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ARTIFICIAL INTELLIGENCE, IT'S CREATIVE-DESTRUCTION IMPACT ON EMPLOYMENT IN GLOBAL ECONOMY

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ABSTRACT

Artificial intelligence (AI) is becoming more and more involved in the lives of the world's humanity every day. Although it has many benefits for societies, concerns that unemployment may increase in societies due to the participation of artificial intelligence in economic life seem to have increased. Here, the question of why AI impact to unemployment is important. In this context, for answering to this question, here, firstly, the elements that constitute and reveal artificial intelligence are examined. Afterwards, the possible relationship between AI and employment was investigated. While artificial intelligence's capabilities develope over time, artificial intelligence is to caused machines to replace people in jobs that require routine and automated workforce. However, in the artificial intelligence-employment relationship, it should not think that unemployment will increase tragically. Because - as in previous industrialization processes - in an environment where artificial intelligence activities are included in production processes, new job areas will emerge and these new job areas will have a positive impact on employment. However, this is also a reality: In this change process where artificial intelligence is effective, the need to improve the qualifications of the workforce in business conditions will become more important than the unemployment of the labour.

Keywords: Artificial intelligence, Automation, Economic development, Economic growth, Employment, Productivity

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YAPAY ZEKA VE KÜRESEL EKONOMİDE İSTİHDAM ÜZERİNDE YARATICI YIKIM ETKİSİ

ÖZ

Yapay zeka (AI) her geçen gün dünya insanlığının hayatına daha fazla katılıyor. Toplumlara pek çok faydası olmasına rağmen yapay zekanın ekonomik hayata katılması nedeniyle toplumlarda işsizliğin artabileceği endişeleri de artmış görünüyor. Burada yapay zekanın işsizliği neden etkilediği sorusu önemlidir. Bu bağlamda bu soruya cevap verebilmek için burada öncelikle yapay zekayı oluşturan ve ortaya çıkaran unsurlar incelenmektedir. Bu incelemeden sonra, yapay zeka ile istihdam arasındaki olası ilişki araştırılmıştır. Yapay zekanın gelişiminden görülen odur ki, yapay zeka çalışmaları zamanla artarken, bu gelişmeyle birlikte yapay zeka rutin ve otomasyona dayalı iş gücü gerektiren işlerde insanların yerini makinelerin almasına neden olacaktır. Ancak, yapay zeka-istihdam ilişkisinde, yapay zekanın etkisinde dünya ekonomisinde işsizliğin büyük ölçüde artacağını da düşünmemek gerekir. Çünkü -daha önceki sanayileşme süreçlerinde olduğu gibi- yapay zeka etkinliklerinin üretim süreçlerine katıldığı ortamda, yeni iş alanlarının ortaya çıkması ve bu yeni iş alanlarının istihdama olumlu etki yapması da söz konusu olacaktır. Ancak burada şu da bir gerçekliktir: Yapay zekanın etkili olduğu bu değişim sürecinde, iş koşullarında işgücünün niteliklerinin iyileştirilmesi ihtiyacı, işgücünün işsizliğinden daha fazla önemli hale gelecektir. Bir bakıma, yapay zekanın ekonomik hayata artarak katıldığı ortamda, işsizliğin azaltılması, işgücü niteliğinin geliştirilmesi ile mümkün olacaktır.

Anahtar Kelimeler: Yapay zeka, Otomasyon, Ekonomik gelişme, Ekonomik büyüme, İstihdam, Verimlilik

INTRODUCTION

The world economy has undergone a great change in the 20th century. In this changing, 1929 World Crisis and II. World War conditions are important. Especially, major developments especially in the fields of electronics lived developments during and after the war. An important point in the change was invention of the transistor in 1948, which can be defined as a milestone in electronics. Because, transistors, the primitive form of the processor, which is the main component of today's computers and artificial intelligence devices, not only changed the field of electronics, but also the world economy through the production tools and products using transistors. The developments and products that we are now facing in the economies and social life are a gradual result of the changes that took place during these years. In this transformation, transistors first transformed integrated, then became computer processors and then the main component of artificial intelligence.

In the 21st century, starting from developed economies, there has been a major development. This development is the inclusion of artificial intelligence in the production process. In today's world economy, countries have exceed their past production levels in production with the support of the artificial intelligence. The production support of artificial intelligence has not only emerged in the increase in production, but also shows itself in the development of product quality and the acquisition of new products. It can say that in the industrialization process of world economy, production was first carried out with mechanical tools focused on steam and manpower, developments continued and in today's form were arrived.

AI is important for production process. Because with artificial intelligence, production processes have become controllable from moment to moment and in every dimension, and thus errors in production processes can be reduced, while production and product quality have increased to higher levels than before. And artificial intelligence developments continue. On the other side, this changes in production have meant more goal (profit/benefit) maximization not only for entrepreneurs but also for consumers. In this paper, firstly the conditions for the emergence of artificial intelligence examined for analysing phenomenon of Artificial intelligence and then investigated artificial Intelligence and on the effects of artificial intelligence on employment. Here, especially artificial intelligence and unemployment connection is important Because, with the development of artificial intelligence, it is claimed that these developments will have a negative impact by some researchers on employment in economy literature. In a way, the question here is why and in what way artificial intelligence affects unemployment and which sectors will be effected from AI. In order to answer this question, it will examine ,firstly what artificial intelligence is and the possible relationships between artificial intelligence and employment.

1. BACKGROUND OF ARTIFICIAL INTELLIGENCE

In order to analyze the phenomenon of artificial intelligence, it is first necessary to present development of the phenomenon of the computer. At this point, it must be said that what makes a computer an computer is the processors in computers. As the processors in computers have developed over time, computers have become capable of performing more and more operations. At this point, it should be noted that processors are of fundamental importance both in computers and in the phenomenon of artificial intelligence. The first predecessors of today's computer processors are the 8086 and 8088 processors introduced in 1974. The other complementary element that enables these processors to become functional products in the production and consumption processes in the world economy is the (computer) operating system software. At this point, the first organized computer operating system was the IBM-DOS operating system. After this operating system, Microsoft-DOS and then Microsoft-Windows system were developed and started to be used in computers.

The ancestors of the software dimension of today's artificial intelligence phenomenon (leaving aside devices and programs such as Atari etc.) are these programs developed by IBM and Microsoft companies. Because of this, it can be said that the beginning of the great change in the world economy also dates back to these years (1970s) with the significant change/influence of these developments. In real conditions, the existential-back date of AI starts with these developments.

In these years, computer processors (and technologies) developed, and computer application (business) programs started to appear on the markets following operating systems. These developments not only laid the groundwork for the existence of artificial intelligence in the world economy, but also enabled the formation of the so-called global economy (Balkanlı, 2002:p.18-19). To make a historical evaluation, while the transition from agricultural society to the first industrial society took about 5000-6000 years, the second industrial revolution (in a shorter period) took place 200-300 years after it, and the third industrial revolution took place 90-100 years after it in a shorter period. The pace of change accelerated in the transition to the fourth revolution and in a period of 30-40 years, a dizzying transformation in the world economy emerged. So much so that the world has moved to the "information society" in a short time, and in the process of the development of AI, it has moved rapidly towards the "innovation and wisdom society" (Öztemel, 2020, p.100).

It can say that the process of the development of AI has three development phases. The first primitive phase of development was 1948-1970. This phase was basic stage and of elecronic development period. Second phase lived between 1974-2000 and this phase was a ovulation/transformation period of electronic to information technology. in 2000s, a lot of algorithms (programs) and techniques were developed. This period, which began in 2000s and continuing, is the period in which algorithms have become successful in the process of learning and perception. The third stage of AI development is a period in which algorithms will excel in learning, perception, to create causality and will be able to generalize will be perfected to act as human intellect (Briciu, Briciu, Moraru and Daiana, 2022,p.3).

In historical process, people thought on AI and produced semi-AI apparatuses. For instance, the computer-like device with semi-electronic circuits that Howard Hathaway Aiken named Mark 1, which worked with a punch card system in 1937, is considered the first most primitive example of artificial intelligence. Daedelus, known as the God of Wind in Greek mythology, is the first image of artificial intelligence in world humanity as an "artificial-human" (Batal, 2016:p.3-4).

The first expressions reminiscent of the concept of artificial intelligence were put forward by the British mathematician and logician Alan Turing in 1950. Six years before the Dartmouth conference in 1956, where the concept of artificial intelligence was put forward, that is, A. Turing published an article in the philosophy magazine Mind (August issue, in 1950), called "Computing Machinery and Intelligence") in which Turing asked "Can machines think?" opened the question for discussion (Pirim,89;Arslan,2020,p.79; Buchmeister, Palcic and Ojstersek, 2019,p.82). The concept of artificial intelligence as a concept was first put forward by John McCarthy at the Dortmund conference in 1956 (Arslan,2020,p.71).

People perform many different mental activities with their mind and intelligence, such as making basic calculations, processing data, making predictions, creativity, reasoning, and communicating. In the 1950s and later, researchers such as M. Minsky, J. McCarthy, H. Simon, S. Papert and A. Newell tried to realize people's this mind and intelligence activities by using machines. (Murat and Şengül,2023,p.200).

In the 1970s and 1980s, while electronic-computer experts developed software for computers with the help of machine language (C language and others), on the one hand, they enabled the development of the software market. On the other hand, these software began to make the work done by people significantly easier. The next step of these efforts was to imitate the way computers (computer programs) work in the human brain and, accordingly, to try to perform artificial intelligence activities - albeit at a primitive level - from computers. It should be noted here that no product or device can become perfect instantly. It takes time for a product or a device to become perfect, depending on usage.

In the 1980s, as computers developed in hardware and software, they began to make life easier step by step. These development effected and supported new developments. Under the influence of these developments, efforts to create artificial intelligence have progressed step by step.

2. TRANSITION TO INFORMATION SOCIETY AND ARTIFICIAL INTELLIGENCE UNDER THE EFFECT OF TECHNOLOGICAL DEVELOPMENTS

In the road of development of artificial intelligence, the first devices produced can be described as simple, primitive devices that perform logical operations. Many tools and equipment used today emerged as the precursors of artificial intelligence, as different forms of artificial intelligence, and have developed and become more complex over time. However, at the modern meaning of artificial intelligence, it's came into existence as a result of its being equipped with a computer processor. Here, the phenomenon of computer and processor should not be considered in the classical sense of laptop and notebook and their processors. In its current form, artificial intelligence consists of neural networks and programs, machine learning and logical-genetic algorithms, and the important element here is the artificial neural networks in the effectiveness of the programs. As a computer system element, artificial neural networks in artificial intelligence mimic the way the human brain learns. According to this logic, artificial intelligence activity is the activity of realizing the basic human functions of the human brain, such as learning, remembering and generalizing and producing new data from the data it collects, with computer software. Therefore, this can be called automation of human intelligence behavior or artificial intelligence (Öztürk and Şahin,2018,2p.6-27;Pavaliou, 2016,p.21-22).

It can say that artificial intelligence (programs/aparatus) will be changer, (at the meaning Schumpeterian (Schumpeter,1994, p.83) creative-destructive in world economy more effectively according to past's changings. Artificial Intelligence will created future's intelligent development. Artificial intelligence products (they are products) will realize the mathematical and logical analysis, automatizeto works, absorb data, classify and prioritize information, conduct simulations but at the last condition, human operators will give decide to the final action of process. (Buchmeister,et al,2019,p.81).

TABLE 1 | Comparing AI to Selected Previous Productional Technologies

Items	Steam engine, electricity	Computers&internet	Artificial Intelligence
Main output	Energy	Calculations and information exchange	Advanced analytics (predictions, optimisation),content generation
Nature of tasks primarily affected	Physical	Cognitive routine and communication	Broad range of cognitive
Autonomy from humans?	No	Limited	Potentially advanced
Capacity for selfimprovement?	No	No	Yes
A method of invention?	No	Yes	Yes

Source: *Filippucci, F. et al. (2024), "The impact of Artificial Intelligence on productivity, distribution and growth: Key mechanisms, initial evidence and policy challenges", OECD Artificial Intelligence Papers, No. 15, OECD Publishing, p. 14 (Table 1).*

During the first industrialization process, production was carried out using steam and electric energy, and through mechanical production tools. Towards the end of the 20th century, computers and the internet became ,mportant tools of economies. Computers began to produce intangible outputs such as calculations and these developments the ability to exchange information remotely, while also affecting mostly cognitive tasks (Table 1). In general, artificial intelligence is similar to the use of computers and the internet in affecting cognitive tasks. However, artificial intelligence has a higher level of autonomy compared to computers, and therefore tends to be more versatile and more advanced due to the highly complex predictions, analyses and content it can perform (as it descripted in Table) (Filippucci, 2024, p.14).

In order to understand the changing effect of the development in the electronics world on the world economy, it is necessery to consider the opportunities offered by micro-electronics to information technology as an example. The point that should be especially taken into consideration here is that while the development and widespread use of electronics increases the knowledge accumulation, this accumulated knowledge opens the way for new formations to emerge. Thus, new technologies developed, and great changes occured in the world economy under the influence of these newly developed technologies.

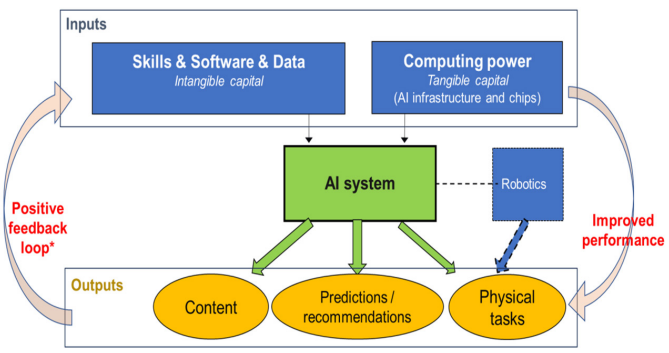
So much so that the informational development and transformation that came with technological change not only changed the trends in the world economy, but also changed the markets. At the impact of these developments, "things" that were difficult and troublesome to reach in the past were become easily accessible. These developments, ranging from electronics to computers, have also reduced the production costs of information-communication-technology products in an environment where the types and quantities of products have increased over time. Falling prices have increased the demand and use of information technologies. In a way, these developments (while the consumption opportunities of products increased with the support of China's cost advantage in production) also ensured the democratization of consumption in the world economy (If we say it by analogy). Market growth fueled by increasing demand here has supported the entry of new companies and new products in different product areas in the information technology markets.

As markets have grown, companies's profitability has also increased. Increasing profitability, in the logic of the multiplier effect, has supported the entry of new companies into the markets with the dimension of developing new products. While operating system developments and the widespread use of computers have increased the search for system security, new software has emerged and these have created new demands. These developments have brought a dizzying growth in these markets over time. Here, for understanding to changing, as another factor, must think throught transition to global economy, also. In the 1980s, when countries in the world economy abandoned the old relatively inward-looking and state-controlled structure, increased their openness to the outside world, and eventually moved to global economic conditions in the 1990s. Obviously, the global character of the world economy is of great importance in the tremendous growth of today's technology markets. Because in the global economy, national markets transformed to global markets.

Just as the gradual increase in demand for this field became effective in the development of the phenomenon of artificial intelligence, competition between companies in producing products became effective, especially in the global economy conditions. Another factor in the development of artificial intelligence is the widespread use of the internet following the development of computer technologies (Later Arpanet, which had the first internet protocol in the 1960s).

Artificial intelligence is a field that aims to imitate human-like intelligence abilities of computer systems and is related to many fields. Artificial intelligence includes a number of basic concepts and impressive algorithms (Korkmaz, Sarıkaya and Kapukaya,2024,p.8). Artificial intelligence or logical analysis machine is a computer, a high-processor smartphone, or a computer-controlled machine. And it performs activities that require high intelligence, such as reasoning, making meaning, and learning from past experiences and making inferences, which are human-specific qualities, exemplifying the working model of human intelligence (Batal, 2016,p.4). The new developments in artificial intelligence are emerged not only electronical developments but also with effect of the application of varius machine learning systems. Especially, deep-learning practise of artificial intelligence has been important in this development. Such, with using of algorithms, artificial intelligence products (computers/ aparatus/programs) are equipping with the ability to learn without being explicitly programmed (Buchmeister,et al,2019, p.83).

FIGURE 1 | AI system in Production: Process of Input and Output



Source: *Filippucci, F. et al. (2024), "The impact of Artificial Intelligence on productivity, distribution and growth: Key mechanisms, initial evidence and policy challenges", OECD Artificial Intelligence Papers, No. 15, OECD Publishing, p.9, (Figure 1).*

With artificial intelligence, inputs are processed and converted into output. As can be seen in Figure 1, the software that runs the system and processes data and the inputs to be provided to the artificial intelligence are of great importance for artificial intelligence to change production (Filippucci,2024,p.9). In general, artificial intelligence feed mainly from three major sources: Firstly, from data (informations provided by the Internet of Things). Secondly, the it feed from perception recognising of voice and images. Thirdly it is feed from cognition and problem solving activities. It can say this that this is the ability to continuously learning and developing. Todays's artificial intelligence is a efficiency technology, the application and impact of which span all sectors of the economy. Todays' empowered artificial intelligence's activities includes perceptivity, the ability to understand spoken language, rational inference, and making judgments (Buchmeister, et al,2019, p.83). It should be said here that modern artificial intelligence products are formed by creative-destructive innovation and new technologies incorporated into the Machine Learning System (Pavaloui, 2016, p.21).

Developed artificial intelligence of modern times is able to make analogies and contextual changes similar like the human brain. Automated learning system meant to Machine Learning system is a process that it is process which uses computational patterns to learn process of human behaviors and taking desicion and allows software systems to identify and store real-world knowledge and then improve their performance on given tasks. In todays, the process of recognizing and processing the human voice has become possible by many programs such as Apple Siri and Amazon Alexa and Chat GPT 4.0 (Briciu,et al, 2022, p.4). In this surround, it can say that there are three main types of AI based on its capabilities : (i) Weak Artificial Intelligence, (ii) Powerful Artificial Intelligence, (iii) Super Artificial Intelligence. Weak AI is works and focuses on one task and also cannot perform beyond its limitations (our daily lives's products). Powerful AI can understand and learn any every intellectual task that a human being can. Super AI is best AI, because it surpasse human intelligence and can perform any task better than a human (Dugal, 2024).

According to the sorting improved by the IBA Global Employment Institute, the funcitonalities of artificial intelligence in world economy can be examined to five elements) (Abuzelidse and Mamaladze, 2021, p.3): (i)Deep learning: Machine learning based on algorithms abstractions and performaning of analyses. (ii)Robotization, (iii) Dematerialization: Automatic data recording and data processing, eliminates to traditional 'backoffice' activities in economies.(iv)Gig economy: Easies for companies advertise.(v)Autonomous processing/ driving capability in economic activities.

According to OECD, any AI system is a machine-based system that derives from the inputs it receives how and in what way to produce outputs such as predictions, content, recommendations or decisions that can change or affect the physical or virtual environments for a task or process. There are different AI systems in terms of their level of autonomy and adaptability after deployment (OECD, https://oecd.ai/en/wonk/definition,2024).

These technological developments effect on the employment will be in two basic ways: (i) Displacement effect (displacing of workers from their haved standard tasks). (2) Productivity effect (In the effect of new technologies, the increase of demand for labor in industries. So, this effect is positive effect of AI (Abuzelidse and Mamaladze,2021, p.3).

Nowadays, the use of artificial intelligence (as a program/device) is rapidly increasing. The emergence of this proliferation on a global scale causes to constantly accelerate of developments, and if this trend continues, artificial intelligence activities are expected to affect a large part of the world economy in the near future. This is an expected situation. Because investments in artificial intelligence are increasing rapidly around the world, the global artificial intelligence market size worth realized 136.5 billion dollars in 2022. And also, from 2023 to 2030, market size worth is especting to grow with a growth of 37.3% from to 1,811.75 billion dollars (Murat and Şengül,2023, p.200-201).

Here, it must say that AI is not useful in every condition. In some condition AI may create negative impacts on economy and society. And also , the scope and scale of the harm that will occur as a result of AI errors is also important. For example, EUROPOL (2023) points out that large language models and AI applications such as ChatGPT can provide false objectivity to messages and in a way take on the unintended function of "facilitating the processing of online misinformation, hate speech and terrorist content" (OECD,2023, p.16). The harm that will occur here can be transmitted not only to individuals but also to certain groups or society as a whole. Because AI takes its algorithms on social media, it can cause existing problems to increase even more. In addition to these negative aspects, AI can support the formation of negative mental health effects or affect the erosion of ethical and cultural values in societies or create social polarization and electoral effects (OECD,2023, p.16). Therefore, it may not be right to approach AI activities in every way as completely positive.

3.POSSIBLE IMPACTS OF THE DEVELOPMENT OF ARTIFICIAL INTELLIGENCE ON EMPLOYMENT IN GLOBAL ECONOMY

AI adoption is changing how workers work their jobs and organisation form of work. For example, in an auto factory the AI tool captures an image of a vehicle body and assesses whether its dimensions meet production standards. However, before AI, workers inspected a random sample of vehicle bodies, taking measurements manually (OECD, 2024, p.12). These developments not only accurate in automotive sector, but it is also accurate in other sectors of economy and these developments in production impact to employment of labor force.

Depending on the use of artificial intelligence, productivity in economies can increase and new jobs can be created by creating new products, and these developments can positively affect economic growth. For this reason, examining the technology-economic development and technology-economic growth relationship and the impact of artificial intelligence on productivity has gained increasing importance in the economic literature in recent years. However, it is also claimed (as mentioned also above) that artificial intelligence may be a source of negativity in some areas of economies. According to some studies suggest that as production and services are increasingly connected to artificial intelligence, unemployment may increase in the services rendered by people, on the one hand, and on the other hand, there will be a possibility of a decrease in wages (under the influence of the increasing use of artificial intelligence in production). And as a result, the general inequality of income distribution in the world will probably more increase. However, this is not a generally accepted situation: In the process where artificial intelligence joins production, the "blue collar-white collar-machine collar" trio will emerge as rivals to each other in production. But as in the past 1st industrial revolution process, today while production is increase through machines and the effectiveness of artificial intelligence it is also claimed that this development may not increase unemployment in economies (Oran, 2021, p.5-7).

For example, according to Acemoğlu and Restrepo, artificial intelligence (AI) will set to effect all side of human lives, not least the way production is organised and AI can automate works and tasks previously performed by labour via by machines. But also it must say here that according to approach of Acemoğlu and Restrepo AI will create new works and activities in which humans can be productively employed and it will effect to positively to employment. As a general condition, it can say in the only first phase that, at the result of automatization in production and services may become a negative development stagnating in labour demand and decreasing of labour share in national income (Acemoğlu and Restrepo, 2020, p.25).

In Acemoglu and Pestrepo's other article, they focused on autumation's positive effect on employment (Acemoglu and Restrepo, 2018, p.6). Acemoglu and Pestrepo, in their study, they especially emphasized to the presence of the displacement effect does not mean that automation shall reduce labor demand. According to Acemoglu and Pestrepo, automation is decrease the cost of producing. Therefore, automation of production in some sectors may increase the demand for labor in non-automated sectors. According to Acemoglu and Pestrepo, at the automation process via by AI, automation causes to increase of production. In this process, while production increase, the prices of the goods and services will decrease. This decreasing will effect to demand increase. This development impact to production in positive way and

in result, this changing will create new labour demand. According to Acemoglu and Pestrepo, this is productivity effect of automation/ artificial intelligence. While production increase, capital accumulation will increase and this development will effect positively to demand of labour. At the other side, depening of automation will cause the expansion of the set of works that can be produced by capital. Raising of techological development , it will create the same productivity effects. This productivity impact, will increase new labor demand. It can say that this dimension of advances in automation technology is meant the deepening of automation (Acemoglu and Restrepo,2018, p.6-8).

According to the research conducted by London-based Nesta and Oxford University academics, the following professions/ Works (in the USA) may be least affected by artificial intelligence (Dirican,2015,p.568-569). (i)Translators, Interpreters (5.8%), (ii) Performance artists (7%), (iii) Radio broadcasters (7.7%), (iv) Film and TV producers (8%), (v) personels in the field of natural sciences (10.9%). This research says us that the jobs most susceptible to AI include office managers, call center staff, librarians, in agriculture sector cattle and crop raisers, loggers, miners, car salesmen and hotel staff. According to J. Stiglitz unemployment will increase because capital owners or human resources managers preferred to be replaced AI products instead of human-workers (as cited in, Dirican,2015,p.568-569). In here it mas say that in fact, the idea that technology will cause unemployment is not new. For example, John Maynard Keynes developed the "technological theory of unemployment" by arguing that technological change would cause job loss. It it go the back, it can say that similar concerns existed in the automation process brought about by the first and second industrial revolutions (Abuzelidse and Mamaladze, 2021, p.3;Sheiki,2022, p.104).

According to the OECD Employment Outlook report, artificial intelligence is not limited to routine and non-cognitive tasks, but significantly expands the scope of tasks that can be automated with the support of technological developments, and when viewed from this dimension, artificial intelligence applications are a general-purpose and rapidly developing technology that affects almost every sector and profession. According to the OECD, when the impact of artificial intelligence is taken into account, it can be said that occupations classified at the highest risk of automation correspond to approximately 27 percent of employment (TİSK,2023, p.2-4).

In this context, it is stated that low- and medium-skilled jobs in the fields of construction, farming, fishing and forestry are the most at risk, while occupations requiring high skills (for a workforce with appropriate skills) are at the least risk of automation. It is stated that, on the one hand, artificial intelligence can reduce monotonous and dangerous tasks for people, which can ensure employees' loyalty to the business and physical safety in the work environment, and on the other hand, artificial intelligence will leave employees in a more intense and fast working environment because it automates simple tasks, also. According to research conducted in this field, it is predicted that 3/5 of the working workforce will completely lose their current jobs to artificial intelligence in the next 10 years, and it is stated that their wages will decrease while the employment of human workforce decreases (Ment.TİSK,2023,p.2-4).

Although the thesis in Acemoglu and Pestrepo's articles that "the demand for labor will increase due to the increasing work volume with the increase in the use of artificial intelligence" is not wrong, the concerns that the workforce working in many fields may lose their jobs are not entirely unjustified, too. For example, the Industry 4 application in industry is a production system in which artificial intelligence is used, and the expression "dark factory" describes a situation in which human labor force decreases. However, on the other hand, in an environment where increased production under the influence of artificial intelligence feeds new consumption demands, it should also be considered that this increased production will increase the demand for human labor.

In the artificial intelligence-employment relationship, a situation that needs to be considered is whether artificial intelligence can perform emotional behaviors (or, to put it differently, "emotional thinking"). If such a situation is possible, it can be thought that the differences between humans and computers will decrease significantly and, in this respect, artificial intelligence devices can start to do many of the jobs that humans do (such as education, legal, economic and consultancy services and health services) (Kambur,2021, p.148-153).

In a research realized by Oxford University and Deloitte company, they are forecasting 35% of jobs doing by labor will be at losting risk in the next 20 years (Wakefield, 2016). According to forecast of Oxford University no less than 47% of USA workers' job and 54% of those Europea region will be in work losting risk inside of 20 years (Bregman, 2017). In this surround, at the study of McKinsey claims that till to 2030, 700 billion humans could be lost their jobs to artificial intelligence apparatus(Wang and Keng,2019,p.68-69). At the other side, according to Price Water House (PWC) company's forecast, in Britain works of 30% could be autamated and in result, will be job-losting for working people's %30. And According to same company, 38% in USA, 21% in Japan, 77% in China may live automation in waorks and this changing creat big unemployment. For example, Foxconn company (Apple company's hardware producer) replaced to artificial intelligence apparatus instead of 60.000 workers (Wang and Keng,2019, p.68-69).

Now, in today, artificial intelligence is doing many jobs that only humans could previously do, and has already replaced humans in many jobs. For example, now insurance evaluation, accounting, driving and medical assistant works are realizing by artificial intelligence. But people doesn't think complete negative and they are also thinking that new jobs will also emerge will be created in the process. (Wang and Keng,2019, p.70).

These negative claims are not singular/extraordinary claims. For example, in the UK, it is claimed that artificial intelligence can replace humans by 95% in accounting, 33% in hairdressing and 10% in economics. In the OECD Automation Policy Summary published in 2018, it is stated that 14% of jobs in the world economy can be automated, and 32% will encounter significant changes in the way jobs are carried out. It is suggested that as artificial intelligence and machine learning studies develop, workers engaged in manufacturing and agriculture will be more affected by the effectiveness of artificial intelligence. In the artificial intelligence employment relationship, it is predicted that the riskiest jobs are low-skilled routine jobs and this risk cannot be closed with education (Sheiki,2022, p.107). According to research, it is claimed that 54% of the jobs currently performed by humans in EU member states are at risk of being lost to computerization/ artificial intelligence. For example, Pew Research Center conducted research to evaluate the public's attitude towards artificial intelligence in the USA, and according to this research, 65% of participants think that their jobs will be replaced by artificial intelligenced apparatuses or smart algorithms in 50 years (Abuzelidse and Mamaladze, 2021, p.1).

In medical and healthcare works, professional cleaning, agricultural works, transportation and logistics and hospitality works artificial intelligenced AI pruducts using is increasing and will increase in future (www.ifr.org,2023). These data show in these jobs aritificial intelligenced products take tasks in these areas, instead of human workers. While research shows that automation and artificial intelligence developments are expected to take away employees' jobs, it is predicted that a strong "displacement effect" will occur with this change. As stated by researchers such as Acemoglu and Pestrepo, on the one hand, there are those who argue that productivity will increase with technological development in the field of artificial intelligence and therefore this technology will increase the total workforce, while on the other hand, there are those who argue that there will be decreases in workforce, wages and labor demand due to the possible displacement effect. In general, in public opinion, while thinking that the possibility of people creating new tasks and new business activities with artificial intelligence and artificial intelligence-related technologies is less likely, it is thought that the increase in the automation process will create further deterioration in unemployment and income distribution against the workforce (Murat and Şengül,2023, p.202).

In fact, the following can be said here: With the widespread use of artificial intelligence, it can be thought that while production increases and new job opportunities may arise, the bargaining power of the workforce and its share in production in the factoral income distribution will decrease. It is clear that the effectiveness of artificial intelligence is fed by the capital factor and the enterprise factor, and therefore it explains why the increasing weight of the enterprise power in production while artificial intelligence participating to production.

The data also supports this. It explains the increasing weight of the enterprise power in production. The data also supports this.

Considering the developments so far, it can be seen that, as a general trend over the years, there is a decrease in the share of labor in income and an increase in profits in institutions. According to a study conducted by a team led by Loukas Karabarbounis and Brent Neiman from the University of Chicago, it was found that while automatisation increase in production, labor's share of income in 38 countries (56 countries) has decreased significantly over the years. Karabarbounis and Neiman attribute the increase in the share of companies, despite the decrease in the share of the workforce in national income, to the increases in productivity in addition to the development of information and technology. In a sense, under the influence of automation and artificial intelligence activities, which represent technological development, the gap between productivity and wage increase widens and the demand for labor decreases in the process (Murat and Şengül, 2023:p.202-203). In this process where artificial intelligence and automation are added to production and production increases, another point is that competition between companies and therefore countries increases.

Regarding the artificial intelligence-employment relationship, as seen from the researches and literature, it can be said that as the use of artificial intelligence in production increases, it will deeply affect the labor markets. However, it should also be noted here that although there will be a tough competition between the labor factor and artificial intelligence devices in the process, there may not be a huge decrease in the demand for the labor factor in this process. Or, as artificial intelligence devices are brought into production, new areas will be opened in the process of change, and those who lose their jobs will be able to be employed in these new areas (even though there is a downward trend in wages) within the framework of increasing their job skills (Murat and Şengül,2023, p.206). There are even positive examples at this point. For example, research information seen from applications in some countries (example in Taiwan) shows that artificial intelligence technology is positively associated with productivity and employment. But this is the main reality: The development of artificial intelligence technologies significantly changes the workforce composition of companies, which reduces the share of workforce with low educational qualifications in employment (Yang,2022).

Healthcare is an area where artificial intelligence applications are used intensively. In this sector, especially in General Health Management, Documentation Management, Cost and quality management, Rational use of the capacity of health institutions, Improvement of negativities in health service and management, Remote preventive and complementary health service delivery, clinical applications, it is seen that it is an important assistant. Here, especially in public health management, early diagnosis and emergency intervention, evaluation of radiology images, evaluation of test results, treatment, artificial intelligence-supported surgeries, evaluation of pathology results, drug treatment follow-up, drug development, personalized treatment, there are artificial intelligence applications focused directly on human health (Akalın and Veranyurt,2021, p.233-236). Another important area where artificial intelligence applications are seen is the education sector. While Master systems, Intelligent tutoring systems, Dialogue-based tutoring systems are effectively used in this field, it reduces teacher employment and tutoring jobs in certain areas of education. For instances, Aleks and Watson education programs are well-known examples of AI education in USA (Arslan, 2020, p 82-84; İşler and Kılıç,2021, p.4-6).

Artificial intelligence is also becoming widespread in the field of tourism. Especially smart tourism applications give more space to artificial intelligence programs and devices instead of human power in the sector (Başer and Olcay, 2022, p.1798). The phenomenon of artificial intelligence in tourism is not only seen directly in tourism services, but has also become an activity that extends to language support in terms of communication in the countries subject to tourism. This is as true for Türkiye as it is for the world. Especially for Türkiye, as can be seen in Table 2, which is constructed on the impact mechanism of artificial intelligence and social observations in Türkiye, the sectors in Türkiye where artificial intelligence activity may be most effective are in parallel with the world.

TABLE 2 | The Sectors-Work Areas may impact negative from AI Developments*

Possible Impact Frequency	Sectors-Work Areas
1	Informatics/IT/Programming and Technology,Electronics
2	Operational-routine and direct-labor jobs--Labor Intensive Services
3	Desk/Office-Secretarial work,Accountants-Accounts Works,Trading
4	Healthcare and Other Medical Works
5	Production (Especially Factories,(Automotive, other industries-Mining)
6	Financial Services (Banking, Capital Markets, Insurance etc.)
7	Media-Communication-TV-Cinema-Music-Painting-Writing-Literature
8	Education-Teaching Works and Academics
9	Engineering-Architecture
10	Design and Art
11	Logistic-Cargo-Transportation-Aviation Industry
12	Law Works
13	Language learning-Translation Works
14	Defense-Security Sector
15	Agriculture

** In here, according to AI efficiency logic, job areas that will have a negative impact on employment under the influence of artificial intelligence are considered to be "Operational-routine and direct-labor jobs - Labor Intensive Services Area. (In creating of the table, for clasification used combination of social scalar-observations in Türkiye and AI impact mechanism).*

Accordingly, it can be said that one of the sectors that will be affected first that will be most affected by artificial intelligence will be the IT/IT/Programming and Technology and Electronics sectors. These sectors should be expected to be followed by Operational-routine and direct labor-intensive jobs-Labor Intensive Services sectors. In addition to these sectors, Desk/Office-Secretarial jobs, Accountants-Accounting Jobs, Trade sectors, health sectors, the industrial sector and the financial sector are among the most affected sectors. In Türkiye, for example, these effects are felt especially pronounced in the financial sector, banking and capital markets (Özdemir,2023, p.63-64). So much so that, artificially intelligent smart devices and artificial intelligence programs are able to perform tasks previously performed by the workforce, while the working opportunities of human labor are diminishing.

Agriculture is also among the application areas of artificial intelligence. Especially in the agricultural sector, there is a high level of routine work characteristics and due to this situation, artificial intelligence applications are increasing in the agricultural sector. This importance in agriculture shows itself in all areas from the identification of plants to the detection of plant diseases, planting, irrigation and harvesting of plants. Artificial intelligence has also started to be used effectively in the field of animal husbandry in agriculture. This situation seems to create a serious employment problem in time, especially in economies like Turkey where agriculture is important in employment (Terzi, Özgüven, Altaş and Uygun, 2019, p.248-252).

According to OECD, high-skilled jobs are the most exposed to artificial intelligence. Especillay, Genetic Counselors, Financial Examiners, Actuaries, Purchasing Agents, Budge Anaysts occupations most exposed to AI. However, Dancers, Fitness Trainers and Aerobics Instructors, Helpers, Reinforcing Iron and Rebar Workers, Pressers, Textile,Germent and Related Materials occupations least exposed to AI (Green,2024,p.17).

TABLE 3 | 5 highest and lowest occupations by AI exposure

Occupations Most Exposed to AI	Occupations Least Exposed to AI
Genetic Counselors	Dancers
Financial Examiners	Fitness Trainers and Aerobics Instructors
Actuaries	Helpers
Purchasing Agents	Reinforcing Iron and Rebar Workers
Budget Analysts	Pressers, Textile, Garment, and Related Materials

Source: *Green,A., (2024), "Artificial Intelligence And The Changing Demand For Skills In The Labour Market OECD Artıfıcıal Intellıgence Papers April No. 14,p.17, (Table 2.1).*

According to Acemoglu;Autor;Hazell and Restrepo, as developed economy, in USA, Over 2010–18 As AI-exposed establishments adopt AI, they simultaneously reduce hiring in non-AI positions and change the skill requirements of remaining postings (Acemoglu, Autor; Hazell and Restrepo,2022). This development may think for another developed countries and also develong countries. However, the differency in AI effectiveness between developed and developing economies is not only in terms of employment. When comparing developed and developing economies in the field of artificial intelligence, it is necessary to look at the impact of the development differences between these countries on the use of artificial intelligence. For example, it should be noted here that most developing economies are not ready to evaluate the opportunities offered by artificial intelligence technologies. For these economies, diffusion of artificial intelligence is a development that will take a longer time. Because when it look at the world of developing economies, we see that billions of people still do not have access to the internet; basic technological and data infrastructure is generally inadequate; and R&D expenditures are limited. In addition, data sets produced in developed economies are sometimes insufficient to meet local needs. Here,, there is adaptation problem. Such gaps can further increase the gap between developed and developing economies (on inequities between scientific productivity, economic performance and the quality of public services) (Addo, 2023, p.294).

AI-based technological advancement is driven by improved digital connectivity, rapidly increasing amounts of data, advanced algorithms, and leaps in processing power. While this technological advancement with AI is currently largely in developed economies, AI also has incredible potential to reshape emerging economies to accelerate their development. But while AI offers significant potential to solve complex development problems, it also risks widening the AI gap in developing countries, increasing social inequality, and leaving millions, even billions, in poor conditions (Digitalk WB,2020, p.1).

According to the findings of a study conducted by Aderibigbe and his friend, it is of great importance to develop capacity in developing economies to address infrastructure constraints and skill gaps in the field of AI, and to establish public-private partnerships and develop public-private policies in the field of AI (Aderibigbe, Ohenhen, Nwaobia, Gidiagba, and Ani, 2023, p.196). Many studies assign a role and responsibility to the government in increasing the effectiveness of AI in developing economies. For example, at the another study, also (a study by Htet, Liana, Aung and Bhaumik) emphasizes the importance of government policy interventions, strengthening infrastructure and capacity building to close the gap between developed and developing economies in the field of AI development (Htet, Liana, Aung and Bhaumik ,2023, p.b658). In another study, it say that (as if to emphasize the role of central authorities) the benefits of generative AI are not accessible to all at the impact of infrastructure problems and limited access in developing countries (Mannuru,Shahriar, Teel and Vaidya et, al., 2023, p.13). These conditions meant that goverment policies are important for AI development in developimng countries.

AI doesn't just have positive effects everytime as stated above. It also has negative effects. When these negative conditions that may arise from all AI are considered together with the positive conditions, they impose a role on the state, which can be defined as a supra-societal authority. In developing economies, governments can design the right policies and regulatory frameworks, as followed (in 6 points), to facilitate the development and adoption of AI, thus balancing the opportunities and risks associated with AI (Digitalk WB,2020, p.1):

i. Developing a roadmap/national strategy with clear goals to foresee and/or further advance the developments in the field of Artificial Intelligence

ii. Establishing the foundations and possibilities of the digital economy on solid ground.

iii. Establishing institutions and structures related to this field within the government.

iv. Organizing organizations in the field of Artificial Intelligence, including the private sector.

v. Increasing market conditions and demand opportunities for AI development.

vi. Creating and developing ethical, security and responsibility legislation in the development of AI.

DISCUSSION AND CONCLUSION

It is clear that in the not-too-distant future, artificial intelligence as a program or machine will be able to perform many tasks that are currently performed by traditional human power. Therefore, in a way, it can be said that workplaces will take on a different structure in the future. Standardized and routine tasks will be largely carried out by artificial intelligence machines and devices. In this conditions, it should also be considered that people will focus more on creative, developer and designer, mastering-need work in future.

As the structure of workplaces in economies changes in the process, it can think that some jobs will be carried out by artificial intelligence machines and devices as much as possible, depending on the nature of the job. But, this process will not bring about a process in which human labor and intelligence will be relegated to the background, on the contrary, it may lead to a structure that prioritizes the creativity and specialization of the human mind.

However, it should be said that there will also be a change in employment in the economies. As stated above, this is also seen in OECD reports, in detail. As stated in the OECD Employment Outlook report, artificial intelligence will not be limited to routine tasks. According to the report, the scope of automated tasks will expand. If this process continue like forecasted, According to OECD report, it can say that in the process, artificial intelligence applications may affect almost every sector and profession. But, this point should be emphasized here. With the development of artificial neural networks, can artificial intelligenced devices that can produce their own behaviors (programs) (beyond the ability to act predictively) effectively emerge? And when such a development occurs, can artificial intelligence elements exhibit riskable behaviors beyond out of replacing humans? If artificial intelligence can code observations and experiences, upload them to its system as information, and make decisions by looking at (comparing) this, it can lead to surprising developments that "scare people". But these are debatable issues. Here, it is important (for employment) that especially artificial intelligence devices and other artificial intelligence elements are starting to participate more in economic life.

This raises serious questions and concerns about the employment of labor in societies. This is not just a socio-economic perception. The OECD Employment Outlook report quoted above also says this. While there are such concerns on the one hand, on the other hand, when we talk about smart homes, AI-based healthcare, and autonomous machines, it is necessary to say that humanity is also rapidly adopting such services due to the benefits provided by AI.

Of course, when this situation is considered from the perspective of entrepreneurs, it seems to have great promises from cost minimization to developing new products and increasing of profitable. In result, it can say that the main advantages of artificial intelligence are production's increasing, increasing of product quality, process precision in production, production costs's decreasing. The most obvious negative impact that will arise with the spread of artificial intelligence will be the increase in the employment problem of the medium-skilled workforce and the relative decrease in income in jobs where automation. But at the other side, prdouction will increase at the support of AI, and this development may support increase of employment. In this surround, it can say that main solving way of this employment problem will be develope of labour qualification.

The effects of artificial intelligence on employment can also argue in terms of the developed country-developing country distinction. Here, firstly, it should be noted that capital is relatively cheap in developed economies, compared to developing economies. On the contrary, in developing economies, labor is relatively cheap compared to developed economies, while capital is relatively more expensive. And in general, unemployment rates in developing economies are also higher than in developed economies. In this respect, it can be said that the increased use of artificial intelligence in production in developing economies will have a more negative impact on employment than on developed economies. From this perspective, it may be considered that if the use of artificial intelligence in production increases, the current unemployment rates in these countries may be negatively affected by the use of artificial intelligence.

Although the capital factor is relatively expensive compared to labor in developing economies, it is clear that production tools equipped with artificial intelligence will mean both increased production and increased product quality for companies using artificial intelligence in production. and Increased production and production quality will make it easier for these companies to compete domestically and internationally. This is a very attractive situation for companies in terms of profitability. All of these will have a negative impact on labor employment in developing economies, similar to the developments experienced in developed economies but more intensively. Here, moreover, it should be considered that the numerical increase in unemployment -although not high due to the opening of new job opportunities- will have a suppressive effect on labor wages/income.

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