

Developing Competitiveness in Industrial Revolution 4.0

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Abstract: The Fourth Industrial Revolution has not only tremendous potential in overhauling industry, but it is also certain to be a widespread view not only in government and academia but also in various walks of life. Many countries (both developed and developing countries) have included the 4.0 Industrial Revolution on the national agenda as a way to increase competitiveness in the global market arena. The Industrial Revolution 4.0 has fundamentally changed the way humans think, live and relate to one another. This era will disrupt the various human activities in various fields, not only in the field of technology, but also in other fields such as economics, social, and politics. This certainly provides opportunities and threats for some circles because to be able to compete in the era of the Industrial Revolution 4.0, we need to improve our ability to develop competitive technological advantages and develop creativity. This paper will discuss in detail the economic conditions in the industrial revolution 4.0, Principles of Industrial Revolution 4.0, as well as Competitive Strategy and Preparations for the Industrial Revolution 4.0

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I. THE INDUSTRIAL REVOLUTION 4.0: AN OVERVIEW

Currently the world is entering the era of the industrial revolution 4.0. Where the industrial revolution 4.0 is marked by technological developments that are so rapid, so that the digital aspect has become the basis in life. With the industrial revolution 4.0, it can facilitate all daily activities. Especially in business, all business processes are made easy by the existence of an online system, so that as business people can easily develop their business quickly. The 4.0 industrial revolution also provides new opportunities and challenges in order to survive in competitive global competition.

The Industrial Revolution 4.0 brought big changes, because of its speed and impact on various systems. Thus, as a society and business people must adjust to developments so as not to be left behind. We are obliged to learn and explore what will have an impact on life as a society and business people, in order to have readiness in facing the Industrial Revolution 4.0. However, not all elements of society are aware of the logical consequences or impacts of the changes they cause. In fact, the facts of the change are still often debated. For example, the number of conventional shops in shopping centers (malls) that are closed is often politicized with the argument that the trend is caused by a decrease in people's purchasing power. Conventional shops are starting to face serious problems or minimal visitors because some urban communities prefer the online shopping system. From buying clothes, shoes and books to buying food, all with online shopping patterns.

There are still a few examples of the effects of Industrial 4.0 adaptation. For example, due to e-banking factors and the rapid development of payment systems, 30 percent of job posts at each bank are predicted to disappear in the next few years. So, lately termination of employment (layoffs) in the banking

sector was inevitable. Then, the enactment of the e-money provisions to pay tolls also has an impact on workers who have been serving cash payments at all toll road doors. The newspaper industry also experienced a significant decrease in business scale, because it could not avoid the impact of the rapid growth of online media. Some of these illustrations illustrate the changes that have arisen as a result of digitization and automation in the current Industrial 4.0 era. Major changes become inevitable when the world must transform with the changing times.

The First Industrial Revolution was marked by the mechanization of production using hydropower and steam. Then, mass production became an open possibility thanks to the presence of electricity in the Second Industrial Revolution. The industrial sector could then realize production automation in the Third Industrial Revolution because of the support of the electronics and information technology industries. All these changes encourage humans to adapt, because in the end they will change behavior, how to work up to the demands of skills. Then the Fourth Industrial Revolution that is being felt at this time, namely the era of digitization and automation (Kompas, 2019).

Industrial Era 4.0 will continue to bring many changes that can not be dammed. Therefore, there is an urgency if the state needs to make maximum efforts and more aggressively provide understanding to all elements of society about the nature of the Industrial 4.0 era with all its logical consequences. This step is important because not many people are interested in understanding Industry 4.0. The public has indeed experienced some of these changes, but concern for the challenges in the era of digitization and automation today is fairly minimal.

Therefore, all countries both developed and developing countries must take the initiative to encourage all elements of society to be more concerned with the Industrial 4.0 era. By providing a deeper and deeper understanding, the community will naturally be motivated to prepare to face and respond to these changes. Even more important is to encourage the national education sector from basic education to tertiary education to adjust the education curriculum to the challenges and needs of the current era. A curriculum that opens access for millennials to gain knowledge and training to become competitive and productive workers (Anis, et.al., 2018).

II. PRINCIPLES OF INDUSTRIAL REVOLUTION 4.0

Rapid changes in information and communication technology (ICT) have answered the challenge of the boundary between virtual reality and the real world. Industry 4.0 has been able to make machine communications with other equipment, called the Internet of Things (IoT) and can communicate with people called the Internet of People (IoP), so as to create what is now called the virtual physical production system (CPPS). The industrial revolution 4.0 has four principles that enable each company to identify and implement a variety of industry 4.0 scenarios, including: (1). Interoperability, the ability of machines, devices, sensors and people to connect and communicate with each other through the internet. (2).

Information Transparency, the ability of information systems to create a virtual copy of the physical world by enriching digital factory models with sensor data. (3). Technical Assistance, first the ability of the assistance system to help people collect data and make visualizations in order to make wise decisions. Second, the ability of the physical system to help humans carry out various heavy, unpleasant, or unsafe tasks for humans. (4). Independent decision, the ability of the physical system to make decisions and perform tasks as independently as possible.

Industry 4.0 will bring many changes, the changes that will occur have both positive and negative impacts, where one of the impacts is the use of technology that is more efficient and more precise, but there are also impacts that have a negative impact on human labor that cannot responding to the challenges of industry 4.0 where human labor that is unable to compete and cannot answer the challenges of industry 4.0 will be replaced with developing technologies.

Not only other countries that use industry 4.0, Indonesia will also use industry 4.0 where the ministry of industry will launch the Making Indonesia 4.0 program which is an integrated road map and campaign to implement strategies to face the 4th industrial revolution era (Industry 4.0). The roadmap will be launched on 4 April 2018. As a first step in running Making Indonesia 4.0, there are five industries which are the focus of the implementation of industry 4.0 in Indonesia, namely the food and beverage, textile, automotive, electronics and chemical industries. These five industries as the industrial sector in Indonesia which have the biggest influence in the Indonesian economy, with the application of industry 4.0, it is hoped that these five industries can further develop and support the Indonesian economy to become the top 10 in 2030 to come. Industry 4.0 in Indonesia will attract foreign and domestic investment in Indonesia, because industry in Indonesia is more productive and able to compete with other countries, and strives to be better accompanied by an increase in the ability of Indonesian workers to adopt technology.

Mental revolution must also be carried out, starting from changing the negative mindset and fear of industry 4.0 which will reduce employment or the paradigm that technology is difficult. It is hoped that the level of innovation in Indonesia which is currently ranked 87 world can continue to increase so that it is more competitive in the current technological transition era. In conclusion, the industrial revolution 4.0 is not a frightening event, but opportunities are opening up for the nation's children to contribute to the national economy and can help the progress of Indonesia. Industry 4.0 opens opportunities and widens ways so that everyone from low to upper economic classes can contribute to helping the country's economic progress (www.kemenperin.go.id/artikel/18967, 2019).

III. COMPETITIVE STRATEGY AND PREPARATIONS FOR THE INDUSTRIAL REVOLUTION 4.0

Entering the industrial revolution 4.0 which touches the virtual world in the form of human, machine and data connectivity, everything is everywhere (the Internet). This term is known as the internet of things. Many people say that we must be aware of the emergence of industrial 4.0 because it will have an impact on our income and performance. When talking about the unrest we must know about the challenges and advantages of industrial 4.0. In industrial 4.0 there are several challenges that must be faced by society, these challenges are in the form (Nagy et al., 2018): (1). Data security issues, given that in

industry 4.0 all systems and data are controlled and operated by the internet so that they are very vulnerable in their security, (2). Maintaining the stability of the production process without human intervention, and (3). Loss of some work which will be replaced by an automated system.

In addition to the challenges that need to be worried, we will also benefit from the presence of industrial 4.0 such as (www.kemenperin.go.id/artikel/17565/Empat-Strategi-Indonesia-Including the Fourth Industry-Revolution, accessed 31 March 2019): (1). Computers that are "in control" can produce more reliable and consistent production. (2). Results for many businesses and production can increase revenue, market share, and profits. (3). Faster in producing goods, (5). Reduces the possibility of product defects and work accident rates, and (5). Time spent producing goods and services is more efficient and no time is wasted

To deal with industrial 4.0 we need to use the right competitive strategy so that we do not lose to competition. The definition of competitive strategy according to M. Porter is an approach to corporate strategy in order to outperform competitors in similar industries. There are three strategic foundations that can help organizations gain competitive advantage (Porter, 1996): (1). Cost advantages: emphasizing the manufacture of standard products at very low unit costs for consumers who are sensitive to price changes. Cost advantage can use a cost strategy that we know as cost leadership (Emphasis on efforts to produce a standard product (the same in all aspects) with a very low cost per unit. (2). Differentiation: Strategy with the aim of making products that provide services that are considered unique throughout the industry and are aimed at consumers who are not too concerned with price changes. This strategy encourages companies to be able to find their own uniqueness in the target market. The uniqueness of the product (goods or services) that is prioritized allows a company to attract the greatest possible interest from potential customers. (3). Focus: making products and provide services that meet the needs of a number of small groups of consumers. This type of strategy is intended to serve the needs of consumers whose numbers are relatively small and in making their decision to buy relatively unaffected by price. The focus strategy is integrated with one of two other generic strategies: low cost strategy or product characteristic differentiation strategy. This strategy is commonly used by suppliers of "niche markets" (special segments / specific in a particular market; also called a niche market) to meet the needs of a product - goods and services - specifically.

Competitive strategies to deal with industrial 4.0 that managers can do are: (1). Increased HR In industrial 4.0 we will involve internet access and computer-controlled systems. Therefore we must improve our human resources to be able to operate tools or the internet so that they can be useful for factories and we as humans still get jobs in the midst of modern systems. By attending some special training and certification to improve their skills. (2). Preparing for the availability of adequate infrastructure. Prepare infrastructure both in terms of hardware and software so that when it has changed to industrial 4.0 the company will not experience difficulties. (3). The existence of big data: Big data must be prepared carefully because to store the entire company data that is used both for production and for company research. If the big data is not ready, it is feared there will be errors and losses for the company.

In the development of industry 4.0 inevitably a company or organization engaged in services or goods must be able to develop a strategy to respond to the times, which continues to

develop so rapidly that even human needs are very diverse (Morrar, et. Al. 2017). With the introduction of very sophisticated technology, human needs can be quickly resolved or resolved. In addition, Porter's mind helps companies or organizations that provide goods or services to meet human needs, such as in the continued development of the company can offer goods or services at low cost but good quality, so consumers become interested, in addition the products produced are unique or different from others so that they are able to attract the interest of consumers themselves even companies or organizations must focus on the benefits of the company itself, as well as serving consumers remain focused on the needs of consumers themselves.

In addition, when talking about industry 4.0, where industries are developing because of technological developments, much can be done to increase revenue and even the development of a particular company or organization. It can be said with human work technology quickly resolved, with human power technology can be replaced with robots for example, with human technology earning income such as online shopping, with technology a company or organization providing products both goods and services can arrive or get information related to the product being circulating in the market and many more technological developments that help people in running the industry (Porter and Heppleman, 2014). It must be realized that industry 4.0 does not always have a positive impact, certainly technology created by humans has a negative impact so it is expected that companies or organizations can use opportunities or opportunities to introduce or even develop companies or organizations by utilizing science and technology itself. besides that as humans must continue to learn even able to master science and technology so that they are able to compete. Because if humans are not able to master science and technology, eating human work will increasingly be replaced by the power of robots.

CONCLUSIONS

Industry 4.0 will be a huge advantage for companies that fully understand what it means to them. This change in nature will transcend corporate boundaries and possibly national boundaries of the country in which this business takes effect. In the context of industry and production, Industry 4.0 is understood as computerized factories, or data automation and reconciliation in order to create smart factories. Structured in this smart factory are robots or cyber physical systems, the Internet for Everything (IoT), cloud computing, and cognitive computing, all of which are digital.

To face the industrial revolution 4.0, various preparations are needed, one of which is the improvement of human resources, the role of government, supporting facilities and infrastructure. Preparing a reliable workforce and special skills for the mastery of the latest technology There are two real potentials

that underlie that belief, namely a large market and skills. These two potentials are able to support the development of the digital age. Millennial generation is demanded to increase capacity. Not enough just to master the technology, but must be equipped with the mastery of a number of foreign languages to be communicative at the global level. The capacity building for millennial workers can be realized through training, courses and certification. Industry and educational institutions must also care about the issue of increasing the capacity of workers in this era of globalization. So, with the 4.0 industrial revolution, most people and business people are expected to understand well and correctly about technology that will develop very rapidly. So, become a community or business people who are up to date.

References

- [1] Anis, B.J., Christiananta, B. & Ellitan, L. 2018. The effect of Entrepreneurship orientation, information technology, strategic planning to competitive advantages with the business performance as intervelling variable, *International Journal of Advances. Research*, 6(1), 230-242.
- [2] Anonim, 2019. "Ekonomi 4.0 dan Kehendak Jadi Negara Maju", Kompas, 28 Maret 2019, hal 6.
- [3] Anonim, 2019. "Making Indonesia 4.0: Strategi RI Masuki Revolusi Industri K-4.", <http://www.kemenperin.go.id/artikel/18967/MakingIndonesia-4.0:-Strategi-RIMasuki-Revolusi-Industri-Ke-4, diakses 28 Maret 2019>.
- [4] Anonim, 2019 "Empat Strategi Indonesia Masuk Revolusi Industri Keempat." <http://www.kemenperin.go.id/artikel/17565/Empat-Strategi-Indonesia-Masuk-Revolusi-Industri-Keempat, diakses 31 Maret 2019>
- [5] Morrar, R., Arman, H. & Mousa, S. 2017. The Fourth Industrial Revolution (Industry 4.0): A Social Innovation Perspective. *Technology Innovation Management Review*, Vol. 7, Issue 11, pp. 12-20.
- [6] Nagy, J., Oláh, J., Erdei, E., Máté, D. & Popp, J. 2018. The Role and Impact of Industry 4.0 and the Internet of Things on the Business Strategy of the Value Chain—The Case of Hungary. *Sustainability* 2018, 10, pp. 1-25. www.mdpi.com/journal/sustainability
- [7] Natalia, I and Ellitan, L (2019) *Strategies to Achieve Competitive Advantage in Industrial Revolution 4.0*. International Journal of Research Culture Society, 3 (6). pp. 10-16. ISSN 2456-6683
- [8] Porter, M.E. 1996. What is Strategy? *Harvard Business Review*. Vol. 74 (6): 61-78.
- [9] Porter, M.E. & Heppelmann, J.E. 2014. How smart, connected products are transforming competition. *Harv. Bus. Rev.*, 92, 64-88.