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Analysis of The Influence of Student Decisions in Using *Artificial Intelligence* (AI) As a Learning Reference

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ABSTRACT

Education is one of the many facets of human existence that have changed as a result of the advancement of artificial intelligence (AI). The goal of artificial intelligence (AI), a subfield of computer science, is to create computers and systems that can carry out operations that normally call for human intellect. According to data, the number of people using AI is expected to reach 3.33 million annually by 2030. Out of the 100 respondents who received the surveys, 100 said they utilize AI apps. Students in semesters two (19%), four (36%), six (17%), and eight (28%), respectively, make up the distribution of use. 90% of AI is used as a learning reference, compared to 10% for thesis. This study uses the Technology Acceptance Model (TAM) technique as a theoretical framework to ascertain the perceptions that help Industrial Engineering students decide whether to use AI as a learning reference. The analysis's findings indicate that perceived advantages (38.64%), perceived ease of use (40.73%), and actual usage (16.81%) are the perceptions that affect students' decisions in Malikussaleh University's Industrial Engineering department. The development of AI integration tactics in higher education can benefit greatly from these discoveries.
Keyword: Artificial Intelligence (AI), Technology Acceptance Model (TAM), Decision Influence, Learning References, Perception

ABSTRAK

Pendidikan merupakan salah satu dari sekian banyak aspek kehidupan manusia yang telah berubah akibat kemajuan kecerdasan buatan (AI). Tujuan kecerdasan buatan (AI), sebuah subbidang ilmu komputer, adalah menciptakan komputer dan sistem yang dapat menjalankan operasi yang biasanya membutuhkan kecerdasan manusia. Menurut data, jumlah orang yang menggunakan AI diperkirakan akan mencapai 3,33 juta per tahun pada tahun 2030. Dari 100 responden yang menerima survei, 100 di antaranya menyatakan menggunakan aplikasi AI. Mahasiswa semester dua (19%), empat (36%), enam (17%), dan delapan (28%), masing-masing, merupakan bagian dari distribusi penggunaan AI. Sebesar 90% AI digunakan sebagai referensi pembelajaran, dibandingkan dengan 10% untuk skripsi. Penelitian ini menggunakan teknik Technology Acceptance Model (TAM) sebagai kerangka teori untuk memastikan persepsi yang membantu mahasiswa Teknik Industri memutuskan apakah akan menggunakan AI sebagai referensi pembelajaran. Temuan analisis menunjukkan bahwa persepsi keuntungan (38,64%), persepsi kemudahan penggunaan (40,73%), dan penggunaan aktual (16,81%) merupakan persepsi yang memengaruhi keputusan mahasiswa di Departemen Teknik Industri Universitas Malikussaleh. Pengembangan taktik integrasi AI di pendidikan tinggi dapat memperoleh manfaat besar dari temuan ini.
Kata Kunci: Kecerdasan Buatan (AI), Technology Acceptance Model (TAM), Pengaruh Keputusan, Referensi Pembelajaran, Persepsi

1. Introduction

The improvement of synthetic Intelligence (AI) has converted many aspects of human existence, along with schooling. inside the virtual era, artificial Intelligence (AI) plays an an increasing number of crucial role in assisting students face gaining knowledge of demanding situations and achieve instructional achievement [1]. Data shows that Artificial Intelligence (AI) usage continues to increase, with the highest usage reaching 1.3 million users, with a projected annual increase of up to 3.33 million users by 2030.

From the initial questionnaire distribution to see which Artificial intelligence (AI) applications are frequently used by industrial engineering students, from 100 questionnaires distributed to respondents, 100 respondents obtained the results of the questionnaire conducted stating that 100% of respondents use the Artificial intelligence (AI) application ChatGpt feature, consisting of 2nd semester students by 19%, 4th semester students by 36%, 6th semester students by 17% and 8th semester students by 28%. With the use as a learning reference by 90% and 10% thesis.

One area of computer science that seeks to create robots and systems that can carry out activities that often need human intellect is called artificial intelligence (AI), or AI in Indonesian [2]. Machine learning, neural networks, natural language processing, and many other fundamental concepts are all included in the Artificial Intelligence (AI) framework [3]. Artificial intelligence (AI) has significantly influenced several fields, such as autonomous cars, facial recognition, voice recognition, medicine, and many more [4]. The effectiveness and relevance of the learning process are being improved by technology associated with artificial intelligence (AI). Numerous obstacles and issues in the field of education, including gaps in student comprehension and the absence of tailored learning, are crucial concerns that must be addressed [5].

A helpful theoretical framework to use is the Technology Acceptance Model (TAM) to understand the factors that influence Industrial Engineering students' decisions to use ChatGpt's Artificial Intelligence (AI) capabilities as a learning tool [6]. In 1989, Davis created this [7]. The Technology Acceptance Model (TAM) [8] states that perceived utility and perceived ease of use are the two main criteria that influence technology adoption. This strategy has been effective in predicting and explaining the uptake of various IT in educational environments [9].

SEM is used as a tool to determine which factors most significantly influence business performance. The SEM method is used because it can analyze several latent variables in research that cannot be measured quantitatively and therefore require further analysis [10]. SEM-PLS is an approach used in SEM analysis with the aim of providing explanations of cause-and-effect relationships in predicting statistical models [11].

As a learning resource, the findings of this study should be utilized to boost user interest in ChatGpt, an artificial intelligence (AI) function. This study intends to ascertain the degree to which artificial intelligence (AI) users perceive the ChatGpt feature, whether the users will benefit from its existence, and whether the presence of the ChatGpt feature affects student learning references. As a result, the author carried out a study called “Analysis of the Influence of Student Decisions in Using Artificial Intelligence (AI)" As a Reference for Learning Using the TAM Method (Case Study: Industrial Engineering)”.

2. Method

Data gathered directly by researchers from primary sources or research items is referred to as primary data [12]. This information is gathered using techniques like questionnaires, surveys, experiments, and interviews that are especially created to satisfy the requirements of the study. The study's main sources of data are (a) Information on students' interests, experiences, and views of artificial intelligence (AI) and (b) Types of AI employed.

Secondary Data: Information that the researcher did not personally observe is referred to as secondary data. Others have gathered this information from current and reliable sources, such as (a) Data on the number of industrial engineering students at Malikussaleh University and (b) Literature analysis of print and electronic scientific books, journals, and other information sources

The data collection technique to determine the number of participants in this study was calculated using the Slovin formula with an error rate (α) of 10%. With a total population of 1,005 participants, substituting these values into the formula resulted in 99.90, which was then rounded to 100 participants.

$$n = \frac{N}{1+N \propto^2} \quad (1)$$

n = 99.90 ≈ rounded to 100

Observation is done by going into the field and seeing for yourself, namely Industrial Engineering Students at Malikussaleh University who use Artificial Intelligence (AI). A questionnaire is a method of gathering data in which participants are asked to reply to a set of written statements or questions [13]. The information used in this study came from a variety of surveys given to Malikussaleh University students studying industrial engineering. A Likert scale was employed in this investigation. Method of Analysis: One of the most often used study models for forecasting how individuals would use and accept technology and information systems is the Technology Acceptance Model (TAM), which was created by Davis in 1989 [14]. Structural Equation Modeling (SEM) Structural Equation Modeling (SEM), which is a multivariate statistical technique for the relationship between variables in a model and directly identifies measurement errors to obtain comprehensive results about the model [15]. There are several stages of data processing that must be carried out, the following are the more detailed processing stages [16]

The stages of data analysis in this study included: (a) model specifications; (b) model estimation; (c) outer model evaluation, which consisted of the convergent validity test, discriminant validity test, and composite reliability (CR); and (d) inner model evaluation, which included the model fit test, collinearity test, R-squared test, effect size, and path coefficient.

3. Results and Discussion

3.1. Model Specification

An explanation of the relationship between two latent variables is called a model specification. Structural Equation Modeling (SEM) diagrams have linked parts. A route diagram is used to illustrate the linkages that will be investigated in order to aid with visualizing. You can view the model definition in Figure 1..

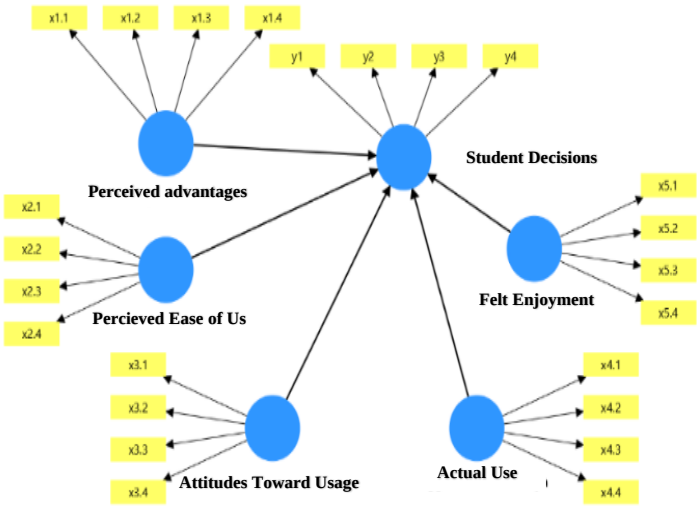

Figure 1. Model Specifications

According to the aforementioned route diagram, the links between student decisions and perceived advantages, perceived ease of use, attitudes toward usage, actual use, and felt enjoyment will be examined.

3.2. Model Estimation

The PLS algorithm, which has an iterative process that generates latent variable scores, is used to estimate the model. A model estimation can be developed based on the findings of the questionnaire recapitulation. Figure 2 displays the model estimation for visualizing latent variables.

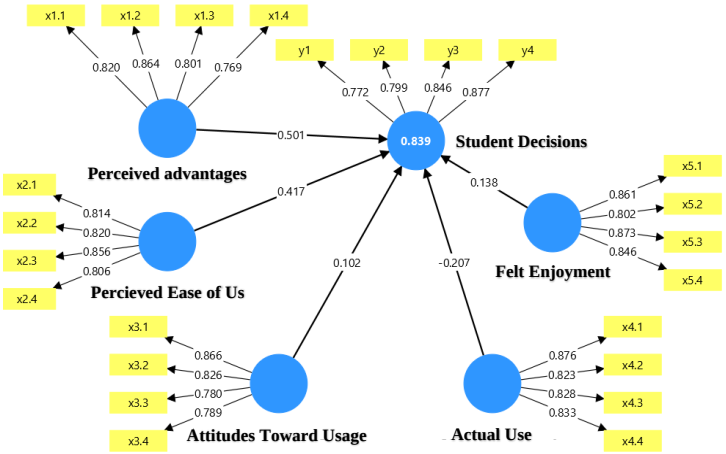

Figure 2. Model Estimation

3.3. Model Evaluation

3.3.1. Measurement Model (Outer Model)

Convergent Validity Test

The optimal Outer Loading value is 0.7, which indicates that the indicator is reliable for measuring the construct it creates. Table 1 displays the Outer Loading findings.

Table 1. Outer Loading Results

Variables	Indicator	Outer Loading	Information
Perception of Benefits	X1.1	0.820	Valid
	X1.2	0.864	Valid
	X1.3	0.801	Valid
	X1.4	0.769	Valid
Perception of Convenience	X2.1	0.814	Valid
	X2.2	0.820	Valid
	X2.3	0.856	Valid
	X2.4	0.806	Valid
Attitudes Towards Use	X3.1	0.866	Valid
	X3.2	0.826	Valid
	X3.3	0.780	Valid
	X3.4	0.789	Valid
Actual Usage	X4.1	0.876	Valid
	X4.2	0.823	Valid
	X4.3	0.823	Valid
	X4.4	0.833	Valid
The Pleasure Felt	X5.1	0.861	Valid
	X5.2	0.802	Valid
	X5.3	0.873	Valid
	X5.4	0.846	Valid
Chief Mahasiswa	Y1	0.772	Valid
	Y2	0.799	Valid
	Y3	0.846	Valid
	Y4	0.877	Valid

From Table 1, the results of the validity test show that the outer loading or loading factor is more than 0.7, which means that the variables forming the research are valid and can also be used as a benchmark to measure the variables studied in Student Decisions in Using Artificial Intelligence (AI) in the Industrial Engineering Department, Malikussaleh University.

Discriminant Validity Test

When the value of the hidden variable has an AVE value greater than 0.5, the measurement model is considered satisfactory. Table 2 shows the Average Variant Extracted (AVE) value, which provides the results of the discriminant validity test.

Table 2. Average Variant Extracted (AVE) Value

Variables	Average Variant Extracted (AVE)
Perceived Benefits	0.663
Perception of Ease	0.679
Attitudes towards use	0.666
Actual Usage	0.707
The pleasure felt	0.716
Perceived Benefits	0.680

The results of the discriminant validity test can be obtained from the Average Variant Extracted (AVE) value above, which shows that each variable has an Average Variant Extracted value >0.5, so it can be concluded that the indicators used have good discriminant validity.

Composite Reliability

An good cutoff value is 0.7, while a very desirable value is 0.8. Table 3 displays the findings of the Composite reliability values and Cronbach's Alpha.

Table 3. Cronbach's Alpha and Composite Reliability Values

Variables	Cronbach’s Alpha	Composite reliabilit
Perceived Benefits	0.870	0.910
Perception of Ease	0.845	0.895
Attitudes towards use	0.863	0.906
Actual Usage	0.844	0.894
The pleasure felt	0.834	0.887
Perceived Benefits	0.835	0.888

Since the Cronbach's alpha value is greater than 0.8 and the composite reliability value is greater than 0.8, it can be said that all of the values are reliable and that the findings demonstrate extremely excellent dependability.

3.3.2. Structural Model (Inner Model)

Latent variables, or variables that cannot be assessed right away, are expected to have causal links with one another using structural models. Assessing the internal or structural version comes after comparing the construct/variable measurement version. The R-rectangular check, impact size, path coefficient (Patch Coefficient), version healthy check, and collinearity assumption test may all be used to evaluate the inner model..

Model Fit Test

The match model take a look at is used to evaluate the suitability among determined correlations, in which the Standardized Root imply rectangular (SRMR) price is smaller than zero.10, then the model is taken into consideration appropriate. The version is said to fit if the ordinary in shape Index (NFI) price is among 0 and 1. The in the direction of 1, the higher/greater suitable the version. The results of the fit model test can be visible in table 4.

Table 4. Model Fit Test Results

Parameter	Saturated Model	Estimated Model
SEMR	0.062	0.062
_dULS	1.148	1.148
d_G	1.298	1.298
Chi-square	599.604	599.604
NFI	0.733	0.733

According to the model fit test findings, the model is deemed appropriate and excellent as the SRMR value is less than 0.10 and the NFI value is around 1.

Collinearity Test

Testing for collinearity reveals a relationship between indicators in a model's latent variable, which has unstable and inconsistent predictive potential. The VIF (Variance Inflation Factor) number can demonstrate collinearity; if it is less than 5, collinearity is not present. Variance Inflation Factor (VIF) values are displayed in Table 5.

Table 5. VIF (Variance Inflation Factor) Value

Indikator	VIF	Indikator	VIF	Indikator	VIF	Indikator	VIF
X1.1	1.913	X2.3	2.164	X4.1	2.441	X5.3	2.318
X1.2	2.231	X2.4	1.843	X4.2	1.978	X5.4	2.104
X1.3	1.622	X3.1	2.182	X4.3	1.911	Y1	1.616
X1.4	1.608	X3.2	1.838	X4.4	1.912	Y2	1.746
X2.1	1.837	X3.3	1.697	X5.1	2.273	Y3	2.092
X2.2	1.795	X3.4	1.688	X5.2	1.774	Y4	2.360

The results of the collinearity test show that if the VIF (Variance Inflation Factor) value is <5, the level of multicollinearity is low. This result confirms the robust (unbiased) estimation results in SEM PLS.

R-Square

The percentage of variation in a dependent variable that can be predicted or described by the unbiased variables is determined using the statistical metric known as R-square (R^2). A near 0.67 on the R-squared cost drawing is regarded as strong, zero. 0.19 is seen as vulnerable, while 33 is regarded as moderate. In Table 6, the R-squared values are displayed..

Table 6. R-Square Value

	R-Square	R-Square adjusted
Student Decision	0.839	0.830

Perceived utility, perceived ease of use, attitude toward usage, actual use, and perceived enjoyment all have a simultaneous impact on students' decisions to adopt artificial intelligence (AI) in Malikussaleh University's Industrial Engineering Department, according to the student decision variable's R-square value of 0.839. This indicates that the five factors account for 83.9% of the diversity in students' choices. A significant correlation between the independent (latent) factors and the dependent (student decision) variable is shown by the high R2 score. It implies that students are more likely to embrace AI if they find it pleasant, practical, and easy to use, and if they have a favorable attitude and have used it in academic or real-world settings before..

Effect Size

Effect size is used to determine the extent to which an external latent variable affects an endogenous latent variable. It makes it easier to assess the relationship's usefulness. According to the recommended guidelines, an effect size (f2) of 0–0.20 is considered minor, 0.21–0.50 is moderate, 0.51–1.00 is also moderate, and values more than 1.00 indicate a significant influence. Beyond statistical significance, this categorization helps comprehend the true significance of the link. Table 7 presents the results of the impact size analysis conducted for this study. It shows the degree to which each external variable influences the endogenous variable in the structural model.

Table 7. Effect Size Values

Criteria	f-Square
Perception of Benefits -> Student Decisions	0.185
Perception of Ease -> Student Decision	0.210
Attitudes Towards Use -> Student Decisions	0.011
Actual Use -> Student Decision	0.036
Experienced Enjoyment -> Student Decision	0.019

The Effect Size results obtained showed that the influence value on students' decisions in using Artificial Intelligence (AI) in the Industrial Engineering Department at Malikussaleh University was:

a. The perception of benefits on students' decisions to use Artificial Intelligence (AI) in the Industrial Engineering Department, Malikussaleh University has a strong influence (0.185).
b. The perception of ease of decision-making by students in using Artificial Intelligence (AI) in the Industrial Engineering Department at Malikussaleh University has a strong influence (0.210).
c. Attitudes towards the use of student decisions in using Artificial Intelligence (AI) in the Industrial Engineering Department, Malikussaleh University has a weak influence (0.011).
d. The actual use of students' decisions in using Artificial Intelligence (AI) in the Industrial Engineering Department of Malikussaleh University has a simple influence (0.036).
e. The enjoyment felt towards students' decisions in using Artificial Intelligence (AI) in the Industrial Engineering Department, Malikussaleh University has a weak influence (0.019).

Patch Coefficient

Hypothesis testing is the process of formulating particular claims or hypotheses regarding population attributes and evaluating their likelihood using sample statistics. Significance serves as the evaluation criteria for the structural model (inner model). In this study, two-tiled significance values of 1.65 (significance level = 10%), 1.96 (significance level = 5%), and 2.58 (significance level = 1%) were employed. Table 8 displays the values for the Patch Coefficient.

Table 8. Patch Coefficient

Variables	Original Sampel (O)	Sampel Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P-values
Benefit	0.501	0.492	0.130	3.864	0.000
Convenience	0.417	0.415	0.102	4.073	0.000
Attitudes Towards Use	0.102	0.107	0.107	0.959	0.338
Actual Usage	-0.207	-0.202	0.123	1.681	0.093
The Pleasure Felt	0.138	0.142	0.110	1.258	0.208

The results of the Patch Coefficient hypothesis test obtained the Patch Coefficient value as follows:

a. The p-value is 0.000 < 0.05 and the T-statistic value is 3.864 > 1.96. H_1 is approved, but H_0 is refused. This indicates that students' decisions to use artificial intelligence (AI) are significantly influenced by perceived benefits.
b. The p-value is 0.000 < 0.05 and the T-statistic value is 4.073 > 1.96. H_1 is approved, but H_0 is refused. This indicates that students' decisions to utilize artificial intelligence (AI) are significantly influenced by perceived ease of usage.
c. The p-value is 0.338 > 0.05 and the T-statistic value is 0.959 < 1.96. H_1 is refused, but H_0 is approved. This indicates that students' decisions to utilize artificial intelligence (AI) are not greatly influenced by sentiments regarding its use.
d. The original sample value (O) = -0.207, the p-value = 0.093 > 0.05, and the T-statistic value is 1.681 < 1.96. H_1 is refused, but H_0 is approved. This indicates that real-world application has little impact and typically has e.negative impact on students' choices about the employment of artificial intelligence (AI).
e. The p-value is 0.208 > 0.05 and the T-statistic value is 1.258 < 1.96. H_1 is refused, but H_0 is approved. This indicates that students' decisions to use artificial intelligence (AI) are not substantially influenced by their perception of enjoyment.

To see the influence of students' decisions in using Artificial Intelligence (AI) as a learning reference, from 100 students as respondents in this study, 100 students (100%) used Artificial Intelligence (AI) ChatGpt feature, 100 students (100%) with the menu option to answer questions as many as 80 students (80%) and make a summary of 20 students (20%) in the Industrial Engineering Department, Malikussaleh University.

The Influence of Perceived Benefits, Perceived Ease of Use, Attitude Toward Use, Actual Use, and Perceived Enjoyment on Students' Decisions in Using Artificial Intelligence (AI) in the Industrial Engineering Department of Malikussaleh University.

The results of testing the influence of perceived benefits, perceived ease of use, attitudes towards use, actual use, and perceived enjoyment on students' decisions in using Artificial Intelligence (AI) in the Industrial Engineering Department of Malikussaleh University, obtained the influence of variables that influence students' decisions in using Artificial Intelligence (AI) in the Industrial Engineering Department of Malikussaleh University.

a. The influence of perceived benefits shows a T-statistic value of 3.864, which is greater than the critical value of 1.96, as well as a p-value of 0.000 which is smaller than 0.05. This shows that perceived benefits have an important influence on students' decisions in using Artificial intelligence (AI) in the Industrial Engineering Department of Malikussaleh University. This means that the higher the students' perception of the benefits of Artificial intelligence (AI) , the more likely they are to decide to use Artificial intelligence (AI) in their academic activities.
b. The perceived ease of use variable shows significant results with a T-statistic value of 4.073, greater than 1.96, and a p-value of 0.000, which is smaller than 0.05. This indicates that perceived ease of use has a significant positive influence on students' decisions to use Artificial Intelligence (AI) in the Industrial Engineering Department of Malikussaleh University. This means that the higher students' assessment of the operational ease of Artificial Intelligence (AI) (such as a user-friendly interface or a fast learning process), the greater their tendency to use it in academic activities.
c. The attitude variable towards use as a variable has a T-statistic value of 0.957, which is smaller than 1.96, and a p-value of 0.338, which is greater than 0.05. These results indicate that attitudes towards use do not have a significant influence on students' decisions to use Artificial Intelligence (AI) in the Industrial Engineering Department of Malikussaleh University. This means that partially the attitude variable towards use does not have a significant influence on students' decisions to use Artificial Intelligence (AI). Artificial Intelligence (AI **)** in the Industrial Engineering Department of Malikussaleh University. In other words, students' attitudes toward the use of Artificial Intelligence (AI) cannot be used as a strong predictor of their decisions to use Artificial Intelligence (AI) in that context or their professional lives.
d. The actual usage variable yielded interesting results, with a T-statistic of 1.681, less than 1.96, and a p-value of 0.093, greater than 0.05. Although statistically close to the significance limit, this result is accompanied by an original sample (O) value of -0.207, indicating a negative effect. This means that the actual level of AI usage is not strongly influenced by the variables measured in this study, and there are even indications that other factors may play a role in inhibiting or reducing AI usage by students.
e. The Perceived Enjoyment variable shows highly significant results with a T-statistic value of 1.258, smaller than 1.96, and a p-value of 0.208, which is greater than 0.05. These results indicate that perceived enjoyment does not play an important role in students' decisions to use Artificial Intelligence (AI) in the Industrial Engineering Department of Malikussaleh University. This means that Industrial Engineering students of Malikussaleh University do not consider the aspect of enjoyment as the main factor in their decision to use Artificial Intelligence (AI). It is possible that other factors such as convenience, efficiency, or academic needs have a greater influence on this decision.

By looking at the perception through TAM with 5 perceptions, namely the perception of benefits, ease of use, attitude towards use, actual use and perceived enjoyment. From the test results to see the influence, 3 perceptions were obtained that had a strong and simple influence on students' decisions in using Artificial intelligence (AI), namely the perception of benefits with a value of 3,864 (38.64%), the perception of ease with a value of 4,073 (40.73%) and actual use with a value of 1,681 (16.81%). To see the influence of perception of benefits, perception of ease, and perception of actual use on students' decisions in using Artificial intelligence (AI) in the Department of Industrial Engineering, Malikussaleh University can be seen in Figure 3.

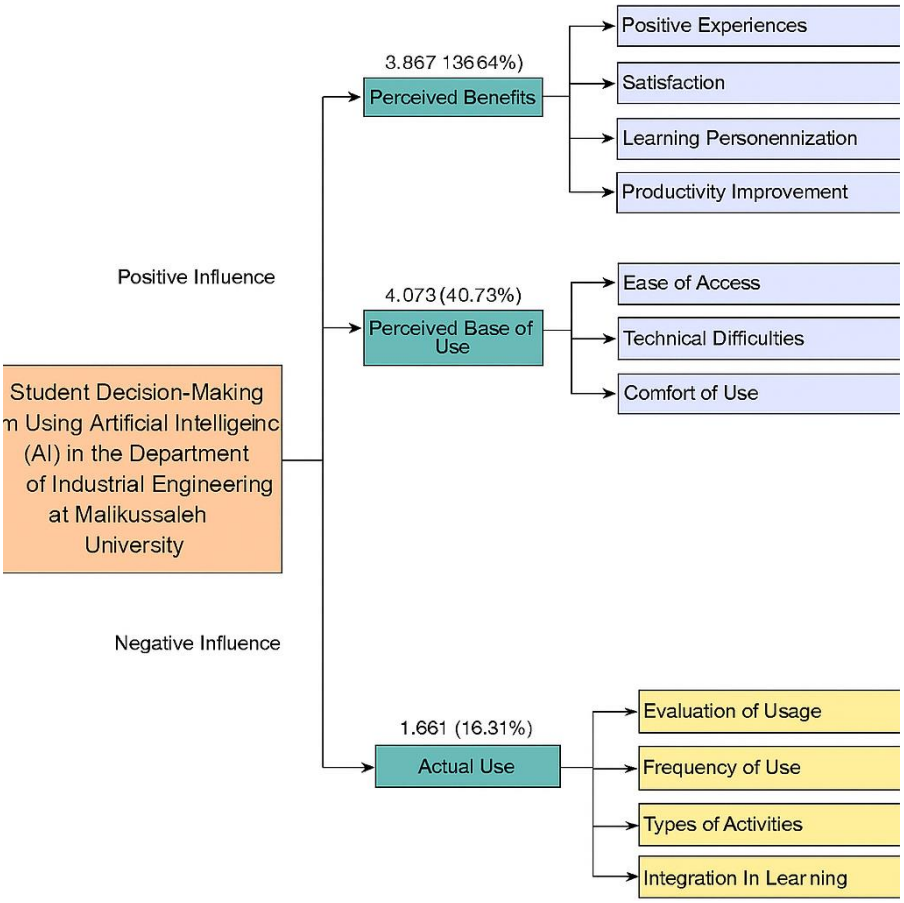

Figure 3. The Influence of Students' Decisions in Utilizing Artificial Intelligence (AI) in the Industrial Engineering Department of Malikussaleh University

Based on Figure 3, the independent variables tested show three influences on student decisions, namely: (a) perceived benefits, which account for 38.64%; (b) perceived ease of use, which accounts for 40.73%; and (c) actual use, which accounts for 16.81%, although this effect is negative and not statistically significant. Meanwhile, two variables were found to have no significant effect on student decisions, namely: (a) attitude towards use, which accounts for 9.57%; and (b) perceived enjoyment, which accounts for 12.58%.

The negative impact lies in the finding that "actual use" actually showed a negative and insignificant effect. In theory, the more frequently students use AI, the stronger their decision to continue using it should be. However, this finding is actually the opposite. Several possible causes require further investigation:

a. External factors such as campus policies, limited access, or resistance to new technologies that have not been accommodated in the model.
b. Digital fatigue or saturation of AI use, so that the intensity of use is not always directly proportional to the decision to continue using it.
c. The context of use, perhaps students use AI because of task demands, not because of personal preferences, so that even though usage is high, the decision to voluntarily adopt is low.

Comparison with previous research can be seen from:

a. Dominance of Perceived Usefulness and Ease, these results are consistent with many technology adoption studies that place utility and ease as the main factors, such as in the TAM (Technology Acceptance Model).
b. Regarding the Role of Attitude and Enjoyment, several other studies have found attitude and enjoyment to be significant predictors of new technology adoption, particularly for entertainment- or social-based applications. However, in an academic context like this study, the functional aspect outweighs the emotional aspect.
c. Actual Use, findings of negative effects of actual use are rare in the primary literature.

4. Conclusion

From the research analysis of the influence of students' decisions in using Artificial Intelligence (AI) as a learning reference using the Technology Acceptance Model (TAM) method, it was concluded that the perceptions that influence students' decisions in using Artificial Intelligence (AI) in the Industrial Engineering Department of Malikussaleh University are the perception of benefits with a value of 3,864 (38.64%), the perception of ease with a value of 4,073 (40.73%) and actual use with a value of 1,681 (16.81%). Based on these results, it is recommended that educators and educational technology developers design AI tools that are not only functional but also easy to use, thereby increasing student motivation and learning effectiveness. For example, integrating intuitive features relevant to the needs of the Industrial Engineering curriculum can strengthen the perception of AI's benefits and ease of use.

In addition, further research using a longitudinal approach is highly recommended to monitor changes in perceptions and patterns of AI use over time, in order to identify new factors that may emerge as technology and learning needs evolve. More broadly, this study makes a significant contribution to understanding how AI can be effectively integrated into higher education, particularly in engineering. With a better understanding of the factors influencing technology acceptance, educational institutions can optimize the use of AI to support more adaptive and innovative learning processes.

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