

Forum: United Nations Commission on Science and Technology for Development

Issue: Issue #32-01: Measures to address technological unemployment as a result of technological development and automation.

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Introduction

Through the rapid increase in science and technology, many concerns have been brought about regarding unemployment due to technological advancement and autonomy – appropriately coined as “technological unemployment.” It has been highly debated whether this is, in fact, a critical and pressing issue, but it is hard to deny the increasing ubiquity of technology in our daily lives. Every generation is progressively getting more enveloped within technology, and soon the technologies we create will take some – if not eventually all – of our jobs. The United Nations estimates that by 2030, approximately two thirds of all jobs in developing countries will be taken by robots. Manufacturing, development, and production jobs can all be replaced by technology, and there are no welfare mechanisms capable of handling such widespread unemployment resulting from technological innovation.

While an issue like this may not seem explicitly noticeable today, it is important to recognize that this is far from being a new one. The ramifications of technological advancement can be witnessed all throughout history, but only really became relevant in the last two hundred years. The first major concerns about technological unemployment arose in the early nineteenth century, when many new inventions such as the tractor, the improved printing press, and numerous other transportation technologies showed labourers of the era that technology would eventually be able to complete the same tasks humans could. At the time, many economists warned that technological unemployment will eventually become a contentious topic. This issue was once again carefully examined during the peak of the Industrial Revolution, where machines and mechanisms suddenly became cheaper than employing human workers. Soon, many expressed outrage that technology was slowly replacing members of the

working class.

Likewise, a similar issue can be felt today in the form of technology surpassing human capability in the production of goods – namely, on the assembly line. Furthermore, other technologies like drones, self-driving cars, and dynamic software are beginning to threaten more jobs than ever before. It is estimated by the World Bank that over 750,000 jobs were lost to technology in the past year alone, with the number projected to continually grow at a steady 5-11% per year. Yet, there has been an unfortunate amount of indignation directed towards the issue. Furthermore, considering the significant rate technology is continuously improving, countless employment opportunities are being threatened. It is paramount that an issue as tangible as this be addressed with absolute conviction.

Unfortunately, there has not been adequate effort directed into solving the issue of technological unemployment. This issue is inescapable in the sense that technology will one day replace too many jobs. And eventually, the discussion will no longer be about technology replacing jobs, but rather mass unemployment. Consequently, it is imperative that the situation never escalates to that magnitude. If it were to reach that situation, it would result in unprecedented recessions that would inadvertently crush economies and cripple industries. It is estimated that if technological unemployment reaches even 15% globally, markets everywhere could expect a loss up to 18%. Moreover, there are approximately 10 million jobs being threatened by technology within the next 8 years, meaning that the impacts will be felt (and very soon, at that). Taking into account the normal ramifications of regular unemployment, the globe may be facing an anomalous economical crisis.

However, it is understandable that corporations may believe that using technology instead of manual labor may be more beneficial. For every innovation, technology is improved marginally – commonly resulting in monetary drops. It is also widely accepted that a robot possess the capability to work faster and at a higher precision when compared to a human. Coupled with the that fact technology increases productivity at competitive prices and removes the need to pay working wages, a valid case can be made that the eventual implementation of technology in place of certain jobs is inevitable. And something like this is not unfavorable per se, rather it inadvertently creates another unfortunate problem. When it comes down to it, either technology will take jobs and create unemployment or protect jobs and hinder economic growth – providing little to no middle ground when discussing solutions.

Hence, it must be understood that if technology replaces people, the fact that they require stable income and financial security must be taken into consideration. As of today, there are no satisfactory

contingencies or policies to tackle the effects of technological unemployment. And due to this very material and palpable issue, countries should make it an obligation to actively discuss and develop methods to address technological unemployment. The faster this issue is actively discussed will ultimately provide more time to solve this issue. With many of the consequences lying in the very near future, countries need to effectively scrutinize over time in order to corroborate suitable and satisfactory solutions that will eradicate technological unemployment while consecutively augmenting technological innovation.

Definition of Key Terms

Technological Unemployment

The official term that refers to jobs and employment opportunities lost due to the introduction of certain technological innovations and machinery.

Automation

A system of machines or technology that has the capability to function automatically and autonomously. It requires little to no monitoring and is an exceedingly efficient method for production.

Technological Change

The increase in efficiency when producing any given product. It refers to an increase in the output of the product while avoiding an increase in the input. Essentially, it is imparting the same amount of work to yield bigger results.

Luddite Fallacy

A term specific to technological unemployment that refers to a contingent of people who assert that technological progress will have no effect on unemployment whatsoever. In essence, those who use this term do not believe in technological unemployment.

Structural Unemployment

Unemployment due to economical restructuring as a result of innovation, implementation of new technology, or government policy – not a loss of jobs due to a shift in supply or demand. These jobs are often lost to industrial factors rather than economical ones.

Spillover Effect

An event in economics that is inadvertently caused by another seemingly unrelated event, usually as a result of unemployment, change in policy, or the restructuring of an industry.

Structural Change

A fundamental alteration to how a certain industry and/or market functions that may inadvertently cause many other changes in a business and the economy. These are usually caused by motivating factors such as policy, opportunities, supply and demand, profit, and competition.

General Overview

Considering the gravity at the issue at hand and the apparent ignorance directed towards the issue thus far, there have been many controversies regarding the legitimacy of this issue. Disputes have arisen on whether technological unemployment is a real thing, or is just paranoia based on fear for innovation. However, it is generally accepted that it is, in fact, a real and pressing issue. Notably, this issue is still a developing one, with the concerns regarding technological unemployment gaining traction in the past couple of years. In fact, this adds to the authenticity to the issue. Technological unemployment, in this sense, is very vague and enigmatic to solve. But like any other social issue, it is imperative to understand the short and long term effects that are compulsory to discuss in order to understand the true nature and pronounced consequences of this issue.

The blunt history and contention behind technological unemployment

Many have questioned whether or not technological unemployment is actually a tangible and relevant topic to discuss, and some have even gone as far to try and disprove the issue altogether. However, it is hard to factually deny that automation and the implementation of technology are slowly taking jobs and rendering many unemployed (something which is most commonly discussed when referring to the automation of assembly lines). An issue like this is quite obvious, and significant concern has been expressed as far back as the early nineteenth century during the Industrial Revolution.

A group of economists consisting of John Stuart Mill, Thomas Robert Malthus, and Jean Sismondi were some of the first ever to publicly scrutinize over technology taking jobs. At first, the public had a very alarmed reaction, but the uproar soon subsided due to benefits of technology far outweighing the than perceived negatives. From then on, the issue continued to lay dormant, as it seemed to be a prospect

of the future and was not considered applicable at the time. Interestingly enough, the issue became satirical among academic communities throughout the world – something which unfortunately still happens today. Technological unemployment really was not taken seriously until many technological innovations in the twentieth century threatened many in the working class. With the invention of the tractor and other agricultural technologies, millions of people across the globe began to lose their jobs. This revitalized the topic, albeit for a short time.

The issue once again picked up steam at the turn of century. Technology was being implemented throughout the world and the repercussions of technological unemployment were beginning to be felt. However, the general consensus of the population still asserted that innovation in technology helps create more jobs and not the opposite. Despite this, numerous professional works by Stanford, Harvard, The Bank of England, and The Bank of Italy refuted the general belief. But as time progressed, more people began to see and understand the repercussions of the issue at hand. And in 2014 when a survey was conducted by the World Economic Forum, it concluded that 48% of the experimental group believes that technological employment is actually a real thing, demonstrating momentum built behind this quickly growing issue. As time continued on, this idea entered the mainstream where today the effects of technological unemployment are avidly being discussed.

Short-term effects of technological unemployment

The immediate effect of technological employment may at first seem minimal, but proves to quite extensive if looked into. Today in the modern world, technology is being implemented at an alarming rate, placing many workers at risk of losing their jobs in the next couple of years. This is a major problem, however, the biggest problem is the relative unawareness of the issue. It would be an understatement to state that technological unemployment is criminally disregarded. Though it will affect everyone in one way or another, not much has been done to actually tackle or resolve the issue. It is estimated by the World Bank that only 6% of the population actually know what technological unemployment is, with around 50% of those actually believing that this issue is a real one. This is very concerning, considering that the UN themselves have even stated that two thirds of all jobs in the developing world will be taken by robots in the coming years.

However, there are other less concerning short term effects to technological unemployment as well. Namely, the economic implication of technology immediately affecting jobs may temporarily decrease productivity in the workforce, while subsequently also affecting the efficiency and quality of the

product being produced. Also, the implementation of technology will leave many low-skill workers out of job, creating many spillover effects that will affect the economic climate. Interestingly, this small change will encourage employment in various other sectors and galvanize interest in creative skills. In short, the sudden influx and demand for creative workers will make the economy even more competitive, resulting in higher unemployment rates and lower demand for the already pre-established workers.

Theorized long-term impact

Shockingly, the long-term effects may not be as insipid as one might expect. At first, technological unemployment will create shockwaves throughout economies all around the world, but theoretically there are ways where technological unemployment can be beneficial. At first, there will obviously be massive unemployment throughout the workforce, but the disparity will quickly subside. In theory, low demand for low skill workers will dissuade that particular field, and in turn bolster demand for artistic and creative skills. Slowly, unemployment will dissipate as workers will eventually find other jobs to work – albeit it may take a while for the economy to restructure in such a way. So, many economists theorize that unemployment in the long run will ultimately not be affected. All things considered, things seemingly are not as grim as they were previously deliberated to be.

However, the key word here is “theory,” as many have only theorized. No actions, contingencies, or plans have been put into place that are available that address this issue. This should make the situation more enticing and galvanize international action in solving this issue – with the very least being preventative measures being put in place. If measures are not put into place, the future unemployed will be in a less-than-desirable situation. This will also extend past simple unemployment rates; it may cause severe structural changes and irreversible spillover effects that will affect not only an individual, but the larger economy in the grand scheme of things. It is hard to predict what these repercussions will be, regardless it is imperative solutions are made to protect the workforce so that these consequences are never felt.

The Importance of Education

Ultimately, there is a general consensus that the cause for technological unemployment is, in fact, education (or the lack thereof). Conveniently, the solution to this issue lies in addressing education as well. Basically, the jobs being taken by robots and technology are jobs that are considered to be low-skill, such as labourers who work on the assembly line putting parts into places. In many cases, workers end up

working these low-skilled jobs due to a lack of formal/proper education. So the fact of the matter is that with proper education, theoretically no workers would ever need to have the jobs that robots can (arguably) do better. In other words, since less privileged low-skilled workers have jobs that will be taken, educating and training these former labourers to take up high-skilled will prevent the need for a human to have a job that a robot can easily do. Likewise, there are jobs that robots cannot do that only humans can, which are the high-skilled jobs that people should, in fact, be trained for.

However, sometimes getting a quality education requires substantial amounts of money, which unfortunately not everybody can afford. So as of right now, it seems that in all likelihood that the only people that will not have the threat of technological unemployment looming over their heads are the ones who have money in their pockets. This must change, as technological growth and innovation cannot forever be prevented to account for people who cannot afford to institute themselves out of their current situation. To effectively end technological unemployment, there needs to be a guarantee of universal quality education – something which regrettably is too farfetched as of now. Because of this, efforts need to be made in providing meritable education to those who need it. Really, those who have jobs that are threatened by technology are in their current situation because of lackluster education which prevents them from unassailable job opportunities. Strides need to be made to change this.

Major Parties Involved and Their Views

United States

As the world's largest economy, many large and influential corporations are always looking for ways to maximize profit, and coupled with increasing technological advancements, many jobs are being threatened in the United States alone. It is in the best interest that they secure as many jobs as possible for their citizens to act in the best interest for the people.

China

Due to China having some of the most labour-dense manufacturers, millions of jobs in China alone are being threatened by more suitable, efficient, and faster machines. And considering the high concentration of workers, it is imperative that China creates policies to assure that these workers will have options for other future employment opportunities.

Japan

Japan has some of the highest implementation of technology per human worker. However, they are not feeling the effects of technological unemployment as drastically as one might expect. The country has collectively found ways to reintegrate workers into society while consecutively finding methods to implement more technology. As such, these two factors consolidated make for a very progressive economy.

South Korea

South Korea relies heavily on the implementation of technology in the manufacturing and production industries. Yet, South Korea boasts some of the lowest unemployment rates and highest technological administration rates. They are constantly working towards producing better technologies while creating new industries to open up alternative employment opportunities. Through this, South Korea has been able to achieve one of the most advanced and fastest growing economy.

India

Out of all the countries, India is one of the slowest countries to adopt and administer technology in their economy, despite them being one of the largest economies. In fact, they are the ones producing the robots rather than implementing them. Considering this, there is very little chance that robots will soon dominate the economy in India, as they have a constant influx of cheap workers which prove to be more profitable and cost-efficient than robots.

Taiwan

Considered to be an emerging market, Taiwan has made some of the fastest and most aggressive switch to the application of technology anywhere. Due to the particularities and distinctness of Taiwan's workforce, they have little need for humans to work jobs which robots easily could; technology are replacing jobs that humans have stopped working in. Because of this, Taiwan has made rapid growth in the expansions of their industries while securing the safety of human employment.

Russia

Russia has had significant economic improvement, boasting considerable implementation of technology over the past couple of years. However, they have done little to address the resulting technological unemployment. There has been progress made into rehabilitating the unemployed, but there has not been substantial effort into trying to solve the issue. And as Russia continues to aggressively

implement and administer robots and technology, steps must be made for this issue to be addressed in to best interest of the people.

Timeline of Events

Date	Description of event
1821	Political economist John Stuart Mill publicly claimed that technological innovation will result in long-term job unemployment, making him one of the first to address the issue.
1870	Technological unemployment became a popular topic for debate at academic environments throughout Great Britain, challenging the significance of this issue.
1927	Unemployment drastically increased across the world due to innovations in agricultural and manufacturing technologies.
1932	Many issues and concerns arose in the US about technological unemployment due to increasing automation in factories that rendered many low-skilled workers useless.
1964	European countries began to scrutinize over the very real and tangible issue of technological unemployment, and policies begin to be put into place, but never reach implementation.
September 7, 2013	A study published by the University of Oxford details the future of employment and how robots and technology threaten human employment, sparking concern all throughout the world.
2014	Former US Treasury Secretary Lawrence Summers states that technology hinders employment opportunities and needs to be addressed promptly.
2014	Canadian politician Michael Ignatieff sparks controversy all throughout the world when he claims that technological unemployment was a creation of the

media to attack corporations.

2015

A controversial study released by the Australian National University claims that there was no observable reduction in employment due to the introduction of technology.

October 2016

United Nations Conference on Trade and Development (UNCTAD) publishes a report on robots threatening to take at least two-thirds of jobs in the developing world.

UN involvement, Relevant Resolutions, Treaties and Events

The UN involvement (or lack thereof) towards this issue is very concerning. Not much has been said directed towards this issue, so essentially this issue is tackling uncharted territory. When discussing technological unemployment, many see it as a problem that needs to be addressed in the future, not as one that needs to be addressed now. As such, there have not been very many attempts to solve this issue in total. Maybe there have been certain policies placed by some companies, but they are rather a temporary plan to provide benefit to the unemployed, not a solid attempts to actually create a solution. In this manner, this issue is very unique, as there has not been an attempt to solve the issue thus far because the issue is so conjectural.

- The closest thing to actual UN involvement towards the issue comes in the form of a policy briefing by the United Nations Conference on Trade and Development (UNCTAD Policy Brief No. 50) that provide figures that explain how in the coming years that robots threaten at least two-thirds of jobs in the developing world. However, this briefing also emphasizes on the fact that this issue is mostly speculative.

Evaluation of Previous Attempts to Resolve the Issue

Obviously, there is not much of a “Previous Attempt” to solve this issue thus far. There have been many assessments regarding the supposed impact of technological unemployment, but there are no solid resolutions as of yet. The reason for this is because this issue is unsubstantiated and hypothetical, so there is nothing to base the resolution from. Unfortunately there has not been enough emphasis on accentuating

on the issue for preventative causes, which will eventually be inimical in the future. However, this gives more freedom to explore any possibility to diminish the issue before it even comes into fruition.

Possible Solutions

Since technological unemployment is a relatively new issue, the solutions are quite broad and expansive. There are many different ways to possibly tackle this issue and each are unique in their respective approach. Possibly the most obvious and simple answer is to ban certain innovations and technologies from ever being implemented. Simply preventing the issue before it ever becomes a problem is possibly the easiest solution to exercise, it may not be the most practical way into solving technological unemployment. The implementation of some innovations/inventions are necessary to progress economies, and prevent that may hinder economic and technological growth, which is counterproductive.

Another simple solution that can possibly be set forth is creating a system where welfare checks or guaranteed income is used to compensate for the unemployed who have lost their jobs to this issue. With a proper system in place, victims to this issue will have ways to bounce back from their newfound unemployment. With a steady income or lump sum of money, it will ease the situation for the workers. Though, the economic ramification for this issue will be extensive, as creating a federal or international fund may not be accepted wholeheartedly. To avoid this inconvenience, another way to combat this issue is simply to educate about this issue. Clearly, technological unemployment is not treated with the magnitude that it should be, so making people aware of the consequences will galvanise them into taking action.

Possibly the most realistic solution in order to spur action and raise awareness for this issue is to educate about the ramifications surrounding technological unemployment and create a system to retrain unemployed workers in better and higher-skilled jobs. As previously mentioned, technological unemployment is all about technology and automation taking jobs of low-skilled labourers. With education and retraining, it will effectively address the instigator behind this problem; education will prevent workers from taking expendable jobs that will be replaced by automation, while the retraining will provide the less privileged with alternative jobs opportunities that are irreplaceable by technology. In this way, the issue may be eliminated and the subsequent consequences are also consecutively addressed. However, the major obstacle for this solution is finding the means of implementing such education and finding the resources that allow for adequate retraining.

Similarly, in terms of having a more complicated solution, the long term goal to completely eliminate technological unemployment is to having a society where the maximum amount of product can be created with the least amount of human labor. Theoretically through this method, society would have evolved to the point where all the jobs occupied by humans could not be replaced by robots. So really it is a method where certain tasks are assigned to technology, while the others to humans. While an idea like this may sound utopian, it is still an ideal to strive towards through proper implementation of the aforementioned education. Possibly, by setting certain goals that affirm robot job occupation, it will give time for workers to find employment elsewhere. This method may possibly be the most effective in theory, but it is the most logistical and gruelling to implement.

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Appendix or Appendices

- A detailed and extensive analysis of technological unemployment:
<https://object.cato.org/sites/cato.org/files/pubs/pdf/pa068.pdf>
- For the UN Policy brief regarding robots threatening jobs:
<http://unctad.org/en/pages/newsdetails.aspx?OriginalVersionID=1369>
- A comprehensive report regarding the digital revolution and how it will affect the future:
<http://www.worldbank.org/en/topic/ict/brief/will-the-digital-revolution-help-or-hurt-employment>
- An engrossing and thorough video regarding automation:
<https://www.youtube.com/watch?v=WSKi8HfcxEk>
- For an article that details the coming changes for a jobless future:
https://www.washingtonpost.com/news/innovations/wp/2015/07/07/sorry-but-the-jobless-future-is-nt-a-luddite-fallacy/?utm_term=.770465fb5d1d