

The Implications of Artificial Intelligence for the Future of the Workforce Markets

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ABSTRACT

Contrary to output and employment statistics, mechanization and artificial intelligence have always been viewed as threats to job security. Modern industrial robotization with worker replacement raises unemployment, yet there is evidence of its reduction. This book shows how, despite inevitable robotization and job loss, new trades and professions will emerge, just as in the previous three revolutions, in all sectors of goods, services, and military. However, current publications confront them with the technological trend of the twentieth century, company activity and its effect on the future labor market. Statistically, highly qualified organizations and employees adapt quickly. Negative implications include loss of low-skilled worker competitiveness, loss of union bargaining power, increased gender pay gap, and wider gap between high-tech industrialized and undeveloped countries. It is concluded that immediate improvements are required in educational programs, labor reforms, and financial reforms. Less developed countries will continue to fall behind unless they reform their economic policies in innovative and pragmatic ways.

Key Words: Artificial Intelligence, Technology, Labor Market, Economic Growth, Unemployment

INTRODUCTION

A number of newspaper publications and academic researchers have recalled the "perverse effects" that mechanization has had on labor since the English industrial revolution of the 18th century: according to this approach, mechanization has always displaced low-skilled labor, thereby contributing to the creation of unemployment and poverty; however, in times of panic, it is forgotten or little is mentioned how mechanization not only eliminated trades but also spawned new industries. It is important to remember the repeating phenomenon of every industrial revolution: the period between unemployment due to replacement and the new occupation has never been short, but has always been long and expensive, i.e., relocation to new jobs that require new skills that are more complex than the previous ones has not been easy, despite government assistance and educational programs (Adusumalli, 2017). The purpose of this research is to investigate how the current technological revolution in artificial intelligence (AI), as well as its acceleration as a result of the present environmental situation, would affect labor markets in the future (Pasupuleti, 2016).

Jobs and professions lost to mechanization, systematization, and robotization are constantly cited in the media, academics, and government reports. The dangers of developing artificial

intelligence, giving robots the ability to overcome human physical and mental strength, condemning educated and uneducated workers such as doctors, administrators, and blue-collar workers, means more unemployment and poverty. Humanity will be unable to compete when robots gain knowledge and competitiveness exponentially.

For example, during World War II, computers were invented, causing a panic that lasted until the end of the Cold War. Films, like Kubrick's (1968), *2001: A Space Odyssey*, projected that robots would eventually supplant humans and rule the globe. This fear could become a reality once personal computers became mass produced in 1980. In the 1990s, computers and software led to neural networks and increased robotization. Academia recently researched the influence of industrial robots on US job markets from 1990 to 2007. An increase in the usage of robots reduces the employment-population ratio by 0.2 percentage points and earnings by 0.42 percent.

Frey (2019) traces the history of the present environmental situation from English industrialization until 2017. Starting with Elizabeth I's "poor laws" (1610), rulers opposed mechanization since it threatened workers' rights and hence domestic stability. The Queen opposed unemployment and insecurity. Pre-industrial inventions were outlawed until the English expansion in the 17th century. A rivalry between European powers arose due to European expansionism, which justified the adoption of labor-saving technologies supported by industrialists and politicians even though it harmed workers who, as members of a social class, had no political power to oppose it (Adusumalli, 2018). Fortunately, mechanization reduced production costs and enhanced worker quality of life in the late 19th century.

Mechanization increased demand for workers by stimulating the development of technological enterprises while decreasing production costs. The same happened in the US with industrialization. The only way for France and Germany to avoid ceding global dominance to England, according to Mantoux (1983) was to adopt mechanization and substitution. Because labor was inexpensive in the English industrial pre-revolution (1600-1700), no mechanized incentives or subsidies were justified. Governments will employ subsidies to preserve competitiveness (worker replacement) in foreign markets and to bolster military strategy. Incentives for AI development are still provided by governments for competitiveness and security reasons (Pasupuleti, 2017).

To sum up, most studies on mechanization and systematization agree that technology has historically substituted labor and relocated it, generating new types of companies, professions, and lowering long-term unemployment rates, but that the process was costly and slow, and that the beneficiaries of the mechanization process were not the unemployed.

While labor relocation is sluggish, Frey (2019) asserts that given the complexity and productivity of today's robotization, it may be even slower and more traumatic because AI can completely replace people, making it difficult to redefine their new duties. To understand how hazardous artificial intelligence can be, it is necessary to define it.

DEGREES OF ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) is the ability of machines and computers to reason, make decisions, and solve problems. Scientists now claim to be developing robots that not only think and act like people, but also do so rationally, i.e., better than humans, as human behavior in making economic decisions such as consumption, investment, and other types of judgments is often irrational (Pasupuleti, 2018).

Artificial intelligence uses computers and databases to solve issues, but it is a step up from machine learning and deep learning. Algorithms are created to create expert systems that make predictions or recommendations based on input data. Machine learning is a subfield of deep learning, which is part of AI. Deep learning uses neural networks to automate operations, eliminating human involvement and working with larger data sets. That is, expanding machine learning, but human involvement is required to learn (Adusumalli, 2019).

Weak AI, often known as narrow AI (ANI), is focused on specific tasks. Most current AI is weak; it analyzes and makes decisions in place of humans, but it is not smarter. Instead, strong AI consists of AGI and ASIS (ASI). A machine with general artificial intelligence would have a conscience of its own, understanding that it can solve problems, make decisions, learn, and prepare for the future. Artificial superintelligence will outperform human intelligence. It is currently not available, but researchers are working on it, thus it is science fiction, but it will one day become reality.

You don't have to be negative. In the popular imagination, a robot walks the streets, stronger than a person, never sick, yet in reality, robots are limited-life, disposable machines. They will have manufacturing flaws and be infected by viruses created by programmers and competitors. There is no guarantee that they can reproduce, fill the globe, or have a conscience (as in fiction cinema). So, how will AI affect the labor market? Will AI supplant humans? Will it cause joblessness? How will people work?

LABOR MARKET PROSPECTS

First and first, the reasons for unemployment must be identified and addressed. There are two basic types of unemployment: temporary and structural. Temporary unemployment is the most common type. The conjuncture is only temporary, whereas the crisis lasts for a long time, causing expansion and contraction. The structural type of unemployment is long-term unemployment caused by structural failures as a result of underdevelopment, which include, among other things, a persistently low growth rate, agricultural backwardness, a lack of infrastructure and technology (Pasupuleti, 2020).

The following are the reasons for temporary unemployment: Macroeconomic contraction cycles are triggered by a variety of internal and external factors, including the reduction of fiscal deficits, the contraction of international trade, the contraction of monetary policy, the reduction of domestic demand, high rates of inflation, imported recessions, and so on. The following are the reasons of structural unemployment:

1. One is the demographic trend, which includes increasing birth rates, international immigration of both skilled and unskilled labor, and migration from rural to urban areas.
2. The country's levels of international competitiveness, as measured by the following indicators:
 - A decrease in the amount of national and foreign investment as a result of legal and fiscal constraints that make the establishment of enterprises and businesses in general undesirable for investors.
 - Political instability, corruption, and the structure of public institutions are all factors to consider.
 - A lack of communication infrastructure, such as highways, airports, and seaports as well as river ports.

- Inadequate educational system: a scarcity of specialists, a limited number of qualified workers, and a surplus of unskilled laborers.

There are several questions that arise: Is there a difference between structural and transitory unemployment caused by technology?

Unemployment rates reflect a portion of the amount of technological substitution that has occurred. The unemployed swiftly find work in a different industry, and this is reflected in the unemployment rate's statistics? What happens if the relocation process is lengthy? The numbers provided by questioned organizations, however, do not appear to be detailed enough to address each issue in detail, as enterprises do not appear to distinguish between investments in artificial intelligence and traditional investments in capital machinery in their records. It is necessary to conduct more in-depth surveys in this area.

ROBOTICS BEFORE THE 2020

Although the inventory of industrial robots operating in factories worldwide today is at its highest level in history, according to the World Robotics Report 2020, the recession before 2020 resulted in a 12% drop in robot sales as the four main user sectors, automotive, electrical and electronic, machinery and metal, plastic and chemicals, contracted. The present has impacted robot sales, with a similar recovery to what happened in the US. The preceding data illustrates that capital heavy businesses invest in robots, and that sales of robots are affected by economic cycles (Adusumalli & Pasupuleti, 2017).

According to the same survey, China leads the industrial robot market, followed by Japan and India. Asia had almost two-thirds of the world's new robot supply. Most robots deployed in China are imported to serve the domestic market. In particular, Chinese automakers still focus on the domestic market. Germany, Italy, France, and the UK lead Europe. The United States leads the Americas, followed by Mexico, Canada, and Brazil. Although there are several North American robot makers, most US robots are imported from Japan or Europe.

China, India, and other populous countries show how AI can change the neoclassical notion of comparative advantage. Because labor is cheap, China and India should specialize and export unskilled labor-intensive items (greater share of unskilled labor than equipment). Before AI, the theory distinguished between machine and worker (Pasupuleti & Adusumalli, 2018). But not intellectual jobs. Robots are thinking machines that can possibly replace any human capital, qualified or unskilled, erasing the physical and qualitative distinction between machine and worker. It is hoped that only industries where humans are uncompetitive would be robotized. Clearly, it is disturbing to consider a future in which human capital is not produced.

Given that the United States remains the world's economic engine, its important looking at how AI has affected the unemployment rate (Rahman et al., 2019). However, the growth rate of the US GDP and its unemployment rate from 1960 to date demonstrate that an expansion of investment in AI has not significantly changed the jobless rate. The red curve indicates the unemployment rate, which has risen and fallen in lockstep with GDP growth. Since 1960, the US has allegedly invested much in AI, both commercial and military, fueling economic growth. A global battle or war can encourage high-tech sectors, including AI, so stimulating economic growth, lowering unemployment, and increasing consumption (Pasupuleti & Amin, 2018).

REASONS TO INVEST ON ARTIFICIAL INTELLIGENCE

Conquest of markets, natural resources, and raw commodities is backed by military might. Economic survival goes hand in hand with military force and technical growth, which requires the employment of AI, a phenomenon that perpetually feeds on itself and cannot be halted despite short-term economic and structural problems. Ruttan (2006) highlights how the military industry creates jobs and is a major player in the labor market, particularly for trained workers. For example, General Motors produces goods for both the civilian and military markets. After Mao's death in 1976, China attempted to join the global economy to escape poverty. China adopted an open-door policy for foreign business and commerce. Corporations from the US and Europe moved there to take advantage of low labor costs. Some companies shut down production, causing job losses and lowering living standards, like in the American rust belt. It doesn't matter if unemployment rises or earnings decline, because AI is being employed for two linked goals:

1. Improve economic competitiveness by producing innovative goods and services for domestic and international markets.
2. National security: land and space arms race

The cheaper Chinese product encouraged many local producers to invest in robotics to compete. This happened across Europe and Asia. As China joined globalization, physical borders were obliterated, and investment in robotics was driven by corporate interests rather than national ones. Exports of Chinese goods are "legitimate" since they assist raise the standard of life of American consumers who buy low-cost goods manufactured in China. During the recent decade, China's expansionist objectives under the current Xi Jinping regime have raised the possibility of a confrontation (Brown, 2018). The trade deal with China has been renegotiated and constraints on technology transfer to China have been implemented, a strategy continued by Vice President Biden. Clearly, national economics includes international politics and security as well as economic growth, income distribution, employment, and social welfare. The world's political and economic power is contested between Western-style democracies (American, European, Asian) and Russian and Chinese dictatorships.

Political Systems, AI and Labor Markets

Workers and unions in Western democracies can protest the deployment of labor-replacing technologies, but in dictatorships, this opposition is outlawed. The IA may cause damage to the economy, human rights, or ethical principles, but in dictatorships, there are no debates for any of the above reasons, allowing their immediate implementation. As in China, dictatorships can obtain leadership in labor-replacing fields and competitiveness in military and international markets. If Western superiority is endangered, political and military forces will surely push for more use of AI to overcome the disadvantages faced by dictatorships, subordinating individual interests to national security.

In a dictatorship, the labor market's performance is secondary. The New York Times reports that under dictatorships like China, excesses are eliminated through forced population transference controlled by the Communist Party, with proof that the population is relocated from the rural to the urban sector. This process modifies labor supply and demand, urban salaries, and places more people in jobs that add value. Robots can replace rural labor in agricultural production, increasing agricultural productivity.

The two world wars were preceded by a strong expansion industrial military in Germany, the United Kingdom, France, and Japan. The military sector, closely linked to the automobile, steel, construction, and infrastructure industries, helped Germany cut unemployment in the 1930s. During the wars, the USSR and the US did it. In fact, the conclusion of WWII caused a downturn in the US from 1948 to 1949, and the end of the Korean War caused a recession from 1954 to 1958. It is reasonable to expect that the race for AI supremacy will have similar effects.

IMPACT OF AI ON LABOR MARKETS

There will be no more mass migrations like those that occurred during the colonization of the Americas, Australia and New Zealand. Conquest of new areas (Siberia, Northern Canada) will first be carried out by robots capable of withstanding extreme conditions: robots will pave the way for immigrants. In the space race, robots will first explore Mars before humans establish outposts. It is vital to distinguish between the union strength of industrialized and developing countries. The scenario is identical throughout Latin America and perhaps in most developing nations. Protests and strikes over the IA make integration difficult and slow, which discourages domestic and foreign investment. The current scenario gave employers a competitive advantage in the labor markets that elections could not provide (Pasupuleti et al., 2019). Employees may be tempted to start their own enterprises if contracts are drawn up with substantial disadvantages for workers. This necessitates legal speed. Legislation has always been slow to regulate and resolve problems. The period for relocation is extending, according to research. Frey (2019) recounts how technology in the past replaced personnel, resulting in new sorts of organizations, professions, and lowering unemployment rates. Most likely, the lengthening correlates to a transitional stage as each country's education systems eventually adjust to AI.

Given that most individuals in developing nations are unemployed, IA adoption will be slow and difficult, deterring foreign investment. The high costs of robotization will prevent them from being incorporated in the vast formal industry and the highly technical finance sector. Most small and medium-sized businesses will lag in AI. These countries' educational systems have incorporated robotics education since primary school. Brazil and Mexico are two countries that have created software designer companies that form the base for AI breakthroughs. The disparity between urban and rural labor markets will persist (Khan et al., 2020). Poor countries' communication and transportation infrastructure development is hampered. Imagine what will happen with the adoption of more complex technology like AI, resulting in reduced earnings for workers in rural areas (Rahman et al., 2020). Meetings discuss how traditional college education is not appealing to millennials who want to work in high-paying tech jobs.

Disenchantment with traditional jobs due to oversupply of experts in traditional domains and increased attraction to technology are common in developing countries' educational systems. Despite this, the rate of formal company openings is slow, resulting in a surplus of trained labor and professional unemployment, prompting engineers to emigrate to industrialized countries. Robotization may widen the gender pay gap. Miah et al. (2021) analyze the impact of industrial robot deployment on the gender pay gap using data from European nations. A 10% rise in robotization causes a 1.8% increase in the gender wage gap. In countries with the biggest gaps, this tends to increase as men in high-skill positions become more productive with robot assistance. Imagine what can happen in most undeveloped nations where women have no access to education and are exploited in the informal economy, where robotization will inevitably widen the divide.

There will be ripple effects on labor markets, among other things.

- Globalization accelerates. We all know how technology globalizes. Businesspeople and governments were obliged to utilize Microsoft and others' platforms (Teams, Zoom, etc.). There was an obvious global dependence on a few networks and a more critically global dependence on technology, notably created in the US and English. However, AI suppliers will remain encouraged to build new products and services that integrate the world surrounding a platform. This means more AI-qualified workers are needed.
- Migratory reduction Countries with low population growth rates that have encouraged cheap labor and qualified professionals will no longer need immigrants when machines take over most employment. Immigrants will face more rigorous screening.
- Wages in developed nations will level off. The exorbitant salaries caused by the shortage of professionals of all kinds, competent or not, will be stabilized by robots. Remember that robots don't get sick, unionize, strike, take vacations, or retire early.
- Unions will continue to lose power. Labor unions have lost bargaining strength as computers and robots threaten to replace workers, especially in sectors and countries where labor is informal.
- New ways to hire Due to cheap wages in China relative to the OECD, Chinese corporations have inundated the world with low-cost items, while the latter have had to pay hefty income taxes under welfare economics schemes. Employers have pushed for labor market deregulation since the 1980s to compete with China. Paradoxically, no country has labored harder for capitalism than China: from communist isolation to integrating most of its population into capitalism. This led to huge economies of scale that slashed labor costs and prices, undermined labor unions, caused governments to cut taxes, and boosted global competition.
- The likelihood of starting a new business will rise Administrative and technology employees will use more applications that supply information, contacts, and business ideas. AI will continue to shrink the planet and enable employees to become entrepreneurs, allowing for global work teams.
- The contract modalities. As firms impose their hiring models, employees have more chances to provide their services through expanding networks and new employment modalities.
- As with machining and systematization, some jobs may vanish and others will appear. New engineering will be needed for robot programming, production, maintenance, and whatever AI is produced. Aerospace and associated industries will provide a boost.
- Despite the impending cycles, the new orientations of the weapons competition will provide more employment in these industries.
- AI will likewise lag behind labor markets in developing nations. Without AI, many current industries will move to these nations to take advantage of low labor costs. The adoption of AI will be influenced by economic and national security plans. Conflicts in third-world countries make them an attractive market for AI weaponry.
- The escalating costs of a college education are causing many to drop out of college and attend a community college or another sort of basic education since college students receive incomes similar to community college students. ILO

- Working circumstances in many nations, especially those with high birth rates, are similar to those during the English Industrial Revolution. The future job market will remember that millennials are tech-savvy and can replace elder professionals. They assist increase skilled labor supply while lowering wages. Employers use the justification that young people lack expertise and experience to justify low compensation.
- An IMF research found that robots replace repetitious tasks. Cleaning, manufacturing, and contact centers are examples of industries where women are overrepresented.

TECHNOLOGY FINANCING AFFECT THE LABOR MARKET

One of the key factors is the “German” financial framework, which pushes enterprises to get bank loans as the most accessible form of financing. Contrarily, the “Anglo-Saxon” model encourages the formation of new businesses through the issuance of shares. In the United States, the NASDAQ is the market where new technology businesses are financed. Remember the great tech companies: Amazon, Facebook, Tesla, Twitter; the space conquest programs championed by Bezos, Musk, Branson, etc. They don't go to the European financial markets after the Nasdaq or from China to New York. The Shanghai Stock Exchange Science and Technology Innovation Board is a Chinese science and technology focused stocks exchange created on July 22, 2019. Now the Chinese are building a third stock exchange in Beijing for SMEs.

Gómez-Mejía (2017) shows that enterprises financed by equity are more productive than those financed by debt. Funding is critical to scientific creation. It's useless to have ideas if you can't execute them. The US and other Anglo-Saxon countries have generally had lower unemployment rates than Europe. In the US, talented labor may simply transform their ideas into a firm after searching for investors. Several types of investors provide funds and expertise to the company's capitalization process. In these very advantageous conditions for business opening, the supply and demand of competent personnel increases, even during recessions. These are like investment funds, but they operate online. Because crowdfunding lacks the stability and legal protections of exchanges, scammers can utilize it to defraud naive investors. In conclusion, obtaining low unemployment rates is closely tied to economic policies and financial institutions that permit AI financing rapidly, safely, and affordably.

Latin America is the best example of the Anglo-Saxon vs German model. Most countries on this continent adopted the German model, which strengthened bank finance by prohibiting the issuance of shares. Many engineers from Latin America choose to emigrate to North America and Europe due to a lack of funding mechanisms for their projects (Fadziso et al., 2018). Latin America exports the most human capital to the industrialized world. Emigration occurs when the availability of skilled workers exceeds the availability of high-tech enterprises. It's also impossible to rely on or believe in politicians' campaign promises to allocate substantial sums of funding to help engineers and scientists start businesses. Per capita, the funds allocated are little. The beneficiaries are few compared to the needs. Also, keep in mind that during fiscal contractions, which virtually inevitably occur, the aid disappears.

Because AI development demands big capital, wealth disparities are predicted to aggravate social tensions. Workers can become shareholders in the companies where they work. This is the best method for workers to profit from all robotic and AI breakthroughs. But, as we all know, most countries have leaders that do not share this viewpoint, so it is projected that the societal divide will widen as well as the countries that do not fund AI would fall further behind.

CONCLUSION

Historically, both mechanization and artificial intelligence (AI) have been viewed as dangers to job stability, despite the fact that statistics on productivity and employment have proved the inverse to be true in recent years. Following the pattern of the past three industrial revolutions, trend studies predict that robotization would eliminate certain employment while creating new sectors of labor in other industries. Most recent international political events, such as the weapons race and the space race, indicate how artificial intelligence is increasingly being used to achieve these goals, and how it will serve as an accelerator of robotization with multiplier effects in the products and services industries. Changes in educational programs to prepare students for technical occupations, as well as adjustments in labor market liberalization to accommodate new kinds of contracting, are required immediately to keep pace with the growth of artificial intelligence. AI enhances the likelihood of establishing businesses, the hunt for enormous funding channels, and the development of technology that is more efficient and less expensive than bank credit and government subsidies. The adoption of artificial intelligence also has negative consequences, such as the likelihood of a rise in the gender pay gap and the exclusion of people who are unable to adjust to new circumstances. There is little doubt that the gap between high-tech industrialized countries and developing countries will continue to expand. The latter, on the other hand, do not fulfill the competitive criteria demanded by an increasingly technological society. The drive for world dominance and special interests of the superpowers will finally push economic factors such as unemployment and well-being to the sidelines in favor of national security concerns, as shown in the preceding paragraph. The rising technical lag of the poor countries will necessitate the implementation of fundamental and pragmatic adjustments in their economic policies, including those relating to employment and finance.

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