SCHOOL OF COMPUTING
Faculty of Engineering

SECI2143

PROBABILITY & STATISTICAL DATA ANALYSIS

SEMESTER 2019/2020-2

PROJECT 1

Report

Section : 06

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INTRODUCTION

Nowadays, social media is indeed one of the most popular platforms to be used in the society, especially among the youngsters. As time passes by, the usage of social media gradually expands as it is not only used for socializing, like the name itself, but can also be used for many other purposes. With social media being a multi-purpose platform, the importance of it can be focused in a lot of different aspects. One of them is in the communication aspect. It provides a medium which enables people to communicate with one another regardless of the distance. In simpler words, it is convenient to be used for contacting with your loved ones. However, it is not limited to that. Netizens can interact within the virtual communities to share their thoughts and opinions. This leads to the next aspect, obtaining knowledge. It correlates to how one got an idea or information from a source shared by another netizen for their learning process. Furthermore, news also can be spread much faster by using social media. This helps people to be more aware of the current issue happening around the globe. Next, people also opt for social media for entertainment purposes. It does not require any of their energy to fulfill their fun needs. Last but not least, social media helps a business grow since people are exposed to a lot of advertisements online.

OBJECTIVE

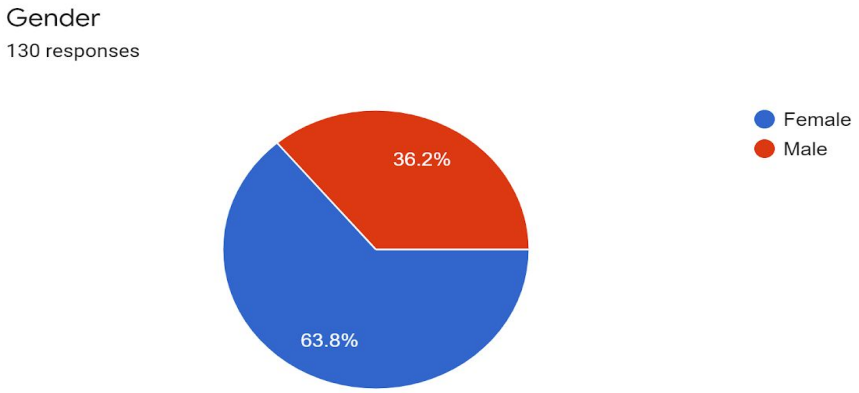
The purpose of this survey is to identify what undergraduates used social media for and the time spent.

SCOPE OF STUDY

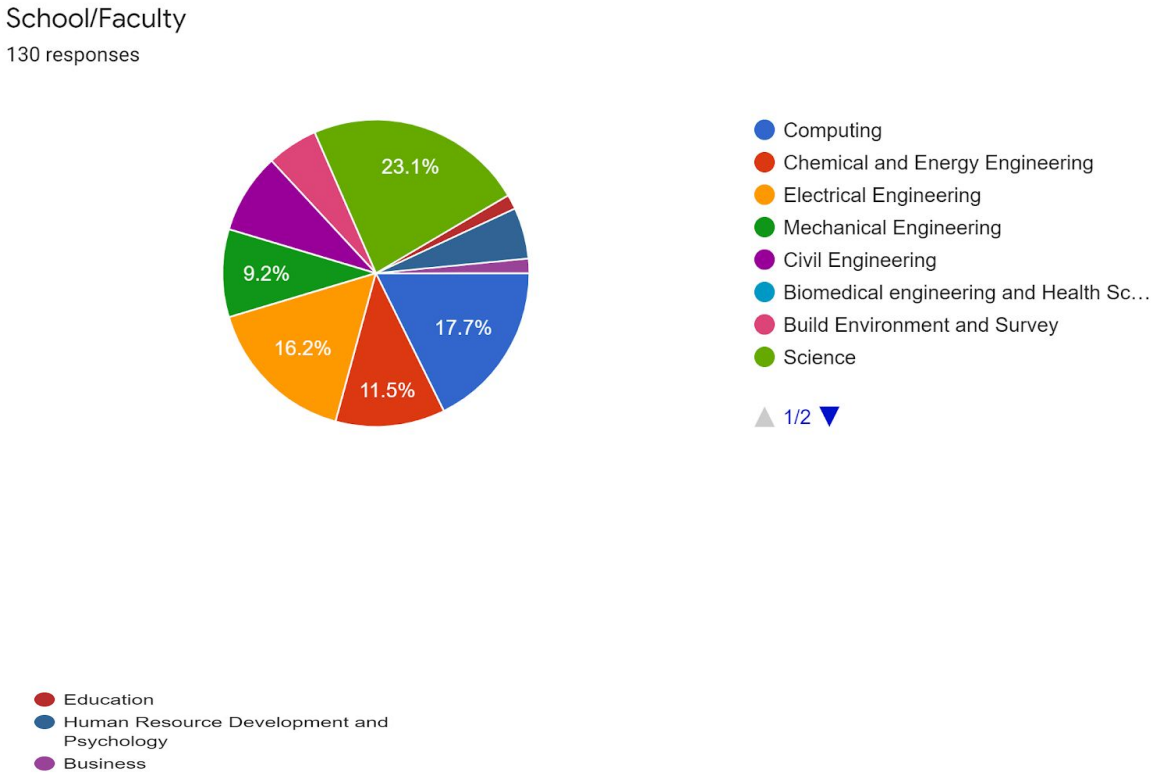
This study was limited to perceptions of UTM's undergraduates. Data for this study was collected by using Google Form in 7 days.

CONTENT:

This survey is distributed among UTM's students and has a total of 130 respondents in a span of one week.



The first question asked on the survey was the respondents' gender. From the pie chart above, 63.8% (83) of the respondents are female while the remaining 36.2% (47) are male.



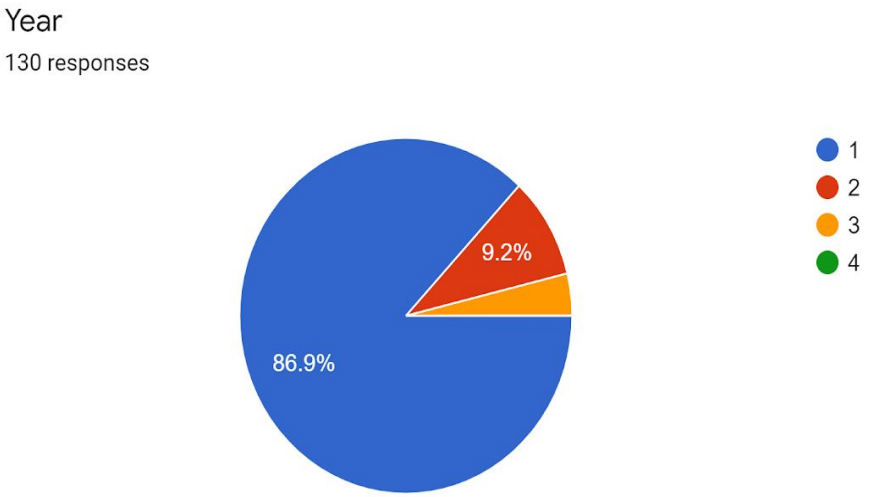
The second question asked in the survey was the respondents' school. It can be seen that the students from School of Science take the biggest space in the pie chart, with 23.1% (30 students). This followed by the students from School of Computing with the percentage of

17.7% (23 students). Students from Azman Hashim International Business School and School of Education share the same spot of being the minority among the respondents with 2 students (1.5%) from each school.

Stem and leaf plot:

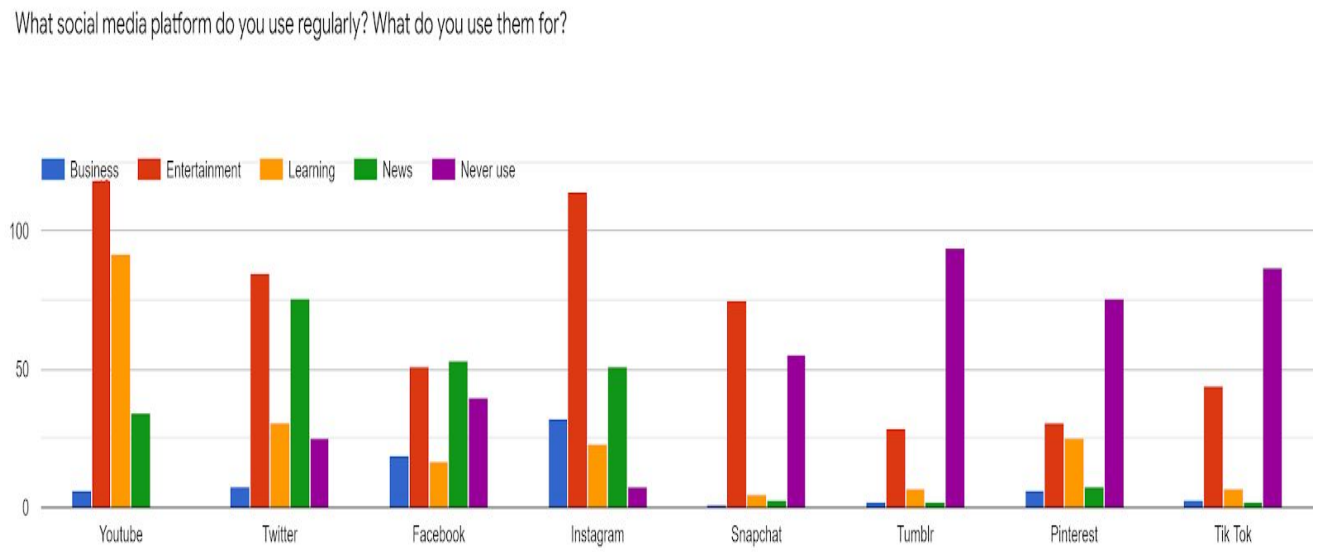
Stem	Leaf
0	2 2 7 7
1	1 2 5
2	1 3
3	0

Key: 1|1 means 11 students



Next, the third question asked in the survey was the respondents' year. From the pie chart above, many of the respondents are from Year 1 and no respondent is recorded from the fourth-year students.

Thus, the first three questions are to classify the difference in usage of social media between the options from different aspects (gender, faculty, year).



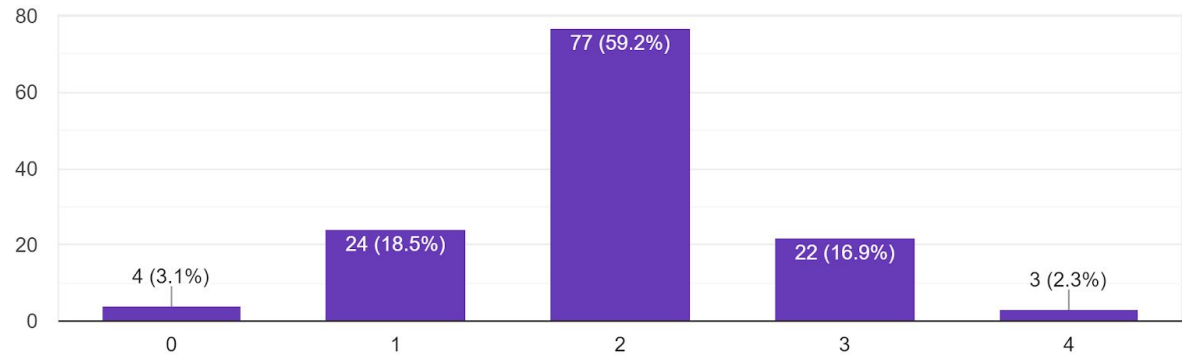
Furthermore, listed in the survey are well-known social media applications and their usage for respondents to choose. For this question, the respondents were allowed to choose more than one choice. The graph portrays that the majority of the respondents thought that social media's main usage was for entertainment. The most used application for entertainment used among the respondents was YouTube (119 respondents). However, some usage depends on the application. For example, aside from entertainment, respondents used Instagram to promote their business (32 respondents) rather than learning (23 respondents). In contrast, YouTube was known to be a great learning platform according to the respondents (92 respondents) compared to business' purpose (6 respondents). In terms of receiving news, Twitter was voted as the best platform for it (76 respondents).

SUPPORT FOR TOPIC

To get more information on the usage of social media among the students, these statements were given for the respondents to rate from 0 (strongly disagree) to 4 (strongly agree). For the first statement, most of the respondents (77 respondents) gave the rate 2 which means that they have a neutral opinion on the statement. For the next statement, 70.8% of the respondents (92 respondents) strongly agreed that social media makes communicating so much easier.

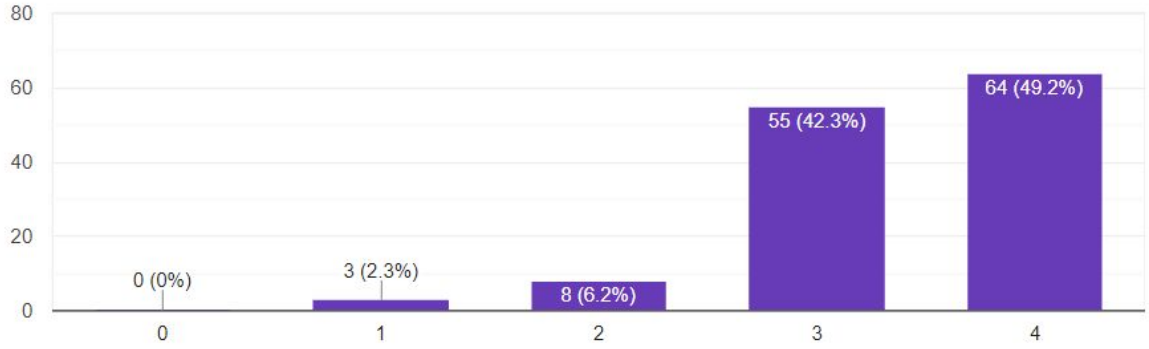
The information obtained through social media is accurate.

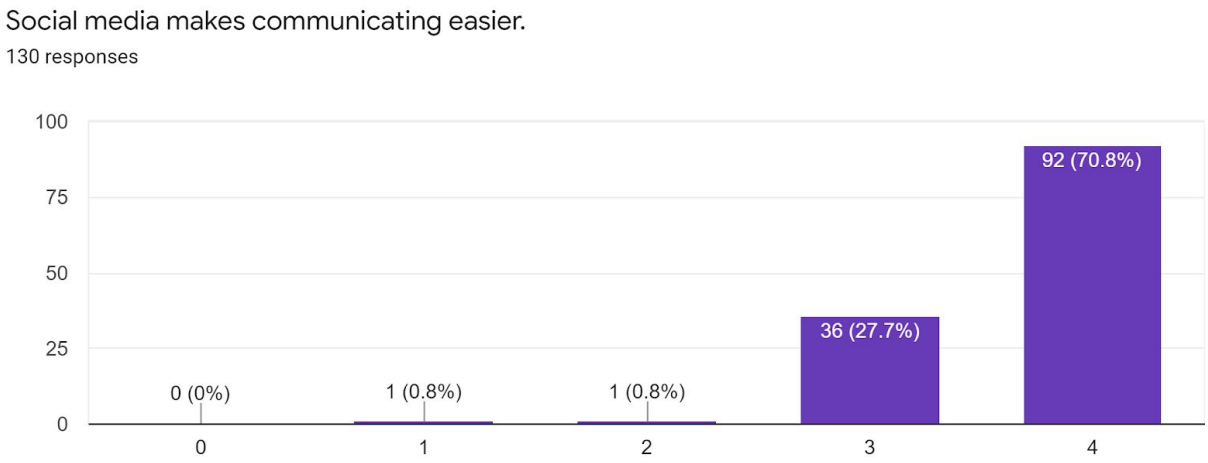
130 responses



Social media is efficient in receiving news.

130 responses





The boxplot and scatter plot for "The Efficiency in Receiving News" .

The data used to draw the boxplot is obtained from the frequency of respondents' choice.
No respondent strongly disagree to the statement "Social media is efficient in receiving news" thus making the data zero. 3 respondents(2.3%) disagree to the statement while 8 respondents (6.2%) are neutral to the statement. A bigger number of the respondent responded positively to the statement whereby 55 respondents(42.3%) agreed to it and the others 64 (49.2%) strongly agreed.

Data: 0,3,8,55,64

Minimum value=0

Maximum value==64

$Q_1 = \frac{25}{100}(5) = 1.25$ $Q_2 = \frac{50}{100}(5) = 2.5$ $Q_3 = \frac{25}{100}(5) = 3.75$

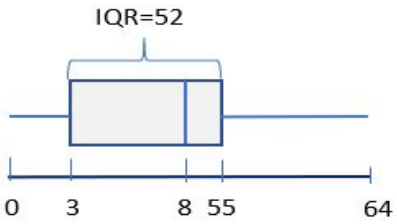
$=2^{nd}$ of data $=3^{rd}$ of data $=4^{th}$ of data

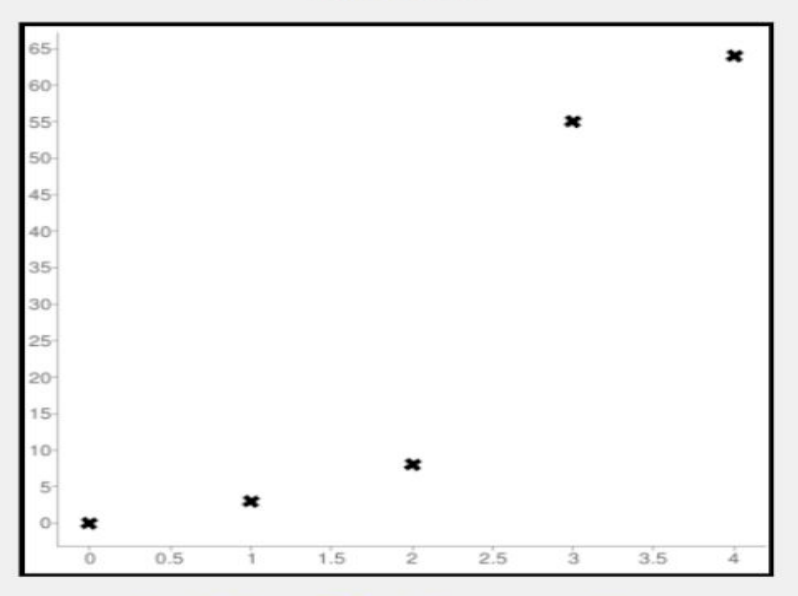
$=3$ $=8$ $=55$

IQR = 55– 3

= 52

Skeletal Boxplot:





The boxplot for "The Accuracy in Obtaining Information" .

The data used to draw the boxplot is obtained from the frequency of respondents' choice.
4 respondent strongly disagree to the statement "The information obtained from social media is accurate". 24 respondents disagree to the statement while 77 respondents are neutral to the statement. On the bright side, responded positively to the statement whereby 22 respondents agreed to it and the others 3 strongly agreed.

Data: 3, 4, 22, 24, 77

Minimum value=3

Maximum value==77

$Q_1 = \frac{25}{100}(5) = 1.25$ $Q_2 = \frac{50}{100}(5) = 2.5$ $Q_3 = \frac{25}{100}(5) = 3.75$

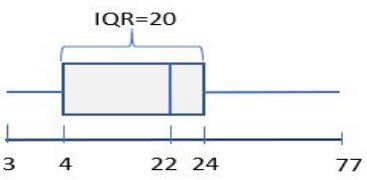
$=2^{nd}$ of data $=3^{rd}$ of data $=4^{th}$ of data

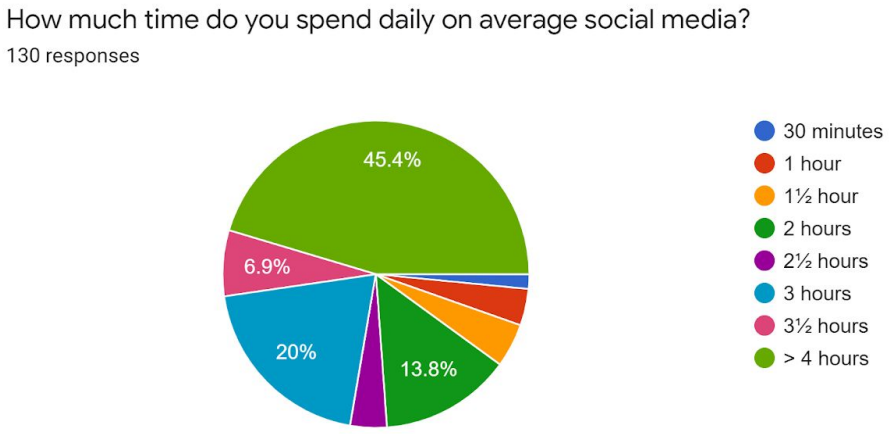
=4 =22 =24

IQR = 24 – 4 Lower limit=4 –1.5(20) Upper limit = 24 + 1.5(20)

= 20 = -26 = 54

Skeletal Boxplot:





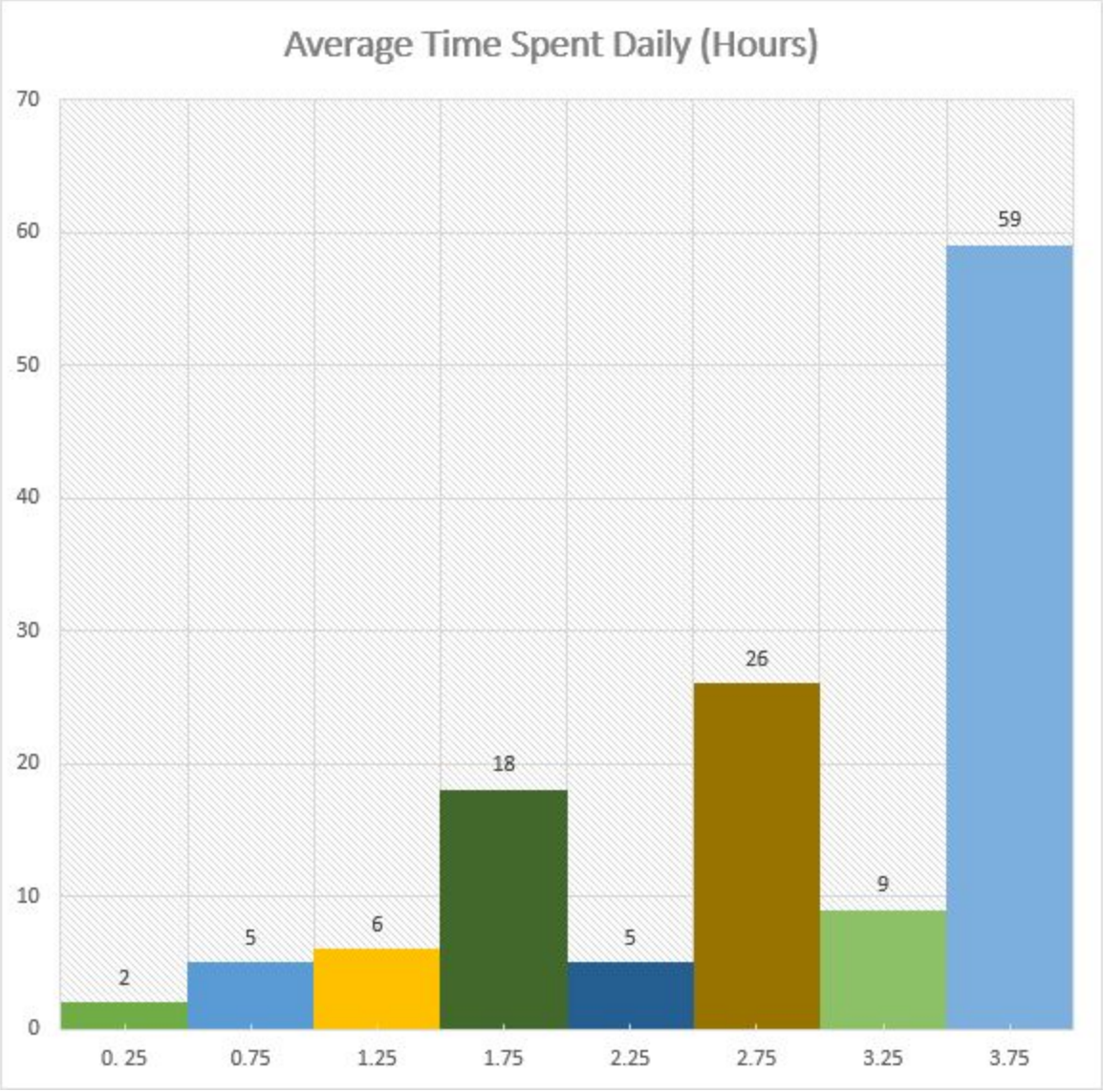
Frequency Distribution Table

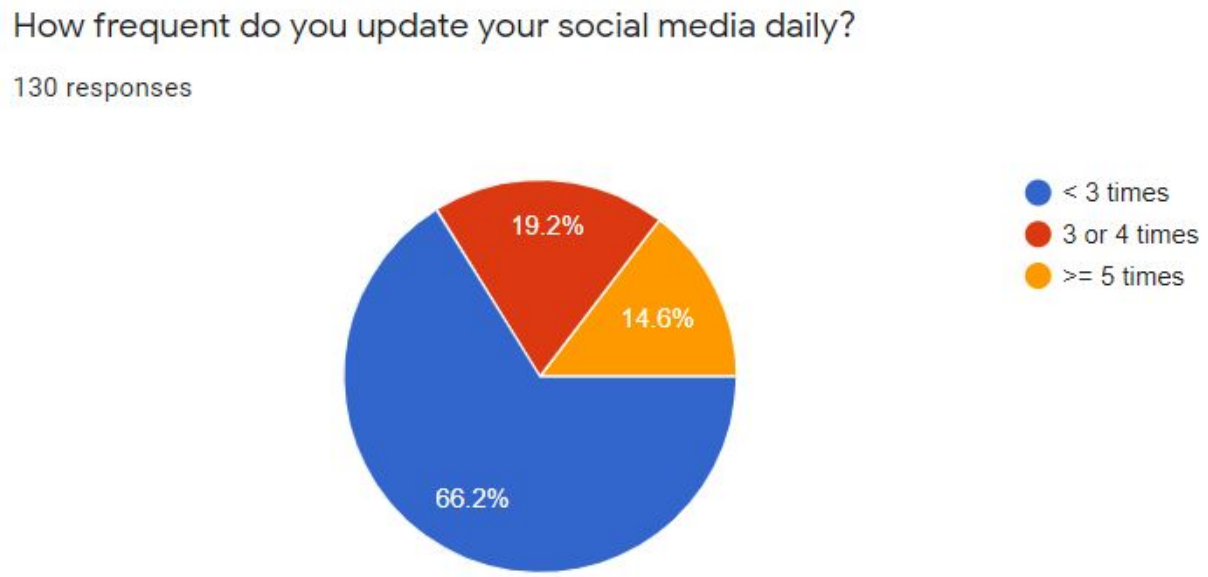
We classify the data into frequency distribution table for a better and clearer insight on how to obtain the statistical measure. Based on the data obtained (Average time spent on social media daily) from the survey, the mean for the data is 2.8962 while the standard deviation of data is 0.9793. Based on the standard deviation, it can be concluded that the numbers are less spread out. The skewness of the data is -0.8637 which means that it is negatively skewed.

Class interval	Midpoint, x	Frequency, f
0.0 – 0.5	0.25	2
0.5 – 1.0	0.75	5
1.0 – 1.5	1.25	6
1.5 – 2.0	1.75	18
2.0 – 2.5	2.25	5
2.5 – 3.0	2.75	26
3.0 – 3.5	3.25	9
3.5 – 4.0	3.75	59

Histogram

Based on the frequency distribution above, a histogram was plotted below.





Next, we also wanted to find out how active the students are in using social medias; thus, two kinds of questions were asked in the survey. The first question asked in the survey was how much time these students spend on social media despite having a busy schedule. It is found that most of the respondents (45.4% respondents) spent more than 4 hours on social media daily. Although the majority of them spend more than 4 hours on social media, the result also leads to the fact that the majority of them are not that active on social media in terms of uploading or updating status, which is less than 3 times daily (66.2%).

HYPOTHESIS TESTING

A hypothesis testing is made based on the question “How long on average do you spend on social media daily?”. A frequency distribution table was made for a clearer vision of the data and along with it, mean and standard deviation was obtained. With a mean of 2.8962 and a standard deviation of 0.9793, is it still valid to say that the average a student spends on social media is 3 hours even when the mean calculated shows that the average is a little under 3 hours?

$H_0 = 3$ $\alpha = 0.05$ (significance level)
$H_{1 <} 3$

Using the Rstudio, we have obtained a result conveying that the null hypothesis we initially made could be accepted. Two methods are shown that are using the traditional method and also by calculating the p-value.

```
> n = 130          #sample size
> xbar = 2.8962    #mean (average time spent daily)
> sd = 0.9793      #standard deviation
> mu = 3           #null hypothesis value (3 hours)
> alpha = 0.05     #significance value
> #Traditional Method
> z = (xbar-mu)/(sd/sqrt(n))    #calculate z test statistics
> z.alpha = qnorm(1-alpha)
> z
[1] -1.208518
> -z.alpha                      #calculate critical value
[1] -1.644854
> #P-value method
> pval = pnorm(z)
> pval             #lower tail p-value
[1] 0.113424
```

With traditional method, the z test statistic, -1.2085 is not less than the critical value -1.6449. Hence, at 0.05 significance level, we accept the null hypothesis that the average spent daily on social media is 3 hours.

Using the p-value, the lower tail p-value of the z test statistic is 0.1134. It turns out to be greater than the 0.05 significance level. Thus, we accept null hypothesis. The average spent daily on social media can be 3 hours.

CONCLUSION

Based on the data above, we can simply conclude that the undergraduate students used social media for some purposes such as entertainment, receiving news, business along with marketing and learning. Most of the respondents are from first year students which we conclude that first year students have more free time and spend on social media. Majority of the respondents agree that social media makes communication easier which they can communicate with each other anytime and anywhere. In addition, they also agreed that social media is efficient in receiving news because undergraduate students always bring their phone anywhere thus easier to get information. Somehow, there are some social medias that have never been used by the respondents such as tik tok, snapchat and pinterest. It shows that most of the students only used popular social media apps in their phone. For instance, for entertainment purposes, YouTube is the only social media that all of the respondents use because YouTube is quite popular among students. Prior to the survey, YouTube serves as a useful platform to learn, entertain and receive news.