



## **Jurnal Pertahanan**

Media Informasi tentang Kajian dan Strategi Pertahanan  
yang Mengedepankan *Identity*, *Nationalism* dan *Integrity*  
e-ISSN: 2549-9459

<http://jurnal.idu.ac.id/index.php/DefenseJournal>



### **EDUCATION LINEARITY: THE SHACKLE OF DISRUPTION ERA IN INDUSTRIAL REVOLUTION 4.0 FROM THE DEFENSE PERSPECTIVE**

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#### **Article Info**

##### **Article history:**

Received : June 30, 2021

Revised : July 5, 2021

Accepted : August 28, 2021

##### **Keywords:**

Linearity,  
Disruption,  
Industrial revolution,  
Transdisciplinary,  
Multidisciplinary,  
The Defense system

#### **Abstract**

The era of the industrial revolution 4.0 has had a big impact on changing the order of life or global disruption. In Indonesia, almost all tertiary institutions apply linearity in recruiting teaching staff and academics when they are going to a higher level. The linearity of the study program according to the Circular of the Ministry of Research, Technology and Higher Education of the Republic of Indonesia Number 696/E.E3/MI/2014 is the suitability of the background knowledge obtained in the bachelor, master and doctoral degree program with the knowledge that will be taught at the teaching place to achieve competence or learning outcomes at the teaching place. The challenge of life today is to answer actual global issues that can no longer be viewed from a monodisciplinary point of view but must be viewed from a transdisciplinary and multidisciplinary point of view. This study is a qualitative approach, that leads to the situation and the individual holistically. This type of research is descriptive in the form of a literature study using primary and secondary sources. The problem is the defense system nowadays is more complex with the new perspective of the 5th generation war. The 5th generation war needs a comprehensive approach in the defense systems including bioinformatics, biomedical, psychology, industrial, chemical, biology, and others. Linearity in the defense educational system could be a shackle for the defense system to encounter the industrial revolution and 5th generation war. Indonesia Defence University could be an example where defense is viewed from the spirit of collaboration and cooperation between multidisciplinary, transdisciplinary, and interdisciplinary approaches. By opening its doors to undergraduates, the university can start building a much-needed core of human resources equipped to defend the country and also new hope for a comprehensive perspective in the defense system.

DOI:

<http://dx.doi.org/10.33172/jp.v7i2.1275>

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## INTRODUCTION

Science and technology develop very rapidly, bringing many benefits to human civilization. The advances of science and technology today provide a lot of convenience and comfort for human life. Automatic machines can now replace the types of work that previously required quite a sizeable physical capacity. As well as the discovery of new formulations of various computer capacities, it shifts the position of the human brain's ability in various fields of science and activity (UNCTAD, 2021). Nowadays, the industrial revolutions have more issues in globalization and technological disruption. It had brought giant changes such as industrial citizen to the informational/knowledge citizen, disruption to the high technology, the challenge of the global economic, hierarchical system to the network system, the development of a new capital country, and also privatization of natural source. Issues affecting the world and society become ever more complex that interdisciplinary framework rather than monodisciplinary framework is rapidly becoming more needed and valued (CohenMiller & Pate, 2019).

The development of science and technology in Indonesia, apart from all the ease of development that humans get from advances in science and technology, is currently experiencing several problems, including, 1) limited science and technology resources, 2) low development of science and technology culture, 3) not optimal science and technology intermediation mechanism, 4) weak synergy in Science and Technology Policy, 5) the research activities unrelated with real needs (Weni & Khabib, 2020). According to the data from Ristekdikti 2018, only 60% graduate from higher education that ready to work, from 2015 with only 50% of graduates that ready for the job. One of the root problems is the higher education in Indonesia still uses a monodisciplinary framework on their education. In Indonesia, almost all tertiary institutions apply

linearity in recruiting teaching staff and academics when they are going to a higher level. Traditional academic structures which today are organized largely could begin to crumble as discipline converge (Derrick, Falk-Krzesinski, & Roberts, 2012; Dimiyati, 2018)

The defense system is also one of the fields affected by the disruptive era. Globalization and technological disruption were not conducted in a traditional way such as physical war, but also cyber and biological war. In 2017 Indonesia successfully improved its rank in the latest Global Competitiveness Index to 41, from the 36. Indonesia is driven mainly by its large market size as macroeconomic environment, Indonesia's infrastructure is improving in the past 5 years. Those conditions could be a threat for other countries viewed from the defense perspective (Dimiyati, 2018; Nurrobi, 2019). It is a common claim now that the gravest dangers to world security are no longer military threats from rival great powers, but rather transnational threats emanating from the world's most poorly governed countries. Poorly performing developing countries are linked to humanitarian catastrophes, mass migration, environmental degradation, regional instability, energy insecurity, global pandemics, international crime, and of course transnational terrorism. Here we can conclude that the defense and security field needs a multidisciplinary perspective to deal with both factual and nonfactual threats. A more comprehensive multilateral response needs to overcome the challenge in the disruptive era and global threats. For example, in this global pandemics of COVID-19 we need collaboration from different fields such as Medical and health workers as more frontline, Indonesian Army Forces (TNI) can also work together to collaborate with health workers in handling and controlling the mitigation, and distribution of vaccine while the scientist work in the laboratory to produce evidence-based vaccine (Patrick, 2006).

This study aims to analyze the effect of industrial revolution 4.0 on the disruption from the defense perspective both in the military and nonmilitary fields, also the effect of linearity that could act as a shackle for the defense system in preparing to deal with the industrial revolution and 5th generation war.

## **METHODS**

This study uses a qualitative approach, that leads to the situation and the individual holistically. The qualitative approach generates the data in the form of expressions or notes of the person or the behavior of the observed. A qualitative approach is research that does not compute quantitative data. This type of research is descriptive in the form of a literature study using primary and secondary sources (Saihu, 2019). The primary literature studied consists of Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers, Circular of the Ministry of Research, Technology and Higher Education of the Republic of Indonesia Number 696/E.E3/MI/2014 concerning Linearity in the Field of Science and The Regulation of Ministry of Education and Culture No. 46 of 2016 concerning the Structuring of Linearity for Certified Educator Teachers. The data collection method used was the documentation method, data about variables in the form of books, journals, articles, pages, and others.

The development of science and technology and human civilization also impacts military fields that change in the pattern of warfare changing towards the 5th Generation War. The purpose of this generational war is to gain an advantage for a specific group. The Indonesian Armed Force (TNI), as the main component of the Military Defense of the National Defense System, can deal with threats that may arise in the present and the future. One of the threats to watch out for in the industrial era 4.0, in addition to cyber threats, is biothreat. The bioweapon used can be released to the

public quickly, undetectable, and cause massive casualties. That threats were never identical to before, more complex, and need a comprehensive approach.

## **RESULT AND DISCUSSION**

### **Scientific Relationships Pattern**

The scientific relations pattern is shared into multidisciplinary, interdisciplinary, and cross-disciplinary/transdisciplinary. Multidisciplinary is a particular focus by using several disciplines that are separate from each other without any unified concept. As interdisciplinary scientific relations, there is an interaction of two or more multidisciplinary fields with the communication of ideas. Meanwhile, cross-disciplinary science is a scientific relationship with a horizontal orientation because it destroys the boundaries of established disciplines (Weni & Khabib, 2020). An interdisciplinary approach is a method or model of learning and research that can integrate information, data, techniques, tools, perspectives, concepts, and theories from two or more disciplines to advance fundamental understanding and solve specific problems with more than one scope. A particular discipline (monodisciplinary) or particular area of research practice (Derrick et al., 2012; Oey-Gardiner et al., 2017).

In the industrial era 4.0, the problems become increasingly complex and diverse that no longer able to be overcome only by using a monodisciplinary approach, but multidisciplinary, interdisciplinary, transdisciplinary methods to find the best solution. The reality, the world of education today still teaches separate disciplines. Therefore, the development of scientific literacy as an activity of human life and its problem needs to be trained comprehensively and systematically. With a multidisciplinary approach, scientific and other issues studied are interrelated, expounded, and opened to gain a better understanding (Sunarti, Wasis, Madlazin, & Suyidno, 2020).

Transdisciplinary and interdisciplinary

research are complementary in the process of scientific production. Transdisciplinary research is the extension and further development of multidisciplinary research. According to Tress et al., Transdisciplinary research combines and integrates interdisciplinary research and a participatory approach. Academic researchers work together with non-academics to conduct research on specific problems to achieve goals and develop science (Oey-gardiner, 2018).

The interdisciplinary approaches are focused not so much on the synthesis of genuine disciplinary knowledge but on the acquisition of new knowledge about the objects of research due to the search for them in such subject areas. This circumstance allowed one discipline to solve problems of another discipline. At the same time, there was a mutual enrichment and intensification of their both interacted disciplinary. While the multidisciplinary approach is the combination of not only similar subject areas but also those that have no similarity. Multidisciplinary approaches are the method of expert assessment or expert group whose success is guaranteed by a consensus of opinions based on the results of disciplinary research and a compromise of an expert which is achieved within the limits of the rules of professional. According to J. Piaget, transdisciplinary, not limited to interdisciplinary relationships, but places this relationship within the global system, without strict boundaries between disciplines. The transdisciplinary approach considers a new branch of knowledge characterized by the desire of researchers to place disciplinary knowledge about the world, the object of research, their subject areas within a certain global system, without strict boundaries between disciplines (Zhuravlova, 2019).

In facing the challenges of the disruption era, what is more, important is the quality of lecturers and universities. Challenges in the future will prioritize research-based

world-class universities. To create a research climate, researchers and lecturers who are experts in their fields are needed. In 1996-2015, the number of scientific publications in Indonesia was lower than other countries in Asia which were less well known for their academic life. Scimago places Indonesia in 57th position out of 239 countries, far below Singapore (32) and Malaysia (35th). However, in 2020, Indonesia succeeds to rise to rank 21, becoming the highest country rank for academic publications in Southeast Asia. This was possible because Kemenristekdikti RI's policy for academic promotions must include international scientific publications (Scimago, n.d.).

The spirit of collaboration is also one of the skills needed in this disruption era. There is a fundamental difference in education in the industrial age with the knowledge age. Education in the industrial age emphasizes competitive competition, while in the knowledge era emphasizes the spirit of collaboration. This can be seen on the Sinta (Science and Technology Index), a web of academic rank for higher education in Indonesia where the holder of the highest score in Sinta for 3 consecutive years is collaborative research of cross-country researchers. Collaborative spirit in health sciences cluster can be exemplified in the application of Interprofessional Education, an implementation of learning followed by two or more different professions to improve collaboration and service quality. It can be carried out in all learning, both the undergraduate stage and the clinical education stage to create professional health workers. This interprofessional education can involve study programs in medicine, pharmacy, nursing, midwifery, or even outside the health sciences, such as the biological sciences in the application and manufacture of vaccines, as well as electrical engineering in the creation of medical devices (Anderson, Smith, & Hammick, 2016).

### **Industrial Revolution 4.0 Era, A Comprehensive Disruption**

Industrial Revolution 4.0 becomes a giant leap in the industrial sector, information and communication technology was used to achieve the highest efficiency, resulting in a new digital-based business model. Industrial Revolution 4.0 combines automation technology with cyber technology. There is a new trend of automation and data exchange in manufacturing technology. The industry is starting to touch the virtual world, establishing connectivity between people, machines, and data known as the Internet of Things (IoT) (Sima, Gheorghe, Subić, & Nancu, 2020).

The Industrial Revolution 4.0 encourages disruption in various fields. The disturbance is defined as something uprooted, a distraction, or a problem that interferes with an event, activity, or process. The disturbance is defined as a significant change that changes the order. There are two essential characteristics of disruption. First, the fundamental differences. Second, trouble always starts at the low end of the market (Subasman, 2019; Weni & Khabib, 2020). The disruption era brought various impacts in various fields, including education. In higher education institutions where technological disruption occurs there are fundamental changes:

1. The trend of education changes to Competency-based education
2. Internet of Things improves connectivity between the academic community with educational facilities, research centers, equipment, and machines.
3. Virtual/Augmented reality where students can work through virtual systems, especially complex practicums that deal with hazardous materials.
4. Artificial intelligence for online learning platforms according to the demands needed (Dimiyati, 2018).

### **Scientific Linearity**

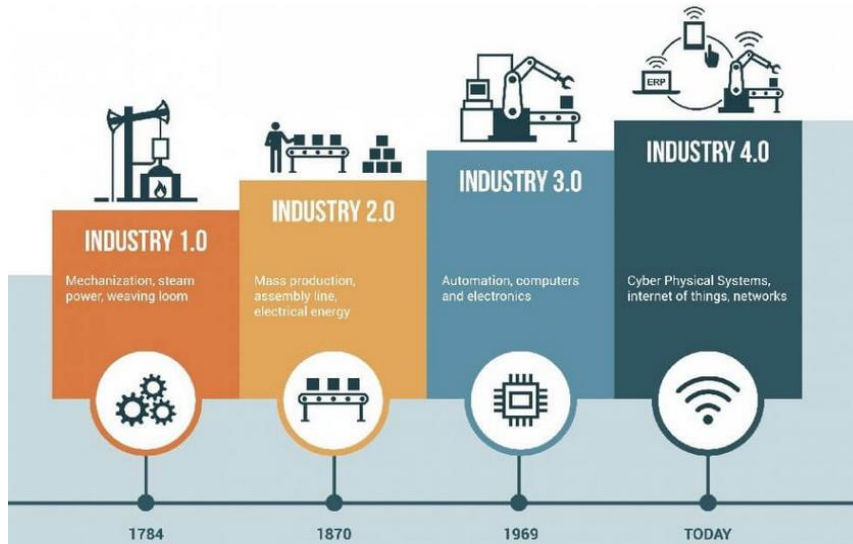
Regulation of the Ministry of Research, Technology and Higher Education of the Republic of Indonesia Number 696/E.E3/MI/2014, which reads the suitability of knowledge background of the bachelor degree, master degree and doctoral degree, and doctoral degree program aims to achieve competence or learning outcomes in the place of college graduates. Based on the Circular of the Director-General of Higher Education, Circular Number 887/E.E3/MI/2014, regarding the explanation of linearity, linearity is not interpreted as the scientific background of college graduates, the undergraduate program must be the same as the master degree or doctoral degree (Kemendikbud RI, 2014)

The reference to the grouping of knowledge refers to Law Number 12 of 2012 concerning Higher Education, Article 10 (paragraph 2):

1. Cluster of Science and Technology is a collection of several trees, branches, and branches of science arranged systematically.
2. Cluster of Science and Technology as referred to in paragraph (1) consists of:
  - A. Cluster of religious knowledge;
  - B. Humanities clusters;
  - C. Social science clusters;
  - D. Natural science clusters;
  - E. Clumps of formal Science;
  - F. Applied science clusters.

As referred to in paragraph (2), the Knowledge Clusters has changed, developed, and disseminated by the Academic Community through Tridharma. As for the latest additions to knowledge clumps according to the Higher Education Ministerial Regulation No.0404/E3.2/2015 concerning the Nomenclature of Science and Technology Clusters and the Degrees of Higher Education Graduates as follows (Kemendikbud RI, 2015):

1. Mathematics and Natural Sciences



**Figure 1.** Industrial Revolution Stages  
*Source:* Agustina, n.d.



**Figure 2.** Technological Disruption in the Industrial Revolution 4.0  
*Source:* Dimiyati, 2018

- (MIPA) Clusters;
- 2. Agricultural Sciences Clusters;
- 3. Animal Science Clusters;
- 4. Sciences Clusters Medicine;
- 5. Health Sciences Cluster;
- 6. Engineering Cluster;
- 7. Languages Cluster;
- 8. Economics Cluster;
- 9. Social Humanities Cluster;
- 10. Religion and Philosophy Cluster;
- 11. Art, Design and Media Cluster;
- 12. Education Science Cluster.

- There are three linearity models, namely:
1. The first model is linearity in terms of educational institutions. A person with an undergraduate degree in law faculty is linear if his magister and doctoral degree are also the law in this model, science is not a priority. But the similarity of the administering institutions.
  2. The second model is linearity in the field of science. A person with an educational background is a bachelor of economics,

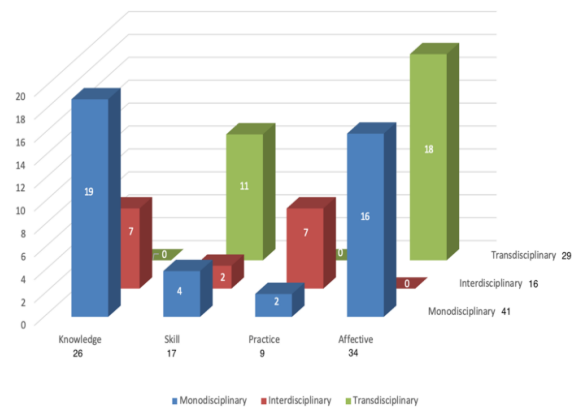
Master of economics management, and Ph.D. in education management.

- The third model is focus interest. The concept of linearity here is not based on the organizing institution or the field of science, but on specific areas of study, for example, a bachelor thesis on fern cultivation at the Faculty of Agriculture, a master degree in fern technology as herbal medicine in the Faculty of Pharmacy and a doctoral dissertation on fern as an anti-pain herb (Saihu, 2019).

Linearity has a narrow meaning and is even dichotomous. The dichotomy of science and education leads our education system to a narrowing purpose. For instance, in the development of social science, a holistic multidisciplinary study is needed. The history study will be holistic if supported by other social theories such as anthropology and sociology. Interdisciplinary studies (trans-disciplinary) are examples of Karl Marx's conflict theory that crosses historical, economic, sociological, and political studies (Saihu, 2019). For example, nowadays popular terms in education worldwide are STEM (Science, Technology, Engineering, and Mathematics). STEM conduct is based on an interdisciplinary framework which is science, technology, engineering, and mathematics. While STEM education has drawn increased attention and research, it is also filled with debates and dilemmas which in real situations the STEM's research is still conducted in monodisciplinary frameworks. Gao et al. had researched monodisciplinary, transdisciplinary, and interdisciplinary dimensions of education. The results of the research show that most research in STEM (science, technology, engineering, and Mathematics) still focused on monodisciplinary knowledge which is closest to linearity education (Gao, Li, Shen, & Sun, 2020).

In the fields of defense and security, the concept of linearity could become a shackle since the 5th generation war are more

complex. In a perspective of the interdisciplinary approach, someone who graduated from medical faculty could then continue to get a master's degree in Disaster Management and a doctoral degree in Management of Defense. To deal with a more complex life in a disruptive area, the perspective can no longer be viewed from mono discipline.



**Figure 3.** The Distribution of Article Over Categories Between Transdisciplinary, Monodisciplinary, and Interdisciplinary Framework

Source: Gao et al., 2020

### Shackle of Science and Technology Development

Linearity is currently being debated among academics and professionals. People who want to continue their studies to a higher level or for doctoral lecturers will propose for a functional position of professor (professor). Even among professionals, linearity becomes an obstacle because of difficulties in getting a job later (Nurul, 2013). Facing the challenges of development in disruption 4.0, universities as the institution are expected to carry out problem-solving, innovation, creativity, invention, imagination, transformation, utilization of technological developments, entrepreneurship, and openness of insight. This underlines the importance of transdisciplinary science. Openness in thinking formed by real experience (concrete experience) in dealing with the friendly and ferocious nature of the universe (climate change, natural disasters, clean water, environmental cleanliness), the



need to ease the burden of human life (clothing, food, shelter, energy renewables, transportation), overcoming complex economic, social-social, socio-religious problems (poverty, education, health, radicalism, terrorism, takfirism or people or groups who have different understanding and interpretations of religion from theirs), social inclusion, drugs, sexual violence, corruption, collusion and nepotism, ethics, and law) are the main visions and objectives of a transdisciplinary approach to learning and research. Transdisciplinary learning and research are not necessarily limited to combining science and technology (Oey-gardiner, 2018).

A current perspective of higher education still uses a reductionist perspective, using a small and narrow perspective in seeing and analyzing the problem. The concept of linearity and division of science is still widely found in higher education in Indonesia. It can be seen from the requirements for continuing studies from the bachelor's degree to the master's and doctoral degrees, and the requirements for recruiting prospective teaching staff at universities. If linearity is defined as limited to the management of the scientific birocracy in the management of study programs, it may still be understood; but when scientific linearity is described strictly and rigidly, it will shackle the working, thinking creatively, and innovation of the lecturers and students (Oey-gardiner, 2018). Today, The challenges faced by universities and higher education in the world and in Indonesia generally, still underestimated the importance of scientific linearity and are far away from efforts to reunite the scientific views of nature, humanity, and social science, including religious sciences. Whereas with the increasingly complex development of human life and science, the view of scientific linearity must be abandoned, in line with the liberal art education or general education, education and learning in Indonesia must be brave in finding new alternatives that are more

conducive to responding the challenges of the future and global humanity (Derrick et al., 2012).

Complex life indeed is multiple disciplinary. Disciplines are the result of the artificial fragmentation of knowledge. The real-world problem is rarely confined to the artificial boundaries of academic disciplines. Multiple disciplinary research evolves to meet the demands of many societal, environmental, industrial, scientific, and engineering problems that cannot be adequately addressed by single disciplines alone. Modern technology must be built by a team of experts from different disciplines, who themselves can understand and contribute to only a small part of the complex problems. The requirement for multiple disciplinary is emerging at a time when the pace and complexity of science and technology is accelerating such as in the field of bioinformatics, research, health care, teaching, and public health (Choi & Pak, 2006).

Critical sociological experts such as Habermas and Antonio Gramsci place education as media of liberation. In critical thinking, it will be found that education is a medium for growing resistance to oppression. A narrow sense of linearity is like putting a horse's eye on an agent of change in a country. It is difficult to expect significant change to grow when change agents cannot develop their knowledge holistically. Meanwhile, through holistic and integrated education, it is expected that humans will be able to explore meaning, find identity, realize and develop their potential (Saihu, 2019). Specialization as demand for expertise and a profession is the result of a monodisciplinary way of thinking. It results from the compartmentalization of scientific disciplines that tends to exclude science and methodological claims as to the truest science. Over-specialization will have an impact on a person's perspective in communicating, socializing, seeing, and organizing life. Three key words connect and link the clusters of knowledge, namely



semi-permeable, inter-subjective testability, and creative imagination. It needs to continue to be attached to the mentality of scientists, lecturers, and teachers as scientists and science enthusiasts with various backgrounds of their respective expertise (Oey-gardiner, 2018; Weni & Khabib, 2020).

The Minister of Research, Technology and Higher Education (Menristekdikti) in 2018 state that the elimination of several regulations related to the development of higher education creativity, awarding of degrees, and linearity. These things can be obstacles to the development of innovation, flexibility, and quality of higher education. Because in the disruption era, the development of science and technology is unmeasurably increased. Knowledge will not be able to stand alone because all knowledge were interrelated and strengthens each other (Saihu, 2019). Linearity that is promoted in higher education in Indonesia wants to make human resources in Indonesia as an expert in one field. But the reality that the field of science cannot stand alone cannot be denied. One knowledge is born from another discipline. The science of education was born from the womb of psychology, methodology, anthropology, and others. The birth of knowledge cannot be separated from other sciences and mastering one science is not enough with just one knowledge (Saihu 2019). The industrial revolution 4.0 era and advances in science and technology have made changes in many things. Technological disruption has an impact on all sectors. For example, the application of automation, AI (Artificial Intelligence), and big data in all sectors. Meanwhile, in the socio-cultural and environmental fields, the impact of the development of science and technology can trigger scarcity of fossil fuels, water crisis, climate change, and rising sea levels. Increasing life expectancy and working years will increase the need for energy and water and reduce natural resources (Weni & Khabib, 2020).

Non-linear scientific development in the future will allow a multidisciplinary scientific paradigm where scientific problems are solved by various scientific fields. The use of plural methodology with the methods of each science involved. Interdisciplinary with a holistic approach and striving for all related disciplines to become a whole. As well as based on the principle of unifying the reality of science as a multidisciplinary or interdisciplinary reality. Linearity in perspective of educational background is closest to the overspecialization in a single discipline field. While nowadays the problems of life are more complex than can no longer view in single discipline fields. Our education should make a ready-to-work person that is able to overcome the more complex problem in this disruptive area. Which means that they have multiperspective and multiple skill from a multidisciplinary, transdisciplinary and interdisciplinary perspective.

### **Effect of Globalization on the Defense System**

With the globalization, nowadays industrial change to Industrial Revolution 4.0 that is characterized by the emerging of applied technology like advanced robotics, artificial intelligence, internet of things, virtual and augmented reality, additive manufacturing, and distributed Manufacturing which was globally changed the type of production and business model in all industrial sector. The transformation has both positive and negative impacts on all fields include the defense systems (Nurrobi, 2019).

The 5<sup>th</sup> Generation of War nowadays is very different from the classic physical war. There are some types of war that describes the 5<sup>th</sup> war:

1. The white book of Indonesian defense. Indonesia is projected to be new strength of the world global economy together with others newcomer countries for the future. Those are predictions from world research organizations like Standard

- Chartered Research, International Monetary Fund (IMF) dan City Investment Research and analysis. (BKPM, 2018).
2. The threats can be in military, nonmilitary, or hybrid between each other.
  3. The Factual threats were:
    - a. Terrorism dan Radicalism
    - b. Separatism dan weaponed rebellion
    - c. Natural disaster
    - d. Border Territory Violation
    - e. Piracy and Theft of Natural Wealth
    - f. The epidemic of a disease
    - g. Cyber Attack and spionage
    - h. Drug Trafficking and Abuse
  4. Non-factual threats were:
    - a. Open war
    - b. Invasion of foreign troops (Nurrobi, 2019).

With the new perspective of the 5<sup>th</sup> war, the problem in the defense system is more complex. The 5<sup>th</sup> war requires a comprehensive approach in defense systems include bioinformatics, biomedical, psychology, industrial, chemical, biology, and others. Linearity in the defense educational system can be a shackle for defense mechanisms in preparing to face the Industrial Revolution and the 5<sup>th</sup> war. As the 5<sup>th</sup> war was not just a physical war, but the threats can be in CBRNE (chemical, biological, radiological, nuclear) or cyberwar.

Indonesia Defense University is a government-run university below the Ministry of defense. Since it was inaugurated, The university conducts defense science not only from a military perspective but also from nonmilitary, such as political, economic, social, and cultural perspectives. Indonesia Defense University also could be a giant example of a think tank for officers in Indonesia's Armed Forces (TNI) and civilians to produce an intellectual cadre of state defense as our assets of human resources of national defense. Indonesia Defense University as a mandatory command from the Minister of

Defense, in August 2020 was opening bachelor degree programs such as Military medicine, Military Pharmacy, Military IT, Military Mathematics and Natural Science (chemistry, biology, physics), and Military Technic Faculty. By opening its doors to undergraduates, the university can start building a much-needed core of human resources equipped to defend the country. The opening of the bachelor's degree program is new hope for collaborative spirit in the defense system. The cadet was graduated from that faculty could be an agent of defense with a comprehensive way of thinking and way of act. Defense is not only military-based since the effect of globalization 5<sup>th</sup> war needs a multidisciplinary approach.

#### **CONCLUSIONS, RECOMMENDATION AND LIMITATION**

Almost all tertiary institutions in Indonesia apply linearity in recruiting teaching staff and academics when going to a higher level. The industrial revolution 4.0 era has a significant impact on changing the order of life or global disruption. The challenge of life today is to answer actual global issues that cannot only be viewed from a monodisciplinary but must be viewed from a transdisciplinary and multidisciplinary. To survive in the disruptive era, it needs collaboration and cooperation between scientific disciplines. The opening of the bachelor's degree program in Indonesia Defense University is new hope for multidisciplinary and comprehensive ways in the defense system.

Commitment between academics began to change the mindset, and scientific perspectives can support transdisciplinary, interdisciplinary, and multidisciplinary paradigms. It is necessary to cultivate a climate in the higher education environment directed towards scientific collaboration-based research to prepare the academic community to face the globalization era's challenges.

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