STATISTICAL ANALYSIS

DATA ANALYSIS AND RESULTS
DEMOGRAPHICS

All over the world, social media has become an integral part of our lives, especially to the young population most of their conversations are carried out on various social media platforms such as Facebook, Twitter, and Whatsapp. Roberta (2015), states that ninety percent of college students have Facebook accounts and that the estimated time spent on Facebook ranges from thirty minutes to two hours daily. In this study, the target population was between the ages of eighteen and twenty-two. Past researches have shown that there is a relationship between social media and loneliness, Chen and Lee (2013), state that social media has reduced face to face communication with the family members leading to loneliness and depression. Roberta et al. (2015) suggested that self-esteem determine the number of friends that one had on Facebook. This study intends to establish the effect of wellbeing, emotional investment and night time use of social media on self-esteem using regression analysis.

DEMOGRAPHICS

53.4% of the population was male while 46.6% of them were female. 8.6% of the respondents were 18 years old, 15.5% of the respondents were 19 years old, 36.2% of the respondents were 20 years old, and those aged 21 were 27.6% while those aged 22 were 12.1%. On the social media platform used, 31.1% of the respondents indicated that they use Facebook, 6.6% use Twitter, 20.4% use Instagram, 4.8% use Pinterest, 3% use Tumblr, 26.9% of the respondents use YouTube while 7.2% of the respondents use other platforms.65.5% of the respondents were single, 29.3% of them were in a relationship, while the remaining 5.2% of them were engaged.

DESCRIPTIVE STATISTICS

The descriptive statistics for the four variables in the hypothesis were and the results are shown in the table 1.1.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Overall social media use	47	3	5	3.67	.540	.292	.497	.347	.349	.681
Wellbeing	47	1	3	2.12	.454	.206	-.248	.347	.608	.681
Emotional Investment	46	2	6	3.45	.878	.771	.200	.350	-.284	.688
Self-esteem	47	2	3	2.28	.274	.075	-.774	.347	.155	.681
What is your gender?	58	1	2	1.47	.503	.253	.142	.314	-2.052	.618
Valid N (listwise)	40									

All the four variables were negatively skewed except for the variable “Gender” which was positively skewed. An analysis of standard residuals was carried out which showed that there were no outliers reported for the four variables. Shapiro-Wilk test was used to test for normality; Emotional investment was normally distributed for both the male and the female populations, Wellbeing was also normally distributed for both the genders, overall social media use was normally distributed among the female population, but not the male population. Self-esteem was normally distributed for the female population, but not the male population.

DATA RELIABILITY

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.677	.656	64

The Cronbach’s alpha was used to measure the internal consistency of the scale. Gliem (2003), suggests that Cronbach’s alpha is a test reliability technique that requires only a single test administration to provide a unique estimate of the reliability for a given test.

Cronbach's alpha is the average value of the reliability coefficients one would obtain for all possible combinations of items when split into two half-tests. The Cronbach's alpha in this research was 67.7% which Nisbet et al., (2009) assert that is acceptable.

Social media time

9.3% of the respondents use social network between 6-10 am, 13.6% use social media between 10am-2pm, 20.7% of the respondents 2pm-6pm, 32.1% of the respondents use social media between 6pm-10pm, 19.3% of the respondents use social media between 10pm-2am, while the remaining 5% use social media between 2am-6am.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.720	.751	6

The statements on the times when the respondents used social media had a high level of internal consistency of 72.0% as depicted by the Cronbach's alpha.

EMOTIONAL INVESTMENT IN SOCIAL MEDIA

In this study, emotional investment is measured with variables such as "I feel disconnected from friends when I'm not logged into Facebook," "I would be disappointed if I could not use Facebook at all" and other eight variables.

Reliability Statistics

Cronbach's Alpha	N of Items
.863	10

The emotional investment questions displayed a high level of internal consistency as depicted by the Cronbach's alpha of 86.3%.

Majority of the respondents, 30.4%, disagree with the statement "I feel disconnected from friends when I'm not logged into Facebook," while those who strongly agree with the statement.

GENERAL HEALTH MEASURE

*Do you use social media? * Feeling unhappy or distressed Crosstabulation*

			Feeling unhappy or distressed				Total
			Often	Sometimes	Seldom	Never	
Do you use social media?	Yes	Count	13	15	14	6	48
			27.1%	31.3%	29.2%	12.5%	100.0%
Total		Count	13	15	14	6	48
			27.1%	31.3%	29.2%	12.5%	100.0%

Distress was used as a measure of general health. 27.1% of the social media users were often distressed, 31.3% of them were sometimes unhappy or distressed, 29.3% of them seldom felt unhappy or distressed, while 12.5% of them indicated that they never get distressed. Only 12.5% of the respondents that use social media have never experienced some amount of unhappiness or distress.This agrees with past studies, Lee et al. (2012), state that the more one uses social media, more the more they are likely to be unhappy and distressed. The statements on general health depicted a moderate internal consistency as shown by the Cronbach's alpha.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.698	.679	12

Nisbet et al., (2009), states that Cronbach's alpha above sixty percent is not ideal, but shows a significantly high amount of internal consistency of the data.

SELF ESTEEM

Rosenberg's scale measured self -esteem. The respondents rated ten statements a 7-point Likert scale from "strongly disagree" to "strongly agree." Loss of self-confidence was used as a measure of self-esteem among the respondents who use social media.

Having lost self-confidence

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Often	15	20.8	31.3	31.3
	Sometimes	8	11.1	16.7	47.9
	Seldom	11	15.3	22.9	70.8
	Never	14	19.4	29.2	100.0
	Total	48	66.7	100.0	
Missing	System	24	33.3		
Total		72	100.0		

31.3% of the respondents indicated that they often had lost confidence, 16.7% of them acknowledge that sometimes they lose confidence, 22.9% of the seldom have confidence loss, while 29.2% of them never experience. This indicates that a large number of respondents who use social media have experienced loss of self-confidence at least once.

A chi-square test was then carried out to establish whether there was a statistically significant relationship between night use of social media and loss of self-confidence.

Chi-Square Tests

	Value	of	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.376[a]	9	.110
Likelihood Ratio	17.570	9	.041
Linear-by-Linear Association	1.818	1	.178
N of Valid Cases	48		

a. 13 cells (81.3%) have expected count less than 5. The minimum expected count is .33.

We can see here that χ (9) = 14.376, p = .110. This tells us that there is no statistically significant association between Loss of self-confidence and Night use of social media.

A moderator analysis was then carried in which Self-esteem was assumed to be continuous, the independent variables; Wellbeing and Emotional investment were also assumed to be continuous. The moderator variable, Gender, was assumed to be dichotomous, that is, was divided in two groups; male and female. An analysis of standard residuals was carried out which showed that there were no outliers reported for the four variables, therefore the assumption that there are no outliers hold.

When a moderation analysis was run, with Self-esteem as the dependent variable and Emotional investment as the independent variable with gender as the moderator, the following results were noted;

Model Summary

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.313[a]	.098	.056	.260	.098	2.335	2	43	.109	
2		.136	.074	.257	.038	1.855	1	42	.180	1.623

a. Predictors: (Constant), Q1 What is your gender?, emoinv Emotional Investment
b. Predictors: (Constant), Q1 What is your gender?, emoinv Emotional Investment, genemot
c. Dependent Variable: Self_esteem Self-esteem

The change in R^2 is reported as **.038**, which is 3.8%, which is the percentage increase in the variation explained by the addition of the interaction term, (Emotional investment* Gender). We can also see that this increase is not statistically significant (p >.0005). We can conclude that Gender does not moderate the relationship between Emotional investment and Self-esteem. The Durbin-Watson value=1.623 is close to 2, so we can make the assumptions that the observations are independent.

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.315	2	.157	2.335	.109[a]
	Residual	2.898	43	.067		
	Total	3.212	45			.102[b]
2	Regression	.437	3	.146	2.206	
	Residual	2.775	42	.066		
	Total	3.212	45			

a. Predictors: (Constant), Q1 What is your gender?, emoinv Emotional Investment
b. Predictors: (Constant), Q1 What is your gender?, emoinv Emotional Investment, genemot
c. Dependent Variable: Self_esteem Self-esteem

The ANOVA table, p>0.005 which suggests that the regression model does not statistically significantly predict Self-esteem.

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	1.830	.217		8.432	.000		
	emoinv Emotional Investment	.088	.045	.290	1.960	.056	.957	1.045
	Q1 What is your gender?	.101	.078	.192	1.296	.202	.957	1.045
2	(Constant)	2.441	.498		4.905	.000		
	emoinv Emotional Investment	-.087	.136	-.285	-.638	.527	.103	9.731
	Q1 What is your gender?	-.320	.319	-.605	-1.003	.322	.056	17.706
	genemot	.123	.090	.902	1.362	.180	.047	21.346

a. Dependent Variable: Self_esteem Self-esteem

The value of Tolerance is greater than 0.1 and VIF is less than 10, this shows that the assumption that the data does not show multicollinearity can be made.

The moderation analysis was then repeated with Self-esteem as the dependent variable and wellbeing as the independent variable, with Gender as the moderator.

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.501[a]	.251	.216	.243	.251	7.217	2	43	.002	
2		.252	.199	.246	.001	.060	1	42	.808	1.815

a. Predictors: (Constant), Wellbeing, Q1 What is your gender?
b. Predictors: (Constant), Wellbeing, Q1 What is your gender? gendwell
c. Dependent Variable: Self_esteem Self-esteem

The change in R^2 is reported as **.001**, which is 1.00%, which is the percentage increase in the variation explained by the addition of the interaction term, (Wellbeing* Gender). We can also see that this increase is not statistically significant (p <.0005). We can conclude that Gender does moderate the relationship between Wellbeing and Self-esteem. The Durbin-Watson value=1.815 is close to 2, so we can make the assumptions that the observations are independent.

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.853	2	.426	7.217	.002[a]
	Residual	2.540	43	.059		
	Total	3.393	45			.006[b]
2	Regression	.856	3	.285	4.726	
	Residual	2.537	42	.060		
	Total	3.393	45			

a. Predictors: (Constant), Wellbeing, Q1 What is your gender?
b. Predictors: (Constant), Wellbeing, Q1 What is your gender? gendwell
c. Dependent Variable: Self_esteem Self-esteem

The ANOVA table, p<0.005 which suggests that the regression model statistically significantly predicts Self-esteem.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	1.529	.214		7.135	.000		
	Q1 What is your gender?	.072	.072	.132	.994	.326	.986	1.015
	Wellbeing	.300	.080	.500	3.760	.001	.986	1.015
2	(Constant)	1.389	.614		2.263	.029		
	Q1 What is your gender?	.158	.360	.291	.439	.663	.040	24.726
	Wellbeing	.366	.280	.609	1.308	.198	.082	12.176
	gendwell	-.041	.166	-.185	-.245	.808	.031	31.963

a. Dependent Variable: Self_esteem

The value of Tolerance is greater than 0.1 and VIF is less than 10, this shows that the assumption that the data does not show multicollinearity can be made.

The regression analysis also shows that Wellbeing is a significant predictor of Self-esteem, p<0.05.

The moderation analysis was then done with Self-esteem as the dependent variable and overall use of social media as the independent variable, with Gender as the moderator.

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.146[a]	.021	-.029	.247	.021	.426	2	39	.656	
2		.037	-.039	.248	.016	.634	1	38	.431	1.665

a. Predictors: (Constant), Overall social media use, Q1 What is your gender?
b. Predictors: (Constant), Overall social media use, Q1 What is your gender?, gendover
c. Dependent Variable: Self_esteem

The change in R^2 is reported as **.016**, which is 1.6%, which is the percentage increase in the variation explained by the addition of the interaction term, (Overall social media use* Gender). We can also see that this increase is not statistically significant (p >.0005). We can conclude that Gender does not moderate the relationship between Overall use of social media and Self-esteem. The Durbin-Watson value=1.665 is close to 2, so we can make the assumptions that the observations are independent.

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.052	2	.026	.426	.656[a]
	Residual	2.379	39	.061		
	Total	2.431	41			.689[b]
2	Regression	.091	3	.030	.493	
	Residual	2.340	38	.062		
	Total	2.431	41			

a. Predictors: (Constant), Overall social media use, Q1 What is your gender?
b. Predictors: (Constant), Overall social media use, Q1 What is your gender?, gendover
c. Dependent Variable: Self_esteem

The ANOVA table, p>0.005 which suggests that the regression model does not statistically significantly predict Self-esteem.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.368	.256		9.239	.000		
	Q1 What is your gender?	.065	.080	.135	.807	.424	.900	1.111
	Overall social media use	-.049	.072	-.114	-.680	.501	.900	1.111
2	(Constant)	2.974	.804		3.701	.001		
	Q1 What is your gender?	-.364	.544	-.756	-.668	.508	.020	50.507
	Overall social media use	-.215	.221	-.501	-.973	.336	.096	10.440
	gendover	.116	.145	1.085	.796	.431	.014	73.276

a. Dependent Variable: Self_esteem Self-esteem

The value of Tolerance is greater than 0.1 and VIF is less than 10, this shows that the assumption that the data does not show multicollinearity can be made.

CORRELATION ANALYSIS

Correlations

		Q1 What is your gender?	Overall social media use	Wellbeing	Emotional Investment	Self-esteem
Q1 What is your gender?	Pearson Correlation	1	.300*	-.132	-.208	.088
	Sig. (2-tailed)		.040	.375	.166	.555
	N	58	47	47	46	47
Overall social media use	Pearson Correlation	0.300*	1	-.056	- 0.512**	-.071
	Sig. (2-tailed)	.040		.723	.000	.655
	N	47	47	42	41	42
Wellbeing	Pearson Correlation	-.132	-.056	1	0.306*	0.484**
	Sig. (2-tailed)	.375	.723		.041	.001
	N	47	42	47	45	46
Emotional Investment	Pearson Correlation	-.208	-0.512**	0.306*	1	.250
	Sig. (2-tailed)	.166	.000	.041		.093
	N	46	41	45	46	46
Self-esteem	Pearson Correlation	.088	-.071	0.484**	.250	1
	Sig. (2-tailed)	.555	.655	.001	.093	
	N	47	42	46	46	47

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

There is a significant negative correlation between emotional investment and overall social media use, r=-5.12, p<0.01. It was also established that there was a significant positive correlation between Gender and overall social media use, r=0.300, p<0.05. It was determined that there is a positive correlation between Wellbeing and emotional investment, r=0.306, p<0.05, the analysis also revealed that there was a significant positive correlation

Reference

Nisbet, R., Elder, J. F., & Miner, G. (2009). *Handbook of statistical analysis and data mining applications*. Amsterdam: Academic Press/Elsevier.