

# Digital Literacy Ability and Professionalism Towards Lecturers' Competencies in the Industrial Revolution Era 4.0

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**Abstract**—This research examines the teaching competence of lecturers at Samudra University in the era of the industrial revolution 4.0 based on the perspective of students' perceptions as the main stakeholder and is the user of educational services. The objectives of this study are 1) To determine the effect of digital literacy on lecturer competence, 2) To determine the effect of professional attitudes on lecturer competence at Samudra University in response to the industrial revolution 4.0. The research method in this research is quantitative using multiple regression analysis. This study involved 250 students from twenty-five study programs as research respondents. The sampling technique used is proportional random sampling, with the following criteria: students are active status and at least are taking the fifth semester. Data collection techniques were carried out using interviews and questionnaires via google form. The results of this study are: 1) Digital literacy has a positive and significant effect on lecturer competence, 2) Professional attitudes have a positive and insignificant effect on lecturer competence.

**Keywords**—digital literacy, professionalism, lecturer's competencies

## I. INTRODUCTION

Higher education has a strategic role in producing the human resources needed to develop the country. The task of higher education is to provide superior and competitive undergraduate education [1]. To carry out the strategic role of tertiary institutions in the era of revolution 4.0, lecturers are required to master expertise, the ability to adapt to new technology and global challenges. So that the quality of lecturers remains competitive and is able to transform knowledge maximally to students as mandated in Law of the Republic of Indonesia Number 14 article 1 point 2 of 2005 and Law of the Republic of Indonesia Number 12 of 2012 Chapter II article 12 point 1.

From the explanation above, the quality of students such as understanding of science, achievement in lecture activities, cannot be separated from the influence of lecturer competence in lecture activities [2]. Educational competence has been

described in Government Regulation no. 19 of 2005 on National Education Standards consists of four types, namely 1) pedagogical competence, 2) personality competence, 3) professional competence, 4) social competence.

Regarding the competence of lecturers, lecturers are able to transform knowledge to students well and have an effect on student achievement. The development of information technology is part of the emergence of the digital revolution era in Indonesia. It's very rapid development is able to have a big influence and dominate all sectors of public life, including in the world of education. Digital-age in the world of education, especially in higher education, has the consequences of learning design by utilizing digital media as a means to increase student knowledge. Digital media can present learning material contextually, audio and visually in an interesting and interactive manner [3,4] Universities as part of higher education institutions should adjust themselves to carry out a digital-based learning process. From this phenomenon, digital literacy is a must for lecturers in following the development of the industrial revolution 4.0

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Based on observations on daily lecture activities held at Samudra University, students have different levels of

understanding and experience of lecture materials when taught by different lecturers. Student understanding is influenced by the ability of the lecturer to teach in the classroom. The difference in understanding is explained by Kadir can be caused by: 1) Individual differences related to the ability to understand lecture material, 2) Difficulty following the teaching and learning process so that they do not understand lecture materials. Thus, lecturers must be able to improve self-competence optimally, by improving self-quality through optimal competence, lecturers can play a role in improving the quality of students in the classroom.

This research was conducted at Samudra University, which has five faculties and twenty-five study programs, where up to 2018 the number of active students reached 5,784 people. This study examines the effect of digital literacy and professional attitudes on the competence of lecturers in the 4.0 revolution era with the perceptions of students as stakeholders who are users of educational services.

Research purposes:

- To analyze the effect of digital literacy on lecturer competence
- To analyze the effect of professional attitudes on lecturer competence

## II. THEORETICAL REVIEW

### A. Lecturer Competence

Competent lecturers can be seen from the ability to master the material and apply the right learning model to the material being studied so that it can be understood by students [6]. Competence itself has a definition of the character, knowledge / knowledge, skills, and abilities of each individual which directly affects individual performance [7]. Competence is a basic individual characteristic related to the ability to work effectively within a certain time. Meanwhile, as in Ransie and Grealish [8]. Competence is divided into two types, namely personal competence and operational competence. Personal competence is in-depth knowledge of a matter while operational competence is the ability to demonstrate, practice / apply the knowledge that is owned. According to Tigelaar et al. [9] describe several teaching competencies which include: 1) competence in material mastery 2) didactic competence, 3) pedagogical methods, 4) skills in presenting teaching material 5) Skills in giving instructions and suggestions, 6) ability to design curriculum and learning materials, 7) organizational competence, and 8) scientific competence. The personality aspect of the lecturer in teaching has an important role in shaping the character and identity of the lecturer, where the lecturer must be able to help students develop knowledge, learn independently, and think critically [10].

As in Mayasari et al. [11], lecturer competence can be seen from several indicators, including:

- Teaching styles that stimulate student learning.

- Ability to communicate well
- Have dynamic enthusiasm

### B. Digital Literacy

As in Littlejohn et al. [12] and Setyaningsih et al. [13] mentioned that there are seven elements of digital literacy: (1) Information literacy is the ability to find, evaluate and use the information needed effectively, (2) Digital scholarship is an element that includes active participation of media users digital in academic activities to make information from digital media as a data reference, for example in research practices or completion of college assignments (3) Learning skills are effective learning of various technologies that have complete features for formal and informal learning activities, (4) ICT literacy or known as information and communication technology literacy which focuses on ways to adopt, adapt and use digital tools and ICT-based media for both applications and services. The ICT-based media in question, for example, a computer or LCD projector / power point that has been designed / designed in such a way that it can be used according to its understanding, especially if it is connected to the internet as the basis for learning, (5) Career and identity management related to ways to manage identity online. A person's identity can be represented by a number of different avatars who are able to make relationships with more than one party at almost the same time 6) Communication and collaboration is a form of active participation for learning and research through networks digital, and (7) media literacy or media literacy includes critical reading skills and creative academic and professional communication in various media. The existence of media literacy makes the public not easily deceived by information that at a glance meets and satisfies their psychological and social needs.

Based on the theoretical study above, the hypothesis of this research is as follows:

Hypothesis 1: Digital literacy has a positive and significant effect on lecturer competence.

Hypothesis 2: Professional attitude has a positive and significant effect on lecturer competence.

## III. RESEARCH METHODS

This research is descriptive quantitative, using multiple regression analysis to predict the effect of digital literacy and professional attitudes on lecturer competence. The instrument used was a questionnaire, combined with in-depth interviews that explored information about respondents' desires and expectations regarding the competence of lecturers at Samudra University. The questionnaire used consists of three parts, namely the first part is the demographic profile of the respondent and the instructions for filling out the questionnaire, the second part is the statement filled by the respondent with the option to strongly agree to strongly disagree, using a Likert scale of 1-5.

The population in this study were all students at Samudra University who were users in receiving and carrying out lecture activities. The sampling technique used is non-proportional stratified sampling. The consideration of the sample selection, namely, this sampling technique can represent all elements of the study program at Samudra University as well as the constraints on the limited real time data that can be accessed by researchers, namely student data for 2018, while this research was conducted in 2020. The number of samples was 250 students who represent the entire study program, the sample size is greater than 30 and less than 500 in most studies are represented.

Based on the data that has been collected, the respondents consist of one hundred and seventy women (68%), and eighty men (32%). From the semester level taken, all respondents have taken at least the fifth semester.

The majority of respondents are female with a ratio reaching 68%, this is because of the total population or total students at Samudra University are women. while the distribution of respondents based on the semester that has been taken shows that the majority of respondents are in the sixth semester, with a percentage of 42% of the total sample, thus respondents are assumed to understand the competence of lecturers based on the length of time studying in the class.

The operational definition of the variables in this study is as follows in table 1.

TABLE I. OPERATIONAL DEFINITION OF VARIABLES

Variable	Definition	Indicator
Digital Literacy	Digital literacy is the attitude and ability of individuals to use digital technology and communication tools to access, manage, integrate, analyze and evaluate information, build new knowledge, create and communicate with others in order to participate effectively in society [13]	1. Information literacy 2. Digital scholarship 3. Learning skills 4. ICT Literacy 5. Career and identity management 6. Communication and collaboration merupakan 7. Media literacy
Professional Attitude	A mentality for the commitment of the members of a particular profession to always create and improve their professional quality [14]	1. Knowledge 2. Skill 3. Ethic
Lecturer Competence	the ability of lecturers to master science and provide information to students with appropriate learning methods [11]	1. Teaching style 2. mastery of science 3. Classroom enthusiasm

**IV. RESULTS AND DISCUSSION**

The results of this study indicate that Hypothesis 1: Digital literacy has a positive and significant effect on lecturer competence (accepted), This can be seen from table three that digital literacy has a positive and significant effect on lecturer competence with a significance of 0.00. Respondents have the

perception that the ability of lecturers to use digital media in learning is a proof of the competence of a lecturer. The results of this study are consistent with research conducted Masitoh [3] and Setyaningsih et al. [13].

From these results, students expect that lecturers have good digital literacy skills, which is proof that lecturers always follow technological developments in the era of the industrial revolution 4.0

The result of hypothesis 2 is professional attitude has a positive and significant effect on lecturer competence (rejected). The results of this test are not consistent with a number of previous studies, based on tracing it was found that students currently choose lecturers with good abilities with technology as competent lecturers.

TABLE II. COEFFICIENTS<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	6.855	.867		7.909	.000
Digital Literacy	.162	.030	.351	5.459	.000
Profesionalisme	.075	.055	.088	1.363	.174

<sup>a</sup>. Dependent Variable: Competence of Lecturer.

Students as internal stakeholders who are generation z have a perception that the digital literacy ability of a lecturer is very important. This is closely related to the fact that students are the generation currently living with information technology in their daily activities, they have smartphones, they have social media, and follow various developments in information technology. Therefore, when a lecturer is not active in the control of digital literacy, it will affect the perception of students regarding the competence of lecturers.

**V. CONCLUSION**

The digital literacy factor has a great impact on the competence of lecturers, given that students are the generation who actively uses the development of information technology. With good mastery of digital literacy, lecturers can provide insights to students on how to get correct information in completing assignments, avoid hoaxes, and be able to assess information from valid sources.

To strengthen the competence of lecturers, universities in this case must actively conduct training, socialize, remind and encourage lecturers to adapt to advances in information technology in particular, while still upholding ethics and professionalism.

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