The Effects of Industrial Revolutions on Unemployment

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Abstract

In this study, after briefly mentioning the important turning points for the history of humanity, the social structure before and after the Industrial Revolution will be discussed comparatively and after briefly mentioning the types of unemployment that are a part of our subject, four main Industrial Revolutions will be mentioned. Finally, the positive and negative effects of Industrial Revolutions on unemployment will be discussed.

Keywords: Effects on unemployment; industrial revolution; industrial revolutions; industrial revolution and society; types of unemployment

INTRODUCTION

First of all, it would be a better choice to start by talking about the social structure and working life before and after the Industrial Revolution.The reason why it started with this topic is that it will make its realize what kind of changes are happening in people's lifestyles.

At first, it is necessary to briefly mention important turning points in human history.Hunting and Gathering is at the beginning of these periods. In this period, people were hunting and gathering in order to survive. This system has caused people to lead a constantly active lifestyle.Over time, people have begun to consume the food sources in the regions they live in. Accordingly, people had to go to other regions to find new food sources.

This will cause them to switch to a new system. This system is a nomadic lifestyle.In this system, people moved to areas rich in food sources. In this system, it is a lifestyle that emerged as a result of moving to places where the air is cooler and food sources are abundant in summer and to places where the air is warmer in winter and again in terms of food sources.

The Agricultural Revolution, which can be regarded as one of the greatest revolutions for humanity, is emerging.The Agricultural Revolution corresponds to 8000 years BC.This revolution can be said to have pioneered many other developments today, from the Industrial Revolution, which is our subject.It can be said that with the Agricultural Revolution, slave societies began to appear as the first social structure.There are two basic classes in this social structure. One of them is the Slave Class and the other is the Free People Class.In this period, systems based on human, animal power were used.

As we started to move from the first age to the middle ages, the Slavery System started to leave its place to the Feudal System.The order in the Feudal System is a completely land-based system.This system had its own hierarchy.The most well-known classes within this order are the Nobles (landowners), the Clergy, and the serfs (peasants).Since the main livelihood of the people is the land, the places of population density have been rural areas.The greatest wealth in the Feudal System is land.

If its take a comparative look at working life in the social order before and after the Industrial Revolution.Before the Industrial Revolution, there was a land-based mode of

production. Of course, there was also the production of goods.Of course, the production of the products mentioned here was mostly done on small scale hand looms.

‘In the production structure based on small-scale enterprises, where labor-intensive production style was dominant before the Industrial Revolution, the working relations were carried out within the framework of the master- journeyman-apprentice relationship and the guild system.’ (Balcı, 1996, p. 77). Again in Balcı's article ‘The production style that emerged with the Industrial Revolution is based on machine-based capital-intensive techniques.’(Balcı, 1996, p. 78). With the Industrial Revolution, the one-to-one relationship between the master, apprentice and journeyman gave way to a more formal relationship between the boss and the worker.

Before the Industrial Revolution, work was usually done at or near houses. accordingly, the working hours were flexible. However, after the Industrial Revolution, the concept of the workplace, which was a new concept, emerged and working hours became strict.Before the Industrial Revolution, ‘The work was done at home, the patients were cared for at home, and the children were educated at home. The family had fun at home. The place where the elderly were cared for was the home’(Toffler & Toffler, 1995, p. 87). ‘The work has been transferred to the factory or office. Patients began to go to the hospital, children to school, couples to the cinema. The elderly were sent to nursing homes. When all these things went outside, what was left was the ‘ nuclear family.’ (Toffler & Toffler, 1995, p. 87)

Based on the information we have given above, it is seen that there has been a radical change in people’s lives with the Industrial Revolution.

After briefly talking about what the First Industrial Revolution means, it will talk about its positive and negative effects on unemployment.First of all, it should be mentioned for what purpose the steam engine was invented.At first, animal and human power was used to drain the water accumulated in the coal mines.This system worked regularly and smoothly in areas close to the ground. However, as we went deeper, this system could not give an adequate and efficient result.British engineers started to work to make this job easier.Thomas Savery invented a steam-powered pump in 1698. This invention did not receive the expected attention, it did not offer a safe use both in terms of cost and because it worked with high steam.This machine was called Savery’s Steam Pump. Thomas Newcomen took the machine to the next level by integrating pistons into

Savery's Steam Pump.This machine was called the Newcomen Steam Engine.When the Newcomen Steam Engine broke down, James Watt was summoned to repair it.James Watt repaired it, but saw that the machine was not very efficient and began work on improving the machine.The machine developed by James Watt began to be produced and marketed in 1776.

First of all, with the development of the Industrial Revolution, with the increase in mechanization in agriculture, the humanpower needed in agriculture began to decrease.With the decrease in the need for humanpower in rural areas, people began to migrate to big cities.This meant cheap labor to work in the factories established with the Industrial Revolution.Initially, people could easily find jobs in factories, but with increasing immigration, more and more people needed jobs. This paved the way for bosses to hire workers for longer hours and lower wages.With the Industrial Revolution, technology was advancing day by day.Accordingly, while it is already difficult for people to find a job, machines will start to replace people. It will cause a great reaction among the people.

The Second Industrial Revolution, The most influential state of this revolution is electricity. The concept of 'Mass Production', a new production system, emerges with the use of electricity and steam power together.With the use of the telegraph, which was invented towards the end of the First Industrial Revolution, developments began to occur in the field of communication.This was not the only major breakthrough in communications, with Graham Bell inventing the telephone. It made a huge impact in the world. however, a new concept emerged. This notion is Operator.

In this period, the phenomenon that we encounter in working life is Taylorism.In short, Taylorism is the process of dividing all the work done into sections, down to the smallest detail.We mentioned that with the First Industrial Revolution, people were replaced by machines. With Taylorism, humans started to replace machines again.Some negative aspects of Taylorism began to be seen. At the beginning of this, there is a loss of time as a result of the machines not working in a stable condition and the transportation of workers as a result of moving a product to another area. It means that workers get tired more quickly and productivity decreases.

With the widespread use of steel in this period, a new sector emerged. This was the construction industry. This new sector will provide new job opportunities.The other

new sector will be heavy industry and weapons industry. Thanks to these sectors, many job opportunities could be provided.

The Third Industrial Revolution could not make a breakthrough as the first two revolutions at first.The biggest reasons for this were the First World War, which affected the whole world, the Great Depression and the Second World War that broke out right after.In order for this revolution to develop, the impact of all these events had to come to an end. This period was overcome in a short time like 4-5 years, and this revolution was revived in 1950.The greatest invention for this period was the first Calculator to work with mechanical and electrical systems. Soon after that, the invention of the computer would take place.In this period, thanks to the rapidly developing information technologies, innovations in many fields such as computer technology, synthetic products, laser technology were achieved.

With this revolution, robots started to enter our lives. The first areas where robots entered our lives were factories. The biggest reason for this is that robots have started to be used to carry loads that humans cannot carry. Later, as the efficiency obtained from robots was seen, robots gradually started to replace humans in factories.This meant that people were unemployed.

It can be said that the biggest advantage of the Fourth Industrial Revolution is its capacity to use the developments in the other three revolutions at the same time.In this revolution, the inventions that were developed and discovered before were further developed and made accessible to almost everyone.

All production tools and systems in this revolution have been integrated with each other.The need for the human factor is minimized as these established systems are enabled to communicate among themselves.

Regarding our subject, it is necessary to briefly talk about the types of unemployment.

Voluntary Unemployment

It is the type of unemployment created by people who do not accept the wages or job conditions given to them.

Involuntary Unemployment

It is the situation where people cannot find a job despite accepting the wages and job conditions.

Frictional Unemployment

It is the type of unemployment created by people who have just joined the workforce and those who leave their current jobs for various reasons and look for new jobs.

Structural Unemployment

It is the type of unemployment that occurs as a result of people's inability to keep up with the new order in changing and developing jobs.

Cyclical Unemployment

It occurs as a result of insufficient demand due to goods and services.

RESULTS

At first, we talked about the turning points that radically changed people's lives, first we talked about the hunting and gathering period, then we talked about the nomadic lifestyle, and finally we talked about the Agricultural Revolution, which is considered one of the greatest revolutions in human history. Then we talked about the slavery system, which is the social structure that emerged with the Agricultural Revolution.With the transition from the first age to the middle ages, a new order, feudalism, emerged.

We talked about the social structure and livelihoods in this system.Then, we discussed the social structure before and after the Industrial Revolution in a comparative way.

Then, at first, we talked about how the First Industrial Revolution came about and the job opportunities at that time, then after we talked about the situation that most affected the Second Industrial Revolution and the innovations that this situation brought, we briefly talked about the effects of these new formations on job opportunities. We talked about the difficult situations at the beginning of the Third Industrial Revolution and its effects on the recovery process and job opportunities in a short time despite these impossibilities. Finally, we briefly talked about what kind of changes the technology developed with the Fourth Industrial Revolution caused in people's lives and its effects on job opportunities.

At the end, the types of unemployment were briefly mentioned in the form of sub-titles.

DISCUSSION

Unemployment was very low during and before the Industrial Revolution. The reason for this is that there are factories established in cities and around cities. The biggest reason for this is that as a result of the decrease in the need for humanpower thanks to the developments in the field of agriculture, people in the rural areas migrated to the big cities and their surroundings.This meant cheap humanpower to work in the factory.This easy job finding will eventually turn into a more difficult job finding.It can be said that one of the reasons for this is child workers. Because child workers could both work harder and be employed for lower wages compared to other male workers.Another reason for the increase in unemployment rate is the increase in immigration from rural areas. They could not find a job when they had to work for their livelihood and this meant the exploitation of workers' labor by the bosses. As a result, it is thought that the type of involuntary unemployment emerged in this period.

With the realization of the Industrial Revolution and the rapid development of technology, the introduction of machines to the market has led to changes in the industrial structure.After the First Industrial Revolution, the biggest changes in production took place on looms.The machine called 'Spinning Jenny', invented by James Hargreaves, was the first to appear in this period. The biggest advantage of this invention is that it can spin 8 reels at the same time.This means that what multiple workers can do, one person can do with a single machine. 'Hargreaves kept the machine secret for some time, but he produced a number for his own growing industry. The price of yarn fell, angering the large spinning community in Blackburn. Eventually they broke into his house and smashed his machines, forcing him to flee to Nottingham in 1768.'(Acamedia). It was getting harder and harder for people to find jobs. Moreover, the fact that the jobs that humans could do could be done by machines meant the new unemployed. This will make it inevitable for people to take a stand against machines. 'Because the "machine" has begun to be seen as a substitute for the worker who has the capacity to use a single tool. Thus, seeing the machines as the basis of the unqualification and alienation of labor caused the workers to revolt against the machines'(Koca, 2020, p. 4536). At the end of this situation, people started a revolt against the machines. 'This first labor movement, which is called ' Luddism ' and means ' Machine Breakers ', made a significant contribution to the consciousness and organization of the working class.'(Taş, 2012, p. 64).

As can be seen with the examples given above, while people's employment opportunities are very limited, it is seen that people's employment opportunities have weakened as a result of the involvement of machines in the production process.

In the Second Industrial Revolution, as a result of integrating with electricity and steam machines, the concept of 'Mass Production' emerges. 'Taylorism, which emerged for the first time in the USA at the end of the 19th century, essentially means that all stages of the production process are in the hands of the management. It is based on the principle of separating head and arm power from each other and simplifying all stages of the production process by breaking them down'(Koca, 2020, p. 4537). Due to the instability of the machines of this system, more humanpower requirement has emerged, but this meant more fatigue to the workers.Later, a new system was developed to eliminate the problems in this production. This system was called the 'assembly line' or 'fordism'. 'By the 1960s, some negativities began to appear in the fordist production process. In the classical belt type production type system, the fact that a part had to be finished until it was brought to the next stage and that these finishing processes took place at different times caused some time losses. On the other hand, from the point of view of workers, the dissatisfaction caused by specialization is intensely unskilled labor force. The use of and the separation of production down to the smallest parts were the main problems of fordist production.'(Koca, 2020, p. 4538).

There were other important employment areas for this period. One of them is the construction industry, heavy industry and the arms industry.A few years before the war, there was a great deal of employment in the arms industry.The effects on employment in the Weapons Industry vary due to various factors. It is possible to make a distinction such as land sharing, civil wars, regional wars.In addition, it varies depending on the strength of the warring parties, that is, on their economy.However, as a result of this employment in the arms industry, the unemployment rate decreased, but there was no increase in the welfare level. The main reason for this is the decrease in employment in the civilian sector and the increase in employment in the arms industry. In addition to this situation, it can be shown that it is shifted to sectors in the conscription and military fields. As a result, the working conditions for the workers began to take an order like in the military camps.'During the Second World War, the share of civilian employment in the total workforce in the United States fell from 82.4% in 1940 to 59.5% in 1945.On the other hand, the share of military sector employment increased from 1.8% to 39.2%

in the same years, while the rate of civilian unemployment decreased from 15.7% to 1.3%. During this period, the labor force participation rate increased from 85.4% in 1940 to 98.1% in 1945.'(Durmuş, 2016, p. 33)

It is seen that the above-mentioned arms industry and heavy industry have created new employment areas. The sector that can provide a new job employment that emerged in this period will be the telecommunication sector.

The Third Industrial Revolution can be called a period when humans and robots came face to face.The biggest reason for this is that with the inclusion of robots and computers in the production process, productivity in production has greatly increased and gained speed.This has begun to negatively affect the employment of people in production.In the face of this, people who did not want to lose their jobs realized that they needed to gain new skills in order to keep up with the order. By blending these acquired new skills with their own knowledge and experience. They have become more qualified individuals.As a result of these trainings, they started to reach all the necessary information from a single point and develop these skills in the computer environment, that is, in the virtual environment.

Of course, new employment areas have been opened in the process of training people who can give these trainings.As in every industrial revolution, there has been a decrease in job opportunities in the field of production.

In the Fourth Industrial Revolution, it is to provide communication between all units in the production process and to ensure that all data created can be accessed simultaneously and at the same time, and as a result, to determine the most accurate and most appropriate value.Today, digitalization, smart automation, robotization, etc. This period, which is called technological systems, is the innovations brought by the age as a result of technological developments.It is inevitable that these technological developments will have a great impact on the workforce.This situation will cause the termination of some business and occupational groups, as well as the formation of new occupations and business groups.Of course, unemployment will occur as a result of smart tools, digitalization of jobs, robots and the control and execution of jobs by them.

With the Fourth Industrial Revolution, civil servant specialists, those working in some agriculture and livestock sectors, those dealing with a certain craft, 'emergency management directors, mental health and substance addiction social workers,

audiologists, occupational therapists, orthotics and prosthetics specialists, health care social workers, oral and maxillofacial surgeons, primary care supervisors of firefighting and prevention workers, dietitians and nutritionistssenior'(Çark, 2020, p. 28), senior executive, those working under the law and some trades will be less affected than other industries.'In the 1970s, the share of health personnel and teachers in total employment in England increased by 11.1% and reached 12.2% from 1.1%'(Çakır, 2018, p. 101). As a result of a study conducted in that period, it is seen that the job opportunities of teachers and health personnel increased.

There are sectors that will be directly adversely affected by these developments.Some of these factors are: Employees in restaurants and cafes, gardeners, handymen, babysitters and elderly caregivers, workers in shops, service sectors and machine operators, 'watch repairers, accountants, library technicians, insurers, cargo and freight agents,'(Çark, 2020, p. 28) etc. assemblers will be factory workers. 'According to the McKinsey Global Institute's Earned and Lost Professions report; By 2030, 75 to 375 million professionals will face the threat of unemployment. Thus, robots will take over 60 percent of the existing workforce'(Öcal & Kıvanç, 2018, p. 2078).

During this period, it has a system built on highly skilled people.In this revolution, like other Industrial Revolutions, it was aimed to minimize the costs in production.Thanks to the autonomous systems, smart systems and robots that started with the Fourth Industrial Revolution, the costs have been greatly reduced.Errors during production were minimized and productivity increased in production.Accordingly, the demand for labor began to decrease.The humanpower-based working system in factories has started to be replaced by machines managed by robots and artificial intelligence.Accordingly, the need for workers in factories will decrease and this will lead to layoffs.Skilled personnel will be needed to operate these AI-managed robots and systems.With the use of robots and machines in the production process, there will be a decrease in employment as the need for humanpower in production will decrease. As a result, structural unemployment and involuntary unemployment are expected to increase.

The Fourth Industrial Revolution has had a significant impact on human and robot collaboration.In fact, robots were originally designed to be used in hard work for humans.If it needs to give an example, it was produced to alleviate the burden of those who work in tiring and heavy conditions.It is designed to work with people.However,

as a result of robots working uninterruptedly and with less cost than humans, there has been an increase in the use of robots instead of humans in production and other sectors by employers. 'The use of robots, which is becoming more and more widespread in business life and factories, is increasing rapidly according to the data of the International Robotics Federation, which is the most important indicator of how widespread Industry 4.0 is. Global robot installations increased by at least 18% in 2017, robot supplies in the Americas increased by 16%, Asia/Australia by 1%, and Europe by 8%. From 2018 to 2020, global robotic facilities are projected to grow at an average of at least 15% per year. 15% in the Americas and Asia/Australia and 11% in Europe. Total global sales will reach approximately 520,900 units in 2020. It is estimated that more than 1.7 million new industrial robots will be installed in factories around the world between 2017 and 2020.' (Efeoğlu & Bozkurt, 2018, p. 293). 'The World Robotics 2021 Industrial Robots report shows a record of 3 million industrial robots operating in factories around the world – an increase of 10%. Sales of new robots grew slightly at 0.5% despite the global pandemic, with 384,000 units shipped globally in 2020. This trend was dominated by the positive market developments in China, compensating the contractions of other markets. This is the third most successful year in history for the robotics industry, following 2018 and 2017' (Robotics, 2021).

After comparing the two data given, it is seen that the sales made by the International Robotics Federation do not keep the statistics for 2020.The reason for this is thought to be Covid 19, which emerged on November 17, 2019.However, despite the pandemic, there is a slight increase in robot sales.

The areas where robots enter our lives are not only factories and industrial establishments. In other words, they did not enter our lives in a single production area.Robots have become a part of our daily life. Other areas where we encounter robots are our homes and the service industry.

'2019 and 2020 unit sales in the world's top 5 areas for Professional Service Robots.

- ✓ Transportation and Logistics; 2019: 33,000 and 2020: 44,000
- ✓ Professional Cleanning; 2019: 18,000 and 2020: 34,000
- ✓ Medical Robotics; 2019: 7,000 and 2020: 18,000
- ✓ Hospitality; 2019: 13,000 and 2020: 15,000

- ✓ Agriculture; 2019: 7,000 and 2020; 7,000’ (Robotics, 2021)

Looking at the data given above, the rate of increase in robot sales data to be used in professional areas within a year is seen.

According to the research carried out by McKinsey & Company for the sectors given above.

‘A study was conducted to analyze the automation potential of more than 800 occupations and more than 2,000 business activities in the US economy, and the analysis was extended to the global economy as a whole of the research the findings are as follows: 49% of the jobs people do for wages in the global economy are adapted to existing technology.It is anticipated that there is potential to be automated. It is predicted that almost 5% of the surveyed professions have the potential to be fully automated with the current technology, and that 60% of the activities in these professions have the potential to be fully automated with the existing technological infrastructure in at least 30% of them. While the technical automation potential of tasks such as data collection and processing, physical activities and operating machines is high, the automation potential of tasks such as interacting with stakeholders, expert decision-making processes, planning, creative tasks, managing and developing people is very low. While jobs such as sewing machine operator, graders, agricultural product classifiers, stock exchange clerks, travel agency workers, watch repairers, chemistry assistants, maintenance assistants, web developers have a high level of automation risk, fashion designers, chief executives, statisticians, psychiatrists and legislators need automation. the risk is low. Considering the automation levels on the basis of sectors, such as accommodation and catering services, manufacturing industry, transportation and storage, retail sales, mining.It is seen that the automation potential in the sectors is over 50%, while it is below 40% in the construction, electricity, water and gas services, wholesale, finance and insurance, art, entertainment and recreation and real estate sectors. It is seen that the highest automation risk is in the field of accommodation and catering services, and the lowest automation risk is in the field of education services.’(Yeşiltaş & Artar, 2021, p. 47).

In addition to the data given above, with the order that comes with this new system, the characteristics that employers look for in workers have begun to change.The data given

above is from the United States. This is because the United States is a country that digitizes faster than other countries.

‘From 2002 to 2016, U.S. jobs and businesses that require a significant amount of digital information due to changes in the digital content of existing occupations or shifts in the distribution of occupations towards medium and high-level digital activitiesshare of employment increased rapidly. Compared to 2002, it is seen that employment in occupations with high digital content increased from 4.8 to 23%, and from 39.5% to 47.5% in occupations with medium level of digital content. On the other hand, employment in occupations with low digital content decreased from 55.7% to 29.5%.In absolute terms, more than 32 million workers in highly digital jobs while employed, approximately 66 million people work in jobs in medium digital positions. In contrast, only 41 million jobs require low digital skills. In line with these trends, digital-focused professions have given great support to the process of business transformation and creation over the past few years. Specifically, approximately 4 million of the 13 million new jobs created in the country since 2010 are high-end digitalrequires skills and almost two-thirds of new jobs require either high- or intermediate-level digital skills.’(Yankın, 2019, p. 24).

With Covid 19, our lives have undergone a radical change. With Covid 19, robotic systems in our lives began to be a little more effective. The biggest reason for this is to minimize contact between people. For this, contactless systems or robots have started to be developed.Robots, which started to enter our lives with the Fourth Industrial Revolution, suddenly became a part of our lives. The best example of this is the ‘Robot Vacuum Cleaners’, which was first released in 2001.According to the data released by the iRobot branded robot vacuum company, headquartered in the United States, they announced that they have sold 40 million robot vacuums. iRobot announced a 44% increase in sales in 2021 compared to the previous year.It is useful to state that these data are only disclosed by one company.Considering that other companies producing electronic goods in the world produce ‘Robot Vacuum Cleaners’, we need to understand how big a sales and market share they have in the world market.After people bought a robot vacuum cleaner, people working in the cleaning area in their homes started to terminate their jobs, causing an increase in unemployment rates.

This situation started to take on a slightly different dimension as robots and artificial intelligence used in the tourism sector and food and beverage sector can be used in almost all service areas offered by businesses.These technological systems, which are used in places such as hotels, restaurants and cafes, will be used in a way that minimizes the time and cost in the preparation phase.As a result of the services provided by service bands and robots, customers''waiting times would be minimized and labor costs would be saved. The first change was in the menus of cafes and restaurants. As it is known, menus were created from materials such as paper. Of course, the menus produced from this paper can cause various problems. These problems meant additional costs when it got old or when the menu would be changed after a certain period of time.Its biggest disadvantage is the damage it causes to nature. 'In addition to the systems where consumers can order with the help of tablets integrated into tables or kiosks in the restaurant, QR menus are the most common digital menus. In this way, the menus are displayed on the device screen thanks to the mobile decoder applications installed using the built-in cameras on the smartphones. With the digital menus, customers can access the calories, weight, allergen, raw material, gluten, nutritional values, price and many more information of the meals with their visuals, and they can also make payment transactions by ordering.'(Yazıcı Ayyıldız & Eroğlu, 2021, p. 1105). Another system used is digital systems. 'POS systems, which started to be used in retail sales points and food and beverage businesses in the 1970s; It had a process where the customer's order was taken at the restaurant entrance and the order was printed in the kitchen simultaneously via a printer. Thus, the customer order was transmitted to the kitchen quickly and the service speed increased. In the following years, POS systems have been developed in terms of hardware and software, and they have become more functional by integrating the features such as transferring the orders received from the customers to the main computer and sending them to the relevant units (waiter-kitchen-safe-accounting-warehouse), issuing accounts, and obtaining statistical data. These programs provide convenience to businesses such as purchasing, storage, shipment from the warehouse, creation of standard food and beverage recipes, menu planning, and adjustment of sales prices.'(Kocaman & Kocaman, 2014).

In addition to the above data, food orders started to be placed over the internet, and as a result of the introduction of smart phones into our lives and their widespread use, orders started to reach the relevant units directly.

Other systems used are robots. Smart hotels, cafes and restaurants, convention centers, airports, etc. The process has accelerated considerably as a result of the integration of robots into these systems in areas that serve many people.These robots are used in food and beverage service areas such as cafes and restaurants, while taking orders, preparing meals and serving them.Robots are used in many areas such as hotel reception, baggage handling and room service in hotels.

It needs to talk about the advantages and disadvantages of robots and smart systems used in the tourism sector and food and beverage sector that we mentioned above.

It will be talk about the advantages and disadvantages in the above-mentioned order; to reduce the waiting times of people to a great extent, to take orders more easily and without errors, to minimize paper usage and to create environmentally friendly systems.Disadvantage is that it can lead to increased unemployment.The advantage of using robots or smart systems is that the services are provided error-free, fast and complete, and they are less costly.As a disadvantage, it may cause an increase in involuntary work.

Another sector where robots and artificial intelligence are used is the automobile sector. ‘The auto industry is on the verge of a revolution to switch to the self-driving automobile industry. The driving force behind this is the rapidly evolving technology, the Internet of Things (IoT).’(Şimşek, 2019, p. 68). First of all, it needs to give some information about how these cars work. ‘IoT Sensors; Today, there are many types of sensors that make autonomous cars a reality. Blind spot monitoring, forward collision warning, radar, camera, LIDAR and ultrasonic sensors work together to create the navigation of a self-driving car. IoT Connectivity; Self-driving cars use cloud computing to move between traffic data, weather, maps, cars and other variables based on surface conditions. This helps them better monitor their environment and make informed decisions. Even if edge computing hardware can solve small computing tasks natively, self-driving cars need to be connected to the internet. Software Algorithms; All the data the tool collects needs to be analyzed to determine the best course of action. This is the main function of control algorithms and software. This is the most complex part of the self-driving car because it has to make the decisions flawlessly. A ‘flaw’, like Uber’s self-driving crash, can be fatal.’(Engin, 2020).

At first, self-driving systems began to be used in individual cars. The reason for this was to check whether this system was working efficiently or not. The next phase would be ‘intelligent public transport systems’. What are ‘intelligent transport systems’? ‘Internet of Things (IoT) and artificial intelligence (AI); It enables a new class of intelligent transportation systems (ITS) for road, air, rail and sea. These solutions are; It connects vehicles, traffic signals, toll booths and other infrastructure to help reduce congestion, prevent accidents, reduce emissions and make transportation more efficient. Examples include fleet management, intelligent traffic management, V2X communication (all vehicles, infrastructure systems, passengers being aware of each other with the network system.), electric vehicle charging, electronic toll collection and various other mobility solutions.’(Intel)

With the introduction of these smart transportation systems and smart vehicles into our lives, it is planned to minimize traffic accidents.As a result of the decrease in the number of accidents, it will provide a great benefit to the state economies. This situation will also have a disadvantage, it means that workers working in this sector may become unemployed.

There were great changes in the factories, which are considered the cornerstone of the Industrial Revolutions. The notion of the factory has completely changed.Today’s factories are called ‘Smart Factories’.With the Fourth Industrial Revolution, the need for human power in factories decreased.With the developed automation systems, all production tools in the factories have become machines that can communicate with each other, learn by themselves and take decisions by themselves.These are the systems and processes that provide self-processing of the data obtained as a result of the application of these developments and innovations.Smart factories do not need human power during production. The number of workers employed is small and the workers are concerned with the machines that carry out the production.For this reason, the other name for smart factories is dark factories. ‘The main purpose of smart factories is to eliminate human-induced errors, slowdowns, and long decision-making processes, and to provide faster and less faulty production. In addition to these, another effect is to reduce the production cost.‘(Barut, Ünver, Kayım, Toprak, & Uysal, 2020, p. 32). We started to feel the effects of the Fourth Industrial Revolution more in our lives.The biggest reason for this is the complete digitalization of our lives with Covid 19.The notion of the workplace, which entered our lives with the Industrial Revolution, has

caused people to work at their homes again today.Strict working hours were replaced by more flexible working hours.As a result of these changes, it can be said that there is a structure similar to the social structure before the Industrial Revolution.With the Fourth Industrial Revolution, our lives can be considered to have changed completely.

In line with the information given above, there are three views about the Fourth Industrial Revolution in the world.

As a first point of view, those who have an optimistic view argue that technology will increase employment. In general, they describe it as follows. At first, they argue that working conditions will improve and technology will not lead to unemployment, but on the contrary, if technology is not used, unemployment will increase.They argue that this unemployment rate will be very low and this will compensate for this rate with an increase in welfare and productivity, and as a result, it will create new job opportunities.

According to the balancing view, they argue that the developing technology will be determined by how and for what purpose people use it.They argue that the developing technology will have an effect on employment, but this effect can be eliminated with technology. They think that technology will not have a direct impact on employment.

Those who support the pessimistic view think that unemployment may occur as a result of the increase in the developing technology and consequently the mechanization, that the production costs decrease with each new technology and the production costs based on humanpower increase. The need for human labor will decrease day by day. With the use of robots and machines in the production process, the need for labor will decrease and there will be a decrease in employment. They argue that this will lead to structural unemployment as a result.

CONCLUSION

After mentioning the reason for the low unemployment rate in the first years of the Industrial Revolution, a rapid increase in the unemployment rate was observed with the rapid increase in the population and the use of machines in production. Since these people needed to work to survive, they had to accept every request of the bosses. Then, as a result of the machines that started to be used in the industry, the uprising that people started against the machines was mentioned.

With the Second Industrial Revolution that followed, we talked about the newly emerging mass production. It has been mentioned that due to the instability of this system during operation, more workers must be employed.Later, a new system called the assembly line was mentioned. The biggest disadvantage of this system is that the produced part has to be finished before proceeding to the next stage and has to move on to the other area. This causes a waste of time.Later, a new system called the assembly line was mentioned. The biggest disadvantage of this system is that the produced part must be finished before proceeding to the next stage and it is necessary to move on to the other area. This causes a waste of time. In addition, the dissatisfaction brought by the specialization on the part of the workers appears in addition to these. It was mentioned that other sectors with new job opportunities for this period are heavy industry, weapons industry and construction sector.

It was mentioned that robots entered our lives with the Third Industrial Revolution and why robots took the place of humans in the production area. It was mentioned that people realized that they needed to improve themselves in order not to lose their jobs in the face of robots and developing technology.People who can provide these trainings were needed and it was mentioned that there were new job opportunities in these fields.

It has been mentioned that with the Fourth Industrial Revolution, it caused changes in all means of production as a result of the integration of technology in almost all means of production.In this period, it was mentioned that robots started to be used in almost every area in order to minimize the contact of people with each other with Covid 19 and that there may be a risk of people losing their current jobs. Of course, it was mentioned that some business sectors are at greater risk as a result of these technological developments.

Finally, the optimistic view, balancing view and pessimistic view of the effects of developing technologies on unemployment were mentioned.

In line with the information and statistics given here, first of all, the positive and negative aspects of the Industrial Revolutions should be examined, and then the Industrial Revolutions should be seen as a continuation of each other, not independent of each other. In this direction, the effects of Industrial Revolutions on people's lifestyles and social structures, as well as the positive and negative effects of Industrial Revolutions on unemployment are mentioned.

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