



Transdisciplinary Management in Welcoming the Industrial Revolution 4.0

Putra Mahendra Gunawan Nasution¹, Fakhruddin Azmi², Nurika Khalila Daulay³

^{1,2,3}Universitas Islam Negeri Sumatera Utara

ARTICLE INFO

Article history:

Received Oct 22, 2022

Revised Oct 29, 2022

Accepted Nov 19, 2022

Keywords:

Transdisciplinary
Management
Industrial Revolution 4.0

ABSTRACT

This study aims to determine the importance of a transdisciplinary management approach in solving various problems that exist in facing the industrial revolution 4.0 which has an impact in all fields such as education, economics, politics, and industry. This research uses a literature research method with a qualitative descriptive approach that examines data sources consisting of literature and various scientific journals related to the research theme. The results of the study explained that in solving problems faced in the industrial era 4.0, a transdisciplinary management approach is needed that integrates and combines various disciplines that give birth to new perspectives from various views together to produce comprehensive solutions and problem-solving.

This is an open access article under the [CC BY-NC](https://creativecommons.org/licenses/by-nc/4.0/) license.



Corresponding Author:

Putra Mahendra Gunawan Nasution,
Fakultas Ilmu Tarbiyah Dan Keguruan,
Universitas Islam Negeri Sumatera Utara,
Jalan Simpang Pesantren Gang Appel, Kabupaten Tapanuli Tengah, Kode Pos 22616, Indonesia,
Email: masgunword@gmail.com

INTRODUCTION

Today the world has entered the stage of the industrial revolution 4.0 and is almost influential in all fields such as education, industry, development, and the field of technology and information. Currently, people are required to master digital media in handling various problems and are expected not to be left behind so that they can change the human mindset to face existing problems. The rapid development of the world and world civilization is directly proportional to the complexity of the problems it causes. The problems facing the world today are global problems that require a different response than those made in the past. Tackling increasingly complex global problems requires an integrated range of disciplines (Batmang, 2016).

The industrial revolution 4.0 has a positive and negative impact on human life, the positive impact is that internet access can be done and received quickly so that human work becomes more time-saving, while the negative impact becomes a big challenge if not handled wisely, but becomes a big threat to society. Humans are increasingly spoiled by versatile and sophisticated technology that makes humans think instantly, thus human character will be swept away by the times. So the industrial era 4.0 becomes a humanitarian problem for those who are not wise to face this era. With easy internet access, many videos are not worth watching, all busy with their respective cellphones make humans forget their identity (Pratama, 2019).

Science is an aspect of human life that develops over time resulting from research conducted by scientists, dialogical traditions by scholars and scholars, reflections carried out by Muslim philosophers and Sufis who think speculatively and imaginatively, and even the development of science due to the development of people's needs for clues and answers to the problems faced. Therefore, the development of science, especially Islamic science, has become mutually affiliated and has a relationship.

The boundaries between one field of science and another are not so clear and often overlap that they have the potential to give rise to new fields. Interdisciplinary science has not solved the problem of boundaries between fields such as the natural sciences, social sciences, humanities, and religious sciences. Each of these fields of science even though they are integrated but still work independently in seeing the problems of the object of science. As a result, even though the field of science has been integrated, it is not quite appropriate and still limits it to the barriers of science. Transdisciplinary is a combination of two or more fields of science in different scientific families such as between biological sciences and social sciences humanities, and religious sciences.

Although the era has entered the industrial revolution 4.0 but does not hinder in solving various existing problems with one field of science with the emergence of the concept of transdisciplinary management which aims not to form a new field of science but rather leads to thinking patterns in various perspectives and a thorough understanding to find solutions to the problems faced, through this approach will give birth to new perspectives from various kinds of views that are carried out jointly to produce more comprehensive scientific and practical science and problem-solving in the face of the industrial revolution 4.0.

RESEARCH METHOD

To collect information relevant to the topic to be discussed in this paper, this research uses a literature research method with a qualitative descriptive approach that examines data by collecting and studying books, literature and scientific journals as a source of data. The selection of qualitative methods in this study is to provide an overview and explanation of the transdisciplinary concept of management in solving various problems faced in facing the era of the industrial revolution 4.0.

RESULTS AND DISCUSSIONS

Industrial Revolution 4.0

The industrial revolution 4.0 is an industry that combines automation technology with cyber technology (Sawitri, 2019). The characteristic of this revolution is the entry of information and communication technology into the industrial sector, bringing changes in various sectors that change jobs that require a lot of time to be replaced by the use of technological machines such as cellphones (Nabillah Purba, Mhd Yahya, Nurbaiti, 2021). The 4.0 era is the fourth phase since the 18th century through the history of the world industrial revolution (Anwar, 2019). Every big change is always followed by a big change in economics, politics, and education (Sudika, 2020). Therefore, the industrial revolution 4.0 is an era that must be faced by the community to answer the challenges of an increasingly rapid era. People are required to be smart and wise in using digital media so as not to fall into things that will have a greater negative impact.

This industrial revolution 4.0 is a trend towards automation and data exchange in production technology. In this era, the industry touches the virtual world that connects human activities, machines, data, and technology, everything is easy to come by and implement under the term Internet of Things (IoT) (Lase, 2019). The challenges of the 4.0 era are very complex, namely the security of the technology that enters the world of education, the stability of production machines,

the lack of adequate potential, resistance to changes in stakeholders, the effect of automation resulting in the loss of jobs (Ibda, 2018).

To keep up with the great changes taking place today, especially social stratification, we must restore our humanity as social beings, especially through the development of prosocial behavior. The development of prosocial behavior has always been associated with the functioning of personnel as social beings capable of interacting with the environment without the use of media, that is, physical interaction face-to-face while maintaining the existence of each one. In addition, prosocial behavior needs to be trained to foster tolerance that has begun to fade, this indicates the need to develop some prosocial behaviors such as attitudes, non-individualistic attitudes, responsibility, cooperation, respect, empathy and cooperation, mutual respect, care, and courtesy in language (Septiana, 2019).

Science plays an important role in developing ideal concepts and theories drawn from the core values of ideology to explain the true meaning of generations and over time. From another point of view, science also plays a role in the development of theories and concepts based on practical experience unearthed from the facts of social development and used by society to critically and realistically understand the true state of affairs (Fadilah, 2019).

Seeing the rapid development of the times, humans are required to be smarter in living their daily lives, following the development of technology, information, and communication, people are expected to be wise in using social media in responding to information that cannot be proven to be true with the term hoax information so that people are not carried away by the currents of an increasingly sophisticated era so that they forget their identity as a nature human being.

Transdisciplinary Management in Welcoming the Industrial Revolution 4.0

Transdisciplinary is the merging of two or more fields of science on a problem with problem-solving using several perspectives in the field of science from discussion to decision-making and solutions to the problem. Management means managing and processing. So transdisciplinary management is the management and processing of disciplines in integrating and transforming sciences from various perspectives in achieving quality problem-solving and good decision-making. Transdisciplinarity is not a new discipline but an approach that aims to improve knowledge by combining several different views to produce complex and comprehensive conclusions.

The use of knowledge in addressing problems through this approach can be implied and expressed. But it is better if it produces explicitly that aims to prove the scientific truth of a person. This study was initially unacceptable because it was considered unethical by scientific experts, especially those whose knowledge was used by people who were not experts (Wahyudi, 2022). However, the rapid development of the times, we have entered the industrial revolution 4.0, the development of science, technology, information, and communication, and art whose problems are difficult to solve only through the approach of one discipline, so that this transdisciplinary approach is accepted among the public to be used as a problem solving in the face of the 4.0 era.

Transdisciplinary in its understanding seeks to develop new theories by involving people outside academia to produce a conclusion and policy with various disciplines. Transdisciplinary removes the boundaries of science so that problems can be solved with various perspectives of science (Fitri et al., 2020). However, to achieve transdisciplinary, one important thing must be done, it has become a necessity for experts, practitioners, and academics in various fields of science to constantly strive to understand how partners work with different disciplines and expertise. Through mutual understanding and the desire to know what other experts are doing that can solve the problems of society (Maharani Sartika Ritonga, 2022).

This 4.0 era makes human activities faster and easier due to increasingly sophisticated technology, information that can be quickly received, science and insights that are increasingly accessible anytime and anywhere. In the industrial sector, digital media can be used to buy and sell

that can be accessed by someone quickly without taking as much time as buying and selling online. Digital media can also be used in the world of education for the learning process, teachers can give lessons in the form of video spectacles related to lessons, that way learning is not monotonous and students do not experience boredom. But the negative impact is also caused by the use of this digital media as an example of students increasingly playing cellphones as a result of which students become negligent and forget the time.

Transdisciplinary studies appear to answer existing problems, where moral crises have occurred anywhere as a result of media use, many of the nation's children have been complacent the digital media, spectacles that are not worthy of children so that their attitudes and behaviors become uncontrolled, as a result of which the morale of the nation's children will slowly be damaged. Therefore, the transdisciplinary approach is the right study to be used in providing answers and solutions for the Indonesian nation in facing the rapid development of the times, where science can be integrated with other sciences such as the social sciences humanities, and religious sciences, so that people's attitudes, behaviors, and sciences can be in line with Islamic values.

The Role of Islamic Education through a Transdisciplinary Approach in Welcoming the Industrial Revolution 4.0

National education and Islamic education are facing complex problems. Islamic education is a subsystem of national education, if national education fails from problems that never end then it is also a failure of Islamic education. Currently, Islamic education is faced with problems from within (internal) and outside (external) (Priyatmoko, 2018). Education is not only oriented toward academic values but also the results of a comprehensive assessment including mastery of science, language and skills, attitudes and character, and a religious science. Students are equipped with skills, potential, creative, innovative, and independent personalities to be able to solve life problems and be able to open jobs from their ideas (Priyanto, 2020). Therefore, the transdisciplinary approach is very important for the development of Islamic education in welcoming the 4.0 era, where general science can be integrated and transformed with religious science so that students have natural sciences and religious sciences that will be in line with Islamic principles and not oppose each other.

Islamic education has an important role in supporting character development in the era of the industrial revolution 4.0, due to the era full of challenges that students must face today. This makes students wonder and confused about what to do. Religious science can be transformed through religious learning such as Quran Hadith, Fiqih, SKI, Aqidah Akhlak, and Arabic. In the learning process activities, it is hoped that religious science will not only expand students' religion but can be implemented in life by applying good attitudes, behaviors, and character, this is a form of implementation of the Aqidah Akhlak lesson. Likewise, other lessons such as fiqh lessons can build students' character more specifically in carrying out worship. In the learning process, teachers use Islamic education and integrated learning methods that are transformed through Aqidah Akhlak lessons, and through a transdisciplinary approach that combines fields of science will create a strong foundation in character development in the era of the industrial revolution 4.0 (Lisnawati, 2021).

Character education has an important role as a controller for generations in the era of the industrial revolution 4.0 so a comprehensive special program is needed from all elements of this nation. Islamic religious education in the form of good morals should be applied from an early age, teachers have an important role in shaping the character of students and are responsible for providing good direction to students and teaching Islamic values because teachers are the main and decisive actors of the education system (Hakim, 2021). Therefore, character education is inseparable from learning Islamic education so that students become individuals who have the knowledge and behaviors that have a charitable character.

The big challenge in the industrial revolution 4.0 is to improve humans who are creative, innovative, and able to combine science, life skills, and mastery of technology and information. The moral issue of the younger generation is also something that needs attention. Information that is very easy to obtain at this time leads to outside cultural influences that are not in harmony with religious values entering Indonesia easily. Development of technology that is developing rapidly, communication, and information is obviously not accompanied by user awareness to make the most of it. As a result, the increasing number of criminal and immoral cases in cyberspace is not resolved, even the incident was carried out by a teenager who is in the process of maturing (Ratu Nisa Shafira Hermawan, Achmad Junaedi Sitika, 2021).

A national vision that is integrated into every subject while fostering a sense of love for the homeland, culture, and language will be one way to maintain national unity and unity through a national vision. Students can implement with other students, teachers, and communities, this is necessary because life in a millennial society knows no bounds. For Islamic education to be accepted in the 4.0 era, all problems faced must be seriously addressed. Otherwise, it is impossible to implement and makes it difficult to provide contemporary and relevant Islamic education. As a result, Islamic education requires urgent reforms reforms in all lines of human life (Muhammad Alwan Hakim, Muhammad Zakariya Abdullah, 2021).

CONCLUSION

The industrial revolution 4.0 is a big challenge for the Indonesian people who present digital media as a tool used to complete various human jobs such as education, economics, politics, and industry. Seeing the rapid development of the times, humans are required to be smarter in living their daily lives, in following technological developments, people are expected to be wise in using social media to respond to the information received. The development of the times requires humans to have various sciences that can be integrated to answer the problems faced so that a transdisciplinary management approach is needed in combining various disciplines as a human perspective in solving life problems, this approach will give birth to new perspectives from various views that are carried out together to produce science and solve scientific problems and More comprehensive practical in the face of the industrial revolution 4.0.

References

- Anwar, S. (2019). Revolusi Industri 4.0 Islam Dalam Merespon Tantangan Teknologi Digitalisasi. *At-Thuhfah: Jurnal Studi Keislaman*, 8(2). <http://e-journal.uajy.ac.id/13192/9/2TA07357.pdf>
- Batmang. (2016). Pendekatan Transdisipliner (Suatu Alternatif Pemecahan Masalah Pendidikan). *Jurnal Al-Ta'dib*, 9(2).
- Fadilah, N. (2019). Tantangan Dan Penguatan Ideologi Pancasila Dalam Menghadapi Era Revolusi Industri 4.0. *Journal of Digital Education, Communication, and Arts*, 2(2).
- Fitri, A. Z., Indarti, L., & Nafis, M. M. (2020). Model Pendekatan Multi-Inter-Transdisipliner dalam Pembelajaran Berbasis Kurikulum KKNI (M. M. N. Agus Zaenul Fitri, Luluk Indarti (ed.); Ke-1). Akademia Pustaka.
- Hakim, L. (2021). Transformasi Pendidikan Agama Islam : Strategi Dan Adaptasi Pada Era Revolusi Industri 4.0. *Jurnal Education and Development*, 9(4).
- Ibda, H. (2018). Penguatan Literasi Baru Pada Guru Madrasah Ibtidaiyah Daam Menjawab Tantangan Era Revolusi Industri 4.0. *Journal of Research and Thought of Islamic Education*, 1(1).
- Lase, D. (2019). Pendidikan di Era Revolusi Industri 4.0. *Jurnal Sunderman*, 1(1). <https://doi.org/10.53091/jtir.v1i1.17>
- Lisnawati. (2021). Urgency Of Islamic Education In Shaping The Character Of Students In The Era Of The 4.0 Industrial Revolution. *Al-Muta'aliyah: Journal of Islamic Education (JIE)*, 6(1).

- Maharani Sartika Ritonga, S. (2022). Implementasi Paradigma Wahdatul 'Ulum Dengan Pendekatan Transdisipliner Untuk Menghasilkan Karakter Ulul Albab Pada Lulusan Universitas Islam Negeri Sumatera Utara. *Journal Of Social Research*, 1(4). <https://doi.org/10.55324/josr.v1i4.79>
- Muhammad Alwan Hakim, Muhammad Zakariya Abdullah, U. H. S. (2021). Pentingnya Memperkuat Eksistensi Pendidikan Islam Di Era 4.0. *El-HiKMAH : Jurnal Kajian Dan Penelitian Pendidikan Islam*, 15(2).
- Nabillah Purba, Mhd Yahya, Nurbaiti, M. K. (2021). Revolusi Industri 4.0 : Peran Teknologi Dalam Eksistensi Penguasaan Bisnis Dan Implementasinya. *Jurna Perilaku Dan Strategi Bisnis*, 9(2).
- Pratama, D. A. N. (2019). Tantangan Karakter Di Era Revolusi Industri 4.0 Dalam Membentuk Kepribadian Muslim. *Al-Tanzim : Jurnal Manajemen Pendidikan Islam*, 3(1). <https://doi.org/10.33650/al-tanzim.v3i1.518>
- Priyanto, A. (2020). Pendidikan Islam dalam Era Revolusi Industri 4.0. *J-PAI: Jurnal Pendidikan Agama Islam*, 6(2). <https://doi.org/10.18860/jpai.v6i2.9072>
- Priyatmoko, S. (2018). Memperkuat Eksistensi Pendidikan Islam Di Era 4.0. *Ta'lim: Jurnal Studi Pendidikan Islam*, 1(2).
- Ratu Nisa Shafira Hermawan, Achmad Junaedi Sitika, H. C. S. (2021). Eksistensi Pendidikan Islam Di Persimpangan Era Revolusi Industri 4.0. *Al-Munawwarah : Jurnal Pendidikan Islam*, 13(1).
- Sawitri, D. (2019). Revolusi Industri 4.0 : Big Data Menjawab Tantangan Revolusi Industri 4.0. *Jurnal Ilmiah Maksitek*, 4(3). <http://e-journal.uajy.ac.id/13192/9/2TA07357.pdf>
- Septiana, N. Z. (2019). Perilaku Prosocial Siswa SMP di Era Revolusi Industri 4.0 (Kolaborasi Guru Dan Konselor). *Jurnal Nusantara of Research*, 6(1). <https://doi.org/10.29407/nor.v6i1.13136>
- Sudika, I. W. (2020). Kepemimpinan Kepala Sekolah Dasar Pada Era Revolusi Industri 4 . 0 dan Pandemi Covid 19. *Edukasi : Jurnal Pendidikan Dasar*, 1(2). <http://jurnal.stahnmpukuturan.ac.id/index.php/edukasi/article/view/916/0>
- Wahyudi, D. (2022). Studi Islam Interdisipliner Dalam Pendidikan Islam Berbasis Moderasi Beragama. *Jurnal Moderatio*, 2(1).