Information Technology Readiness Towards of The Industrial Revolution 4.0 In the Maritime Sector

by Siswadi Mariana Ariana

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Abstract - *The strategy to strengthen the coming of the industrial revolution 4.0 era in the maritime sector is technology. Technological development is undeniably more advanced and Indonesia must follow these advancements. At present, all countries in the world are in the stage of adjusting themselves to the industrial development of 4.0 era. The industrial revolution 4.0 can lead to a technology-based society. In addition, technology is the key to realizing new capabilities for the community. Human intelligence and cognitive computing, according to experts, will be a combination that is very much needed in the 4.0 era.*

In the Maritime Industry, the Industrial Revolution 4.0 requires superior maritime human resources such as economists, technology and industry, as well as intelligence. In parallel, priority agendas such as a permanent shipping system, infrastructure, logistics, maritime security management architecture, capacity building competencies, maritime community quality, harmonization of laws and regulations as well as the shipping and maritime strategic industry are required. In this Journal, the writing method is based on literature studies and the results are related to the Industrial Revolution 4.0 and Society 4.0, all sectors must be transformed, including the maritime sector especially if you want to make Indonesia a world maritime axis.

Index Term- *Maritime Industry, Industrial Revolution, Industry 4.0, Maritime Society*

Introduction

The maritime sector in Indonesia in the face of the industrial revolution 4.0 must have an effective strategy to keep pace with developments and demands of the times. One way is to use information technology. The era of the industrial revolution 4.0 is mandatory to be implemented among academics, public policy makers, and economists. Because this era demands connectivity in all respects (the Internet of Thing), it is also believed to be able to bring significant changes to the world economy and quality of life. This idea arose from the response of the Industrial Revolution 4.0 as a significant technological development, but the role of the community was very much a consideration for the occurrence of this industrial revolution 4.0.

Society 4.0 offers a community centered society that is able to strike a balance between economic progress and the resolution of social problems through a system that connects the virtual world and the real world. The obstacle in facing the current industrial era 4.0 is the social disparities that occur in the wider community. Capitalize on the criticism and sensitivity of the people who have a community and organization is a provision to continue to innovate in each individual and within the scope of the organization.

Regarding the Industrial Revolution 4.0 and Society 4.0, all sectors must transform, including the maritime sector, especially if they want to make Indonesia a world maritime sector. Also in it, there is upstream oil and gas sector which is onshore and offshore that is ready to transform towards the Industrial 4.0 and Community 4.0 eras. Because the industry has long been using computer-based high technology, which is full of high risk, has very large capital and has professional human resources.

With these conditions, we must race even faster to get ready for the direction of the fusion of the era of the Industrial Revolution 4.0 and Society 4.0 which makes humans the subject of controlling the progress of science and technology. We must also work together to produce resilience and resilience with all components of the nation and state to guarantee national welfare and security as well as to actively

participate in maintaining world order and peace so that neo-liberalism, imperialism and capitalism do not occur.

Review of related Literature

The development of technology cannot be denied at the time and has greatly changed the lives of humans from ancient times to the present. Very rapid technological developments have disturbed the establishment of an existing industry, so that the size of an industry is no longer a guarantee, but focus on how an industry's strategy in developing and anticipating changes that occur, in this context partnerships are important. The development of information technology that is very extraordinary greatly affects the mindset and life of the community, so now it is natural that young intellectuals talk no longer about competition but technological development so that new ideas arise to advance the industry.

Industrial Revolution 4.0 is a revolution that brings people closer to industry, in the past the market through modern and traditional markets, the buying and selling activities that occur in the market are carried out so that every human being can meet their needs. need, then the era continues to change and more advanced now the market is close to information technology that can increase sales costs and minimize costs in promotion, marketing, inventory and processes in online sales, so the market can easily market their products directly on the internet or the world network virtual without having to throw away the cost of renting a store and the like.

Currently Indonesia is in the industrial revolution 4.0, where the industrial revolution is a very rapid change in all fields of industry, transportation and maritime. It is hoped that in the near future, Indonesia can take part in the industrial revolution 4.0. In the history of the development of the industrial revolution, the world underwent three revolutions, including the Industrial Revolution 1.0 with the discovery of steam engines replacing human and animal power, the 2.0 industrial revolution began to use electricity, gas and petroleum, the industrial revolution 3.0 has used automatic technology in industry or all computerized where robots and machines began to replace human roles, the industrial revolution 4.0 was marked by the development of information and communication technology that was fully utilized, giving birth to new digital-based industrial models to achieve high efficiency and better product quality.

At all times, information technology is a competitive advantage that has been used as a moment to influence the world globally. The concept of "Society 4.0 / Society 4.0" makes humans the center of technological control. Humans play a bigger role by transforming big data and technology for humanity to achieve a better life. Society 4.0 becomes a blueprint and future strategy.

Today the world is entering the era of the industrial revolution 4.0, the rapid development of technology, including the role of humans who will be replaced by intelligent robots, is considered to be able to degrade the role of humans. Therefore for humans who have skills, increasing the ability of HR is very important so that the role of HR as a human being is not replaced by a robot completely. Progress of the times must be addressed with the spirit of adaptation and innovation. Many ways can be taken to stimulate the mindset and enthusiasm in a competitiveness of themselves, for example:

(1) Increasing intellectual intelligence by continuing to learn to explore knowledge and knowledge gained both in the education stool and in daily life that is full of unlimited knowledge,

(2) Increased emotional intelligence by continuing to maintain attitudes and emotional maturity in the modern world, because not a few people who slip only because emotions are spontaneously overflowed without ethics on social media so that making technology actually becomes a path to immodesty and contrary to moral norms in civilization,

(3) Increasing spiritual intelligence, knowledge and attitudes that are high and good without being accompanied by closeness to the Creator will be in vain. Everything must come from the Almighty and with his permission; this world can develop as fast as we feel now.

The community is able to try and become actors and movers in the 4.0 industry era for mutual progress. According to Tech Crunch (2019), Community 4.0 refers to six main pillars which include infrastructure, financial technology, health care, logistics, and Artificial Intelligence (AI). Technology and innovation need to be utilized to help and advance the community, not to replace the role of humans. Meanwhile, Charles A Beard argued that the industrial revolution actually focused on material (making things) and on humans (social).

Transformation opens up opportunities for the creation of new types of work that did not exist before, although on the other hand there are types of jobs that were lost because they were replaced. New technology has changed the way and current lifestyle. The combination of the Industrial Revolution 4.0 and Society 4.0 should be used as a roadmap / blueprint for Indonesia. The community needs to act quickly and not be late so that national interests and sustainability of the nation's existence are guaranteed. According to Hehni Adam (2019), the Indonesian government needs to prepare regulations to protect workers from the threat of losing work due to the Industrial Revolution 4.0. So that the demographic bonus facing Indonesia can be the subject of controlling technology. Do not let the people upside down become victims of growing technologies. Demographic bonuses for Indonesia must be able to be used as opportunities through increasing their capacity and quality in order to have high professionalism and nationalism so that they have a proud global competitiveness. This needs the commitment of state and company organizers to focus and prepare adequate planning and financing for implementing up skilling, social security net and funding. So as to be able to become an agent of technology as a superior human resource (HR).

Discussion

Industrial Revolution 4.0 will have an impact on increasing the development of national strategic industries including the digital industry, which is based on artificial intelligence (AI), the internet of all things (internet of things / IoT), augmented reality, machine learning (machine learning), and deep learning (deep learning). And oriented to the development of Human Resource, profit and sustainability. Not only to meet the needs of the present, but also to prepare future generations to meet their needs (Elvia Murni, 2019).

Strategies to strengthen the coming of the industrial era 4.0 in the maritime sector include:
(1) Strengthening unity, in this strategy, the education sector, maritime industry and other support, and the government must be strengthened. Then it will be able to solve problems and find solutions to continue to be developed.
(2) Industry work speed 4.0, here means there must be cooperation, work speed, which will have an impact on quality and beneficial results, superior human resources, as well as digital processes, production processes, marketing, and work processes. The pace of this industry 4.0 work will be able to provide solutions to always focus on developing organizations to produce results. The maritime industry must also be supported by a work pattern of 4.0 so that the development of the maritime industry can progress rapidly and according to its goals.
(3) Strengthening maritime relations. At this stage, relations are needed as initial capital to strengthen the maritime industry and its development. Rapid changes must always be followed and responded to quickly. Because, if not, will experience a very far behind. A strong relationship will be able to provide convenience and open great opportunities. The maritime industry will be easy if the relationship is strong.

In order to be able to compete with other developing countries, industrial intelligence needs to be developed as a means of supporting the development and expansion of global business from national strategic industries that have been owned (Davies, R., 2015). Currently, to welcome the industrial revolution 4.0, superior maritime human resources, economic experts, education experts, technology and industry experts, and intelligence are needed. In parallel, priority agendas such as the Indonesian-flag fleet are required, a

permanent shipping system, infrastructure, logistics, maritime security management architecture, capacity building competencies, maritime community quality, harmonization of laws and regulations as well as the shipping and maritime strategic industry. Including making Indonesia the controller and control of ASEAN sea traffic, which is currently in Singapore.

What happened to industry 4.0 and which is driving the current era shift cannot be separated from history that occurred in [1]e era to the era of the Industrial revolution. Industry 4.0 is identical to the mass consumption industry, using collaboration of robotic media with artificial intelligence and the internet of things (IoT), aims to reduce total production costs because goods produced in mass quantities are also consumed because they are exactly what the customer wants. Industry 4.0 develops based on previous industrial developments, namely industry 3.0 which focuses on the use of robotic media in the aspect of production with the aim of mass production (Neneng Zubaidah, Ichs[1] Amin, et all, 2019)

The use of collaboration with robotic media in the two industrial eras is aimed at creating lean processes. With the use of robotic media, it is expected to be able to create efficient work processes and minimize the costs of failure that may arise so as to reduce overall production costs optimally. In addition, the main driver of collaboration with robotic media is based on the desire to eliminate operational risk on workers' (human) objects. Robotic media or automated processes aim to eliminate repetitive and tedious work, prevent workers from dealing with hazardous work, and minimize "dirty work" performed by educated workers (known as the elimination of Three D's - dull, dangerous and dirty jobs ").

Changes that occurred during the 3.0 - 4.0 industrial period were certainly initiated by the characteristics of the market and its customers. In that era (in the 1960s to the present) the pattern of market consumption was more towards economic spending. This triggers industry players to think of ways to reduce costs in the company. One of the most effective ways is to use robotic machines to standardize mass production processes, minimize the risk of failure, and minimize the cost of human error.

Today's Generation

If examined, the market conditions in the future, the market will be dominated by the present generation which certainly has a unique nature and different from the market conditions in the previous generation. The current generation consumption patterns which will become the main consumers in the next few years will have an impact on the future changes in the industry. Characteristics of the current generation (according to Kilber, et al, 2014) are the generation that is internet minded, has high self-confidence and self-esteem and is more open and tolerant of change.

In one study, it was found that there is a tendency for 60 percent of the current generation to make purchases that support their expression. Technology International (Neurosensum) in the results of their research entitled "Understanding Consumer Trends Today", namely research on consumption patterns of millennial generation in Indonesia, revealed that spending in the recreation category has increased 40 percent (1.4 times) in the last two years. This shows that the current generation considers experience important and is more willing to experiment. From this research, it can be concluded that the characteristics of the market in the coming year are the market groups who crave specific, unique, and adjustable products and services (personalization) of each customer's desires that require recognition and high self-esteem.

This desire for mass personalization forms the psychological and cultural impetus behind Industry 4.0 which involves the use of technology that is personalized to the human touch to enhance added value and different experiments in each of its outputs. Output in Industry 4.0, the result of empowering technology and a unique human touch to realize the basic impetus of the market in the future to express themselves, even they are willing to pay a premium price to get these personalized products or services. Products and services like this can only be made through human and technological involvement if needed. Consumers of this generation accept

technology, they don't mind if there is an automated process. Personalization will give rise to special feelings and high esteem coveted by the characteristics of customers in the future.

Regarding the Industrial Revolution 4.0 and Society 4.0, all sectors must transform, including the maritime sector, especially wanting to make Indonesia a world maritime sector (Republika.Co.Id, 2019). Also in it, there is upstream oil and gas sector which is onshore and offshore that is ready to transform towards the Industrial 4.0 and Community 4.0 eras. Because the industry has long been using computer-based high technology, which is full of high risk, has very large capital and has professional human resources (Puput Suwastika, 2019). With these conditions, we must race harder again to prepare for a new direction towards the fusion of the era of the Industrial Revolution 4.0 and Society 4.0 which makes humans the subject of controlling the progress of science and technology.

Society 4.0 offers a human-centered society that makes a balance between economic progress and the resolution of social problems through a system that is highly connected through cyberspace and the real world.

Actually, the concepts of industrial revolution 4.0 and society 4.0 do not have much difference. Namely the industrial revolution 4.0 uses artificial intelligence (artificial intelligence) while society 4.0 focuses on the human component. The concept of society 4.0 has become a new innovation from society 1.0 to society 4.0 in the history of human civilization. Starting from society 1.0 humans are still in the era of hunting and familiar with writing. In society 2.0 is agriculture where humans have started to know farming. Then in society 3.0 has entered the industrial era that is when humans have begun to use machines to support their daily activities, after that came the society 4.0 that we experience today, namely humans who have known computers to the internet as well as its application in life.

If society 4.0 allows us to access also share information on the internet. Society 4.0 is an era where all technology is part of humanity itself. The internet is not

only as information but to live life. So that technological developments can minimize the gap in humans and economic problems in the future (Zhou, K., Taigang L., & Lifeng, Z, 2015)

Indonesia is a developing country where the major of the population is not familiar with the Industrial Revolution 4.0 or society 4.0. However, among academics, the Industrial Revolution 4.0 or society 4.0 is well understood and implemented, business people who do have business continuity interests, as well as public policy makers who are very concerned about the development of the Industrial Revolution 4.0 or society 4.0. Educational institutions which are categorized as leading in Indonesia have begun to implement this industry 4.0 and society 4.0 system. From the start of the education system, how to interact educators and educated, as well as the fertilization of the paradigm of modern thinking. As for the communities and organizations, some did independently discuss the industrial revolution 4.0 and society 4.0.

It should also be appreciated for this focus on social change, capitalizing on the criticism and sensitivity of young people so that communities and organizations have the provision to continue to innovate in each individual and within the scope of his organization.

The Industrial Revolution 4.0 indeed presents interesting challenges while providing opportunities to create new ways, new systems and new cultures in life. The way it works in industry 4.0 must be managed well and be able to produce the desired output in accordance with the plans made.

The impact of the presence of the 4.0 Industrial Revolution will be evident in the maritime industry sector. The maritime industry sector is currently organizing itself to welcome the arrival of the Industrial Revolution 4.0. Maritime industry readiness in managing human resources and information technology infrastructure appears in several regions in Indonesia This form of readiness will affect the strength of competition in the global era. The presence of the fourth industrial revolution or better known as the industrial era 4.0 is colored or marked by the presence of super computer

technology and artificial intelligence or artificial intelligence.

Conclusion

4.0 Industrial Revolution in Indonesia is considered still requires a lot of time and attention from all sectors including in the maritime sector. This is due to the many basic needs of the community that need to be addressed. For example, transportation, human resources[8] to infrastructure. However, the readiness of the maritime industry in the face of the industrial revolution 4.0 continues to increase, this is marked by an increase in maritime technology and equipment. This can be seen from various development programs integrated in the maritime sector. Programs in the maritime sector that are currently being promoted are the development of maritime axis programs, sea tolls, sea security (border), to the potential for economic growth due to the Indonesian maritime connection with the "One Belt One Road".

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