**Assignment5.2**

**Problem Statement:**

Using the following data, perform aoneway analysis of variance using α=.05. Write up the results in APA format.

[Group1: 51, 45, 33, 45, 67]

[Group2: 23, 43, 23, 43, 45]

[Group3: 56, 76, 74, 87, 56]

**Answer:**

Sample mean () for the group1: = 48.2

Sample mean () for the group2: = 35.4

Sample mean () for the group3: = 69.8

To find grand mean =∑Xij / N

=  (48.2+35.4+69.83)/3=**51.13**

Treatment Sum of Squares (SSTR) = ∑∑ rj(j-)2 where j r is the number of rows in thejth treatment and X j is the mean of the j th treatment.

SSTR=5(48.2-51.13)2+5(35.4-51.13)2+5(69.8-51.13)2

=**3022.9**

Mean Square Treatment (MSTR) =( SSTR )/c-1average between variation” (c is the number of columns in the data table)

MSTR=(3022.9)/2=**1511.47**

Error Sum of Squares (SSE)= ∑∑ (Xij-2

=(51-48.2)2+(45-48.2)2+(33-48.2)2+(45-48.2)2+(67- 48.2)2+(23-35.4)2+(43-35.4)2+(23-35.4)2+(43-35.4)2+(45-35.4)2+(56-69.8)2+(76-69.8)2+(74-69.8)2+(87-69.8)2+(56-69.8)2

**=1860.8**

Mean Square Error (MSE) = (SSE)/N-c “average within variation”

N=15 c=3

MSE=(1860.8)/12=**155.07**

F=(MSTR)/MSE

=(1511.4) / (155.07)

=**9.75**

Fcritical(2,12)=**3.89**

Decision: Here critical value is smaller than F-value so rejected null hypothesis. 