



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF COMPUTING

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SECI1143 PROBABILITY & STATISTICAL DATA ANALYSIS

SECTION 02

PROJECT 1

MONTHLY EXPENDITURE OF UTM STUDENTS

LECTURER: DR. NOORFA HASZLINNA BINTI MUSTAFFA

GROUP 4

Student Name	Matric No.
LAM YOKE YU	A23CS0233
GOE JIE YING	A23CS0224
TEH RU QIAN	A23CS0191
TAN YI YA	A23CS0187

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1.0 Introduction

Financial struggles at university

By Rayyan Rafidi - September 25, 2019 @ 12:58pm



HIGHER education is a door to a brighter future, with which students can dream to secure a better career.

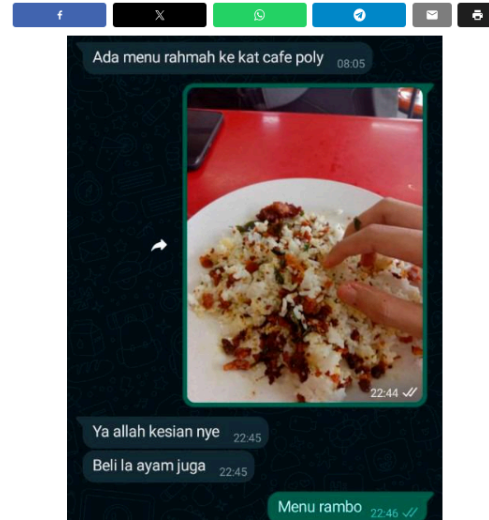
While being accepted to a university programme may be a cause for celebration, students from a low-income background are met with a number of barriers.

Before setting foot on campus, they are burdened by financial worries such as not being able to afford the entrance fees and travelling cost. Once they are in, it is more challenging to stay.

College students spend less than RM3 for meals daily due to financial constraints

Subashini Jeyaraman

24-02-2023 08:13 AM



Pix credit: @eb1rah/twitter

Spending habits and financial management practices among university students vary in many ways. Some people are good at managing their finances and have surplus funds every month that they can save, invest, or earn interest in the bank. On the other hand, there are people who constantly struggle when spending money especially at the end of a month and occasionally borrow money from friends to live frugally.

Indeed, there are many people who do not realize the importance of financial management, and even if they do, laziness may prevent them from implementing it. The diversity of people around us sparked a curiosity about everyone's spending habits, leading us to embark on this survey.

2.0 Objective

1. To study the average monthly income and expenses of UTM students and use this information to predict the spending habits of most college students
2. To identify the spending habits of students from different categories such as food, entertainment, transportation, groceries and health care products.
3. To investigate the factors that influence the spending habits of students
4. To investigate if students needed financial aid

3.0 Data Collection

The research is carried out using a survey method. We will extensively explore the spending habits of UTM students by collecting and analyzing information obtained through the Google Form. To ensure that all of our respondents were UTM students, we set a requirement that only UTM accounts can be used to respond, and each Gmail account is limited to one response. Additionally, we distributed the Google Form to UTM groups via online social media platforms such as Telegram and WhatsApp. Furthermore, in order to obtain a sufficient number of respondents, we visited the arcade on the UTM campus during lunch break to seek help from more students to fill out the questionnaire. This will ensure that our respondents include students from various faculties across UTM and allow us to gather a larger sample size for more accurate investigation of the topic. In total, we received 70 responses through active participation.

Questionnaires Preview Link: <https://tinyurl.com/6ctmps4>

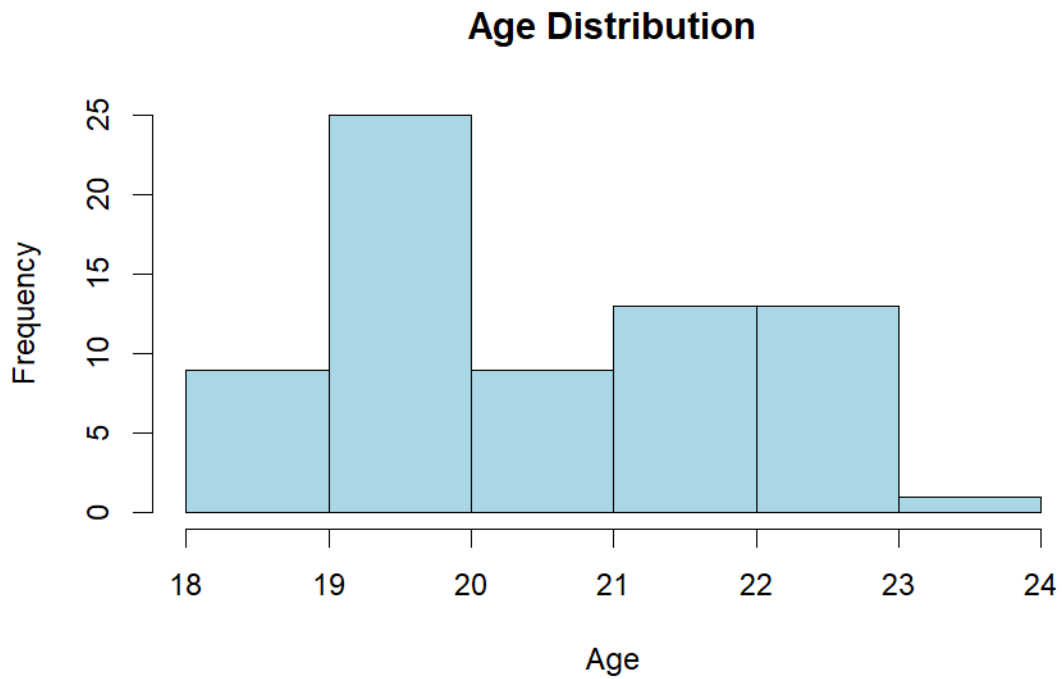
No	Question	Level of Measurement	Data Type
	<u>General Questions</u>		
1	Age	Ratio	Discrete
2	Gender	Nominal	Discrete
3	Ethnicity	Nominal	Discrete
4	Year of Study	Nominal	Discrete
5	Faculty	Nominal	Discrete
	<u>Monthly Allowance</u>		
6	Allowance received from parents per month.	Ratio	Continuous
7	Do you have a part time job?	Nominal	Discrete
8	If yes, please state your salary per month.	Ratio	Continuous
9	Do you have a scholarship or student loan?	Nominal	Discrete
10	If yes, how much per month?	Ratio	Continuous
	<u>The ways spending money</u>		
11	Total Expenses	Ratio	Continuous
12	For Food	Ratio	Continuous
13	For Entertainment	Ratio	Continuous
14	For Transportation	Ratio	Continuous
15	For Groceries and Health Care Products	Ratio	Continuous
16	Other Expenses	Ratio	Continuous
17	Is your money enough for your monthly expenses?	Nominal	Discrete
18	Do you need more per month?	Nominal	Discrete
19	How much per month do you think is enough for a student studying in UTM?	Ratio	Continuous

20	<u>Saving Plans</u>		
21	Do you have a monthly savings plan?	Nominal	Discrete
	If yes, how much do you save monthly?	Ratio	Continuous
22	<u>Financial Literacy: Price Elasticity</u>		
	I compare prices whenever I buy a product.	Ordinal	Discrete
23	I noticed when there is an increase in price when I buy goods.	Ordinal	Discrete
24	I am upset whenever I miss a discount on a product.	Ordinal	Discrete
25	I make an effort to buy the best quality in a product.	Ordinal	Discrete
26	I have a reference price for a particular good.	Ordinal	Discrete
27	I find it important that the goods that I buy are cheap.	Ordinal	Discrete
28	<u>Financial Literacy: Peer Influences</u>		
	I always seek advice from my friends before purchasing any luxury products.	Ordinal	Discrete
29	My friend's opinion matters to me the most when it comes to purchasing a product.	Ordinal	Discrete
30	I will buy the products (or brands) that my friends have bought.	Ordinal	Discrete
31	I spend more when I hang out with friends.	Ordinal	Discrete
32	My friends influence me to purchase trendy products.	Ordinal	Discrete
33	My friends often ask me to buy things together to get a discount.	Ordinal	Discrete

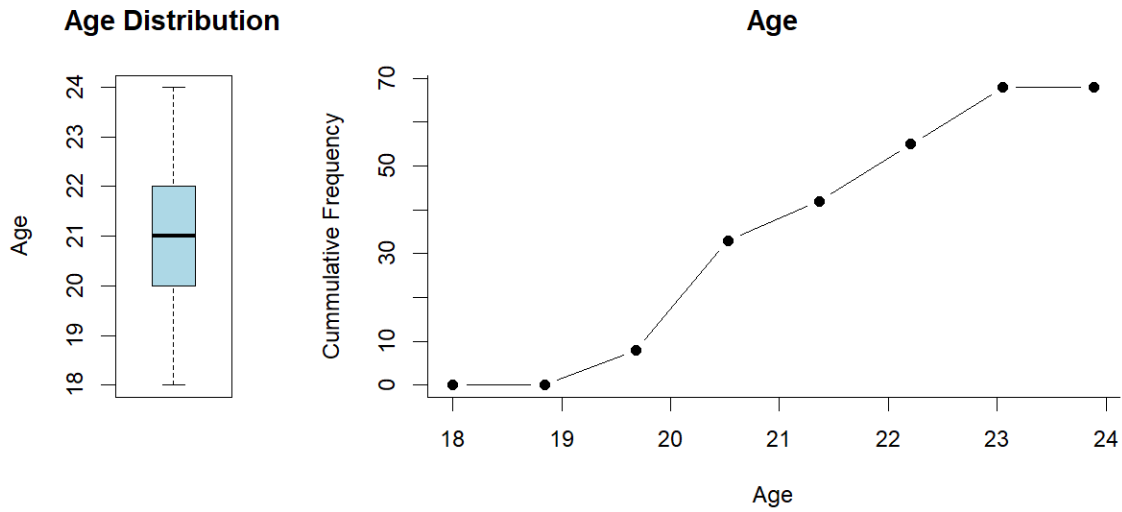
4.0 Data Analysis

4.1 General Question

4.1.1 Respondents' Age



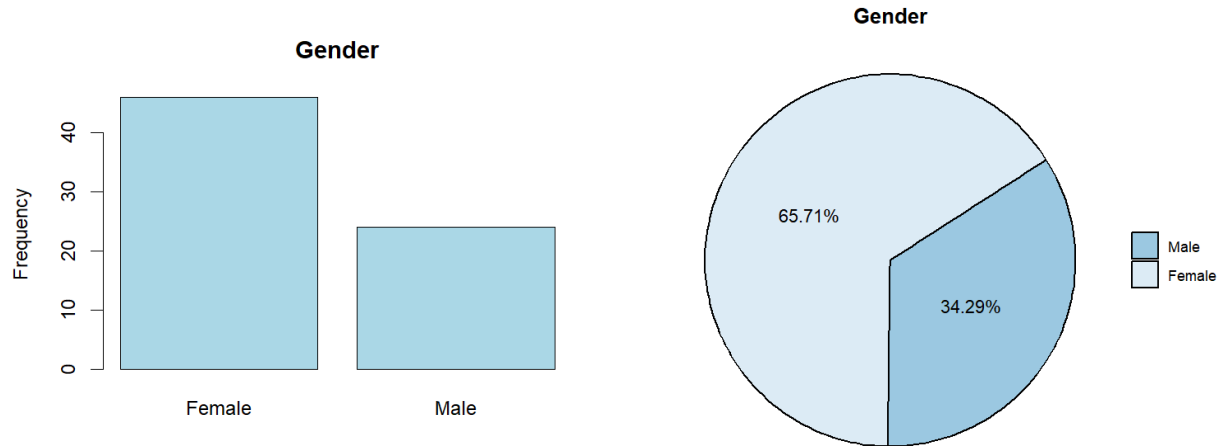
Age	Frequency	Relative Frequency
18	1	0.01428571
19	8	0.11428571
20	25	0.35714286
21	9	0.12857143
22	13	0.18571429
23	13	0.18571429
24	1	0.01428571



Mean	20.9714285714286
Median	21
Mode	20
1st Quartile	20
2nd Quartile	21
3rd Quartile	22
Variance	2.02815734989648
Standard Deviation	1.42413389465193
Skewness	0.202137761808145
Kurtosis	1.92973774013977

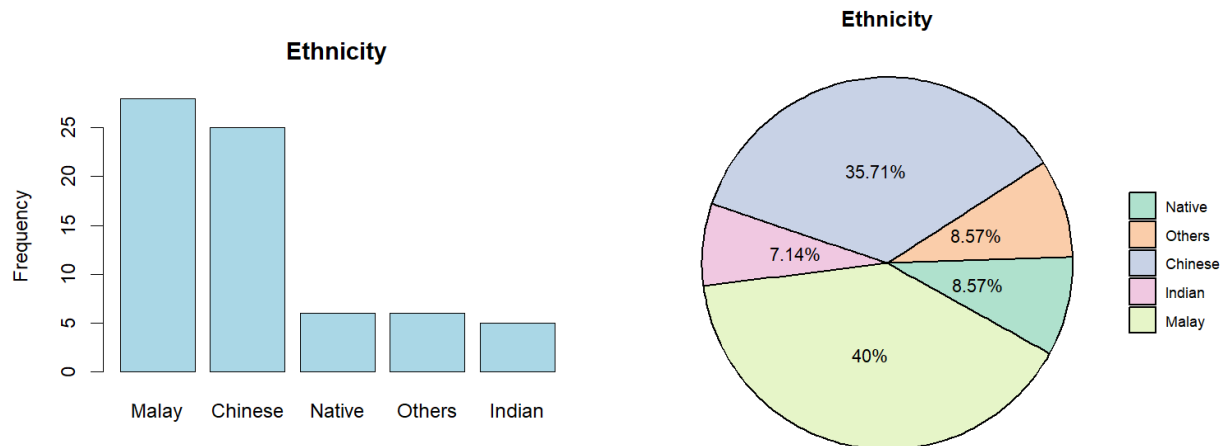
It can be seen from the age distribution table that the respondents to the questionnaire are mainly concentrated in the age group of 18 to 24 years old. Given that our study focused on UTM undergraduate students, it is noticeable that the majority of respondents were 20 years old with a frequency of 25. They are followed by students aged 22 and 23, both with a frequency of 13. Additionally, there were nine 21-year-old interviewees and eight 19-year-old students. We also received one response each from 18-year-olds and 24-year-olds. Since most of the respondents are 20 years old, the mode is 20, and the average age is approximately 20.97 years.

4.1.2 Respondents' Gender



According to the frequency table and pie chart depicting respondents' gender, there were 24 males and 46 females. Consequently, males accounted for a relative frequency of 0.34 and a proportion of 34.29%, while females had a relative frequency of 0.68 and constituted 65.71% of the total.

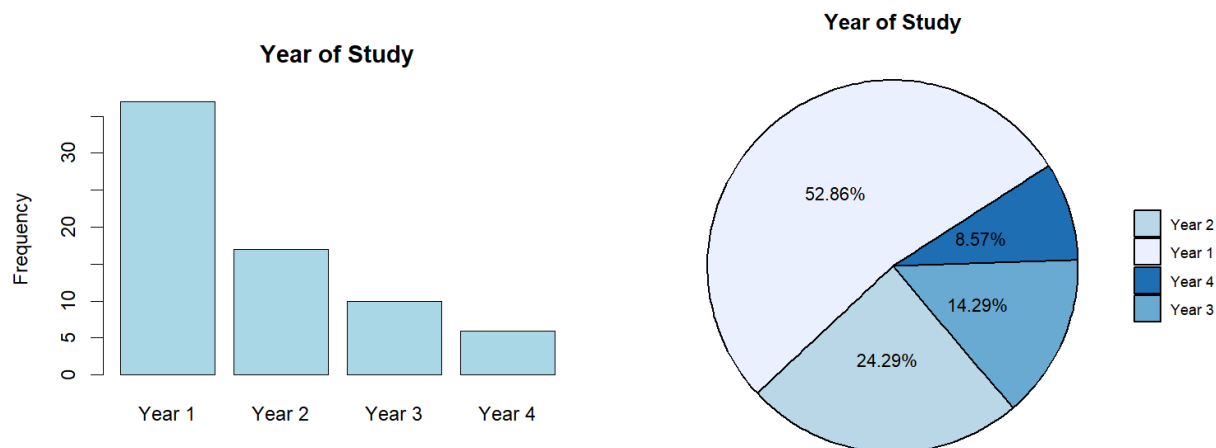
4.1.3 Respondents' Ethnicity



Ethnicity	Frequency	Relative Frequency
Malay	28	0.40000000
Chinese	25	0.35714286
Indian	5	0.07142857
Natives	6	0.08571429
Others	6	0.08571429

Based on the pie chart illustrating our respondents' ethnicity, it's evident that our survey had a diverse pool of participants. Specifically, 40% identified as Malay, 35.71% as Chinese, 7.14% as Indian, while 8.57% identified as natives, and the remaining 8.57% were international respondents. This ethnicity diversity in our survey can provide us with more inclusive data and analysis.

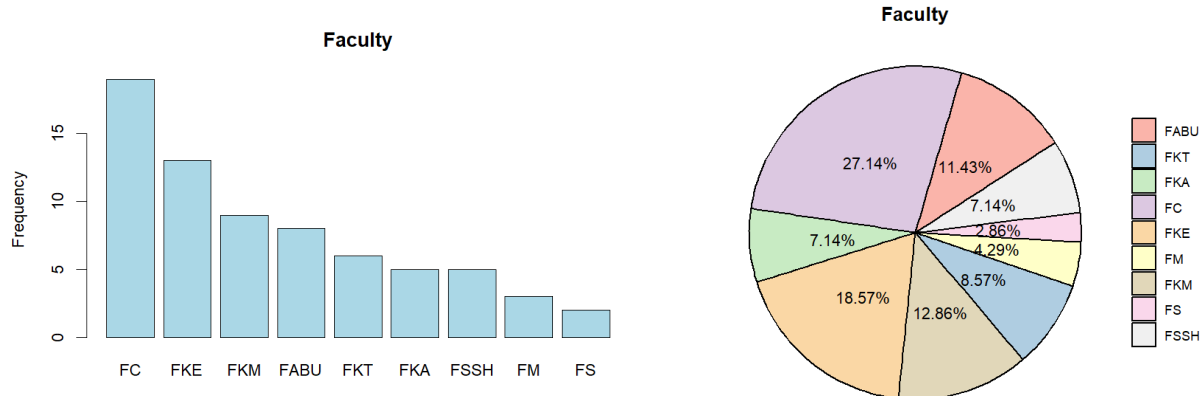
4.1.4 Respondents' Year of Study



Year of Study	Frequency	Relative Frequency
Year 1	37	0.52857143
Year 2	17	0.24285714
Year 3	10	0.14285714
Year 4	6	0.08571429

From the data, our survey included the distribution of different years of study of students at UTM. Mainly first-year students (52.86%), followed by second-year students (24.29%), third-year students (14.29%) and fourth-year students (8.57%). Due to our more frequent interactions with Year 1 students, they have the highest number of respondents, while the numbers decrease gradually for other years. Nevertheless, this also indicates that our questionnaire encompasses students from all years at UTM.

4.1.5 Respondents' Faculty



Based on the data provided, we observe the distribution of respondents across different faculties at UTM. The Faculty of Computing (FC) has the highest number of respondents with 19 participants, comprising approximately 27.14% of the total. Following closely is the Faculty of Electrical Engineering (FKE) with 13 respondents, representing about 18.57% of the total. The Faculty of Mechanical Engineering (FKM) accounts for 9 respondents, making up approximately

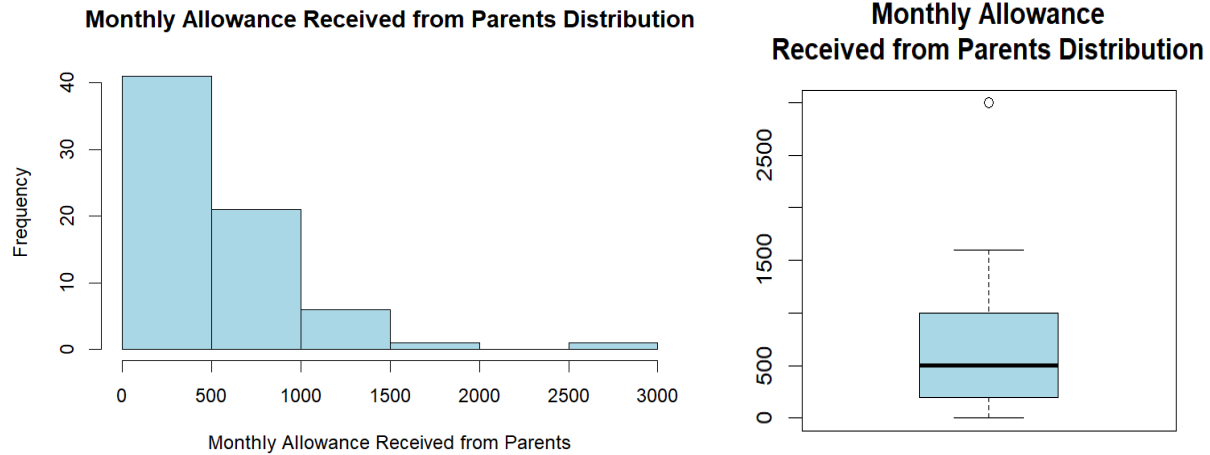
12.86% of the total. Additionally, the Faculty of Built Environment and Surveying (FABU) and the Faculty of Chemical and Energy Engineering (FKT) have 8 and 6 respondents respectively, constituting around 11.43% and 8.57% of the total respectively.

Furthermore, the Faculty of Civil Engineering (FKA), Faculty of Social Science and Humanities (FSSH), and Faculty of Management (FM) each have 5, 5, and 3 respondents respectively, contributing to approximately 7.14%, 7.14%, and 4.29% of the total respectively. Lastly, the Faculty of Science (FS) has the lowest number of respondents with 2 participants, making up about 2.86% of the total.

From this data, we can observe that respondents are distributed across various faculties at UTM, ensuring the diversity of the data and better assisting us in completing our study.

4.2 Monthly Allowance

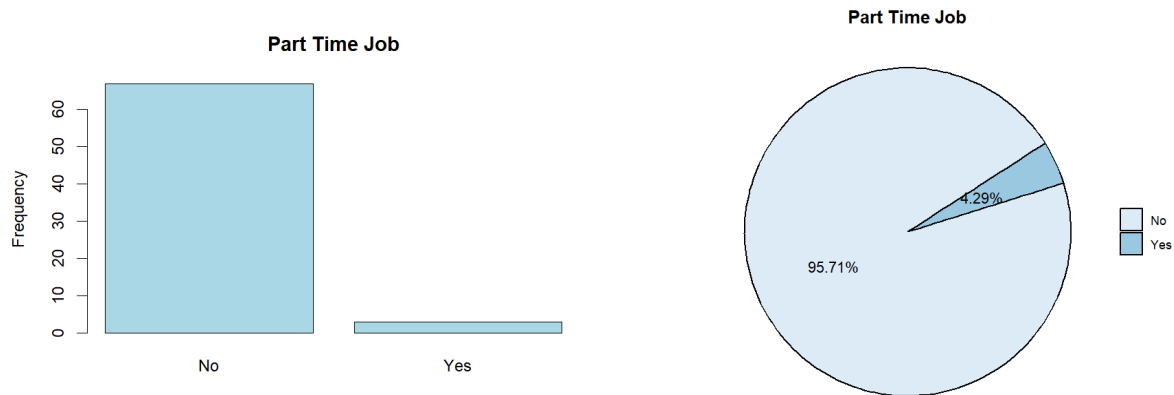
4.2.1 Monthly Allowance Received from Parents



Mean	580.142857142857
Median	500
Mode	0
1st Quartile	200
2nd Quartile	500
3rd Quartile	1000
Variance	275384.037267081
Standard Deviation	524.770461503962
Skewness	1.59678223410265
Kurtosis	7.75554583073749

The monthly allowance that each student receives from their parents is shown in this data. The average amount, or mean, is approximately RM580. When all allowances are listed in increasing order, RM500 is the median, or midway value. Some people might not receive any allowance at all, as indicated by the mode, which represents the most typical allowance of RM0. The data is divided into four equal sections by the quartiles: the first quartile is valued at RM200, the second at RM500, and the third at RM1000. The variation of the allowances from the average is shown by the variance and standard deviation. The data's distribution and form are measured by skewness and kurtosis, which indicate that the data may be positively skewed and have heavy tails.

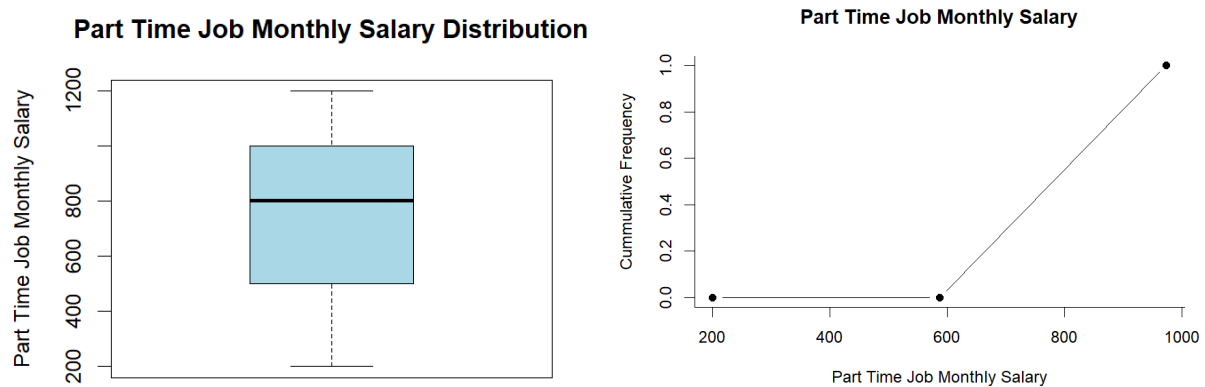
4.2.2 Do you have a part time job?



Part time job	Frequency	Relative Frequency
No	67	0.95714286
Yes	3	0.04285714

According to the bar graph, 3 respondents work part-time jobs compared to 67 respondents who do not. The pie chart indicates that 4.29% of participants work part-time, while 95.71% do not.

4.2.3 Part Time Job Monthly Salary

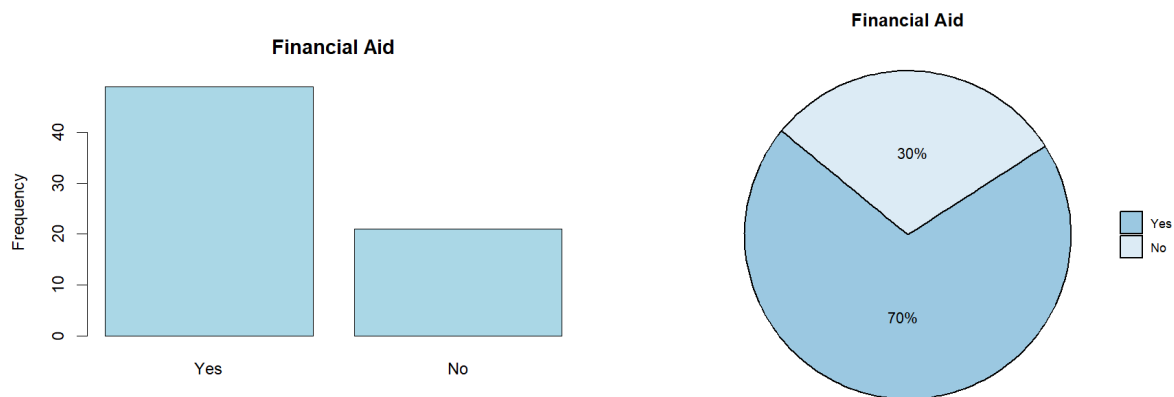


Mean	733.333333333333
Median	800
Mode	200
1st Quartile	200

2nd Quartile	800
3rd Quartile	1200
Variance	253333.33333333
Standard Deviation	503.322295684717
Skewness	-0.239063146929545
Kurtosis	1.5

According to the existing data, the average monthly salary for part-time work is approximately RM733.33, with a median of RM800. The salary that occurs the most frequently, or the mode, is RM200. With the first quartile at RM200, the second quartile (median) at RM800, and the third quartile at RM1200, the salary distribution is wide. About RM503.32 is the standard deviation, which calculates the average deviation from the mean. The data appears to be slightly skewed to the left, as shown by the skewness of about -0.24. In comparison to a normal distribution, the distribution has a considerable degree of peakedness or flatness, as shown by the kurtosis value of 1.5.

4.2.4 Do you have a scholarship or student loan?

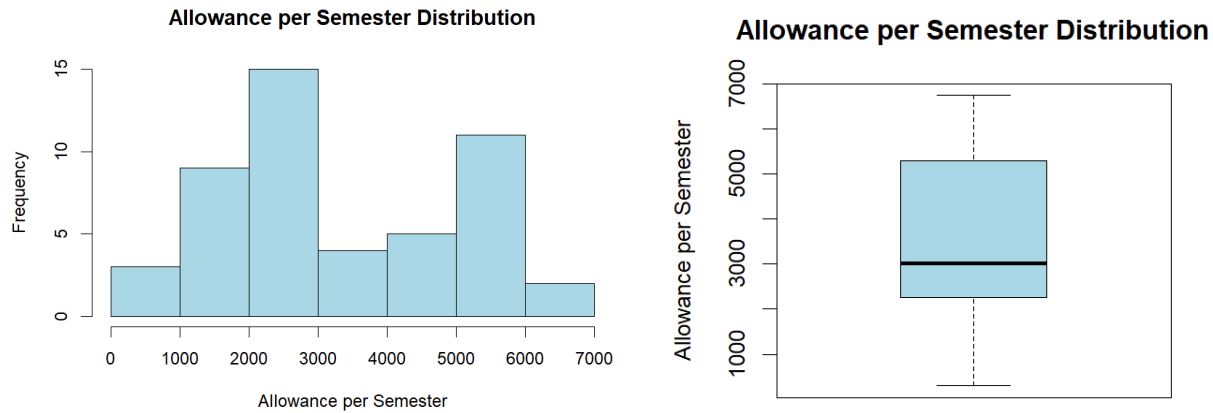


Scholarship or Student Loan	Frequency	Relative Frequency
Yes	49	0.7
No	21	0.3

Based on the provided data, around 70% of the survey respondents, totaling 49 individuals, received a scholarship or student loan, while 21 respondents did not receive any financial support.

of this kind. Interestingly, among those who didn't receive an allowance from their parents, the majority obtained either a scholarship or a student loan.

4.2.5 Financial Aid Allowance per Semester

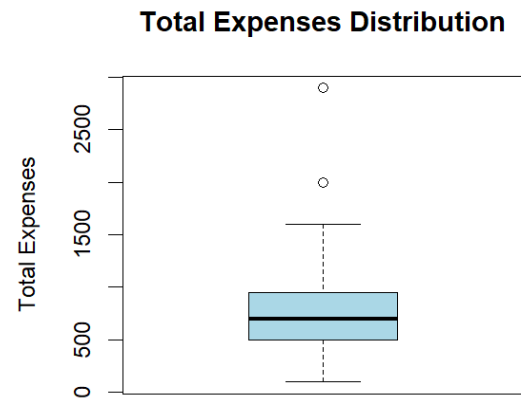
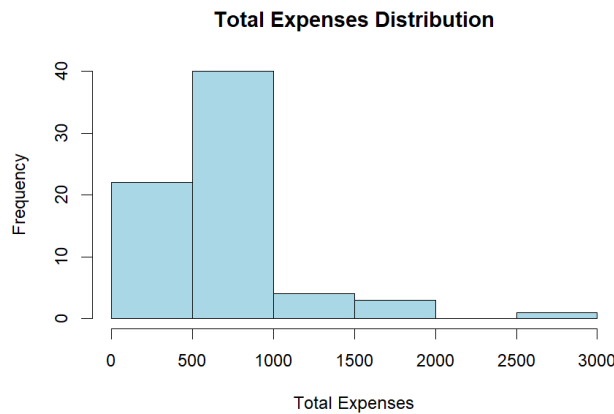


Mean	3473.50102040816
Median	3000
Mode	3000
1st Quartile	2250
2nd Quartile	3000
3rd Quartile	5300
Variance	3078836.50005102
Standard Deviation	1754.66136335506
Skewness	0.280435904399609
Kurtosis	1.84642430775168

The information supplied indicates that, with a median of RM3000, the average financial aid amount per semester is about RM3473.50. This indicates that although half of the students earn more money, the other half receive less than RM3,000. Moreover, RM3000 is the most typical allowance quantity, or mode. The data is spread out, showing variation in the amounts granted, with the first quartile at RM2250 and the third quartile at RM5300. Furthermore, the distribution is significantly heavier in the tails than a normal distribution and is slightly skewed to the right, according to the skewness and kurtosis measurements.

4.3 The Ways Spending Money

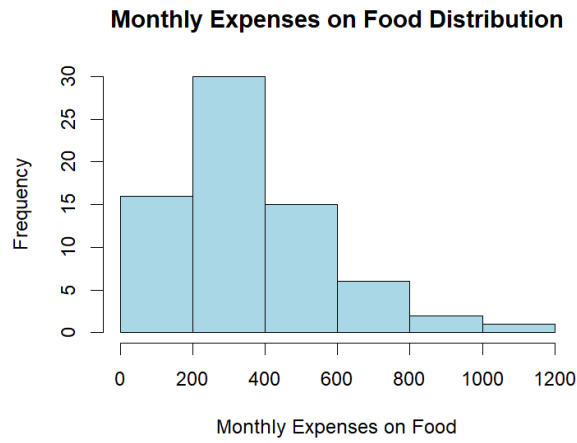
4.3.1 Total Expenses per Month



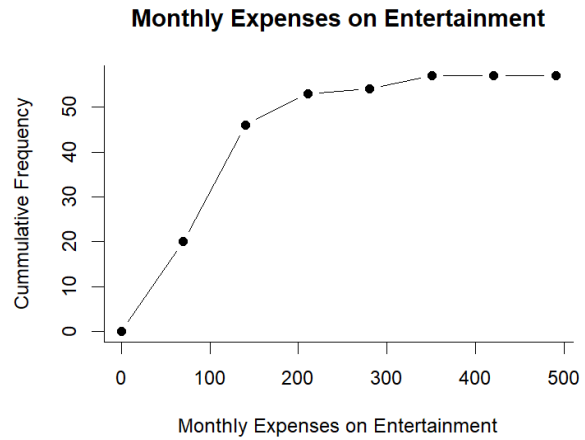
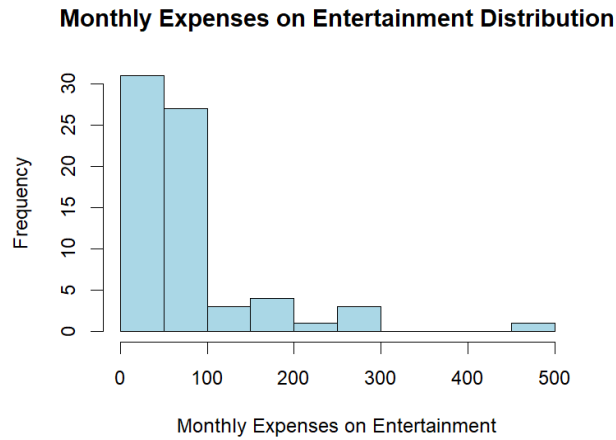
Mean	752.142857142857
Median	700
Mode	600
1st Quartile	500
2nd Quartile	700
3rd Quartile	950
Variance	196112.732919255
Standard Deviation	442.846172975735
Skewness	1.99920575898381
Kurtosis	10.0167708819595

The monthly expenses experienced by UTM students are shown by this statistic. The median expense is RM700, while the mean is approximately RM752. The average, or most frequent spending, is RM 600. With the first quartile (25th percentile) at RM500, the second quartile (50th percentile or median) at RM700, and the third quartile (75th percentile) at RM950, the expenses vary across a range. The distribution's asymmetry is shown by the skewness , where a positive number (around 2.0) denotes a right-skewed distribution. The distribution's peakedness is measured by the kurtosis, where larger values indicate heavier tails or more extreme values.

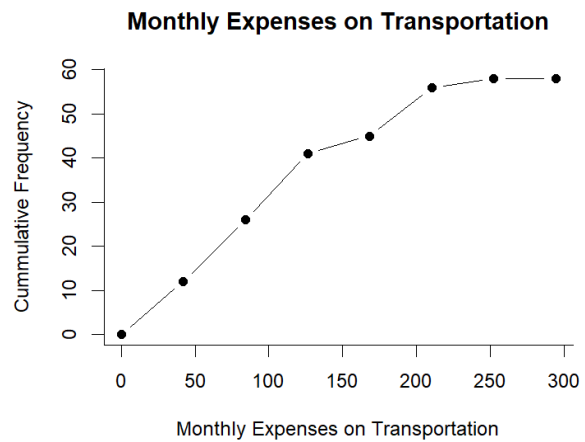
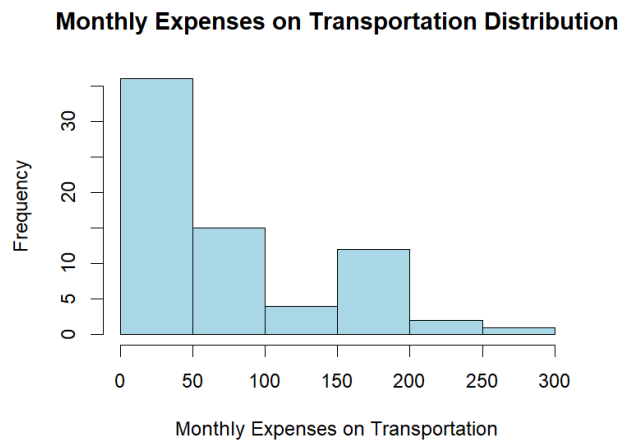
4.3.2 Monthly Expenses on Food



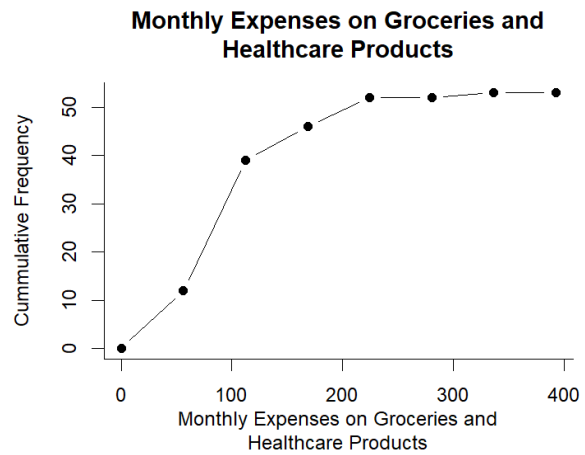
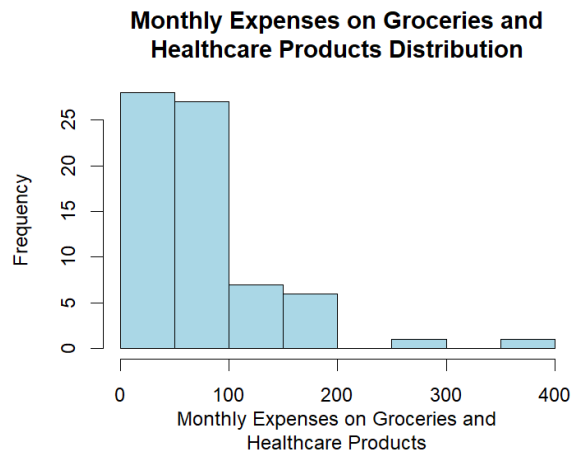
4.3.3 Monthly Expenses on Entertainment



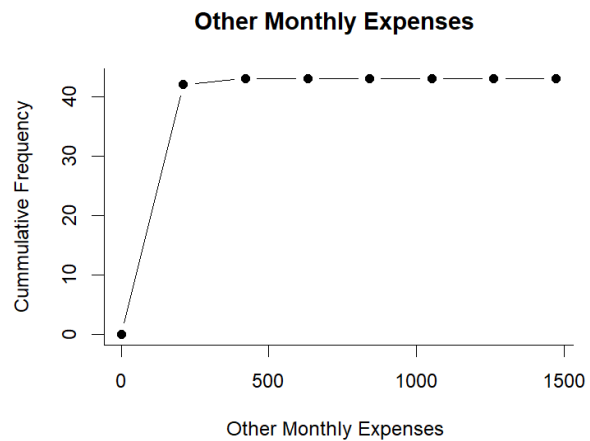
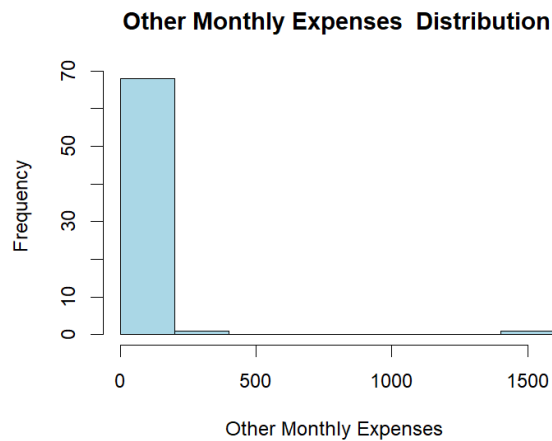
4.3.4 Monthly Expenses on Transportation



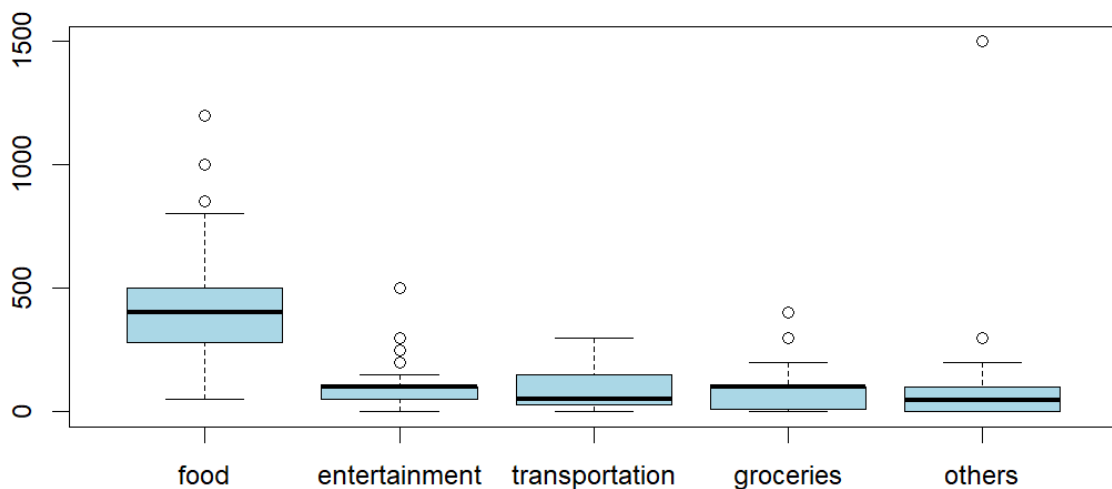
4.3.5 Monthly Expenses on Groceries and Healthcare Products



4.3.6 Other Monthly Expenses



Monthly Expenditure

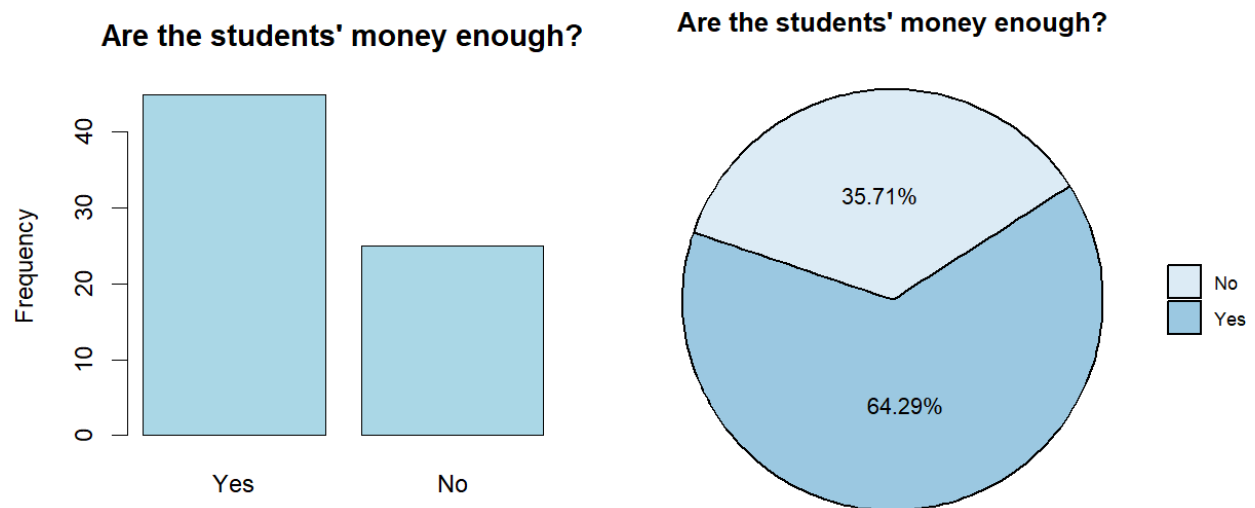


	Food	Entertainment	Transportation	Groceries and Healthcare	Others
Mean	403.571428571429	90.4285714285714	87.7857142857143	85	78.2857142857143
Median	400	100	50	100	45
Mode	400	100	100	100	0
1st Quartile	280	50	30	10	0
2nd Quartile	400	100	50	100	45
3rd Quartile	500	100	130	100	100
Variance	49411.6977225673	7705.61076604555	5941.76501035197	5900.72463768116	34249.1925465839
Standard Deviation	222.287421422282	87.7816083587305	77.0828451106468	76.8161743233882	185.065373710437
Skewness	0.932511085394536	2.04604963754179	0.741110152443002	1.29240117176713	6.63464666763039
Kurtosis	4.50355302598108	8.95095141384616	2.55908917458843	5.96174259783998	51.2680759240463

The information shows different purchasing habits among UTM students in several categories. Students spend an average of about RM403 on food each month, with a median and mode of RM400, suggesting that an almost constant amount of money is spent on food. Entertainment expenses have a wider range, with a mean of RM90 and a mode of RM100, indicating that while some students spend little on entertainment, others spend a large amount of money on it. Besides that, transportation expenses are quite stable, with a mean of RM87 and a mode of RM100, showing that many students spend almost the same amount on transportation. Moreover, groceries and healthcare expenses are slightly more variable, with a mean of RM85 and a median of RM100, indicating a variety of spending habits in this category. Lastly, the category of other expenses, which includes a wide variety of incidentals, has a mean of RM78 and a median of RM0, suggesting that some students spend very little and others spend a significant amount. In conclusion, the data indicates that among UTM students, the primary expenditure is consistently

directed towards food, reflecting a trend of allocating a significant portion of their budget to sustenance.

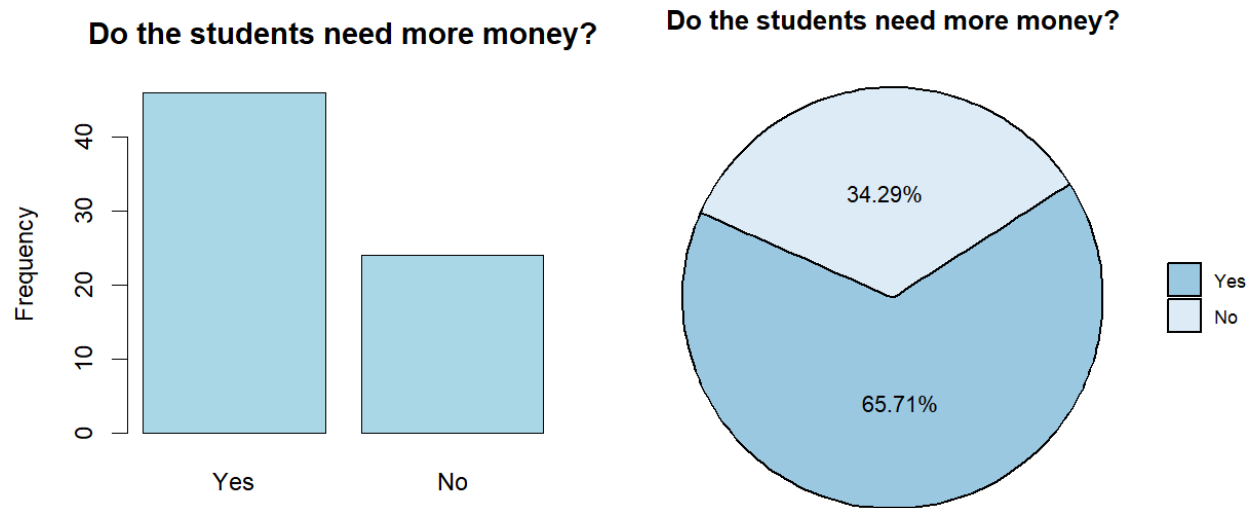
4.3.7 Are the students' money enough?



Money Enough	Frequency	Relative Frequency
Yes	45	0.6428571
No	25	0.3571429

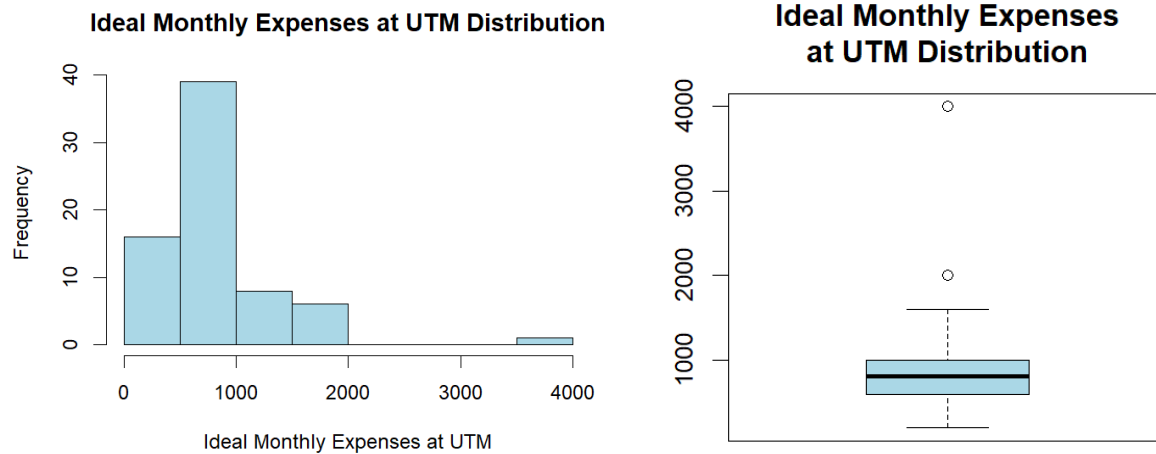
The statistics make it clear that most respondents, or 45 out of 70 responses, said their money is sufficient ("Yes" category). This corresponds to about a 64.29% relative frequency. In contrast, 25 respondents (or around 35.71% of the sample) said that they do not have enough money (the "No" category). This table provides insight into students' financial situation by indicating that a sizable majority believe their financial resources to be sufficient, while a sizable minority disagrees.

4.3.8 Do the students need more money per month?



All respondents who felt they did not have enough money in the previous question answered in yes when asked if they would want more money. However, some respondents would still prefer more money even when they believe their current financial resources are adequate. The analysis indicates that 46 respondents (65.71%) require more money than 24 respondents (34.29%) have for their everyday needs.

4.3.9 How much per month do the students think is enough for a student studying in UTM?

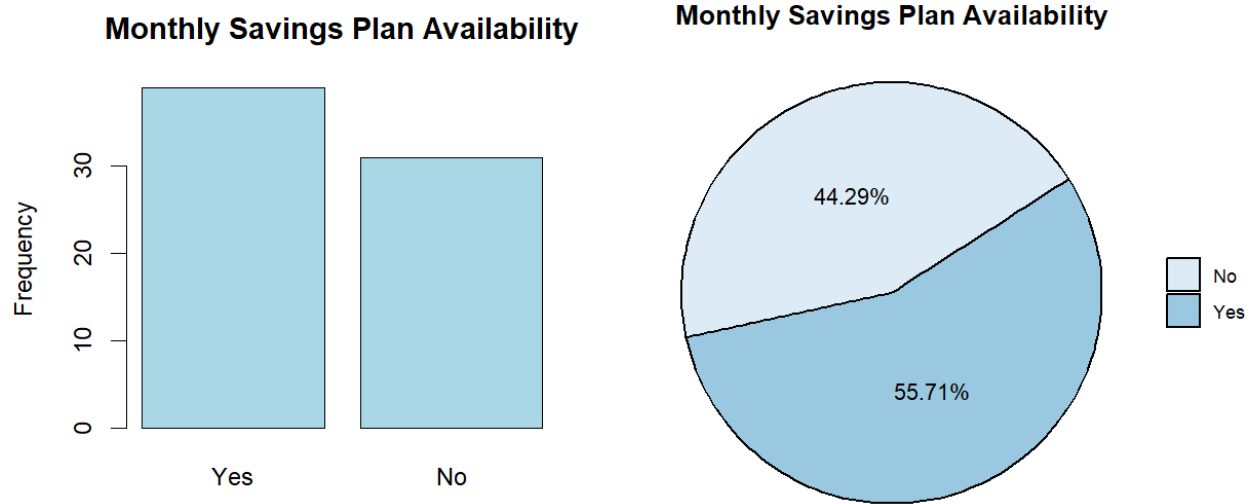


Mean	945.714285714286
Median	800
Mode	1000
1st Quartile	600
2nd Quartile	800
3rd Quartile	1000
Variance	322734.989648033
Standard Deviation	568.097693753489
Skewness	2.62991712620694
Kurtosis	13.4101975501247

Based on the provided data, the ideal monthly expenses for UTM students. The mean where the students are needed for a month is approximately RM 945.71. The median expense, which represents the middle value when all expenses are arranged in ascending order, is RM800. The mode, or most common expense, is RM1000. Additionally, the data is distributed across quartiles, with the first quartile at RM600, the second quartile at RM800, and the third quartile at RM1000. There are also 2 outliers who need RM 2000 and RM 4000 per month.

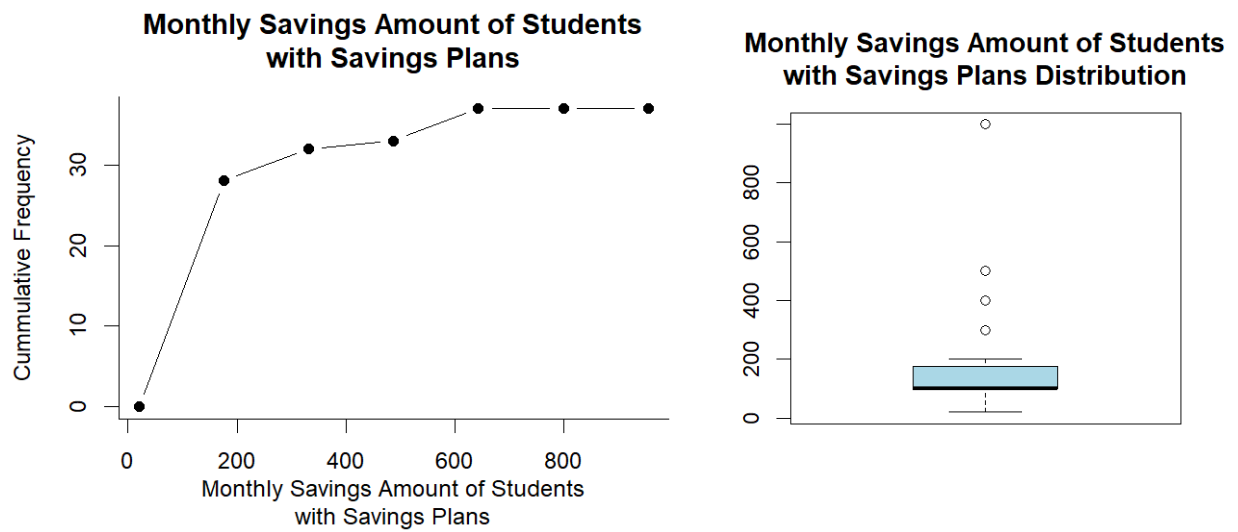
4.4 Savings Plan

4.4.1 Do the students have a monthly savings plan?



Monthly Savings Plan	Frequency	Relative Frequency
Yes	39	0.5571429
No	31	0.4428571

4.4.2 If yes, how much do the students save monthly?

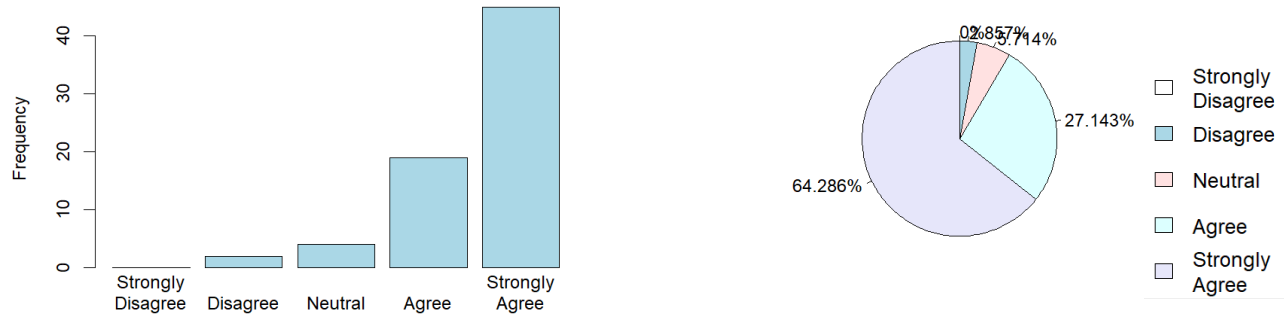


Mean	186.897435897436
Median	100
Mode	100
1st Quartile	100
2nd Quartile	100
3rd Quartile	200
Variance	36157.5155195682
Standard Deviation	190.151296392026
Skewness	2.5042954378105
Kurtosis	9.93956875976552

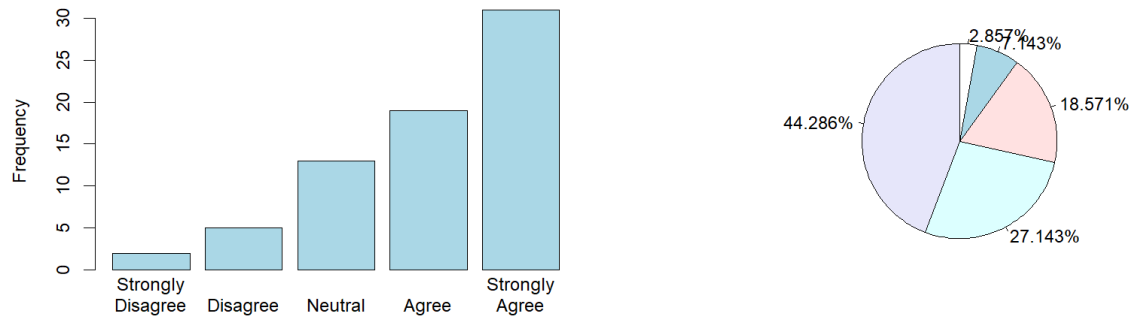
Based on the data provided, more than 50% of UTM students have a saving plan. Majority of students who save money monthly save RM 100 to RM 500 per month. There is one outlier of RM 1000 which 1 student from the survey saves per month.

4.5 Financial Literacy: Price Elasticity

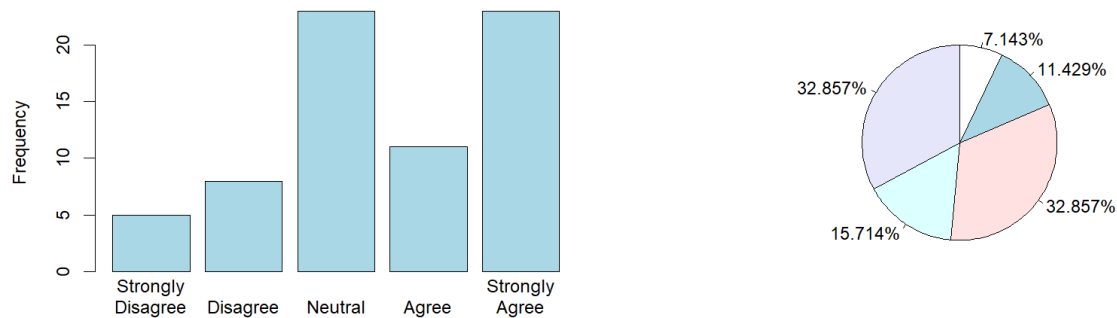
4.5.1 I compare prices whenever I buy a product



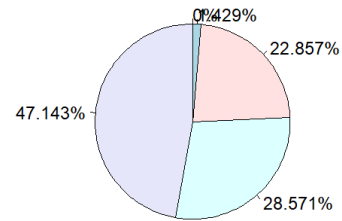
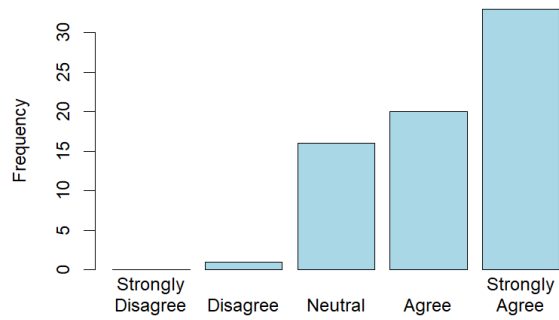
4.5.2 I noticed when there is an increase in price when I buy goods.



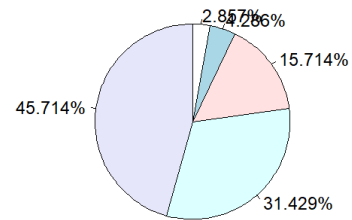
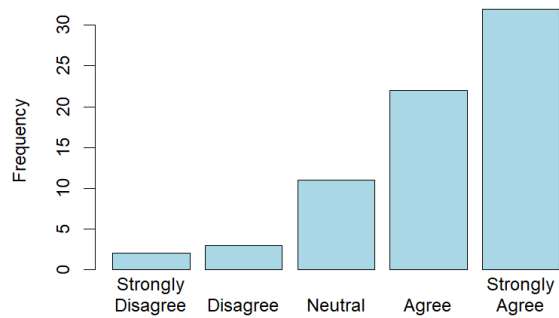
4.5.3 I am upset whenever I miss a discount on a product.



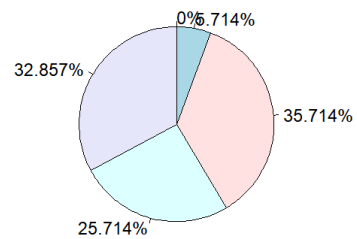
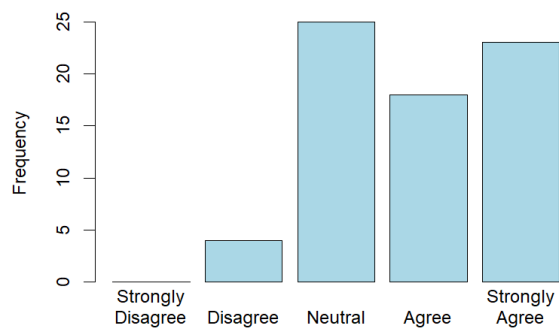
4.5.4 I make an effort to buy the best quality in a product.



4.5.5 I have a reference price for a particular good. (For example, box tissues should not cost more than RM 10.)



4.5.6 I find it important that the goods that I buy are cheap.

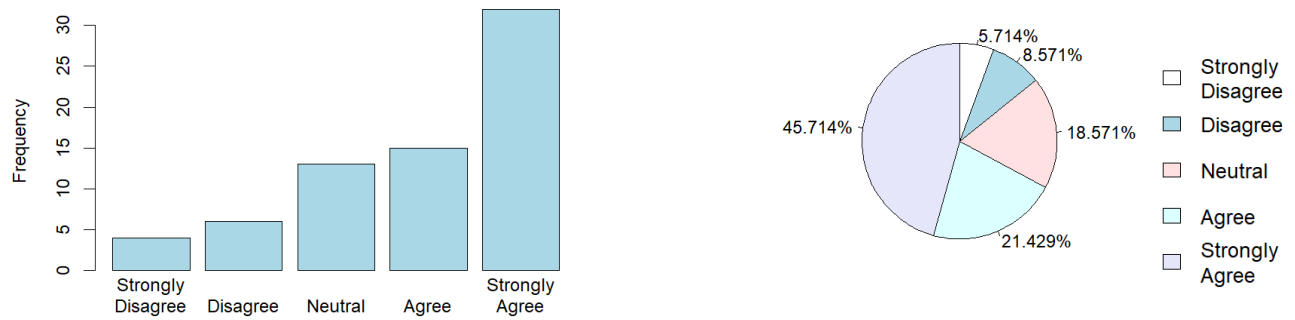


	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I compare prices whenever I buy a product	0	2	4	19	45
I noticed when there is an increase in price when I buy goods.	2	5	13	19	31
I am upset whenever I miss a discount on a product.	5	8	23	11	23
I make an effort to buy the best quality in a product.	0	1	16	20	33
I have a reference price for a particular good.	2	3	11	22	32
I find it important that the goods that I buy are cheap.	0	4	25	18	23

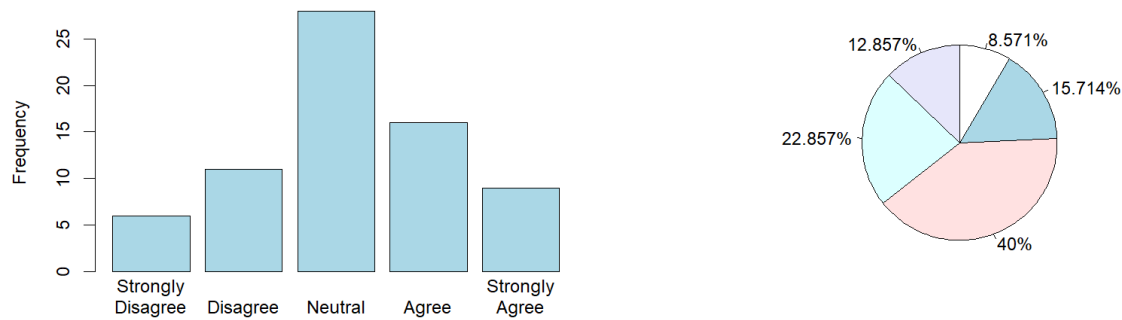
From the questionnaire, it can be seen that more than 90% of UTM students will compare prices when they buy products. Majority of students will make an effort to buy the best quality of product, and can notice if there is an increase in price of the product because they have a reference price of a particular good in mind. However, there is less agreement on whether it is important to buy cheap products, as well as being upset when they miss an offer.

4.6 Financial Literacy: Peer Influences

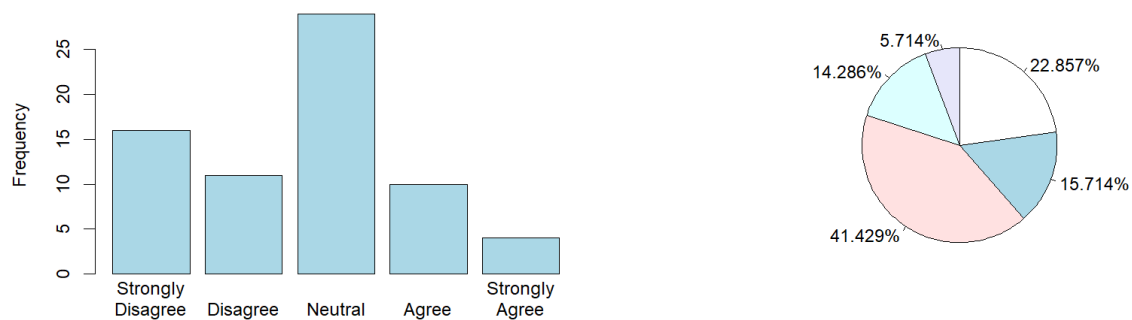
4.6.1 I always seek advice from my friends before purchasing any luxury products.



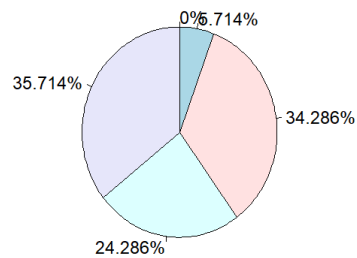
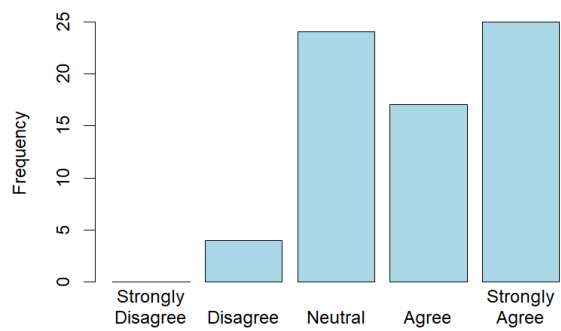
4.6.2 My friend's opinion matters to me the most when it comes to purchasing a product.



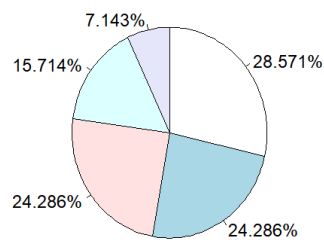
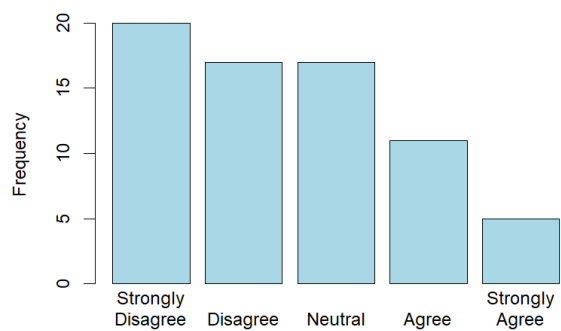
4.6.3 I will buy the products (or brands) that my friends have bought.



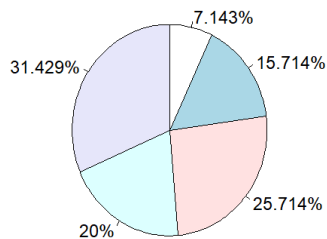
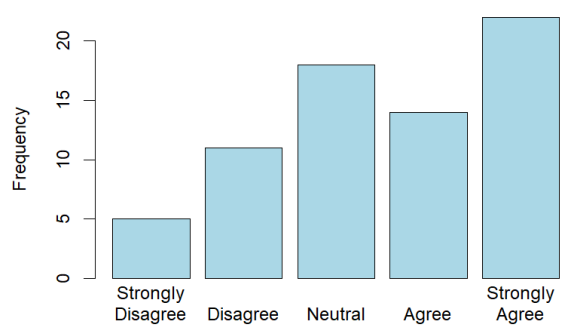
4.6.4 I spend more when I hang out with friends.



4.6.5 My friends influence me to purchase trendy products.



4.6.6 My friends often ask me to buy things together to get a discount.



	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I always seek advice from my friends before purchasing any luxury products.	4	6	13	15	32
My friend's opinion matters to me the most when it comes to purchasing a product.	6	11	28	16	9
I will buy the products (or brands) that my friends have bought.	16	11	29	10	4
I spend more when I hang out with friends.	0	4	24	17	25
My friends influence me to purchase trendy products.	20	17	17	11	5
My friends often ask me to buy things together to get a discount.	5	11	18	14	22

From the questionnaire, it can be seen that a large majority of UTM students are wise in spending such that they will seek advice from friends before buying a product, and try to buy things together to get a discount. Moreover, the majority of students tend to spend more when they hang out with friends than alone. The responses are more evenly distributed when it comes to whether a friend's opinion matters the most for them. Then, the majority of students disagree that friend's opinions are the most important to consider when purchasing a product, and that their friends will influence them to buy trendy products, or buy the product their friend buys.

5.0 Conclusion

Our research included 70 students from UTM, among whom 24 were male and 48 were female. In addition, we had respondents from all academic years of the university, enabling us to more accurately cover and investigate the spending habits of students from different age groups and faculty throughout the entire university. Our questionnaire mainly focused on students' monthly income, expenditure direction, savings plans, and spending habits. These aspects help us better make deductions about the impact of various factors on students' spending habits.

According to our survey, we found that a significant portion of UTM students do not receive allowances from their parents. Instead, they primarily rely on scholarships and financial aid received each semester to support themselves. A minority of students supplement their income by working part-time alongside their studies. Based on the mean values obtained, the monthly allowance from parents is approximately RM580, while income from part-time jobs averages around RM733.33 per month. Additionally, scholarships and financial aid provide an average of RM3473.5 per semester, which equates to approximately RM780 per month.

From the way students spend their money, we can see that at least 75% of UTM students don't exceed a monthly expenditure of RM1000. It is also seen that most students think that RM 1000 is sufficient for a student's monthly expenditure. From the data shown, the majority of spending falls within the range of RM500 to RM700. As indicated by the mode, the highest number of students spend only RM600 per month, while the average monthly expenditure for UTM students is RM752. Notably, the largest portion of their spending goes towards food, averaging RM403.57 per month. This is understandable, as food is a daily necessity for survival, especially for students living on campus. Other expenses such as entertainment, transportation, groceries, and healthcare products average between RM78 to RM90 per month. This shows that UTM students are not extravagant with their spending; rather, they exhibit responsible spending habits and possess good spending habits.

Furthermore, in this survey, we discovered that 55.7% of UTM students have good savings plans. Every month, they set aside a portion of their money for emergencies. This demonstrates a good understanding of how to manage their finances effectively, and they recognize that saving is a helpful habit for the future. We encourage everyone to spread the benefits of saving to those around them and we hope that the other 44.3% of students will realize the importance of saving and start developing this good habit in the future.

It's worth mentioning that, in general, through the final question on financial literacy, we found that many students exhibit some positive spending habits. For instance, over 90% of students will compare prices before making purchases, and they also pay attention to price fluctuations instead of blindly making purchases. Besides, a majority of students (67%) seek their friends' opinions before purchasing luxury items to ensure suitability. However, they also

demonstrate independent decision-making. For example, when friends suggest buying trendy products, they don't immediately follow suit but instead take time to consider. Most students consciously maintain a good spending mindset, which is commendable.

Overall, through this research, we have gained a wealth of knowledge and skills and have greatly improved ourselves. Firstly, in the initial stages of the project, we learned how to collaborate in creating the questionnaire. From the initial group discussions to deciding on the topic, preparing questions at different levels of measurement, and inputting them into Google Form, our team gradually grew more cohesive. Despite the initial disagreements when deciding on the topic, through group discussions, we became more synchronized, combining everyone's ideas into the questionnaire, which left us feeling very satisfied.

During the data collection phase, we learned how to effectively disseminate our questionnaire on social media platforms such as WhatsApp and Telegram, which gained about 26 responses. Moreover, in order to obtain more robust data, we stepped out of our comfort zones and courageously approached respondents at the arcade, a challenge that ultimately proved rewarding, especially upon seeing the diversity of our data.

Moving on to the report writing stage, our team successfully mastered the techniques of R programming, utilizing it to create various charts and data visualizations for our report. We believe that the teamwork, communication skills, and technical expertise acquired through this project will greatly benefit our future careers.

Lastly, we would like to express our gratitude to our lecturer, Dr. Noorfa Haszlinna binti Mustaffa for guiding us through the project and to the 70 respondents for their contributions to our questionnaire.