

## The Influence of Artificial Intelligence (AI) Applications on Students' Learning Motivation

Joko Santoso<sup>1</sup>, Ni Kadek Diah Novia Dewi<sup>2</sup>, Delia Ritu Lende<sup>3</sup>

<sup>1,3</sup> Information System ITB STIKOM Bali, Indonesia

<sup>2</sup> Information Technology ITB STIKOM Bali, Indonesia

### ABSTRACT

In this digital era, technological developments are increasingly rapid, always changing according to human needs. Humans are always looking for ways to make life easier in the field of information technology. Information technology has influenced all fields without exception in the field of education. Currently, what is trending in the world of education is the use of artificial intelligence to help make learning easier. Artificial Intelligence (AI) is a term from Industrial Society 4.0 and Society 5.0, which is a "computer program, machine learning, hardware and software". In this modern era of globalization, every technology is always present in everyday life, making it easy for us to do things, in this case the learning process to be able to improve student learning motivation. The learning motivation in this research is the ARCS motivation model. The ARCS motivation model consists of four components: attention, relevance, confidence, and satisfaction. So far, student learning motivation has been low due to students' boredom with static learning resources. Students need refreshing learning resources that are intelligent and dynamic. Therefore, it is necessary to conduct research on the influence of the existence of Artificial Intelligence (AI) applications on increasing student learning motivation so that there can be created an active, creative and innovative learning atmosphere. This research uses an experimental method with a quantitative approach. The sample consists of 2 classes, namely the control class and the experimental class of ITB STIKOM Bali odd semester 2023-2024 students who take information systems concepts and applications courses. The analysis technique used is simple linear regression to determine the relationship between the two variables, namely 1 independent variable and 1 dependent variable. The urgency of this research is to prove that there is a significant influence between applications used by Artificial Intelligence (AI) which are more focused on using the AI chatGPT application in the current digital era on student learning motivation.

**Keywords:** Artificial Intelligence (AI), students' learning motivation, simple linear regression

### INTRODUCTION

In this digital era, technological developments are increasingly rapid and rapid, always changing according to human needs. Humans are always looking for ways to make life easier in the field of information technology. Information technology has influenced all fields without exception in the field of education. Currently, what is trending in the world of education is the use of artificial intelligence to help make learning easier. Artificial Intelligence (AI) is a term from Industrial Society 4.0 and Society 5.0, which is a "computer program, machine learning, hardware and software". Artificial Intelligence uses a science of hardware and software inspired by reverse engineering of the neocognitron patterns that work in the human brain. Industry 4.0 products are widely used in development and daily applications in various fields, including education (Zahara, Azkia, & Chusni, 2023). In this modern era of globalization, technology is always present in everyday life, making it easy for us to do things, in this case the learning process to increase student learning motivation.

The learning motivation in this research is the ARCS motivation model. The ARCS motivation model consists of four components: attention, relevance, confidence, and satisfaction. Attention is an activity to recognize an increase in student curiosity. Relevance to determine whether there is relevance to student needs. The third component is trust, whether learning activities using Artificial Intelligence (AI) can increase students' self-confidence, and the fourth component is satisfaction, which is used to determine whether Artificial Intelligence (AI) learning activities bring satisfaction to students (Sujiwo & A'yun, 2020). So far, student learning motivation has been low due to students' boredom with static learning resources, students need refreshing learning resources that are intelligent and dynamic in nature. For this reason, it is necessary to conduct research on the influence of the existence of Artificial Intelligence (AI) applications on increasing student learning motivation so that there can be created an active, creative and innovative learning atmosphere.

## MATERIAL AND METHODS

### Artificial Intelligence (AI) Concept

Artificial intelligence (AI) is the most important scientific field currently and in the future. Artificial intelligence is a field of computer science that is very necessary in applying intelligent computers. The devices needed in this field have been developed during the 20th century, especially in industry and households. Artificial intelligence, which in the foreign language Artificial intelligent, means: "intelligence" is the Latin word "intelligo" which means "I understand", so the meaning of intelligence is reliability in understanding and carrying out actions. Artificial intelligence emerged in the 1940s, although it was already known that this development existed in ancient Egypt. A scientist in the 17th century, a scientist named Rene Descartes, said that the animal body is not something simple but is a complex machine. In 1642 a digital machine was created which was used for the first mechanical calculations, while Charles Babbage and Ada Lovelace carried out calculations using a programming language, finally a mechanical calculating machine appeared which could be programmed (Jamaaluddin & Sulistyowati, 2021).

### Student Learning Motivation

Motivation is one of the factors that influences student success. A person will get the desired results in learning if within him there is a desire to learn. Motivation can function as a driving force for achieving good results. A person will carry out an activity because there is motivation within him. Having high motivation in learning will achieve optimal results (Rahman, 2021). Learning motivation is the encouragement or driving force that comes from within oneself or from outside to carry out learning activities (Humendru & Harefa, 2023). Learning motivation is an individual's driving force in carrying out learning activities, so that their learning goals can be fulfilled. Learning motivation has an important role in the learning process for teachers and students, if for students it can increase enthusiasm for learning and students are motivated to carry out learning activities. Apart from that, motivation to learn can also make students feel happy to carry out learning activities (Cahyani & Warmi, 2023).

### Regression Analysis

Statistical tests can be used to carry out research tests on variables that have an influence or have a relationship with other variables. To test a variable, it is necessary to determine what data analysis method is appropriate to use. One of the analytical methods used to determine the relationship between variables is the regression analysis method. Regression is a statistical method that functions to test the extent of the causal relationship between the causal factor variable (X) and the resulting variable. The causal factor is generally symbolized by X or also

called the predictor, while the effect variable is symbolized by Y or also called the response. Regression analysis is used to find out how the dependent (bound) variable can be predicted through independent (free) variables partially or together (simultaneously).

One common use of regression is for prediction, whatever the given value of Linear Regression Analysis is divided into two, namely Simple Regression Analysis and Multiple Linear Regression Analysis. Simple linear regression analysis is a linear relationship between an independent variable (X) and a dependent variable (Y). Simple linear regression analysis is used to determine the influence of one independent variable on one dependent variable. Meanwhile, multiple regression is a development of simple linear regression analysis.

Its use is to predict the value of the dependent variable (Y) if there are at least two or more. Multiple regression analysis is an analysis tool for forecasting two or more independent variables on the dependent variable. To prove whether or not there is an influence of two or more independent variables (X(X3), .....( Xn) with one dependent (bound) variable used in regression. This research uses analysis Simple linear regression because it only tests 2 variables, namely the Artificial Intelligence variable and student learning motivation. The linear regression equation from variable Y to variable X is (Hasan, 2005):

$$Y = a + bX$$

$$a = \frac{(\sum Y)(\sum X^2) - (\sum X)(\sum XY)}{(n)(\sum X^2) - (\sum X)^2}$$

$$b = \frac{n(\sum XY) - (\sum X)(\sum Y)}{(n)(\sum X^2) - (\sum X)^2}$$

Information:

Y : Dependent variable (learning outcomes)

X : Independent variable (learning model)

a : Intercept (Y value, if X=0)

b : Regression coefficient/slop (slope of the regression line)

n : Number of data

The thinking framework of this research shows the relationship between one variable and other variables. In this study there are 2 variables, namely 1 independent variable and 1 dependent variable. The independent variable in this research is the application of Artificial Intelligence (AI) as a variable that influences the dependent variable with the symbol X and learning motivation is the dependent variable, namely the variable that is influenced by the independent variable with the symbol Y.

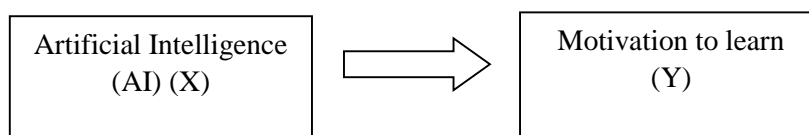


Figure 1. Framework of this Research

**RESULTS AND DISCUSSION**

The analysis technique used is a simple linear regression test for 1 independent variable, namely the Artificial Intelligence (AI) variable with 1 dependent variable, namely the student learning motivation variable. The purpose of this test is to determine the influence of Artificial Intelligence (AI) variables on student learning motivation variables. The basis for decision making consists of 2 things, namely

1. Compare the significance value with the probability value of 0.05
  - a) If the significance value is <0.05, it means that variable X has an effect on variable Y
  - b) If the significance value is > 0.05, it means that variable X has no effect on variable Y
2. Compare the calculated t value with the t table
  - a) If the calculated t value > t table means that variable X has an effect on variable Y
  - b) If the calculated t value < t table means that variable X has no effect on variable Y

Data processing to carry out this test process uses SPSS software, the output of the data processing results is as follows:

The output is a summary model which explains the magnitude of the correlation value (R) of 0.336, namely the magnitude of the relationship between the Artificial Intelligence (AI) variable and learning motivation so that a coefficient of determination or R square value is obtained of 0.113. This R square value means the influence of the Artificial Intelligence (AI) variable on learning outcomes is 11.3%.

**Table 1. Model Summary in SPSS Software**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.336 <sup>a</sup>	.113	.089	6.532

a. Predictors: (Constant), X

The output (ANOVA) in Table 2 explains that the calculated F is 4.822 with a significance level of 0.034 < 0.05, so the regression model can be used to predict learning motivation or whether there is an influence between Artificial Intelligence (AI) variables and student learning motivation.

**Table 2. ANOVA Variables X and Y in SPSS Software**

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	205.737	1	205.737	4.822	.034 <sup>b</sup>
	Residual	1621.363	38	42.667		
	Total	1827.100	39			

a. Dependent Variable: Y

b. Predictors: (Constant), X

The output of the fourth section is a coefficient table stating that the constant value of a is 45.299 and the value of Artificial Intelligence (AI) is 0.160 so that the regression equation can be written as follows

$$Y = a + bX$$

$$Y = 45.299 + 0.160X$$

This equation means that the constant value for the Artificial Intelligence (AI) variable (X) is 45,299 and the regression coefficient 0.160. The regression coefficient value is positive,

meaning that the direction of the Artificial Intelligence (AI) variable (X) towards learning outcomes (Y) is positive.

Decision making from simple linear regression between Artificial Intelligence (AI) variables and learning motivation:

a) Based on the significance value from the coefficients table, a significance value of  $0.034 < 0.05$  is obtained, it can be concluded that the Artificial Intelligence (AI) variable (X) has an effect on the learning motivation variable (Y)

b) Comparing the calculated t value with the t table based on the coefficients table, the t value is 2,196.

Formula for finding t table

t table =  $(\alpha/2)$ ; n-k-1

Formula description

$\alpha$  : confidence level of 0.05

n : number of samples

k : number of independent variables

t table =  $(\alpha/2)$ ; n-k-1

=  $(0.05/2)$  ; 40-1-1

= 0.025 ; 38

Based on the formula for finding the t table, the t table value is 1.988. The conclusion is that the calculated t value is 2,196 > the t table value 2,024, meaning that the Intelligence (AI) variable (X) has an effect on the learning motivation variable (Y).

## CONCLUSION

Based on the research results after carrying out a simple linear regression test, it can be concluded that there is an influence between Artificial Intelligence (AI) on student learning motivation.

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