Hypothesis testing reporting

1. One-way ANOVA

H0: The means of students' satisfaction across different levels of their current perceptions of AI are equal.
Ha: The means of students' satisfaction across different levels of their current perceptions of AI are not equal.

Comparing the means of the independent variable "**Satisfaction_cf**" across different levels of the corresponding dependent variables **Perceptions of AI, Possitive Attitudes of AI, Negative Attitudes of AI**.

	Df	*Sum Sq*	*Mean Sq*	*F value*	*Pr(>F)*
Satisfaction_cf	1	5.765	5.7647	5.2996	0.0269
Residuals	38	41.335	1.0878		

Perception of AI

There are two degrees of freedom, one for "**Satisfaction_cf**", indicating that this is one-way factor and 38 for the residuals.
The sum of squares for "Satisfaction_cf" is 5.765, while for the residuals, it is 41.335.
The mean square for "**Satisfaction_cf**" is calculated by dividing the sum of squares by its degrees of freedom (5.765 / 1 = 5.7647), and for the residuals, it is 1.0878.
The F value is a test statistic that assesses the difference in means between groups. In this case, the F value for "**Satisfaction_cf**" is ***5.2996***. A higher F value suggests a stronger effect.
The p-value associated with the F value measures the significance of the differences in means. In this case, the **p-value** is **0.0269**, which is less than the typical significance level of 0.05. A lower p-value suggests a more significant effect

RESULTS:

p-value = 0.0269
p-value ≤ alpha (0.05)
Conclusion: **Reject the H0.**
Interpretation: There is a significant difference in students' satisfaction across different levels of their current perceptions of AI.

	Df	*Sum Sq*	*Mean Sq*	*F value*	*Pr(>F)*
Satisfaction_cf	1	3.559	3.5588	3.5643	0.06669
Residuals	38	37.941	0.9985		

Positive Attitude of AI

There are two degrees of freedom, one for "**Satisfaction_cf**", indicating that this is one-way factor and 38 for the residuals.
The sum of squares for "**Satisfaction_cf**" is 3.559, while for the residuals, it is 37.941.

The mean square for "**Satisfaction_cf**" is calculated by dividing the sum of squares by its degrees of freedom (3.559/ 1 = 3.559), and for the residuals, it is 0.9985.
The F value is a test statistic that assesses the difference in means between groups. In this case, the F value for "**Satisfaction_cf**" is ***3.5643***. A higher F value suggests a stronger effect.
The p-value associated with the F value measures the significance of the differences in means. In this case, the **p-value** is ***0.06669***, which is **more** than the typical significance level of 0.05. A lower p-value suggests a more significant effect

RESULTS:

p-value = 0.06669
p-value > alpha (0.05)
Conclusion: **Reject the H1.**
Interpretation: There is no significant difference in students' satisfaction across different levels of their positive attitudes toward AI.

Negative Attitude of AI

	Df	*Sum Sq*	*Mean Sq*	*F value*	*Pr(>F)*
Satisfaction_cf	1	4.235	4.2353	4.1544	0.04853
Residuals	38	38.740	1.0195		

There are two degrees of freedom, one for "**Satisfaction_cf**", indicating that this is one-way factor and 38 for the residuals.
The sum of squares for "**Satisfaction_cf**" is 4.235, while for the residuals, it is 41.335.
The mean square for "**Satisfaction_cf**" is calculated by dividing the sum of squares by its degrees of freedom (4.235/ 1 =4.235), and for the residuals, it is 1.0195.
The F value is a test statistic that assesses the difference in means between groups. In this case, the F value for "**Satisfaction_cf**" is ***4.1544***. A higher F value suggests a stronger effect.
The p-value associated with the F value measures the significance of the differences in means. In this case, the **p-value** is ***0.04853***, which is less than the typical significance level of 0.05. A lower p-value suggests a more significant effect

RESULTS:

p-value = 0.04853
p-value ≤ alpha (0.05)
Conclusion: **Reject the H0.**
Interpretation: There is a significant difference in students' satisfaction across different levels of their negative attitudes toward AI.

2. MANOVA test

H0: There is no significant difference in the combined means of students' satisfaction with campus facilities and their current perceptions of AI.
Ha: There is a significant difference in the combined means of students' satisfaction and their current perceptions of AI.

	Df	*Pillai*	*approx F*	*num Df*	*den Df*	*Pr(>F)*
Satisfaction_cf	1	0.27409	4.5309	3	36	0.008541
Residuals	38					

There are two degrees of freedom, one for "Satisfaction_cf", indicating that this is one-way factor and 38 for the residuals.
Pillai's trace statistic is a multivariate test statistic that assesses the relationship between the variables. For "**Satisfaction_cf**," the Pillai's trace value is **0.27409**. This value indicates the strength of the relationship between the variables. A higher Pillai's trace suggests a stronger relationship.
The F statistic is used to compare the variance between groups (**effect**) to the variance within groups (**error**). For "**Satisfaction_cf,**" the approximate F value is **4.5309**. This statistic indicates whether there is a significant effect of "**Satisfaction_cf**" on the **AI perceptions** (dependent variables).
The *numerator* degrees of freedom represent the degrees of freedom for the **effect** (between groups). For "**Satisfaction_cf**," there are 3 degrees of freedom.
The denominator degrees of freedom represent the degrees of freedom for the **error** (within groups). It's 36 in this case.
P-value assesses the significance of the relationship between the variables which is **0.008541**

RESULTS:

p-value = 0.008541
p-value ≤ alpha (0.05)
Conclusion: **Reject the H0**.
Interpretation: There is a significant difference in the combined means of students' satisfaction and their current perceptions of AI.

3. Linear Regression

H0: There is no linear relationship between students' satisfaction and their current perceptions of AI.
Ha: There is a linear relationship between students' satisfaction and their current perceptions of AI.

Residuals

	Min	*1Q*	*Median*	*3Q*	*Max*
	-5.1250	-1.0588	0.7426	0.8971	2.8750

Coefficients

	Estimate	*Std. Error*	*t value*	*Pr(>|t|)*
(Intercept)	14.4779	1.2516	11.568	5.13e-14
Satisfaction_cf	-1.0882	0.3049	-3.569	0.00099

Residual standard error	1.778 on 38 degrees of freedom
Multiple R-squared	0.2511
Adjusted R-squared	0.2314
F-statistic	12.74 on 1 and 38 DF
p-value	0.0009902

Residuals represent the differences between the "**Satisfaction_cf**" actual observed values and the values predicted "**Perceptions**", "**Pos_Att**", and "**Neg_Att**" by the regression model. The residuals have a min of -5.1250 and a max of 2.8750. These values indicate the range of errors in the model's predictions.
The coefficients indicate the estimated relationships between the independent variable **Satisfaction_cf** and the combined dependent variables.
The estimated **intercept** is 14.4779. It represents the expected value of the combined dependent variables when **Satisfaction_cf** is 0.
"**Satisfaction_cf**" is the key coefficient. It indicates that for each unit **increase** in **Satisfaction_cf**, the combined dependent variables (**Perceptions, Pos_Att,** and **Neg_Att**) are expected to **decrease** by approximately **1.0882** units.
The residual standard error is approximately 1.778 and it measures the spread of residuals around the regression line.
Multiple R-squared (R^2) represents the proportion of the variance in the combined dependent variables explained by the model. In this case, the model explains about **25.11%** of the variance.
Adjusted R-squared adjusts for the number of predictors and provides a value of **23.14%.**
The F-statistic tests the overall significance of the model. It has a value of 12.74 with 1 and 38 degrees of freedom.
The associated **p-value 0.0009902** is less than 0.05, indicating that the overall model is statistically significant.

RESULTS:

p-value = 0.0009902
p-value ≤ alpha (0.05)
Conclusion: **Reject the H0**.
Interpretation: There is no linear relationship between students' satisfaction and their current perceptions of AI.