

Pancasila as a Paradigm of Science and Technology

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Abstract - This paper aims to determine the concept of Pancasila in the development of science and technology by using examines Pancasila as a Development Paradigm. Entering the era of the industrial revolution 4.0, the order of life refers to the world of the digital industry, as well as the field of science and technology (IPTEK). Revolution Industry 4.0 requires every individual to run fast to develop technological literacy skills, data, and human resources. These three things become the basic capital in the development of various each individual's competence. The development and progress of science and technology today cannot be separated from mastery of these three literacies The development of science and technology that is not balanced with a fundamental foundation nation, will contribute more negative influence than positive. Misuse of science and technology will threaten the existence of human life in the future. Therefore, a weapon is needed to counteract the negative possibilities of the development of science and technology, one of which is Pancasila. Magic Pancasila is not only limited to being the basis of the state, a way of life, and a unifying force for the Indonesian nation. but also serve as a guiding star in all aspects of life, including the development of science and technology. The basic values contained in Pancasila must be used as the main guidelines in science and technology development. Pancasila is used as the basis for the development of science and technology, which is expected to have an impact broadly on the benefit of the life of the Indonesian nation. Science and technology may develop and advance but must be balanced by maintaining and implementing the noble values of the nation's ideology in all aspects of national and state life.

Keywords: Industrial Revolution 4.0, Pancasila values, science, and technology.

I. INTRODUCTION

Constitutionally, in the Preamble to the 1945 Constitution of the Proclamation, the position of the values of Pancasila philosophy in The preamble to the Constitution serves as the basis of the state and the ideology of the state; at the same time as a spiritual principle state and as the embodiment of the nation's soul. Thus, Indonesia's (national) identity and integrity are values of Pancasila philosophy.

Pancasila values are also a source of motivation for the development of Science and Technology (IPTEK). national education in educating the nation that has high Pancasila values and upholding complete independence, sovereignty, and national dignity in the form of an independent Indonesian state, namely The Unitary State of the Republic of Indonesia, Pancasila as contained in the 1945 Constitution of the Proclamation of the Republic of Indonesia in its entirety. Therefore, philosophically, ideologically, and constitutionally, the Unitary State of the Republic of Indonesia can be called (with predicate) a system Pancasila statehood which is parallel and analogous to the various state systems of modern nations and advanced.

The position of Pancasila values (the system of Pancasila ideology) thus also functions as a normative-philosophical-ideological-constitutional of the nation; animates and underlies the ideals of national culture and moral politics, as embodied in the Proclamation of the Constitution which guides the life of the Indonesian nation in the integrity of the Unitary State of the Republic of Indonesia as a Pancasila state system. It means that the integrity of Pancasila values is constitutionally imperative to provide the cultural and moral principles of

Indonesian national politics as well as building a nation that has knowledge and master various technologies (Science and Technology) to fulfill people's lives.

The Industrial Revolution 4.0 or what is often referred to as the cyber physical system is a revolution that focuses on automation and collaboration between saber technologies. Revolution 4.0 itself appeared in the century 21st century with the main characteristic that is the incorporation of information and communication technology into industrial field.

II. DISCUSSION

1. Industrial Revolution 4.0

Change is the process of changing something from the previous state to the present. Every thing will experience change because change cannot be avoided and will continue to occur along with time development. One of the most obvious forms of change is globalization. Interactions that occur between individuals, between groups, to between nations occurs easily and quickly. The world is connected with access which is very easy and only insulated by virtual boundaries. Changes in the phases of human life are marked by many things, one of which is the change in the industrial era.

Lee et al (2013) explained, industry 4.0 is characterized by an increase in manufacturing digitization that is driven by by four factors: 1) increased data volume, computing power, and connectivity; 2) emergence of analysis, ability, and business acumen; 3) the occurrence of new forms of interaction between humans and machines; and 4) improvements to digital transfer instructions to the physical world, such as robotics and 3D printing. Lifter and Tschienner (2013) added, the basic principle of industry 4.0 is the merging of machines, workflows, and systems, by implementing intelligent network along the production chain and process to control each other independently.

Technological advances allow automation in almost all fields. Technology and approach that combines the physical, digital, and biological worlds will fundamentally change the way people live and human interaction (Tjandrawinata, 2016). Various ease of access presented in human activities inseparable from the challenges that will be faced. Sung (2017) identifies some of the challenges of the Revolutionary era Industry 4.0, namely 1) information technology security issues; 2) reliability and stability of production machines; 3) lack of adequate skills; 4) reluctance to change by stakeholders; and 5) loss of a lot of work due to turning to automation. In order to answer the challenges that may faced in the era of the Industrial Revolution 4.0 requires skills that must be mastered by everyone individual. Aoun (2017) suggests some skills that are needed in the Industrial Revolution era 4.0, among others, are skills in digital literacy, technological literacy, and human literacy. digital literacy directed at the goal of improving the ability to read, analyze, and use information in the world digital (big data). Technological literacy aims to provide an understanding of how machines work and applications technology. Meanwhile, human literacy is directed at improving communication skills.

The era of the Industrial Revolution 4.0 as a phase of the technological revolution has changed the way human activities are previous life experiences, as if everything will be replaced by machines, including jobs that done by humans. This is what must be underlined, that there are not a few human activities or jobs which can be replaced by machines, one of which is an activity in the line of education. So, one of the challenges what is also faced in this era is the development of the latest science. Science development this latest knowledge must adhere to the principles of values that apply to the wider community so that in the future it will not have a negative impact on society.

2. Pancasila Values as Motivators for the Development of Science and Technology

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3. The Value of Pancasila as the Basis for Technology Development

Pancasila is not a rigid and closed ideology, but it is reformative, dynamic, and anticipatory. Thus Pancasila is able to adapt to changes and developments in science science and technology (IPTEK) by taking into account the dynamics of people's aspirations. This ability actually does not mean that Pancasila can change the basic values contained, but more emphasis on the ability to articulate a value into a real activity in solving problems that occur (advanced technological innovations). The strength of an ideology depends on the quality and dimensions that exist in the ideology itself (Alfian, 1992). There are several important dimensions of an ideology, namely:

1. Dimensions of Reality.

That is, the basic values contained in the ideology are actually rooted in people's lives or nation, especially because these basic values are sourced from their culture and historical experience.

2. Dimensions of Idealism.

That is, the basic values of the ideology contain ideals that give hope about a bright future better through experience in the practice of living together with its various dimensions.

3. Dimensions of Flexibility.

This means that the ideological development dimension has enabling and stimulating power development of new ideas relevant to the ideology concerned without eliminating or deny the nature or identity contained in the basic values.

The values contained in Pancasila are the most important things in the development of science and technology. The development of science and technology today and in the future is very fast.

In general, experts agree that the main characteristics behind any system or model of an development of science and technology and modern society, is a high degree of rationality in the sense that activities in such society are carried out based on values and in objective and effective, rather than primordial, ceremonial or traditional. That high degree of rationality driven by scientific and technological developments. Therefore, the values of Pancasila is very encouraging and underlies the development of science and technology good and purposeful. With these Pancasila values, it is necessary to become public awareness that to improve science and technology in Indonesia, from an early age the community must have and hold principles and determination that is strong and based on the values of Pancasila which is the unique personality of Indonesia.

Here in lies the challenge for Indonesia, namely developing a nation's life based on science and technology without lose their identity (Pancasila values). This means that there are basic values that you want to maintain even want to be strengthened. Those values are clear, namely Pancasila. The basis of God Almighty, which is for the nation Indonesia is absolute. If you follow the secular views of the Western world, the knowledge of which is learned and becomes scholarly references, seems to go the other way. In a modern society based on science and technology, there is a tendency for religious life to fade. So, this is not a simple, but important challenge, because of the moral foundation, all moral imperatives, and concepts about humanity, justice, and civility, is faith and

piety. From within and from outside the Indonesian nation will face challenges to the democratic system that is adopted and wants to be upheld, which is in accordance with socio-cultural conditions such a diverse nation and the historical background of the nation.

4. The Concept of Pancasila as a Paradigm of Science and Technology Development

In an effort to realize prosperity and increase the dignity and worth of human beings develop Science and Technology (IPTEK). Science and technology is essentially a result human spiritual creativity. Elements of the human soul (spiritual) include reason, taste and will. Reason is human spiritual potential related to intellect, taste is a relationship in the field of aesthetics and will relate to the moral (ethical) field.

It is on the basis of the creativity of his mind that humans develop science and technology to process natural resources that are abundant provided by Almighty God. Therefore, the essential purpose of science and technology is sole for the welfare of mankind. In this matter, Pancasila has provided the basic values for development of science and technology for the welfare of human life. Science and technology development as a result of human culture must be based on just and civilized divine and humanitarian morals from the listed precepts in Pancasila.

Pancasila, whose precepts are a systematic unity, must become an ethical system in society science and technology development.

1. Please God Almighty.

This precept combines knowledge, creates something based on considerations between rational and irrational, between reason, taste and will. Based on this precept, science and technology does not only think about what found, proven and created, but also consider the meaning and consequences of harm people around him or not. This precept places humans in the universe not as the center but as a systematic part of the nature that is processed (T.Jacob, 1986).

An example of the development of science and technology from the precepts of the Almighty God is the discovery of cell nucleus transfer technology or what is known as cloning technology, which is still in its development still reaping controversy. The problem is related to the existence of "creational intervention" that should be carried out by God Almighty. For those who are Muslims, in Surah An-Naazi'aat verses 11-14, it is indicated that there is a development technology in human life that leads to a return to life from the bones. "is (will also be resurrected) when we have become crushed bones?", they said "if". Thus it is a bad return." In fact, the return is only one blow only, then immediately they come back to life on the surface of the earth."

2. Fair and civilized humanity.

Provide the basics of morality that humans in developing science and technology must be civilized. Science and technology is a result of civilized and moral human culture. Therefore, the development of science and technology must be based on the nature of the goal for human welfare. Science and technology is not for arrogance, human arrogance and greed but must be devoted to the promotion of human dignity.

3. Please unite Indonesia.

Commending universalism and internationalism (humanity) from other precepts. Science and Technology Development directed for the welfare of mankind, including the welfare of the Indonesian nation The development of science and technology should be able to develop a sense of nationalism, the greatness of the nation and nobilit nation as part of the human race in the world.

For example, there are five websites that have facilitated the revolutionary movement in the 21st century. There is Wikileaks, Facebook, Twitter, Blogs, and Video Sharing. Related to the precepts of Indonesian unity 100% LOVE MOVEMENT INDONESIA and the 1000000 Facebookers Movement Support still paying taxes is a form of the many social network movements that unite the thoughts of the Indonesian nation.

4. Populist precepts led by wisdom in deliberation/representation.

This means that it underlies the development of science and technology democratically. This means that everyone must have freedom to develop science and technology. In addition, in the development of science and technology,

everyone must also respect the freedom of others and must have an open attitude. It means open to criticism, review and compared with the findings of other theories.

An example in this case is when news circulated widely about the construction of a nuclear reactor in Indonesia Indonesia. Crowds of all alliances from various regions give their pro or con statements to this development plan. Even through the Facebook social network, the REJECT movement emerged DEVELOPMENT OF NUCLEAR REACTORS IN INDONESIA. This kind of thing should be the material deliberation for political elites and their people so as to reach a wise policy for the benefit of the Indonesian nation itself.

5. The principle of social justice for all Indonesian people.

An example of this fifth precept is the discovery of superior varieties of Cillosari rice seeds from radiation techniques. This discovery is the result of the work of the nation's children. It is hoped that in the development of food self-sufficiency in the future it will improve the welfare of the Indonesian people and provide a sense of justice after increasing the amount of production so that on the way people from various groups can enjoy quality rice at affordable prices affordable.

III. CONCLUSION

Basically, the development of science and technology in Indonesia must be rooted in the culture of the Indonesian nation and involve the participation of the wider community. Pancasila as the Basic Guidelines in Indonesia which has the normative values in it certainly have a big role in regulating the development of science and technology in the Era of Industrial Revolution 4.0. The five precepts of Pancasila are guidelines that contain the nation's fundamental values in organizing the life of the nation in all aspects, one of which is the development of science knowledge and technology. If the values contained in Pancasila are not applied, it will certainly be contrary to the nature of the Indonesian nation and will cause damage to the life of the nation itself.

BIBLIOGRAPHY

- Amri, W. A. A., Asbari, M., Gazali, Novitasari, D., & Purwanto, A. (2021). The Effect of Religiosity and Service Quality on Job Satisfaction: A Case Study of MSME Employees. *International Journal of Social and Management Studies (IJOSMAS)*, 01(01), 53–63. <https://doi.org/https://doi.org/10.5555/ijosmas.v2i1.7>
- Asbari, M., Wijayanti, L., Hyun, C. C., Purwanto, A., & Santoso, P. B. (2020). How to build innovation capability in the RAC industry to face industrial revolution 4.0? *International Journal of Psychosocial Rehabilitation*, 24(6), 2008–2027. <https://doi.org/10.37200/IJPR/V24I6/PR260192>
- Azhari, D. W., Putri, W. F., & Asbari, M. (2022). The Role of Islamic Religious Education in Growing a Sense of Nationalism. *Journal of Information Systems and Management*, 01(02), 24–28. <https://jisma.org/index.php/jisma/article/view/4>
- Bakry, Noor Ms. 1997. *Orientasi Filsafat Pancasila*. Yogyakarta : Liberty.
- Chintia Puja Dewi, 2018, *Inovasi Pelayana Transportasi Publik BRT (Busr Rapid Transit) Trans Semarang Oleh Dinas Perhubungan Kota Semarang*
- Chrisrantio Utama, 2022, *Artikel Kisah Inspiratif Pemilik PO. Haryanto, Sukses Rajai Transportasi Bus Tanah Air dan Miliki 300 Armada*, <https://artikel.rumah123.com/kisah-inspiratif-pemilik-po-haryanto-sukses-rajai-transportasi-bus-tanah-air-dan-miliki-300-armada-119747>
- E Riwayadi - *Journal of Innovation Research and Knowledge*, 2021 - bajangjournal.com

- Emilia, S., Andini, M., & Asbari, M. (2022). Pancasila as a Paradigm of Legal Development in Indonesia. *Journal of Information Systems and Management*, 01(02), 29–32. <https://jisma.org/index.php/jisma/article/view/6>
<http://repository.lppm.unila.ac.id/13309/> (accessed April 11, 2022 at 19.45)
https://www.academia.edu/9438724/Pancasila_as_Pembangun_IPTEK (accessed on April 9, 2022 at 11.15)
<https://www.gramedia.com/best-seller/revolusi-industri-4-0/#:~:text=Revolusi%20Industri%204.0%20atau%20yang%20sering%20disebut%20dengan,informasi%20serta%20teknologi%20komunikasi%20ke%20dalam%20bidang%20industri.> (accessed on April 9, 2022 at 11.43)
- Inggar Saputra, Akhmad Saoqillah, 2017, Koperqwi Sebagai Soko Guru Penggerak Ekonomi Pancasila, *Jurnal Riset Manajemen Dan Bisnis FE-UNIAT*
- Kaelan, Drs. M.S. 1996. *Filsafat Pancasila : Disusun Berdasarkan GBPP dan SAP Tahun 1995*. Yogyakarta : Paradigma.
- Kusumaningsih, S. W., Ong, F., Hutagalung, D., Basuki, S., Asbari, M., & Purwanto, A. (2020). Organizational Culture, Organizational Commitment and Employees ' Performance: The Mediating Role of Organizational Citizenship Behavior. *TEST Engineering and Management*, 83(March-April 2020), 18277–18294. <http://www.testmagazine.biz/index.php/testmagazine/article/view/6958>
- Novitasari, D., Asbari, M., Purwanto, A., Fahmalatif, F., Sudargini, Y., Hidayati, L., & Wiratama, J. (2021). The Influence of Social Support Factors on Performance: A Case Study of Elementary School Teachers. *International Journal of Social and Management Studies (IJOSMAS)*, 01(01), 41–52. <https://doi.org/https://doi.org/10.5555/ijosmas.v2i1.6>
- Purwanto, A., Asbari, M., Novitasari, D., Tiara, B., Nugroho, Y. A., & Sasono, I. (2021). Penerapan Green Industry Melalui Pelatihan Sistem Manajemen Hutan FSC - CoC Pada Industri Packaging Kertas di Tangerang. *Journal of Community Service and Engagement (JOCOSAE)*, 01(02), 7–12. <https://jocosae.org/index.php/jocosae/article/view/9>
- Purwanto, A., Novitasari, D., & Asbari, M. (2022). Tourist Satisfaction and Performance of Tourism Industries: How The Role of Innovative Work Behaviour, Organizational Citizenship Behaviour? *Journal of Industrial Engineering & Management Research*, 3(1), 1–12. <https://jiemar.org/index.php/jiemar/article/view/246>
- Purwanto, A., Putri, R. S., Ahmad, A. H., Asbari, M., Bernarto, I., Santoso, P. B., & Sihite, O. B. (2020). The effect of implementation integrated management system ISO 9001, ISO 14001, ISO 22000 and ISO 45001 on Indonesian food industries performance. *Test Engineering and Management*, 82(14054), 14054–14069. <http://www.testmagazine.biz/index.php/testmagazine/article/view/3078>
- Rahmawati, R., Rosita, & Asbari, M. (2022). The Role and Challenges of Islamic Religious Education in the Age of Globalization. *Journal of Information Systems and Management*, 01(02), 6–11. <https://jisma.org/index.php/jisma/article/view/2>
- Susilawati, S., Aprilianti, D., & Asbari, M. (2022). The Role of Islamic Religious Education in Forming the Religious Character of Students. *Journal of Information Systems and Management*, 01(02), 1–5. <https://jisma.org/index.php/jisma/article/view/1/1>
- Tamam, M. B., & Asbari, M. (2022). Digital Literature. *Journal of Information Systems and Management*, 01(02), 19–23. <https://jisma.org/index.php/jisma/article/view/4>
- Tsoraya, N. D., Primalaini, O., & Masduki Asbari. (2022). The Role of Islamic Religious Education on the Development Youths' Attitudes. *Journal of Information Systems and Management*, 01(02), 12–18. <https://jisma.org/index.php/jisma/article/view/3>