Correlations Coefficient (Level of Significance) MODULE 7 QUIZ II

Name_____Kalyn_Flowers_____Date_____Score_____

1. The following sample data were obtained from companies to determine should the number of stocks a company have depends on the rate of return. Is it reasonable to conclude that there is a position association in the population between the number of stocks and rate of return by using a .05 significant level. MUCH SHOW YOUR WORK FOR FULL CREDIT.

Companies	# of Stocks	Rate of Return
A	8	.15
B	16	.16
C	25	.21
D	16	.18
E	20	.18
F	16	.19
G	20	.15
H	20	.17
I	16	.13
J	10	.11

Step 1. Specify the population parameter of interest.

- If the amount of stocks a business has depends on the rate of return, the businesses want to decide. The point of consideration is the population correlation.

Step 2. Formulate the appropriate null and alternative hypotheses

- Since the companies want to decide if the number of stocks depends on the rate of profit, there will be a two tailed hypothesis test.
- $H_{0 \ P=} 0$
- $H_{1 \ : \ p} \neq 0$

Step 3.   Specify the level of significance.

- The significance level is 0.5

Step 4.   Compute the correlation coefficient and the test statistic.

- T test statistics = 2.306
- Degree of freedom= 8

Step 5.   Construct the rejection region and decision rule.

- The two tailed, lower tail, critical value for an alpha level equal to 0.05: n-2 =10-2=8 degrees of explanatory variables is t0.05=2.306. The rule of judgement is, reject the null hypothesis if t > 2.306. Do not ignore the null hypothesis otherwise.

Step 6.   Reach a decision

- T=2.5657 ≠ 2.306, do not reject the null hypothesis.

Step 7.   Draw a conclusion.

Since the null hypothesis is not dismissed, the sample information does not support the statement that the number of stocks and the rate of return are not related.

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2. The following hypotheses are given to determine an One-Tail testing.

H_0: p≤0

H_A: p >0

A random sample of 10 paired observations indicated a correlation (r) of .35. Can we conclude that the correlation in the population is greater than zero by performing the t-statistic?
- Yes

By using the .05 significance level, what is the p-value or critial value?_____

- 1.860

What is your decision regarding H_o or the null hypothosis?

- T= 1.0567 > 1.860, don't reject the null hypothesis

3. The Airline Passenger Association studied the relationship between the number of passengers on a particular flight and the cost of the flight. It seems logical that more passengers on the flight will result in more weight and more luaggage, which in turn will result in higher fuel costs. For a sample of 13 flights, the correlation between the number of passengers and total fuel cost was .37. Is it reasonable to conclude that there is positive association in the population between the two variables?

H_0: p≤0

$H_{A:}$ p >0

Use the 5% significant level, what is the p-value?_____1.796_____

What is your decision regarding H_0 or the hull hypothesis? Reject or Do not Reject__t=1.3208 > 1.796, do not reject the null hypothesis._____

Draw a conclusion. Specifically, what does this indicate about the question?

- The sample evidence does not support the claim that the positive linear relationship between the number of passengers on a particular flight and the cost of the flight is positive, since the null hypothesis is not rejected.

4. The correlation between the number of police on the street and the number of crimes committed, for a sample of 15 comparable sized cities, is 0.45. At the 0.05 significance level is there a positive association in the population between the two variables?

    a. State the null and alternate hypotheses.

H_0: _____P ≤_0_____

H₁: _____P > 0_____

    b. State the decision rule.

- Reject the null hypothesis if t > 1.771. Do not ignore the null hypothesis otherwise.

    c. Compute the value of the test statistic.

    d. What is your decision regarding the null hypothesis? Interpret the result.

- Reject the null hypothesis, t= 1.8168 > 1.771