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FACULTY OF ENGINEERING

SCHOOL OF COMPUTING

SEMESTER II / 20212022

SECI 2143 - Probability & Statistical Data Analysis

SECTION 02

LECTURER:

DR. NOR AZIZAH ALI

GROUP NO: 09

Name	Matric ID
IKMAL BIN KHAIRULEZUAN	A21EC0186
MUHAMMAD AMIR JAMIL BIN JAMLUS	A21EC0202
LING WAN YIN	A21EC0047
NG SUANG JOO	A21EC0102

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1. Introduction or background

E-wallet is a form of an electronic card that may be used to make online purchases using a computer or smartphone. It serves the same purpose as a credit or debit card in that it is used to pay for the items we purchase. To make payments, an E-wallet must be linked to the user's bank account. An e-wallet is a form of pre-paid account that allows a user to save money for future online transactions. A password protects an electronic wallet. An E-wallet can be used to pay for groceries, online shopping, and plane tickets, among other things. During the covid-19 pandemic in Malaysia, many shopping malls and stores use E-wallet as the main payment because it prevents the virus from spreading to other people. Nowadays, many people are comfortable using E-wallet to pay for their things in daily life as it is convenient and fast rather than paying using money.

The research we conducted was collecting the information from relevant sources to find the answer to our research about the usage of E-wallet among Universiti Teknologi Malaysia (UTM) to know more about their experience using the E-wallet in daily life.

2. Data Collection

In choosing the best method of collecting data, we discuss with each member group the factors that need to be considered when collecting the data. We need to decide how many quantities of data we need to collect as it will bring to our analysis of our data in doing the research and time to collect the data. These two factors lead to our discussion by doing a questionnaire method by doing a survey.

The survey is conducted in the online form by using the Google Forms platform and it will be distributed in the telegram group that consists of all first-year students at UTM due to some aspects taken into consideration - time constraints of the project, the number of respondents required, etc. The distribution of the survey form in those groups is truly effective for us to carry on with the data analysis process. Moreover, our project respondents are entirely targeted at UTM students. There are altogether 60 respondents who participated in this survey.

Survey link :
https://docs.google.com/forms/d/e/1FAIpQLSd5wdksXw2X6CaCoyrFaabSXVeaT96MYh-A4f8lZnUPizYr7g/formResponse

3. Data Analysis

3.1 Gender Distribution

From the total number of 60 respondents we have collected from our study, the respondents comprise 29 female respondents (48%) and 31 male respondents (52%) as shown in *Figure 3.1*.
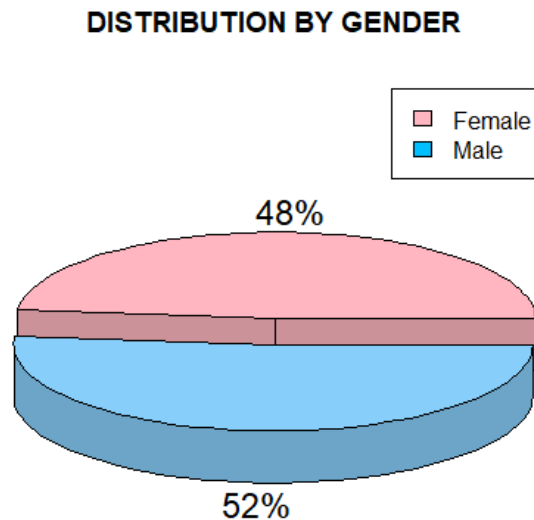
DISTRIBUTION BY GENDER

Figure 3.1 - 3D Pie chart

```
#3D Pie chart
Gender.freq <- table(Data[,5])
lbls <- paste(names(Gender.freq))
pct <- round(Gender.freq/sum(Gender.freq)*100)
lbls <-paste(pct)
lbls <-paste(lbls,"%", sep = "")
Gender.freq
pie3D(Gender.freq,labels=lbls,main = "DISTRIBUTION BY GENDER",
      col = c("light pink","light sky blue"),explode =0.1)
legend("topright", inset=.02,legend= rownames (Gender.freq),
       fill=c("light pink", "deep sky blue"))
```

3.2 Age Distribution

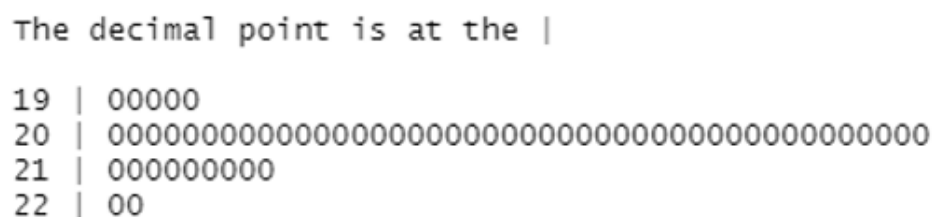It is found that the respondents were mainly aged from 19 to 22 years old.

```
The decimal point is at the |

19 | 00000
20 | 0000000000000000000000000000000000000000000000
21 | 000000000
22 | 00
```

Figure 3.2 - Stem and leaf

```
#stem and leaf
stem(Data$Age, scale = 0.5)
```

3.3 Faculty distribution

As shown in ***Figure 3.3***, 67% of the respondents are from the Faculty of Engineering, 18% of the respondents are from the Faculty of Built Environment and Surveying, 12% of the respondents are from the Faculty of Science, followed by 2% of respondents from Faculty of Social Sciences and Humanities and 2% of respondents are from Malaysia-Japan International Institute of Technology.

DISTRIBUTION BY FACULTY

Faculty of Built Environment and Surveying 18%

Malaysia-Japan International Institute of Technology 2%

Faculty of Social Sciences and Humanities 2%

Faculty of Engineering 67%

Faculty of Science 12%
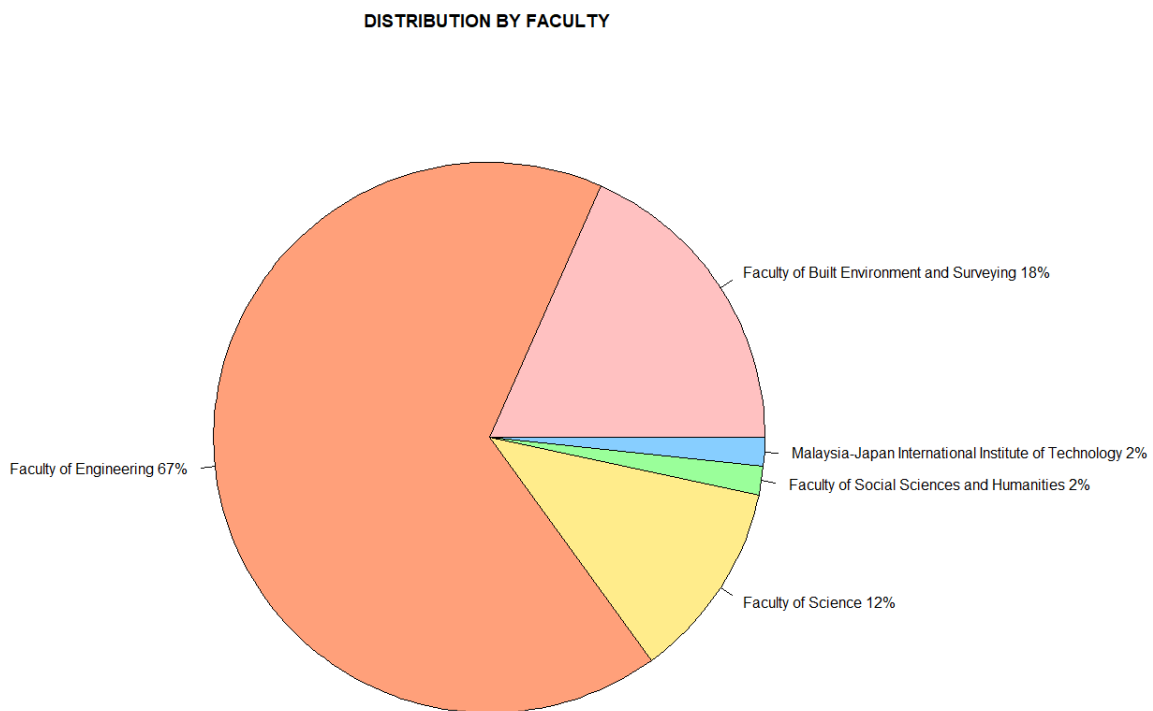
Pie chart - Figure 3.3

```
#Pie chart
Faculty.freq <- table(Data[,6])
lbls <- paste(names(Faculty.freq))
pct <-round(Faculty.freq/sum(Faculty.freq)*100)
lbls <-paste( lbls,pct)
lbls <-paste(lbls, "%", sep = "")
Faculty.freq
pie(Faculty.freq,labels = lbls,main="DISTRIBUTION BY FACULTY",
    col = c("rosy brown 1","light salmon 1" ,"light goldenrod 1",
            "pale green 1", "sky blue 1"))
```

3.4 How many times do you use the E-wallet in a week?

From ***Figure 3.4*** we can see that the value of the maximum and minimum frequency of the use of E-wallet weekly among the UTM students is 5 and 1 times. While the first quartile (Q1), median (Q2) , and third quartile (Q3) are 2, 3, and 4 respectively. Thus, we can get the interquartile range of the use of Ewallet weekly by subtracting the first quartile by the third quartile, that is $IQR = Q3 - Q1$

$$= 4 - 2$$
$$= 2$$

Besides, there are no outliers (values that fall outside of the **adjacent value** region) as shown in ***Figure 3.4***.

Adjacent values:

Lower limit: $Q1 - (1.5)(IQR)$

$$=- 1$$

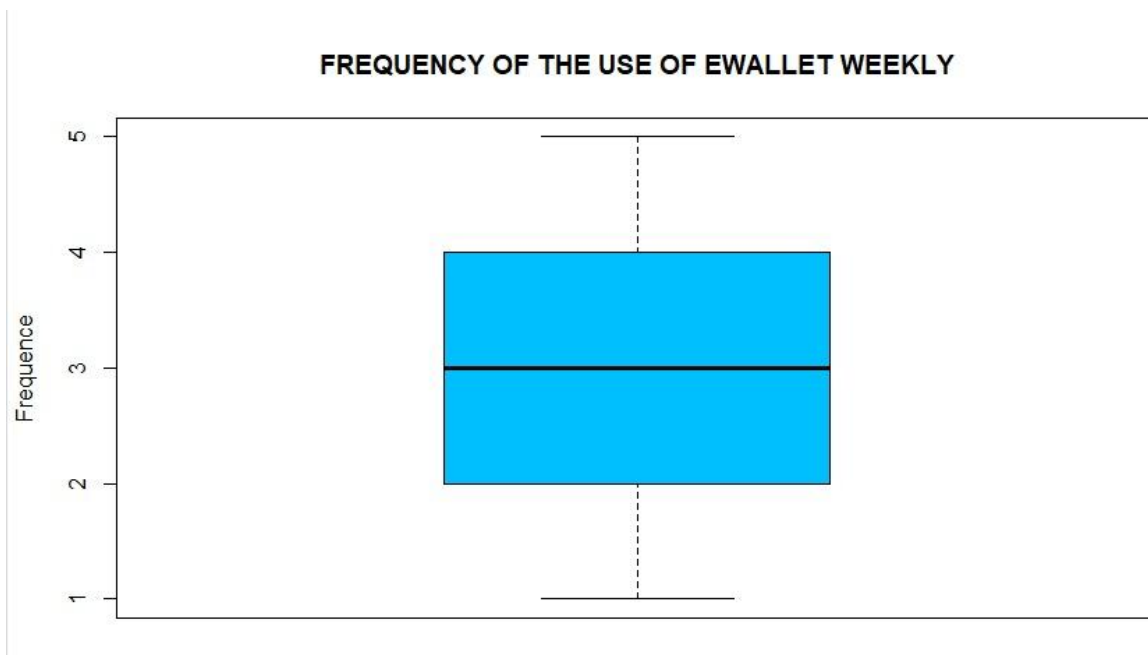*Upper limit*: $Q3 + (1.5)(IQR)$

$$= 7$$

Figure 3.4 - Box Plot

```
#Create a BoxPlot
TransactionTime <-Data$`How far are you comfortable with using e-wallet?`
boxplot(Data$`How frequently you use e-wallet application?(on a weekly basis)`,
        ylab="Frequence",main = "FREQUENCY OF THE USE OF EWALLET WEEKLY",col= "Deep sky blue")
```

3.5 How far are you comfortable with using e-wallet?

Among 60 respondents, the most common rate of comfort using e-wallet is between 4 and 5 based on *Figure 3.5*. The lowest rate of comfort using e-wallet is between 2 and 3. The highest rate of comfort using e-wallet is between 4 and 5.

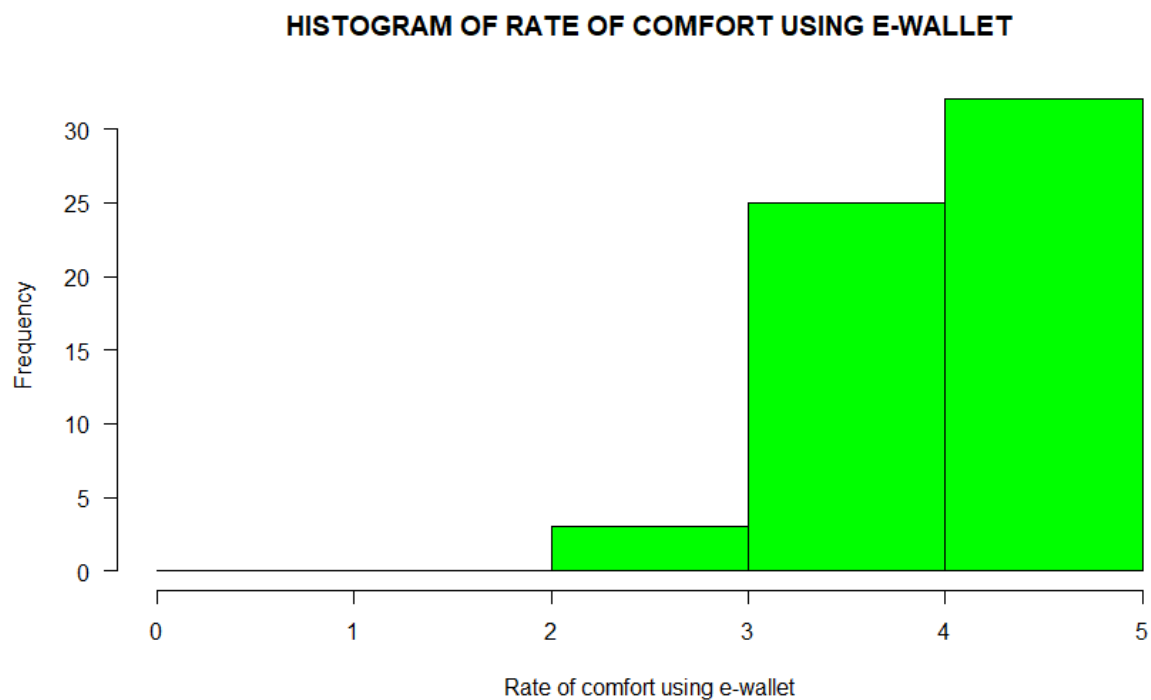**HISTOGRAM OF RATE OF COMFORT USING E-WALLET**

Figure 3.5 - Histogram

```
#Data representation usage of e-wallet among UTM student
#Histogram graph
hist(Data$`How far are you comfortable with using e-wallet?`,
     col="Green", xlab="Rate of comfort using e-wallet",
     ylab = "Frequency",las= 1, breaks = seq(from = 0, to = 5, by=1),
     main= "HISTOGRAM OF RATE OF COMFORT USING E-WALLET")
```

3.6 Time Transaction based on Frequency Usage of Ewallet

Based on *Figure 3.6(a)* and *Figure 3.6(b)*, we can see most of the respondents use time below 500 seconds for transactions, but there are few respondents using time exceeding 1000 and 1500 seconds for their transaction.
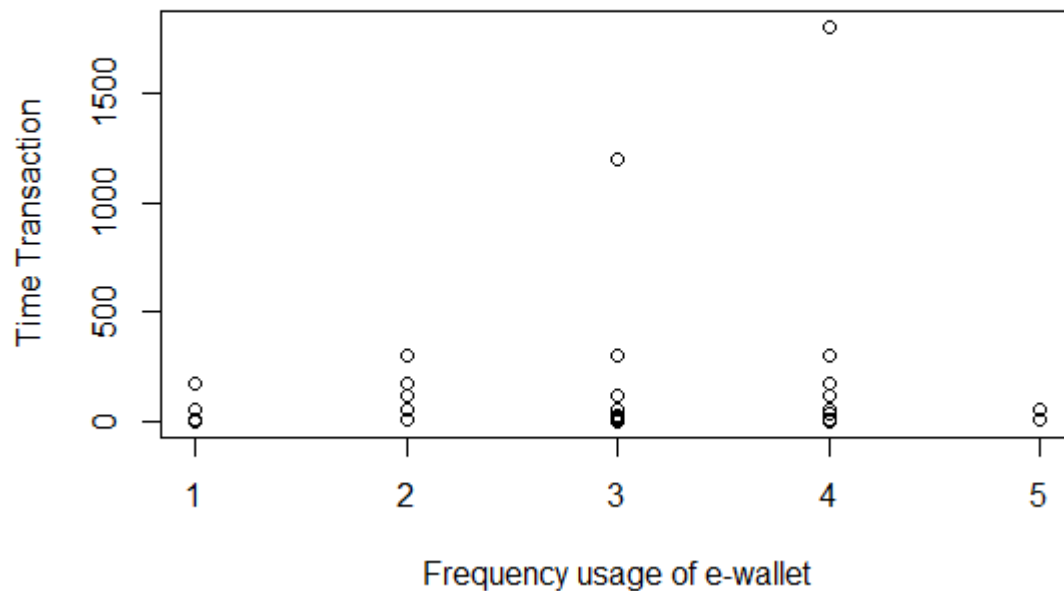

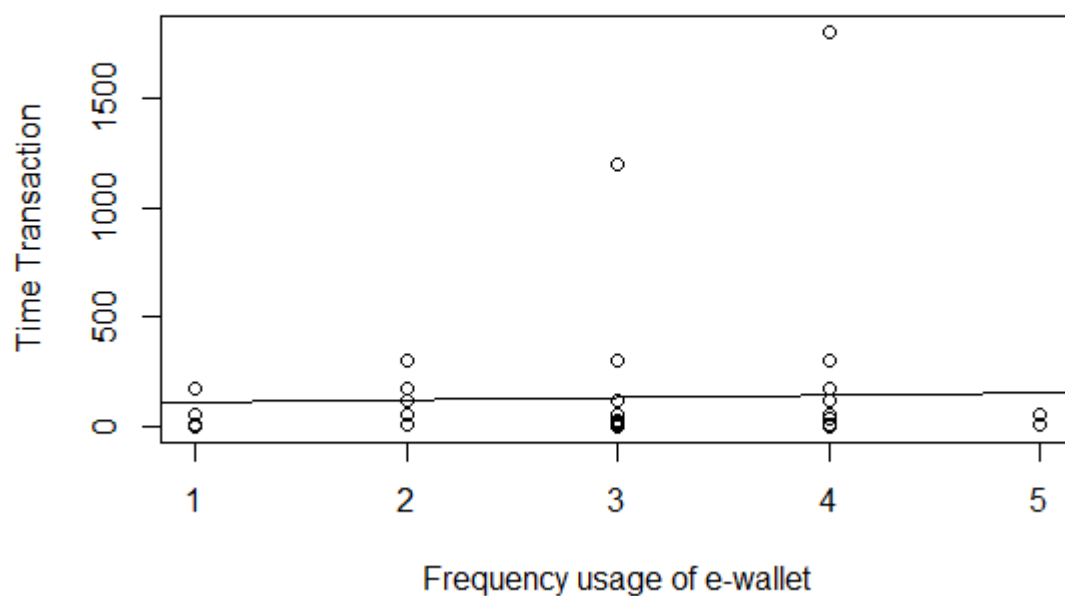*Figure 3.6(a) - Scatter Plot*

Figure 3.6(b) - Scatter Plot

```
#Scatter plot
plot (x=Data$`How frequently you use e-wallet application?(on a weekly basis)`,
    y=Data$`How much time does it usually take you to complete an e-wallet transaction (Please specify in second)`,
    xlab= "Frequency usage of e-wallet", ylab="Time Transaction")
abline(lm(Data$`How much time does it usually take you to complete an e-wallet transaction (Please specify in second)`
        ~Data$`How frequently you use e-wallet application?(on a weekly basis)`))
```

3.5 E-wallet preference among UTM students

4. Conclusion