Homework4

1. This dataset (adhd.sav) is also in spreadsheet format and contains ten variables. Each variable is one item from a scale designed to tap the symptoms of attention-deficit hyperactivity disorder (ADHD) that 500 young adults completed. Respondents reported the frequency of each behavior on a four-point scale: 0 (Never or Rarely), 1 (Sometimes), 2 (Often), and 3 (Very Often). Please explore the underlying factor structure of ADHD scale?

(1) Please perform KMO and Bartlett's Test and report the values.

(2) Please use the principal component analysis method to extract the factors, use the varimax rotation method, and report the scree plot and eigenvalue table.

(3) Please report the loading table based on the rotated solution (sorted by size and suppress small coefficients below .30).

(4) Please decide how many factors should be retained;

(5) make the decision on which items should be deleted and give your explanation.

2.The data file mobile.sav is a data set that reflects the use of mobile phones by mobile phone customers. It contains six variables, namely customer\_ID, phone time during get-off work hours (peak\_mins), phone hours during workdays and off work (OffPeak\_mins), weekend calls duration (weekend\_mins), international call duration (international\_mins), total call duration (total\_mins), and average call duration (average\_mins). Researchers hope to segment mobile users to understand their different mobile phone consumption habits. According to the previous research, the researcher believes that users should be divided into five main groups. Now they hope to obtain the corresponding quantitative clustering results and adopt different marketing measures for each category.

(1) Calculate the mean, minimum, maximum, and standard deviation of all variables.

(2) Use the K-means clustering method to divide the population into five categories and compare the differences between the categories (report the ANOVA table).