Automatic Transportation System and Human Resources Development on Society Era 5.0 in Indonesia

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Abstract: This study analyses and examines the development of human resources in facing the challenges of society 5.0 and the role of the Government in facing the challenges of society 5.0 on transportation. The essential and strategic means in accelerating the economy, strengthening national unity and influencing aspects of the life of the nation and state. In facing the challenges of the Society, 5.0 era in terms of transportation by automatic driver system technology, the Government must prepare strategies in terms of handling problems that will be faced later both in terms of Human Resources and direct handling in the field. Using description on the background of the problem above, then there is a problem formulation, Readiness of Human Resources and the Role of the Government of the Republic of Indonesia in Facing Transportation Technology Using Automatic Driving Systems in the Face of the Challenges of the Era of Society 5.0. This research method is juridical empirical using a conceptual approach. The conceptual approach departs from the views and doctrines that develop in technological studies. In this approach, the authors are expected to find solutions to the problems discussed. The research was conducted in the Republic of Indonesia.

1 INTRODUCTION

Traffic is essential for the realization of the development of the nation's life. With smooth traffic, it will facilitate access for the community to carry out activities in fulfilling their economy. In supporting community activities in various ways, transportation is also an important requirement. The complexity of everyday human life cannot be separated from the means of transportation. Transportation is an essential and strategic means in accelerating the economy, strengthening national unity, but on the other hand, the majority of the Indonesian transportation system is still not sustainable (Ali, 2011).

Many problems will occur in the future related to transportation. With the industrial revolution 4.0, there is still a lot of trouble for the Police, especially the Traffic Police, namely with the existence of E-Tilang, and which is now leading to society 5.0. by using a data analysis system will be the strength level of intelligence or sophistication of information technology.

Entering the era of automatic transportation, human resources must be prepared to face this. Vehicles have now shifted from conventional engines to electrification integrated with autonomous automotive technology through artificial intelligence in the transportation sector. Many believe that intelligent engineering, machines, automatic transportation and smart robotics will dominate the future. One of the problems faced by the Indonesian Government is how to prepare human resources to mobilize and utilize industrial revolution technology 4.0 in encouraging economic development, competitiveness and social welfare in the era of society 5.0. Nowadays, the transportation industry was facing a paradigm shift towards transportation electrification as the most promising and sustainable solution. This concept has been adopted for propulsion powertrains and auxiliary systems. In the last few decades, electrification already improves their safety and comfort for the passengers (Bojoi, et al., 2015).

Electrification could have significant implications for electric utilities. joint development of autonomous electric vehicles could make electric transport more likely, leading to faster-than-expected changes in the current transport paradigm (Jurgen, et al., 2017). In facing the challenges of the Society 5.0 era in terms of transportation, namely in the case of an automatic driver system, the Government must prepare strategies in terms of handling problems that will be

faced later both in terms of Human Resources and direct handling of the automatic driving system in the field. Therefore, based on this background, there is a problem formulation: How is the Development of Human Resources and the Role of the Government of the Republic of Indonesia in Facing Transportation Technology Using Automatic Driving Systems in the face of Society 5.0 Challenges?

2 MANUSCRIPT PREPARATION

This research method is juridical empirical using a conceptual approach. The conceptual approach departs from the views and doctrines that develop in technological studies. In this approach, the authors are expected to find solutions to the problems discussed. The research was conducted in the Republic of Indonesia. This study analyzes and examines the development of human resources in facing the challenges of society 5.0 and the role of the Government in facing the challenges of society 5.0).

3 RESULTS AND DISCUSSION

3.1 Transportation based Automatic Driving System

Transportation Automatic steering systems are now viral in the automotive industry, with the emergence of technological innovations and the increasing consumer demand for modern, safe and fun vehicles. Automatic driving affects all car parts, including the powertrain, brakes, steering, display instruments, navigation and sensors, and connectivity inside and outside the vehicle.

Automated vehicles rely on environmental issues, which goes beyond what sensors can collect. For example, drivers need real-time traffic data regarding congestion and accidents. It achieves by simply connecting the vehicle to the server. This system allows a dynamic review of the route to be followed and adjustments under the driving strategy. This Connected Horizon facilitates automatic vehicles to think smarter for comfort and safety in driving. A connected vehicle will be warned of a danger point before a blind corner or hilltop and can prepare itself by reducing accelerator speed. A vehicle may include a monitoring unit configured to determine an automatic-driving software program operating on it.

Electric power steering with a fail-safe system is the leading technology to make it happen. The fail-operation capability allows the driver and automaker to continue using critical steering functions while maintaining about 50% electric steering support in the rare case of a malfunction. Meanwhile, the electronic stability program plays a crucial role in automatic driving. systems provide the driver with the correct steering assistance from an electric motor, calculated by the CPU from vehicle velocity and input steering torque (Nakayama & Suda, 2014). Devolving driving responsibility to vehicles demands specific requirements for brakes. To maintain maximum control when a failure occurs, redundancy builds as a safeguard. The ESP brake control system and the iBooster electromechanical brake booster control the vehicle by themselves. Automatic driving will change the human-machine interface (HMI) between humans and machines, requiring a modern communication concept between the driver and his car (Katherine & Kazerooni, 2011).

Currently, various automotive manufacturers in Indonesia continue to innovate in developing technology for their loyal consumers. One of them is automatic steering or autopilot, where the driver does not need to be tired of driving. The car can drive itself to the location we are going to. There are already automotive manufacturers that have embedded these features on their four-wheeled vehicles, like Tesla's autopilot or Nissan's ProPilot Assist. However, this automatic steering feature is still controversial. Even though it has released to the public, this feature has often caused cars to be involved in traffic accidents.

The autopilot should be on toll roads that are straight, free of obstacles, relatively quiet and with constant vehicle speed. The autopilot is just an electronic component or engine, which means that the driver cannot give 100 per cent to the autopilot while driving. It is not impossible, later this feature can be safe and reliable, but it must complete the supporting facilities.

3.2 Human Resource Development Facing Automatic Transportation System for Society 5.0

The Japanese Government introduced the era of Society 5.0 or super-smart Society (society 5.0) in 2019, which was made as a solution and response to the 4.0 industrial revolution and was thought to cause human degradation. After entering the industrial revolution era, Indonesia will enter the era of society 5.0. the era of society 5.0 as a renewal that places humans as the main component, not just a passive component like in the industrial revolution 4.0.

Indonesia is far behind because of the World Economic Forum and Indonesia's ranking in the 2019 Global Innovation Index (GII). It takes extraordinary efforts to spur the level of national innovation, both in input and output. The company's interest in a workforce with big data and coding expertise is relatively high and is rapidly developing. Labour supply with these criteria is still minimal. The unpreparedness of local workers with industrial needs is considered worrying because it can impact the competitiveness of Indonesia's industry with other countries. Referring to the 2016 World Economic Forum (WEF) report, the industrial world is shifting to using intelligent engineering, machine learning, automatic transportation, and intelligent robotics to dominate the production process by 2020. "Several industries have made cloud technology and mobile internet the focus of their business models. In the future, data processing technology and big data will be followed into the production process.

The existence of renewal in the Society 5.0 can produce new value by elaborating and collaborating on systems, information and technology that also improve the quality of human resources needed or Human Capital. There are three primary abilities in dealing with society 5.0. among them which are:

1. The ability to solve complex problems and can be a problem solver for himself and many people.
2. The ability to think critically, not only in the classroom but also in social life and the surrounding environment, so social sensitivity arises.
3. The ability to be creative.

Society 5.0 can be said to be the integration of virtual and physical spaces to make everything easy with artificial intelligence. In facing the era of society 5.0, education plays an essential role in improving the quality of human resources. In addition to education, several elements and stakeholders such as the Government, community organizations (Ormas) and the entire community will also welcome the upcoming society 5.0 era. We also need to have the readiness and ability to think Higher Order Thinking Skills (HOTS) to answer the challenges of the global era of society 5.0 to minimize the gap in each student's mindset and technology orientation so that integrity can be between humans and technology later. In the era of society 5.0, humans are required to produce faster solutions to meet their needs. It impacts humans to continue to explore information and create new innovations to support their survival. So, it can be concluded that human beings in this era should behave and think forward and must follow the

pattern of the times, but do not forget the identity of the Indonesian nation.

In facing a new era, the 4th Revolution is a silent revolution with Economic Disruptions, which requires every individual to be truly competent and certified. Recognition of work competence is an essential requirement for the ownership-achievement of authority deemed authorized to give recognition. A competency certificate is a legal product that legitimizes the achievement of a person's ability to do specific jobs determined by certain authorities based on agreed and established competency standards. In facing the industrial era, the point is that 4.0, professional, competitive and competent human resources are needed. In the transition of the industrial revolution 4.0 to industrial society 5.0, what needs to be prepared is Human Resources, where technology is the basis for every human life, both in the fields of economy, politics, culture, the world of art and the world of education, which are very complex, this requires readiness and careful thinking.

By preparing superior human resources amid global competence, especially in the era of globalization, scientific advances and technological advances, which are the causes of competition between nations in all aspects of life, to deal with this, the main performance is needed, namely by increasing the ability, independence and competitiveness of the nation through education and mastery of modern technology if you don't want to be left behind from other nations. We hope that when we enter the era of society 5.0, human resources can solve social problems with various technologies that continue to increase.

3.3 The Role of Government in Facing the Challenges of Society 5.0

Industrial revolution 4.0 using artificial intelligence (artificial intelligence), while society 5.0 focuses on the human component. The concept of society 5.0 is an innovation from society 4.0 starting from society 1.0. In society 2.0 is agriculture, where humans have started to recognize farming. Then society 3.0 has entered the industrial era when humans have started to use machines to support their daily activities. Society 4.0 has emerged that we experience today, namely humans who are familiar with computers to the internet and its application in life.

If society 4.0 allows us to access and share information on the internet. Society 5.0 is an era where all technology is a part of man himself. The internet is not only for information but for living life. So that technological developments can minimize the

gaps in humans and economic problems in the future. It does sound very romantic to happen. Moreover, Indonesia is a developing country which can even be said that only a handful of people are familiar with the Industrial Revolution 4.0 or society 5.0. Only a handful of academics who are aware of the progress of their times, business people who are interested in the sustainability of their business, and public policymakers who pay attention to Baru are only a handful of people.

Educational institutions categorized as superior in Indonesia have not implemented the industrial system 4.0 and society 5.0. Starting from the education system, how to interact with educators and the educated and foster a modern thinking paradigm. As for the community and some organizations independently discussing the industrial revolution 4.0 and society 5.0, but only enough for personal consumption due to limited power. It is also worth appreciating the focus on this social change, capitalized on the criticism and sensitivity of young people so that communities and organizations have the provisions for continuing to innovate in each individual and within the scope of their organization.

The Government has implemented several programs to create a good business climate, especially in funding, mentoring, coaching, and facilitation. However, in its implementation, there are still obstacles. "There is still a need for convergence of plans, policies and actions between parties to create an entrepreneurial ecosystem, including social entrepreneurship, in Indonesia. Several determinants of the 4.0 industrial revolution, especially in HR development, face complex challenges. The education, health and entrepreneurship sectors are driving progress. The nation in the fields of industry, services, transportation and trade, faces challenges that are not simple. "Even though these four sectors will determine the dynamics of traditional sectors, such as agriculture, fisheries, livestock and handicrafts. The challenges faced are real and not light.

The existence of an automatic drive-based transportation system in Indonesia is still a matter of debate. Some studies even say that automatic control is still unreliable even in an emergency. The accuracy is still not the same as someone mounting the car manually. One of the efforts to prepare human resources to compete in the industrial era 4.0 and welcome the era of society 5.0, one aspect that must be strengthened is the IT (Information Technology) aspect. The advent of the Digitalization Era in Indonesia is accompanied by a need that will later be able to change the Indonesian economy from resource-based to knowledge-based, starting new businesses (Star-up) and emphasizing the importance of innovation. Inclusive economic growth and sustainable development need to continue to receive attention and support from various groups, namely the support of the Government, the private sector, the community, and not to forget the support from academics in achieving the Sustainable Development Goals (SDGs).

The threat faced by Indonesia in the era of society 5.0 is the emergence of the ASEAN Economic Community Era, which impacts the large number of foreign workers who enter Indonesia. Meanwhile, the challenge is that Indonesia is one of the countries that have the right to support sustainable development (SDGs) because Society 5.0 is oriented towards developing and utilizing technology for a better life for the people. The realization of Society 5.0 leads to the achievement of the Sustainable Development Goals (SDGs). The globalization and digitalization of the world economy keep up to date the problems of attaining sustainable competitiveness (Tatyana, et al., 2018). The Government of Japan's "Society 5.0" initiative aims to create a cyber-physical society in which (among other things) citizens' daily lives will be enhanced through increasingly close collaboration with artificially intelligent systems (Matthew, 2019).

As a developing country, Indonesia must produce talented young generations. In the last five years, the growth and development of technology in Indonesia have not shown a significant number. The young generation, who are currently referred to as the millennial generation, has talent and is potentially full of perseverance and innovation that must be supported by the Government in all matters, especially in terms of funding in development and training to face the era of Society. 5.0.

No progress is possible without a clear policy and defined implementation of that policy. Government initiatives are significant in facing the challenges of society 5.0. In this case, the Government of Indonesia can play a role in promoting digital technology, education and the establishment of an adequate regulatory framework

4 CONCLUSIONS

In facing the era of society 5.0, the world of education plays a vital role in improving the quality of human resources. In addition to education, several elements and stakeholders such as the Government, community organizations (Ormas) and the entire community will also welcome the upcoming society 5.0 era. We also

need to have the readiness and ability to think Higher Order Thinking Skills (HOTS) to answer the challenges of the global era of society 5.0 to minimize the gap in each student's mindset and technology orientation so that integrity can be between humans and technology later. In the era of society 5.0, humans are required to produce faster solutions to meet their needs. It impacts humans to continue to explore information and create innovations to support their survival. So, it can be concluded that human beings in this era should behave and think forward and must follow the pattern of the times, but do not forget the identity of the Indonesian nation.

By preparing superior human resources amid global competence, especially in the era of globalization, scientific advances and technological advances, which are the causes of competition between nations in all aspects of life, to deal with this, the primary performance is needed, namely by increasing the ability, independence and competitiveness of the nation through education and mastery of modern technology if you don't want to be left behind from other nations. We hope that when we enter society 5.0, HR can solve social problems with various technologies that continue to increase.

The Government has implemented several programs to create a good business climate, especially in funding, mentoring, coaching, and facilitation. However, in its implementation, there are still obstacles. "There is still a need for convergence of plans, policies and actions between parties to create an entrepreneurial ecosystem, including social entrepreneurship, in Indonesia. Several determinants of the 4.0 industrial revolution, particularly in human resource development, face complex challenges. The education, health and entrepreneurship sectors are driving progress. The nation in the fields of industry, services, transportation and trade, faces challenges that are not simple. "Even though these four sectors will determine the dynamics of traditional sectors, such as agriculture, fisheries, livestock and handicrafts. The challenges faced are real and not light.

The existence of an automatic driving-based transportation system in Indonesia is still subject to much debate. Some studies even say that automatic control is still unreliable even in an emergency. The accuracy is still not the same as someone mounting the car manually. One of the efforts to prepare human resources to compete in the industrial era 4.0 and welcome the era of society 5.0, one aspect that must be strengthened is the IT (Information Technology) aspect. The advent of the Digitalization Era in Indonesia is accompanied by a need that will later be

able to change the Indonesian economy from resource-based to knowledge-based, pioneering new businesses (Star-up) and emphasizing the importance of innovation. Inclusive economic growth and sustainable development need to continue to receive attention and support from various groups, namely the support of the Government, the private sector, the community, and not to forget the support from academics in achieving the Sustainable Development Goals (SDGs).

As a developing country in information technology, Indonesia should be able to produce talented young generations. Since the last five years, the growth and development of technology in Indonesia have not shown a significant number. The young generation, who are currently referred to as the millennial generation, have talents and potentially full of perseverance and innovation that must be supported by the Government in all matters, especially in terms of funding in development and training to face the era of society 5.0. No progress is possible without a clear policy and defined implementation of that policy. Government initiatives are significant in facing the challenges of society 5.0. In this case, the Government of Indonesia can play a role in promoting digital technology, education and the establishment of an adequate regulatory framework.

REFERENCES

Ali Emadi 2011, Transportation 2.0, *IEEE Power and Energy Magazine*, Vol. 9, Issue 4, 18 – 29.

Jurgen Weiss, Ryan Hledik , Roger Lueken, Tony Lee, Will Gorman, 2017, The Electrification Accelerator: Understanding The Implications of Autonomous Vehicles for Electric Utilities, *The Electricity Journal*, Volume 30, Issue 10, 50-57.

Katherine A. Strausser, H. Kazerooni, 2011, *The Development and Testing of a Human Machine Interface for a Mobile Medical Exoskeleton,* IEEE.

Matthew E. Gladden, 2019, Who Will Be The Members of Society 5.0? Towards an Anthropology of Technologically Posthumanized Future Societies, *Social Sciences,* Vol. 8, No. 5).

R. Bojoi, A Cafagnino, A Tenconi, A Tessarolo, S. Vaschetto, 2015, *Multiphase Electrical Machines and Drives in The Transportation Electrification*, IEEE.

Tatyana Salimova, Nadezhda Guskova, Irina Krakovskaya, Efim Sirota, 2018, From Industry 4.0 to Society 5.0: Challenges for Sustainable Competitiveness of Russian Industry, *Proceedings IOP Conference Series: Materials Science and Engineering, Vol. 497,* International Scientific Conference Digital Transformation on Manufacturing, Infrastructure and

Service 21–22 November 2018, Saint-Petersburg, Russian Federation.

T. Nakayama, E. Suda, 2014, The Present and Future of Electric Power Steering, *International Journal of Vehicle Design*, Vol. 15, No. 3.