**Assignment 5**

Problem 1:

The major goal of this study was to determine the validity and reliability of nursing students' attitudes regarding e-learning scales in the Philippines.

The article employed Principal Component Analysis (PCA) with varimax rotation for factor analysis, and they assumed that the components and variables were independent of one another.

Items 6 and 11 were removed from the factor loading since they had low factor loading. A factorability of the matrix was assumed with a value of 0.6 in the exploratory factor analysis and substantial correlation. Items 6 and 10 were likewise removed after Cronbach's Alpha Reliability Properties, leaving nine elements to be put into one component.

Text

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The factors are broken down in this table. As can be shown, the factor loading is positive when the research topic of whether e-learning is a good approach for nursing students has a favorable answer.

As a result, if the factor loading value is rising, it indicates that more students are interested in e-learning.

The article employed Bartlett's test and KM0 measure of sample adequacy for component stability, as well as Cronbach's alpha coefficients for reliability analysis.

Finally, the research concluded that the model they developed accurately predicted nursing students' attitudes and perspectives about e-learning in the Philippines.

Problem 2:

A)

Graphical user interface, text, application

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Chart, histogram

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We decide on the number of components where the graph bends. As can be seen, the bend is greatest when the number of components is equal to three. As a result, we will focus our investigation on three components.

B)



Chart, scatter chart

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The red lines represent the eigen vectors, and if we use the eigen value approach, the number of components will be greater than three.

C)

When comparing the scree plot with the eigenvalue approach, we will utilize three components in our study because it is usually best to use the smallest amount of components possible.A picture containing graphical user interface

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Graphical user interface

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D)

The formula for the first component is as follows:

**RC1 = 0.645E1 – 0.676E2 + 0.674E3 – 0.660E4 + 0.737E5 – 0.648E6 + 0.720E7 – 0.531E8 + 0.602E9 – 0.623E10 + 0.559A2 – 0.550A7**

E) It appears that the conditions that have the attributes of an extroverted person have a positive loading value, whereas the situations that have the qualities of an introverted person have a negative loading value, according to the first component RC1.

Positive values of the variables indicate that the individual is more extroverted, whilst negative values indicate that the person is more introverted.

F)

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We can see the min and max values of each component by using the summary() function.

G)

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Apart from the numbers altering when compared to Principal Component Analysis, we can observe that there is no discernible difference between the two methodologies. And it's still likely that we'll interpret the results the same way: positive values indicate that the individual is more outgoing, while negative values indicate that the person is more introverted.