



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SCHOOL OF COMPUTING
Faculty of Engineering

**SECI2143: PROBABILITY & STATISTICAL DATA
ANALYSIS**

Report Project 1

SECTION : 04 – 1SECR

COURSE NAME : BACHELOR OF COMPUTER SCIENCE – COMPUTER NETWORKS & SECURITY

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1.0 Introduction

A cafeteria is a type of food service location in which there is little or no waiting staff table service, whether a restaurant or within an institution such as a university is also referred to as Arked in Malaysian language. In University Technology of Malaysia (UTM), there are a lot of Arkeds in which students go for their own purposes whether in UTM Johor Bahru or in UTM Kuala Lumpur. A total of 42 dining places can be found in both UTM. For example, in UTM Johor Bahru there are Arked Cengal, Arked Lestari, Arked Meranti, Arked Angkasa and many more. These Arkeds serve as a place for students to eat at as well as buy necessities from the shops that are available at these Arkeds.

2.0 Background of Study

It is clearly seen that food and necessities is a crucial part in everyone's life to survive and stay healthy, not only among students. There are many factors that lead to the frequency of students who visits the Arked's weekly. Generally, this study is to identify which Arked has the greatest number of students.

3.0 Objective of Study

1. To study which Arked has the greatest number of UTM students visited and from which college they live in.
2. To study the amount of money spent when UTM students go to the Arked.
3. To study the time taken and the time of the day UTM students to go to the Arked from their residence and their school.

4.0 Description of Data

Population : UTM Johor Bahru students

Sample : 100 students

Data Description :

Variables	Types of Variable
Gender of students	Qualitative
Age of students	Quantitative
Year of studies	Quantitative
Students' faculty	Qualitative
Students' residence	Qualitative
Types of Arked	Qualitative
Purpose of visiting the Arked	Qualitative
Cleanliness of Arked	Qualitative
Arked recommendations	Qualitative
Time of day visiting the Arked	Quantitative
Money spent per week in Arked	Quantitative
Time taken to go to Arked from students' residence	Quantitative
Time taken to go to Arked from student's faculty	Quantitative

5.0 Method of Data Analysis

Objectives	Variables related	Data Description
To study which Arked has the greatest number of UTM students visited.	Types of Arked.	Bar chart Mode
To study the amount of money spent when UTM students go to the Arked.	Money spent per week in Arked. Purpose of visiting the Arked.	Frequency distribution Bar plot Mean Median Standard deviation
To study the time taken and the time of the day UTM students go to the Arked from their residence and their school.	Time of day visiting the Arked. Time taken to go to Arked from students' residence. Time taken to go to Arked from student's faculty.	Histogram Boxplot

6.0 Analysis and Discussion

6.1 Students' information.

i. Gender

Gender	Frequency
Male	60
Female	40

Pie Chart of Gender

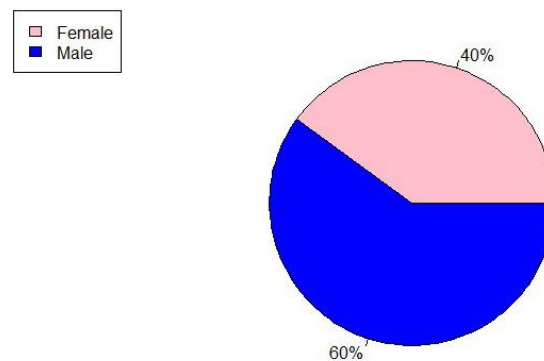


Figure 1

According to the survey, a total of 100 respondents have answered. In this survey, 60% of the respondents are males while 40% are females as stated in figure 1.

ii. Age

Age	Frequency
18	2
19	2
20	43
21	20
22	14
23	5
24	4
25	5
26	2
27	0
28	3

[illegible]

Figure 2

A stem and leaf graph about the students' age are shown in figure 2 above. Stem 1 Leaf 8, Stem 1 Leaf 9, Stem 2 Leaf 6 has two leaves respectively and all of them have the same frequency of the corresponding age, which is 18, 19, and 26 accordingly which are 2.

Stem 2 Leaf 0 has 43 leaves which states 43 students with the age of 20 have answered the survey. Meanwhile, Stem 2 Leaf 1 has 20 leaves which makes age 21 students are 20 in total. Next, students with the age 22 is 14 in total because Stem 2 Leaf 2 has 14 leaves. Stem 2 Leaf 3 and Stem 2 Leaf 5 both have 5 leaves which

makes 5 students with age 23 and 25 have answered the survey respectively. Stem 2 Leaf 4 has 4 leaves which states 4 students with the age 24. Next, only 3 students with the age 28 have answered the survey because Stem 2 Leaf 8 have 3 leaves. There are no Stem 2 Leaf 7 because there is no respondent at that age who answered the survey.

iii. Year of Studies

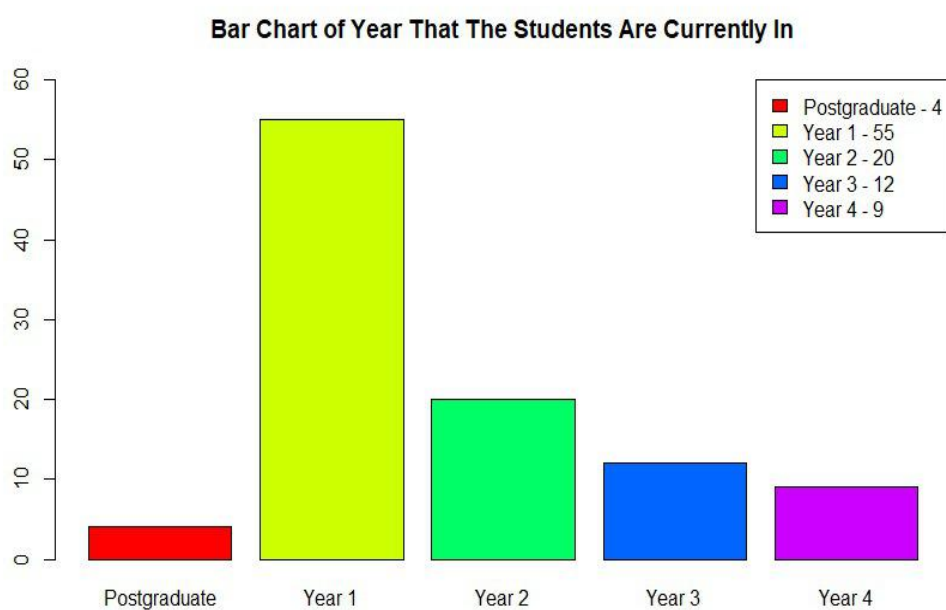


Figure 3

In figure 3, the bar chart above that shows the year of the students are currently in. The highest number of respondents recorded was Year 1 which is 55. Next, the second highest is Year 2 which is 20 followed by Year 3 which is 12 and Year 4 which is 9. The lowest number of respondents in the survey is the postgraduates which is only 4 people.

iv. Students' College

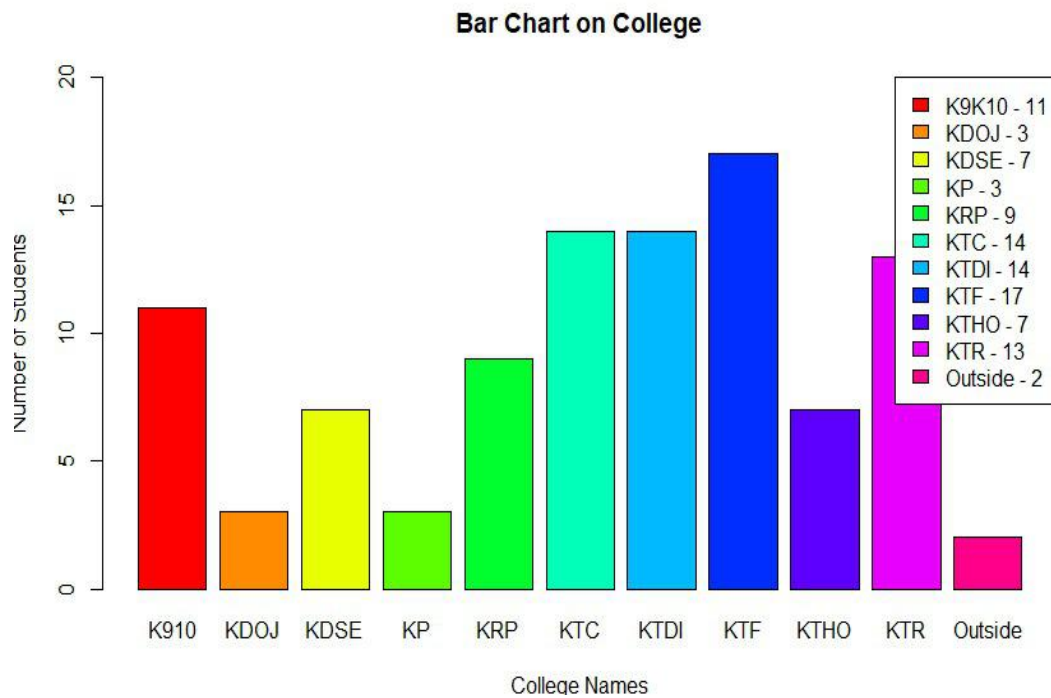


Figure 4

Figure 4 above depicts a bar chart on students' residence area. It is stated that the students of KTF residence recorded the highest which are 17 students. The second highest respondents are from KTC and KTDI which are the same in number which are 14 students. Students who live in KTR are recorded as the third highest which are 13 students. On the other hand, the fourth highest respondents are from students who live in K910 which are 11 students. Next, KDSE and KTHO students were recorded the same in number of students which are 7 students. The sixth highest respondents recorded are from KDOJ and KP which are 3 respectively. The lowest respondents stated that the students who live outside of UTM which is only 2 students.

v. Students' Faculty

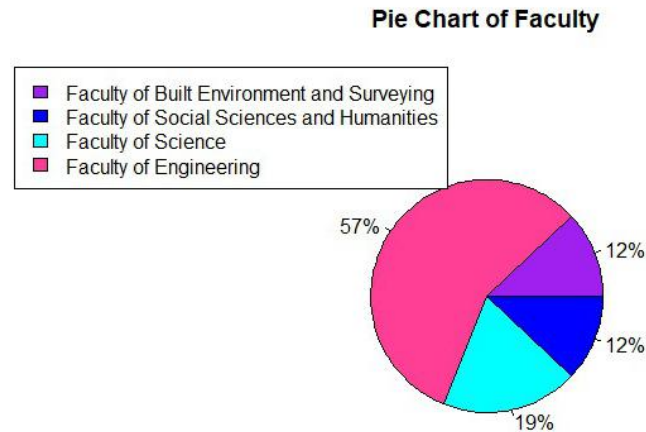
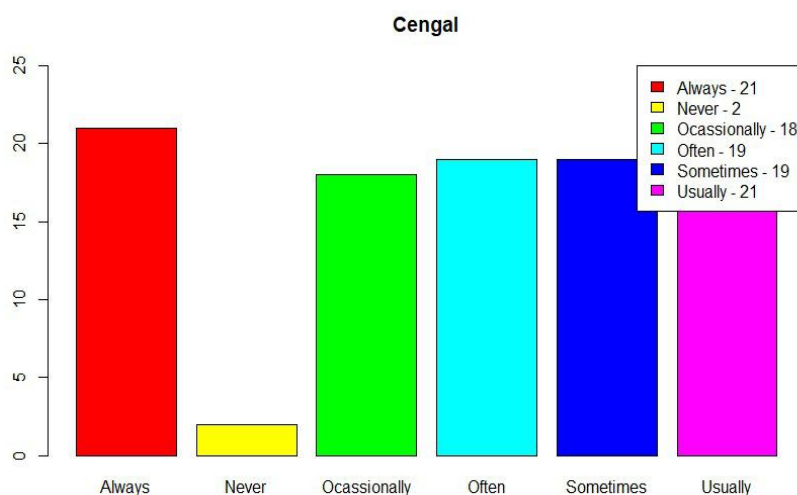


Figure 5

Figure 5 above shows a pie chart of respondents' faculty. It illustrates that the greatest number of students who respond to the survey is from Faculty of Engineering (57%). The second greatest number of students who answered the survey is from Faculty of Science (19) followed by Faculty of Built Environment and Surveying and Faculty of Social Sciences and Humanities, which are 12 correspondingly. Meanwhile, there are no respondents from School of Professional and Continuing Education.

6.2 Comparing which Arked has the highest amount of visit.

i. Types of Arked



In figure 6 Arked Cengal, the highest number of students who always and usually visit there are 21. The lowest number of students who never visit there are only 2.

Figure 6

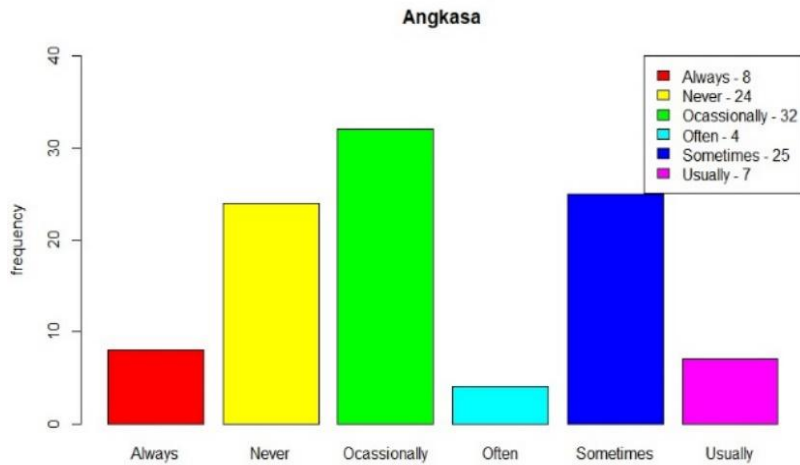


Figure 7

In figure 7 Arked Angkasa, the highest number of students who occasionally visit there are 32. The lowest number of students who often visit there are only 4.

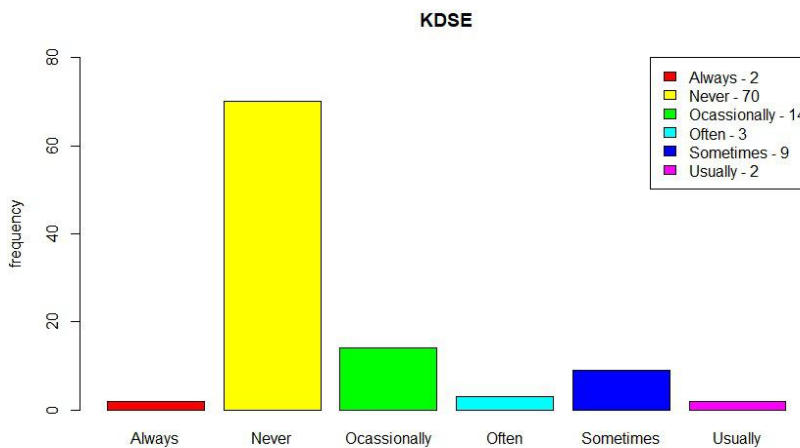


Figure 8

In figure 8 Arked KDSE, the highest number of students who never visit there are 70. The lowest number of students who always and usually visit there are only 2.

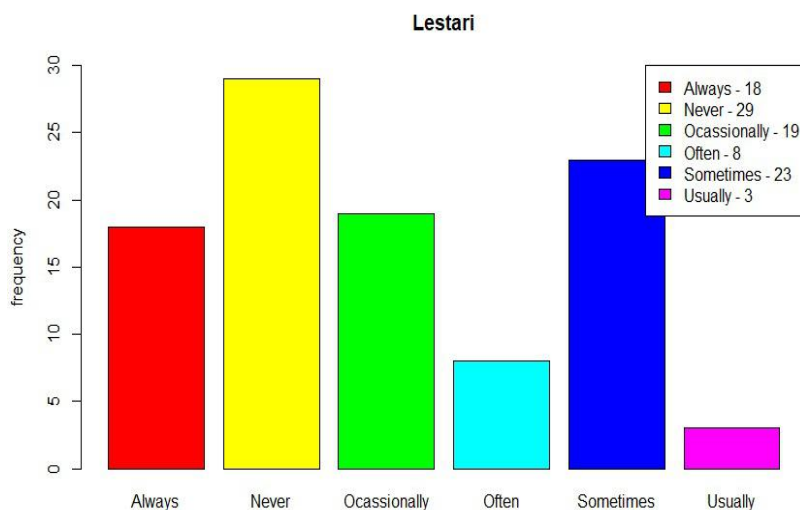


Figure 9

In figure 9 Arked Lestari, the highest number of students who never visit there are 29. The lowest number of students who usually visit there are only 3.

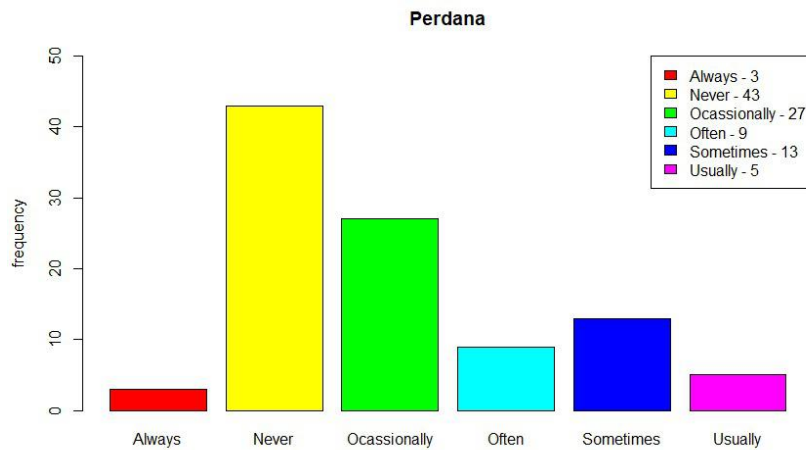


Figure 10

In figure 10 Arked Perdana, the highest number of students who never visit there are 43. The lowest number of students who usually visit there are only 5.

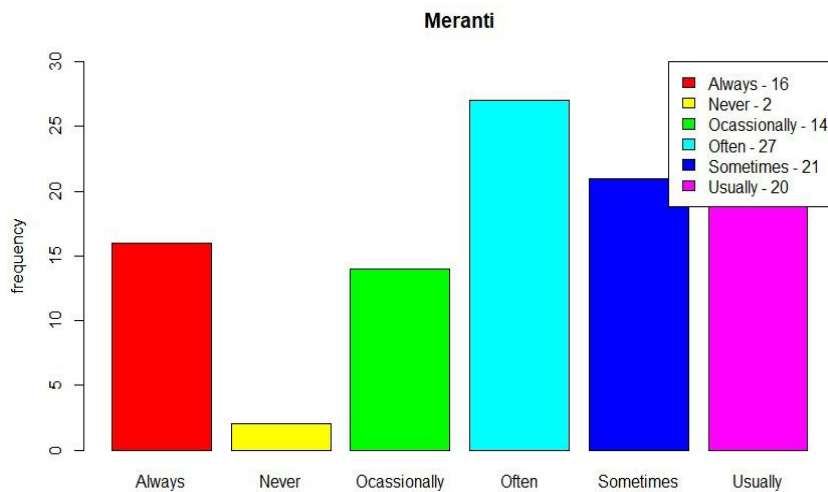


Figure 11

In figure 11 Arked Meranti, the highest number of students who often visit there are 27. The lowest number of students who never visit there are only 2.

In summary, the most visited Arked by students of UTM is Arked Cengal because the mode of number of students who always and usually visit the Arked are 21 respectively since it had the greatest number of students recorded. Next, the recordings show that the mode of number of students who often visit Arked Meranti are 27 which is the highest. Students also go to Arked Angkasa sometimes and occasionally since it had the modes of 25 and 32 correspondingly. Lastly, the survey shows that the least Arked visited by students is Arked KDSE because the mode of number of students who never visit the Arked are 70.

ii. Recommendations of cleanliness

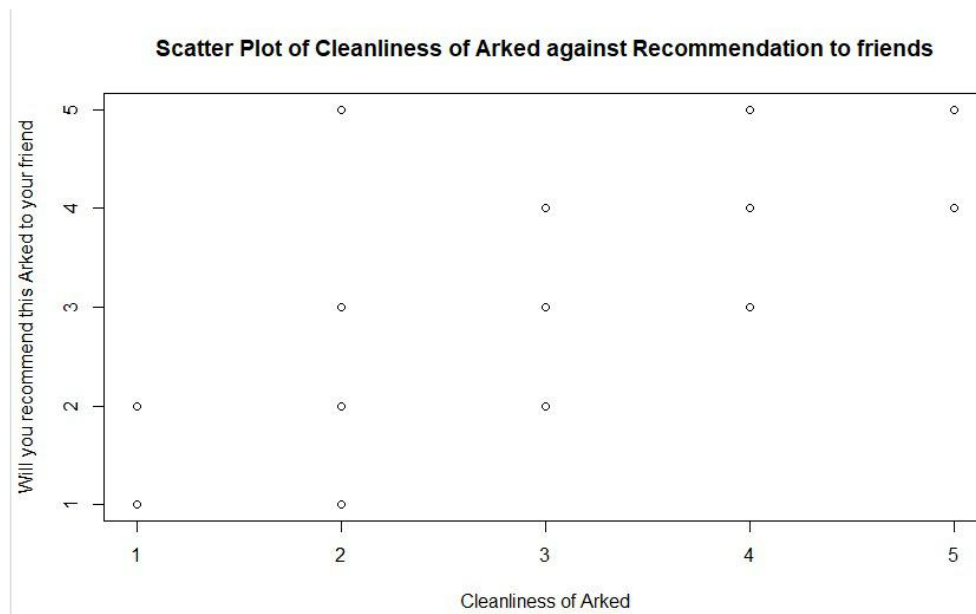


Figure 12

Based on figure 12, the diagram illustrates a scatter plot of cleanliness of Arked against recommendation to friends. There are students who recommend 5 out of 5 about the Arked to others and the cleanliness of the Arked. This is one of the reasons why the Arked gets more visit by the students. However, there are still students who did not recommend the Arked to their friends (1 out of 5) and also rates the lowest for the Arked's cleanliness.

6.3 The purpose of visit and amount of money spent by students.

i. Purpose of visiting Arked.

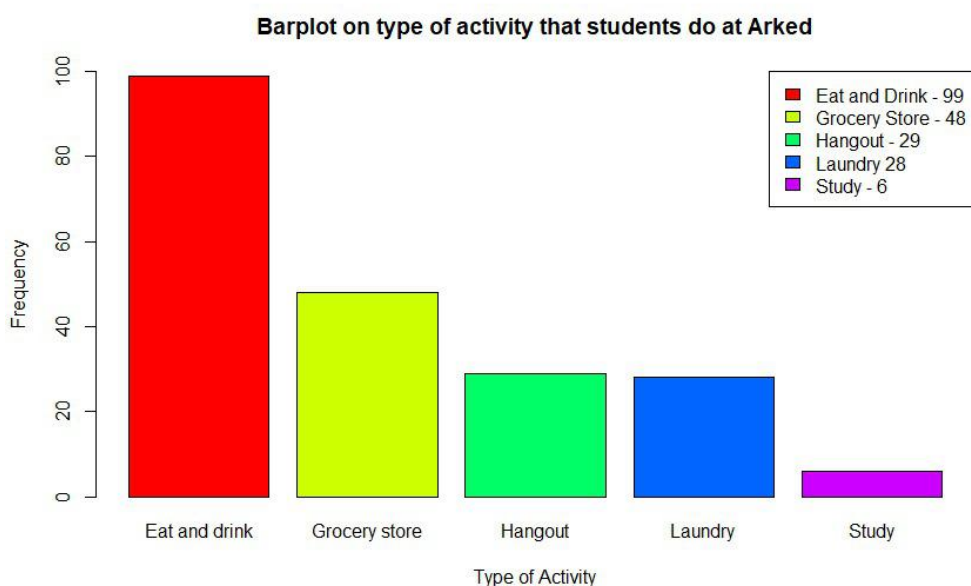


Figure 13

Figure 13 above shows a bar plot on type of activity that respondents do at the Arkeds. The graph illustrates that 99 of students mostly go to the Arked to eat and drink whereas 48 of them go to get their necessities at the grocery store. Meanwhile, 29 of the students stop by the Arked only for hanging out and 28 of them visit the Arked for their laundry. Though there are still 6 students who go to the Arked for studying purposes.

ii. Money spent by respondents.

Money spent, RM	Frequency, f	Cumulative frequency	Middle point, x	x^2	fx	fx^2
1-20	18	18	10.5	110.25	189.0	1984.50
21-40	17	35	30.5	930.25	518.0	15814.25
41-60	35	70	50.5	2550.25	1767.5	89258.75
61-80	20	90	70.5	4970.25	1410.0	99405.00
81-100	10	100	90.5	8190.25	905.0	81902.50
Total					4790.0	288365.00

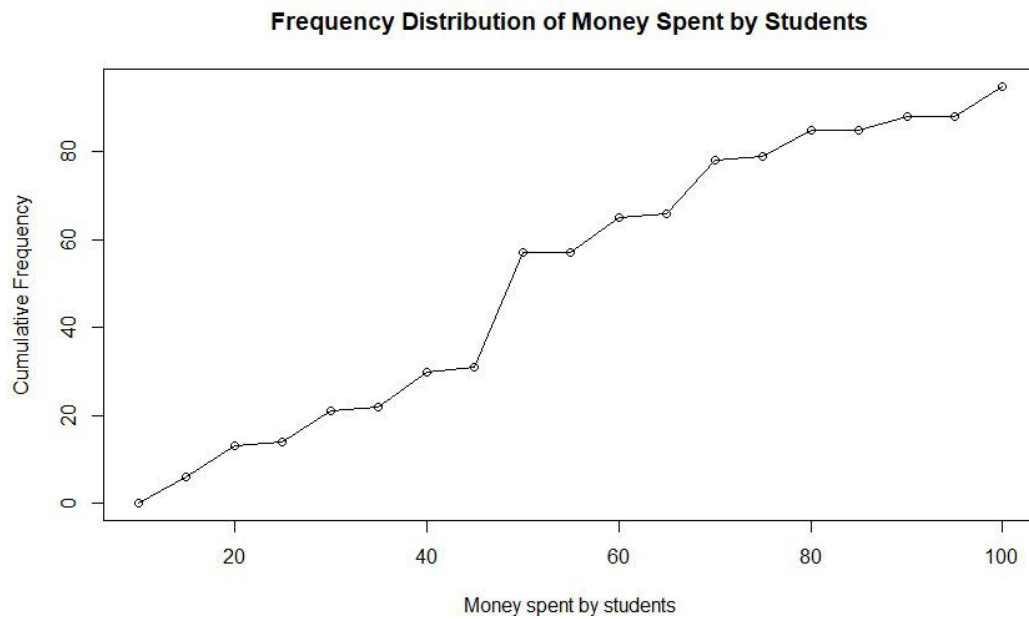


Figure 14

Figure 14 above shows a frequency distribution graph of money spent by students.

Calculation:

$$\text{Mean}, \bar{x} = \frac{\sum fx}{\sum f}$$

$$\bar{x} = \frac{4790}{100}$$

$$\bar{x} = 47.90$$

$$\text{Median} = L + \left(\frac{\frac{N}{2} - F}{f_m} \right) c$$

$$\text{Median} = 40.5 + \left(\frac{\frac{100}{2} - 35}{35} \right) 20$$

$$\text{Median} = 49.07$$

$$\text{Mode} = l + h \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2} \right)$$

$$\text{Mode} = 40.5 + 20 \left(\frac{35 - 17}{2(35) - 17 - 20} \right)$$

$$\text{Mode} = 51.41$$

$$\text{Standard deviation}, \sigma = \sqrt{\frac{\sum (xi - \bar{x})^2}{n - 1}}$$

$$\sigma = \sqrt{\frac{\sum (xi - 47.9)^2}{5 - 1}}$$

$$\sigma = 24.40$$

The mean of money spent by the respondents is RM47.90 per week in the Arked. While the median is RM49.07 per week. This shows that 50% of the respondents spent their money below than RM49.07 while another 50% spent above than RM49.07 in the Arked weekly. The modal value is RM51.41, which is the highest amount of money spent by the students. Since mean is less than median and median is less than the mode, the distribution of these data is skewed to the left or negatively skewed. The standard deviation is RM24.40. This indicates that the money spent by students in Arked is quite low.

6.4 Time taken and time of the day they visit the Arked.

- i. Time taken for respondents to go to the Arked from faculty and school.

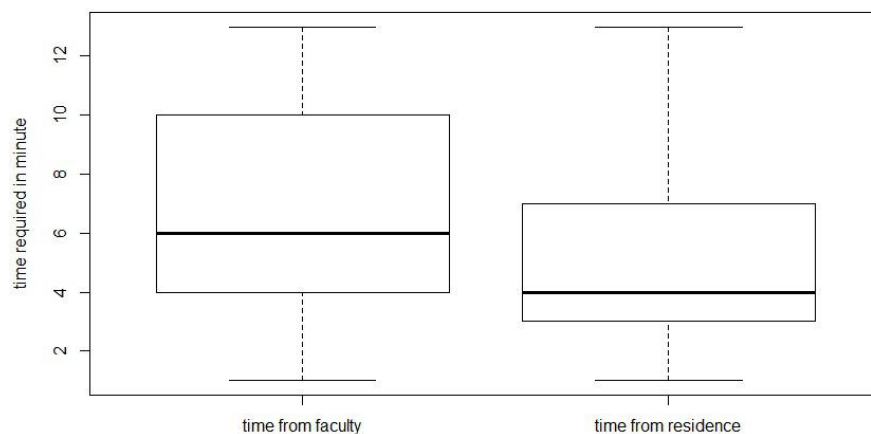


Figure 15

The boxplots in figure 15 above shows the time taken for the students to go to the Arked from their faculty and their residence. The median of time taken for students to go to their Arked from faculty is 6 minutes. When the 1st quartile is 4 minutes while 3rd quartile is 10 minutes, the interquartile range for the time taken to go to the Arked from faculty is 6 minutes. Next, the median of time take for students to go to the Arked from their residence is 4 minutes. When the 1st quartile is 3 minutes while the 3rd quartile is 7 minutes, the interquartile range for the time taken to go to the Arked from residence is 4 minutes.

ii. The time of the day respondents visit.

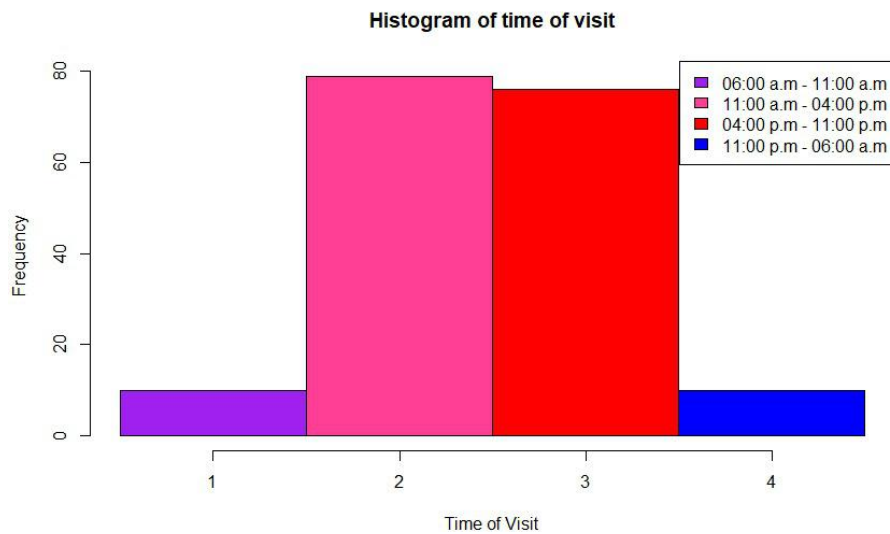


Figure 16

Based on figure 16, the distribution of time of visit is skewed to the right or positively skewed. The spread of the data seems to be centered around 11:00 am to 4:00 pm. In addition, there are no possible outliers in the data.

7.0 Conclusion

In this study, 100 students of UTM Johor Bahru were selected and most of them are Year 1 UTM students. Majority of the students prefer to go to Arked Cengal because most of the students always and usually go to that place which have a mode of 21. The average amount of money spent by students is RM47.90 per week since almost entirely of the students expend money on foods and drinks. For the most part of the day which is from 11:00 am to 4:00 pm, students mainly take around 6 minutes to go to the Arked from their faculty and 4 minutes to go to the Arked from their residence.