

Performance of Industrial Revolution-Base Lecturers 4.0

Isworo Pujotomo Sasmoko A.Bandur Nugroho J. Setiadi

Abstract: Facing the industrial revolution era 4.0 education, especially universities in Indonesia must be able to prepare themselves well. Universities in Indonesia are required to be able to face and adjust to the changes that occurred in the industrial revolution era 4.0.

Many universities think that moving lecture material into online or using high-specification computers means that they have taken part in implementing technology-based learning. The lecturer is the most important person who must respond to the changing times. Lecturers are the front guard in education at the university level. In addition to being important to produce quality graduates according to the needs of the times, self-quality renewal is also important for the sustainability of the lecturers' careers. Research conducted on the performance of industrial revolution-based 4.0 lecturers was used as the theme in this study because researchers assumed that lecturers had an important role in the industrial revolution era 4.0 for that the performance of lecturers needed improved in order to produce quality student graduates in accordance with the industrial revolution era 4.0. The performance of lecturers at this time is still a lot that has not been maximized in supporting the industrial revolution 4.0, this situation is possible because many factors influence it.

In this paper will discuss conceptually the performance of lecturers based on industrial revolution 4.0.

Index terms: industrial revolution 4.0, lecturer, performance, universities

I. INTRODUCTION

The first industrial revolution emerged in the 1780s with steam, making humans more productive. Then in the 1870s an industrial revolution emerged with the development of mass production and electrical energy[12]. The industrial revolution emerged with information technology and electronics, which enabled more efficient production. At present there is a new phase where the melting of some technologies not only automates production, but also knowledge. The industrial revolution 4.0 emerged from the German manufacturing industry in the early 2000s. Changes are happening to date because humans eventually developed computational capacity to store large amounts of data, which in turn could enable learning about machines. The result of this is the development of what is called cyber-physical systems (CPS)

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The industrial revolution 4.0 is characterized by 5 (five) key technologies: (1) Artificial Intelligence, (2) Internet of Things, (3) Advanced Robotics, (4) Wearables / Augmented Reality / Virtual Reality and (5) 3D Printing. The industrial revolution 4.0 not only increases the value of a product, but also values from: individuals (new skills, becoming technology-based operators), society (accelerating sustainable production), industry (productivity and efficiency, new growth and value added, digitalization), companies (smart innovation and engineering, digital orchestration of supply chains, smart and personalized products, new business models), and factories (smart processes, operator-machine productivity, smart structure, location and scale). Challenges that must be faced are technological readiness, security, standards, data management, change management, culture, building capabilities, etc.

Almost all countries in the world, including Indonesia, inevitably have to be prepared to face the industrial revolution 4.0, including universities in Indonesia, both public and private. Universities in Indonesia in the face of the industrial revolution 4.0 received support from the government through the Minister of Research, Technology and Higher Education (Menristekdikti) with various changes in education policies and systems in higher education. Higher Education has an important role to play in shaping the transition of society needed to adapt to the industrial revolution 4.0. The aim of the most prominent Higher Education institutions is to develop capacity for academic achievement and knowledge retention among graduates in preparing them for productive lives[2]. The academic development unit, which is usually the Center for Teaching and Learning, prepares faculty for evidence-based practice in improving learning skills. Higher Education Institutions combine services to the community as part of a learning culture[1].

The relationship between education and society is often implied as one direction in which education is expected to fit economic and political tendencies, rather than oppose them and represent something different. General understanding such as the relationship between education and socio-economic structure and how education positions involve future college projections related to the industrial revolution 4.0. The main mission of higher education remains the same whatever the era. The aim of higher education is to ensure the quality of learning through teaching, to enable students to get the latest knowledge through exploration research and to maintain community development through service .



Lecturers are professional educators and scientists with the main task of providing education to the community, especially students. Lecturers have an important role in the development of educational matters, therefore lecturers must have high capabilities and abilities. Lecturer performance is the ability shown by the lecturer in carrying out his duties or work. Performance is said to be good and satisfying if the results achieved are in accordance with established standards .

Indonesian universities are improving themselves in facing the challenges of the industrial revolution 4.0. However, many blunders occur in implementing technology-based learning systems to deal with these challenges[5]. Many universities think that moving lecture material online or using high-specification computers means that they have taken part in implementing technology-based learning. But that is not what is meant, the main problem is how universities prepare human resources who will use or create the technology .

The Menristekdikti policy in supporting the digital era and industrial revolution 4.0 for higher education includes: 1) The Tri Dharma Paradigm of Higher Education must be harmonized with the industrial era 4.0; 2) Encouraging the Science and Technology Index to become a Global Rating; 3) Increasing research activities and publications relevant to the theme of Industry 4.0; 4) Universities must carry out product innovation processes through industry-based incubation and learning; 5) Curriculum reorientation: New literacy [(coding, big data, humanities (general education)] developed and taught, extra-curricular activities for leadership development and working in teams to be continuously developed, Entrepreneurship and internship to be required; 6) New format of learning systems : from face to face leads to Blended and Online and Distance Learning (ODL)[7] .

This Menristekdikti policy support is expected to enable higher education institutions to face the era of industry 4.0, besides that it is expected for university lecturers to be able to adapt to these changes. Lecturers must equip themselves with deeper technological and internet knowledge in order to support the Menristekdikti policy. The lecturer is the most important figure who must respond to the changes of this age. Because, they are the frontline in education at the college level. In addition to being important for producing quality graduates according to the needs of the times, self-quality reform is also important for the career of the lecturer concerned.

The research conducted on lecturer performance based on industrial revolution 4.0 was made the theme in this study because researchers assumed that lecturers had an important role in the era of industrial revolution 4.0 for lecturers' performance needs to be improved in order to produce qualified student graduates in accordance with the industrial revolution 4.0 era. The performance of lecturers at this time is still a lot that has not been maximal in supporting the industrial revolution 4.0, this situation is possible because many factors influence it.

II. RESEARCH METHODS

Based on the description of the background and the phenomenon of industrial revolution 4.0, problems can be raised about industrial impulse based on industrial revolution 4.0. GPU 4.0-based industrial simulation still needs to be improved, industry-based bold learning system (SPADA) still needs to be improved, scientific consultation is still needed to be improved, soft skills possessed by lecturers still need to be improved and competent in general in the 4.0 era still needs improvement. Modules compiled by the lecturer must fulfill the requirements (1) have formulated clear, specific, observable, and measurable learning goals to change learner behavior and (2) Content in the module has relevance to the needs of learners, society, the world of work, or the world of education.

A..Understanding Lecturer Performance

Performance management in general can be said as a process to create a shared understanding between superiors and subordinates about what must be achieved and how to achieve it in the form of compensation. Performance in Indonesian is actually a translation freely from the word performance. Performance or work performance in a rather limited sense is often used to measure the achievement of one's work such as a task given to someone in the company concerned legally, not violating the law and in accordance with the model and ethics. Lecturers are professional educators and scientists with the main task of providing education to the community, especially students. Lecturers have an important role in the development of educational matters and therefore must have high capability and capability.

B.Performance Measurement

Measurement of performance needs to be done to find out whether during the implementation of the performance there is a deviation from the predetermined plan, or whether the performance can be carried out according to the specified time schedule, or whether the performance results have been achieved as expected by the company[9]. Measurements made are only concerned with measuring what is important and relevant. It is necessary to be clear about what is important and relevant before determining what size to use. Things that need to be measured depend on what stakeholders and customers consider important. Measurements regulate the relationship between customer-oriented strategies and objectives with actions. Size of performance is a measuring tool that must be objective so that the same criteria are needed. With the same criteria it is expected to provide results that can be compared objectively and fairly.

C.Performance Assessment

The success of a system in achieving improved employee performance, in addition to depending on the objectivity of the assessor and the validity and reliability of the method used, will also be influenced by the set performance criteria. In other words, performance will



increase if the assessment is based on the right criteria for a particular job. For more details below, several opinions were expressed about these aspects of performance. Employee performance assessments are traditionally centered on the individual characteristics of an employee such as intelligence, ability

to make decisions, creativity, and the ability to get along with other people. From this opinion, the management performance assessment system generally focuses on the characteristics and attitudes of individual employees so less attention to the elements of individual employee performance.

III.RESULTS

Students fully carry out online learning by accessing and studying teaching materials, doing exercises (assignments), discussing and sharing knowledge and experiences with other student learners. During the learning process, students are guided and facilitated online. To be able to carry out online learning, the lecturer must prepare a learning module. The use of online mode learning will certainly be beneficial which has a positive impact on institutions, lecturers, and students. These benefits will benefit each party[10].

The parties include :

1. Institutions can overcome class limitations if lecture classes are less if lectures are held face-to-face. Complaints so far can be overcome by online learning.
2. Lecturers can take advantage of free time to conduct research and community service. The lack of lecturers conducting research and community service has been allegedly due to lack of time. With the amount of free time complaints so far can be overcome.
3. Students, especially students who study while working are very helpful because they do not need to come to campus to study enough through the internet. Learning online can be done anytime and anywhere. In addition, it can also overcome cost limitations because online learning is more cost effective.

Indonesian universities are improving themselves in facing the challenges of the industrial revolution 4.0. However, there were many mistakes in implementing a technology-based learning system to deal with these challenges[13]. Many universities think that moving lecture material online or using high-specification computers means that they have taken part in implementing technology-based learning. But that is not what is meant, the main problem is how universities prepare human resources who will use or create the technology.

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This is in accordance with Ghufron (2018) which states that the condition of Indonesian lecturers is currently still dominated by the baby boomers and generation X which are digital immigrants. While students faced are millennial or digital native generations.

Indonesian Online Learning System (SPADA) which aims to improve student learning access to quality courses from lecturers of State Universities and Private Universities throughout Indonesia. To facilitate the implementation of the SPADA Indonesia - Industrial Revolution 4.0 Program, guidance is needed that can provide clarity to the recipient colleges in planning and developing open courses[15]. It is this rationale that underlies the development of a guide to the Indonesian Online Learning System (SPADA) Development Program - Industrial Revolution 4.0

IV.DISCUSSION

The factors that can influence the performance of lecturers are as follows:

1. **Personality and dedication;**
Personality is the whole of individuals consisting of psychological and physical elements, meaning that the overall attitude and actions of a person is a picture of the person's personality, in other words the good or not of a person's image is determined by his personality. Personality is an abstract problem, which can only be seen from appearance, action, speech, how to dress and how to deal with every problem. Lecturers who have good personalities can arouse the willingness to actively advance their profession and increase dedication in doing educational work.
2. **Professional development;**
Lecturers' professions are increasingly becoming a concern as science and technology change that demands readiness to stay behind. A professional is someone who serves the needs of community members both individually and in groups. The development and development of the teaching profession aims to improve performance and be carried out continuously so as to be able to create performance in accordance with the desired requirements, besides that guidance must be in accordance with the direction and tasks / functions concerned in the school / place of work.
3. **Teaching ability;**
The ability to teach lecturers is very important and must be owned by lecturers in carrying out their duties and functions. The ability to teach lecturers in accordance with the demands of the standard tasks carried out gives a positive effect on the results to be achieved such as changes in academic results of students, student skills, and changes in lecturers' work patterns. not only decreases student learning achievement but also decreases the level

of lecturer performance. Without the ability to teach well it is very unlikely that a lecturer is able to innovate and create material in the curriculum which in time will provide a sense of boredom for lecturers and students to carry out their respective duties and functions.

4. **Between relationships and communication;**
The learning activities carried out by the lecturer will be successful if there is a relationship and good communication with the students as the components taught. Communication is used to understand and exchange verbal and non verbal messages between senders of information and recipients of information to change behavior[14]. Relationships and communication developed by lecturers, especially in the learning process and in other interaction situations in schools / faculties provide an opportunity to create a conducive situation to facilitate the implementation of tasks. The performance of lecturers will increase along with the existence of healthy relations and communication conditions among the components of the school because with the pattern of relationships and communication that is smooth and good encourages a person to do a good job.
5. **Relations with the community;**
The relationship between the school / faculty and the community is a process of communication between the school and the community to improve the community's understanding of educational needs and activities and encourage community interest and cooperation in school improvement and development. The benefits of the relationship with the community are very large for improving the performance of lecturers through increased joint activities, continuous communication and the process of mutual giving and mutual acceptance to make school introspection and lecturers active and sustainable. Every lecturer activity can be known by the community so that the lecturer will try to show good performance.
6. **Discipline;**
Discipline is obedience and accuracy in a rule that is done consciously without any other party's encouragement or coercion or a situation where something is in orderly, orderly and proper manner and there are no violations either directly or indirectly. Discipline is very important for lecturers to carry out their duties and obligations as instructors, educators and student advisers. High discipline will be able to build professional performance because good discipline understanding of lecturers is able to observe the rules and strategic steps in carrying out the process of teaching and learning activities. Good discipline is shown by lecturers in carrying out their duties and obligations that will facilitate the work of lecturers and provide changes in lecturers' performance towards better and more accountable.
7. **Welfare;**
The welfare factor is one that influences the performance of lecturers in improving their quality because the more prosperous a person is, the higher the chance to improve his work. To maximize the

performance of lecturers the strategic steps taken by the government are to provide decent welfare in accordance with the number of lecturers' work. The existence of a decent life insurance for lecturers can motivate lecturers to always work and improve creativity so that performance always increases every time[5].

8. **Work climate;**
Work climate is a reciprocal relationship between personal, social and cultural factors that influence individual and group attitudes in the school environment which is reflected in the atmosphere of harmonious and conducive cooperative relations between leaders and subordinates, between lecturers and other lecturers, between lecturers and staff and the whole component must create relationships with students so that the educational and teaching goals are achieved. The formation of a conducive climate in the workplace can be a supporting factor for improving performance because comfort in work makes lecturers think calmly and are concentrated only on the task being carried out.

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