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Impact of Industry Digitalization on Recruitment of Employment Opportunities

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Abstract

Industrial digitization will change the character of future jobs. The digital era makes all things easier to carry out. All things that easier to carry out include something that relate to production process, service process, and others process. However, the digital era also has a negative or disruptive effect on the economy, especially in terms of employment, both opportunities and labor needs. This study aims to find out the current labor regulations related to industrial digitization, and to find out what impacts of industrial digitization on employment opportunities. The results of this study indicate that regulations regarding employment related to industrial digitization have been regulated in Law Number 13 of 2003 concerning Manpower and the Law on Job Creation. The digitization of industry and the way new digital technologies are reconfiguring the way goods and services are produced. Likewise with various job opportunities, because industrial digitalization has also changed many types of jobs.

Keywords: Industrial Digitization, Industrial Revolution, Manpower

Abstrak

Digitalisasi industri akan mengubah karakter pekerjaan masa depan. Era digital membuat segala sesuatu menjadi lebih mudah untuk dilakukan. Semua hal yang lebih mudah dilakukan meliputi hal-hal yang berhubungan dengan proses produksi, proses pelayanan, dan proses lainnya. Namun, era digital juga memberikan dampak negatif atau disruptif terhadap perekonomian terutama dalam hal penyerapan tenaga kerja, baik kesempatan kerja maupun kebutuhan tenaga kerja. digitalisasi industri pada kesempatan kerja. Hasil penelitian ini menunjukkan bahwa pengaturan tentang ketenagakerjaan terkait digitalisasi industri telah diatur dalam Undang-Undang Nomor 13 Tahun 2003 tentang Ketenagakerjaan dan Undang-Undang Cipta Kerja. Digitalisasi industri dan cara teknologi digital baru menata ulang cara barang dan jasa diproduksi. Begitu juga dengan berbagai lapangan pekerjaan, karena digitalisasi industri juga telah mengubah banyak jenis pekerjaan.

Kata kunci: Digitalisasi Industri, Revolusi Industri, Tenaga Kerja

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Introduction

Changes in digital technology can certainly result in changes in ways of working from manual to automatic and allow it to be done digitally and integrated. Industries that currently still use conventional mechanisms are forced to transform into digital and technological. Technological innovation will destroy some types of work. This is evident from computers taking on the most obvious job roles (Berg, Buffie, and Zanna 2018).

The development of technology and information is experiencing very rapid development and progress. The development of technology and digital transformation (digitalization) has affected various sectors of life (Deng and Liu 2022). Almost all business sectors are required to follow the digital trends that are

currently developing. Digital transformation is now a business model that is currently being integrated with technology. One of the areas affected by this digitalization is employment, especially the workforce ([Acemoglu and Restrepo 2020](#)).

The existence of smart companies and their factories juxtaposing human workers and robots has implications for the sociology of labor. The problem that arises due to the replacement of human functions and tasks by robots is the opportunity for the loss of identity and autonomy of human workers. Another result is the loss of work privacy due to continuous monitoring by sensors and RFID (radio frequency identification) technology. Another impact of the application of digital management in the relationship between workers and management is the potential loss of trust between human workers and management due to the possibility of a higher level of management trust in robots than in human workers .

Digitalization will change the character of work in the future. The digital era makes all affairs easier to carry out. However, the digital era also has a negative or disruptive effect on the economy, especially in terms of employment ([Damanik, 2006](#)). For the workforce itself, this digitalization situation has a significant impact. Smart factories barely need human labor, except for a few highly skilled workers. One of the worker's own status is workers who require technology or expertise in special technology fields. This of course requires the readiness of each company that will face various kinds of changes and transformations ([Wijayanti, 2016](#)).

For developed countries, industrial digitization can be a way to regain infrastructure and workforce competitiveness. For developing countries, digitization can help simplify the production supply chain, which is needed to deal with rising labour costs.

Digitalization has contributed to human well-being in terms of employment, especially labor. At the same time, digitalization also has disruptive powers ([Page et al. 2021](#)). Technology and digitalization can affect how workers are employed and companies operate. However, in the industrial sector itself there are several fields, there is one sector that can benefit in terms of the digitalization of this industry, namely in the field of e-commerce and also start-up companies which will certainly need more workers to develop their business ([Junger et al. 2017](#)). Technological changes in the digitalization era may not be as drastic as in the past, but the acceleration of technological improvement and adoption is happening even faster. Previous industrial revolutions took a long time to really change so the adjustment time is longer, especially in the labor market, labor and employment.

Research Problems

First, How is the current employment regulation related to industrial digitalization and *Second*, How is the impact of industrial digitalization on employment opportunities.

Research Methods

This research is designed with a normative juridical method. Normative Juridical Research is a method of legal research conducted by examining library materials or secondary materials only. This research is a Normative Juridical Research on issues concerning Law Number 13 of 2003 concerning Manpower.

The method of data analysis is carried out by collecting data through the study of library materials or secondary data which includes primary legal materials, secondary legal materials and tertiary legal materials, both in the form of documents and applicable laws and regulations relating to normative juridical analysis of the synchronization of the Labor Law (Moleong, 2007).

To analyze the legal materials that have been collected, this research uses a qualitative data analysis method, namely normative juridical which is presented descriptively, namely by describing a policy related to improving the performance of the legal system in Indonesia and then assessing whether the application is in accordance with the normative provisions (Soekanto, 2007). Primary legal materials, namely research materials derived from laws and regulations related to the title and problems formulated.

Discussion

1. Employment Regulations Related to Industrial Digitalization

The rapid development of information technology has brought significant changes to the industrial world and will also have an impact on changes in labor relations. Many permanent employment relationships are replaced with freelancers, this phenomenon is known as the "GIG Economy". In Manpower Law Number 13 of 2003 Article 56 paragraph 1, two forms of employment agreements are known, namely the Indefinite Time Work Agreement (PKWTT) and the Fixed Time Work Agreement (PKWT) which is a freelance work agreement for various companies. In Indonesia, the GIG Economy phenomenon has begun to occur, initially clearly visible in the online transportation industry and workers who have certain skills. GIG Economy is starting to develop also in the creative industry and start-ups.

Labor Law Number 13 of 2003 was drafted before the digital economy era developed in Indonesia. With the existence of various new types of work, which

can change the form of employment relationships, resulting in Law Number 13 of 2003 has not been able to accommodate various forms of worker protection in the era of the industrial revolution 4.0. It is necessary to analyze the Manpower Law to what extent it can accommodate labor issues in the era of the Industrial Revolution 4.0 so that revisions can be made to provide maximum protection for Indonesian workers .

The transformation of the labor market structure is more towards the low-productivity service sector. Large service sector employment opportunities are one of the main drivers of poverty reduction. However, most of the service sector jobs created are low productivity, with lower than average or negative growth rates. In the last 10 years, 23 million new jobs were created, 21.7 million of which were in the services sector. The industrial sector absorbed 3.7 million and the agricultural sector reduced by 2.4 million.

Manpower has not yet regulated more broadly the impact of digitalization. Protection for workers/laborers as a result of digitalization is only implied in Article 164 Paragraph (3), which means that there is a blurring of norms. Therefore, it is necessary to provide protection to workers related to the Industrial Revolution 4.0. Protection of workers can be divided into two, namely:

a. Protection of occupational safety and health.

In essence, Occupational Safety and Health (K3) is a multi-disciplinary science that applies efforts to maintain and improve the condition of the work environment, work safety, health and safety of the workforce, and protect workers against the risk of hazards in carrying out work and prevent losses due to work accidents, occupational diseases, fires, explosions or pollution of the work environment (You and Ju 2019) (Cohen and Felson 1979). Occupational safety is a safety condition that is free from the risk of accidents and damage where we work which includes building conditions, machine conditions, safety equipment, and worker conditions (Soepomo, 2002). According to Suma'mur, occupational health is a specialization of health / medical science and its practice which aims to make workers / working people obtain the highest degree of health both physically, mentally and socially with preventive or curative efforts against diseases / health problems caused by work factors and the work environment and against general diseases.

b. *Protection in the form of social security.*

Meanwhile, social security in English is called social security. According to Imam Soepomo, social security is a payment received by the worker in the event that the worker, through no fault of his, does not perform work, so it guarantees income security in the event that the worker loses his wages for reasons outside his will.

Layoffs due to digitalization of legal arrangements related to this can be seen from the provisions of Article 164 Paragraph (3) of the Manpower Law which explains that employers can terminate employment of workers / laborers where it is not caused by the company experiencing consecutive losses for 2 years or experiencing losses and not also caused by force majeure but because the company is doing efficiency, However, with the provision that the company is obliged to provide severance pay to workers/laborers with the provisions of twice the length of service, tenure award money that must be given with the provisions of one time the length of service, and compensation money of the amount that must be received by workers/laborers in accordance with Article 156 paragraph (4).

According to the provisions of Article 50 of Law No. 13 of 2003 concerning Manpower, it is stated that work relations occur due to a work agreement between employers and workers/laborers. Work relationship is a relationship between employers and workers/laborers based on a work agreement, which has elements of work, wages, and orders. The employment relationship is to show the position of the two parties which basically describes the rights and obligations of workers or laborers towards employers or employers as well as the rights and obligations of employers towards workers or laborers (Subekti, 2001).

In the era of the Industrial Revolution 4.0, the relationship between workers and employers is no longer in the form of an employment relationship but a partnership. The change in the employment relationship has an impact on wages. Stakeholders have anticipated this and a discourse has developed regarding the payment of wages calculated by the hour, day, week and month.

The Job Creation Law amends 76 laws, which broadly include, improving the investment ecosystem and ease of licensing, protection and empowerment of MSMEs and cooperatives, employment, research and innovation, ease of doing business, land bank, economic zones, Central Government investment and National Strategic Projects, Government Administration Support, and Sanctions (Projudikoro, 2004).

The fact that the infrastructure was built by each Industry player in addition to causing high costs has also had an impact on the development of urban planning, so it looks like there is no coordination with each other. Whereas with the infrastructure sharing approach and even frequency sharing, the Industry can perform optimal efficiency.

In addition to the connection with infrastructure, the existence of the Job Creation Law also facilitates the development of MSMEs, especially Digital MSMEs and several start-up companies. The licensing aspects regulated in the Omnibus Law are quite positive in this regard because they allow business licenses to be registered easily. The Indef researcher also added that digital transformation is inevitable today and will continue to run.

This is because it is related to globalization and the theory of public behavior that has now begun to shift to the digital aspect. From the regulations, what is needed is indeed encouragement so that this digitalization transformation can be accelerated. Regarding the future of work related to the digitalization of MSMEs, the World Bank has mentioned in recent years that the government needs to implement work flexibility.

2. Impact of Industrial Digitalization on Employment Opportunities

The industrial revolution has always been the basis for changes in the work system including the employment relationship system as the initial concept of industrial relations is an employment relationship, a private relationship between workers or laborers and employers or employers. The industrial revolution 4.0, which has begun to take place since 2018, is characterized by changes in the way people live, work and relate to each other. The phenomenon of changing the actors of the production process from labor to machines or robots (automation). Changes in work relations also appear in the form of business system developments, for example, online buying and selling, online-based transportation (online motorcycle taxis, and online taxis) and others that greatly facilitate the community in general.

For labor, the state of Industry 4.0 has a significant impact. Smart factories barely need human labor, except for a few highly skilled workers. And because of this, many workers are predicted to become unemployed due to limited job opportunities and high labor competency standards. Even without Industry 4.0, many countries, including Indonesia, have experienced unemployment problems. Industry 4.0 will increase the burden on every country to overcome the problems

of increasing labor competence, rising unemployment, and welfare gap. All will make the pressure on the job market even stronger.

Technological innovation will always have an impact on human life. Technological advancements have contributed to human well-being in terms of new jobs, goods, travel and communication, among others. At the same time, technology also has a disruptive power. Technology can affect how labor is employed and companies operate. Technological change in this fourth industrial revolution may not be as drastic as in the past, but the acceleration of technological improvement and adoption is happening even faster. Previous industrial revolutions took decades to really change so the adjustment time is longer.

According to data from the Central Statistics Agency (BPS), job creation in formal economic activities during 2012-2014 averaged 1 million people per year. In 2015-2017, job creation fell by an average of 0.47 million people per year. In informal economic activities during 2011-2014, there was an average increase of 1 million workers per year. In 2015-2017, the number of workers increased by an average of 1.5 million per year.

However, since the COVID-19 digitalization of the industry and the development of technology, it has also had a major impact on employment opportunities in Indonesia. According to the results of the World Economic Forum (WEF) survey in October 2020, the most common step taken is to create a work from home policy. This is to cut operational costs in the office such as electricity, as well as to avoid the occurrence of office Covid-19 clusters. This trend of working from home is also in line with what is happening globally. WEF and Ipsos in their survey in December 2020 recorded 52% of global workers working from home during the Covid-19 pandemic.

The digital economy era does not always have a bad impact on employment. Research results in France, for example, in the last 15 years there have been 500 thousand jobs lost due to the internet. But on the other hand, the internet also created 1.2 million new jobs. Currently in Indonesia, for example, online transportation has created 1 million new jobs. Several studies show that to a large extent, technological improvements have both negative and positive impacts on employment. When technology takes over, some jobs are lost and workers have to upgrade or learn new skills to stay in the job market. In some cases, technology directly replaces workers, while in others it strengthens human capital. On the output side, technology can increase productivity and also increase consumer demand for new products, services and industries. Ultimately, this expansion can create new employment opportunities. Despite its initial disruptive power, technology paves the way for the creation of new industries and jobs. For example,

the use of online devices in Indonesia has resulted in the rapid growth of transportation services which in turn creates new job opportunities for many people.

According to one report from the data word page, Gojek has attracted two million drivers in Indonesia as of March 2019. GoFood service has also embraced more than 400 thousand food and beverage sellers, of which 80% are Micro, Small and Medium Enterprises (MSMEs). In addition, 60 thousand service providers are included in the Gojek ecosystem. Some even argue that the reason why unemployment is relatively low in Indonesia is due to the growth of app-based online services. Moreover, the online job market provides more space for businesses, especially small and medium-sized entrepreneurs. Ecommerce tools including Tokopedia, Blibli, Bukalapak and so on allow small businesses in Indonesia to market their products directly to customers. Social media can also help businesses directly reach potential customers and promote their products. In the absence of data or studies on the role of social media in Indonesia, it is difficult to say to what extent these online channels create opportunities for small businesses. The Industrial Revolution 4.0 is an effort to transform towards improvement by integrating the online world and production lines in industry, where all production processes run with the internet as the main support. Therefore, there are three things that must be learned and mastered by Indonesian industrial human resources in order to compete in the Industry 4.0 era, namely English, Statistics, and Coding.

The implementation of the Industry 4.0 system is considered to generate new job opportunities that are more specific, especially those that require high competence. For this reason, a skills transformation is needed for industrial human resources (HR) in Indonesia that leads to the field of information technology. The government, according to the Head of the Industrial Research and Development Agency (BPPI) of the Ministry of Industry, Ngakan Timur Antara, is prioritizing development in five national industrial sectors that will become pilots in the implementation of the Industry 4.0 system, namely the food and beverage, textile and apparel, automotive, electronics, and chemical industries. Jobs that can be automated are slowly dying out, but new types of professions will be born. For example, new jobs are emerging in fields related to the design and operation of the technology itself, such as computer programmers and user interface designers.

The transition in employment can be seen in the data on the proportion of workers per sector according to the World Bank. Prior to 1997, the agricultural sector was the largest sector of livelihood for the world's population, followed by the service sector, and then industry. However, the percentage of agrarian sector

workers continued to decline from 42 to 29 percent, while the percentage of service sector workers continued to increase from 37 to 49 percent. Finally, in 1998, the service sector became the livelihood field of the majority of the world's population, while the agrarian sector dropped to second place. Interestingly, the percentage of workers in the manufacturing industry, which is usually the most affected by automation, has tended to stagnate at around 21 percent over the past 25 years.

Judging from the trend of employment during August 2018 to August 2019, according to BPS data published in November 2019, employment that experienced an increase in percentage was mainly in the provision of accommodation and eating and drinking (0.50 percent points), processing industry (0.24 percent points) and trade (0.20 percent points). Meanwhile, employment that experienced a decrease was mainly in agriculture (1.46 percent points), financial services (0.06 percent points) and mining (0.04 percent points). The number of people working in each category of employment shows the ability to absorb labor. One of the causes of the increase in the number of workers in the accommodation and eating and drinking sector is due to the increase in the tourism industry due to both domestic and foreign tourists.

The government in the 2020-2024 National Medium-Term Development Plan document sets the following policy direction:

1. Develop conditions that encourage the development of digital service provision such as human resource capacity building, technology, R&D, infrastructure and establish supportive regulations and institutions.
2. Identify the fulfillment of digital services and integrate the digital transformation system nationally.
3. Develop capabilities in Big Data management
4. Strengthen cooperation between the government, private sector, academia and society. The government's plan in relation to preparing for digital transformation is to prepare laws and regulations on Digital Transformation.
5. Prepare an institution that specifically coordinates the implementation of Digital Transformation, namely the Digital Transformation Council.
6. Build supporting networks and infrastructure
7. Building a digital literacy education system
8. Increase the capacity of human resources in digital expertise.
9. Cooperate with all parties in providing digital services.

Reporting from the future of jobs report (Warhurst & Hunt, 2019) from the World Economic Forum, the following professions are the most promising in the future, including the profession as an SEO (search engine optimization) specialist

because it will spearhead the marketing of a company because with SEO specialists your company will be on the front page of the search engine. Second is the digital marketing profession. Third is the data processing expert (data scientist) whose job is to analyze the data needed for decision making. Fourth is the profession as an application developer to create digital applications that can hook many consumers and users. The fifth is as a software developer to optimize the company's computerization system. The sixth is the profession as a product designer, to design product packaging products. In addition, the accountant profession is also needed to manage company finances.

Next is engineering and construction experts because of the increasing development. Along with the increase in population, of course, health problems will also increase, so the profession in the health sector is a promising profession in the future.

Conclusion

Based on the discussion above, the following conclusions can be drawn: The digital economy era does not always have a bad impact on employment. The implementation of the Industry 4.0 system is considered to be able to produce new, more specific job opportunities, especially those that require high competence. For this reason, a skills transformation is needed for industrial human resources in Indonesia that leads to the field of information technology. Increased productivity caused by digitalization means that companies can meet more demand. So what happens is an increase in labor demand.

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