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Multiple Linear Regression Analysis on Factors Affecting Financial Literacy among Undergraduate Students

Nur Niswah Naslina Azid @ Maarof [1]*, Siti Noorul Ain Nor Azemi [2], Nurul Hafizah Azizan [3], Ahmad Syafiq Ahmad Raston[4], Nurul Akmal Abdullah[5], Siti Murni Bahrin[6] and Wan Faizah Wan Yaacob[7]

[1,3,4,5,6,7]College of Computing, Informatics and Mathematics, Universiti Teknologi MARA Kelantan, Bukit Ilmu, Machang, Kelantan, Malaysia
[2]College of Computing, Informatics and Mathematics, Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia

Authors' email: niswah@uitm.edu.my*, noorulain@uitm.edu.my and hafizahaz@uitm.edu.my

*Corresponding author

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Abstract: Financial literacy can be defined as the ability to read, analyse, manage, and communicate the personal financial conditions that affect material well-being. It includes the ability to discern financial choices and discuss money and financial issues. Most university students are facing financial crisis because they do not have the knowledge of how to manage their money. This study aims to determine financial literacy among UiTM Kota Bharu students. Thus, four factors had been examined, which were financial behaviour, financial knowledge, financial attitude, and family influences. The data was collected through an online questionnaire via the WhatsApp application to distribute to students at UiTM Kota Bharu. The research revealed that all factors had a significant effect on financial literacy, with Financial Attitude being the most significant influence, followed by Financial Knowledge, Family Influences and Financial Behaviour. Besides, the results of the study indicate that Grade Point Average (GPA) and Allowance factors have significant effects on students' financial literacy. In contrast, the Gender factor did not have a significant effect on students' financial literacy. The study helps to improve the knowledge and behaviour of young people to act on financial management.

Keywords: Financial attitude, Financial behaviour, Family influences, Financial knowledge, Financial literacy

1 Introduction

Basic knowledge of financial principles is known as financial literacy [1]. It includes the ability to read, analyse, manage, and communicate the personal financial conditions that affect material well-being. In recent decades, financial literacy has become a must-have skill for people to master all around the world. It includes the ability to live with sufficient basic needs such as accommodation, food, transportation, and so on. The world economic crisis has called attention to the importance of financial literacy and the need for financial knowledge and education. According to the Organisation for Economic Cooperation and Development (OECD) recommendation on financial literacy 2020, financial literacy is a combination of awareness, knowledge, skill, attitude, and behaviour necessary to make sound financial decisions and ultimately achieve individual financial well-being. In accordance with this recommendation, it is suggested that financial literacy is a combination of three components, which are financial knowledge, financial attitude, and financial behaviour [2].

Financial knowledge refers to what individuals know about personal financial matters, as measured by their level of knowledge about various personal financial concepts [3]. Financial knowledge is the objective mastery of financial definitions, terms, and concepts [4]. Even though the terms 'financial knowledge' and 'financial literacy' are often used interchangeably by media and researchers, they are not synonymous. Financial knowledge concerns consumers' ability to understand financial information and to use such information to make informed, sound financial decisions [5]. This

definition suggests that consumers need to be knowledgeable about basic and advanced financial concepts. Consumers must be able to translate their financial knowledge into practical financial abilities like budgeting and financial planning.

A person's financial behaviour can be seen from how well he manages cash, debt, savings, and other expenses [6]. People with responsible financial behaviour tend to use their money effectively, such as by creating a budget, saving money, controlling their spending, investing, and paying their debts on time. Financial behaviour is influenced by various factors, including personal beliefs, cultural norms, socioeconomic status, and psychological factors. Understanding and improving financial behaviour can lead to better financial health and stability.

Another component of financial literacy is financial attitude. Financial attitude is a state of a person towards finance that is applied to attitude [3]. Attitudes are part of beliefs, feelings and intentional behaviour towards people, objects, and events (an attitude object) [7]. Financial attitude can have substantial implications in financial literacy. A person with a positive financial outlook will also be financially literate. Low financial literacy will be impacted by those who lack a positive financial mindset.

Financial literacy became a must-skill for people to master all around the world, including students (undergraduate students, in particular), since they need to maintain their financially stable lives. During their days, students are often in need of money to pay for those basic needs when they are away from family. For most students, allowance is the only income that can be used to meet their needs during their studies [3]. Most college students are facing a financial crisis because they do not have the knowledge on how to manage their money. During a financial crisis, college students may experience stress and struggle to focus on lectures, affecting their academic achievement and future job prospects.

Many factors influence students' financial literacy, such as financial behaviour, financial knowledge, financial attitude, family influences, gender, allowance, and students' academic scores (GPA). Financial behaviour, knowledge, attitude, and family influence are crucial indicators of financial literacy [8]. A research study stated that financial knowledge has a positive influence on financial literacy [9]. Another study found that financial literacy is influenced by financial attitude [10]. Meanwhile, there is a significant relationship between financial literacy and financial behaviour [11]. It is proven that family influences, personality characteristics (financial attitude), and financial knowledge have significant positive relationships towards financial literacy [10]. Gender, allowance, and GPA also significantly influenced students' financial literacy [12-14].

The purpose of this study is to determine the relationships between financial behaviour, financial knowledge, financial attitude, and family influences towards financial literacy among undergraduate students. Undergraduate students are a crucial focus for financial literacy studies for several key reasons: (1) Early foundation for lifelong financial decisions, (2) Transition to financial independence, (3) Debt management and avoidance, (4) Preventing financial struggles and mental stress, and (5) Empowering students to make informed choices. The results of this study are intended to increase students' awareness of financial literacy at UiTM Kelantan Campus Kota Bharu branch since they highlight how crucial it is for them to understand financial management in the modern world.

2 Methodology

A Study Design, Sample and Instrumentation

A cross-sectional design was employed in this study to collect the samples from a total number of 1328 students' population. The respondents were selected randomly through the stratified random sampling technique. This sampling technique is referred to as one of the probability sampling techniques that involves the process of stratification or segregation. Once the population has been stratified, a sample of members from each stratum can be drawn using simple random sampling.

Raosoft online calculator was used in the study to estimate the sample size required. The online calculator used a 5% margin of error, a 95% confidence interval, and a 50% response distribution based on the total population. From a total of 1328 student population, the recommended sample size for this study is n = 299. Due to the possibility of dropouts or sampling errors, a 10% increased has been decided [16]. As a result, the total sample size for this study was 329 students. Table 1 shows how the process of sampling was conducted.

Table 1: The Stratified Sampling Process

Program	Number of Students	Sample Size Allocation
BA240	228	(329/1328) *228 = 56
BA242	409	(329/1328) *409= 101
BA249	215	(329/1328) *215 = 53
BA250	204	(329/1328) *204= 51
CS291	27	(329/1328) *27= 7
CS241	245	(329/1328) *245=61
TOTAL	1328	329

A structured questionnaire was distributed to the respondents through Google Forms. The questionnaire consisted of six sections: Section A is the demographic profiles of students, Section B is for Financial Behaviour, Section C is Financial Knowledge, Section D is Financial Attitude, Section E is Family Influence and the last one, Section F is Financial Literacy. The questions used the Likert scale format, which ranged from 1 to 10, except for Section A, which is the demographic profile. The use of a Likert scale is to allow individuals to indicate how strongly they agree or disagree with a certain statement. Table 2 provides a summary of the number of items and variables employed in the study.

Table 2: Instrumentation

Section	Variable	No of Items
A	Demographic Profile	7
B	Financial Behavior	5
C	Financial Knowledge	5
D	Financial Attitude	5
E	Family Influence	5
F	Financial Literacy	5

The study framework is illustrated in Figure 1. The independent variables are financial behaviour, financial knowledge, financial attitude, and family influences, while the dependent variable is financial literacy.

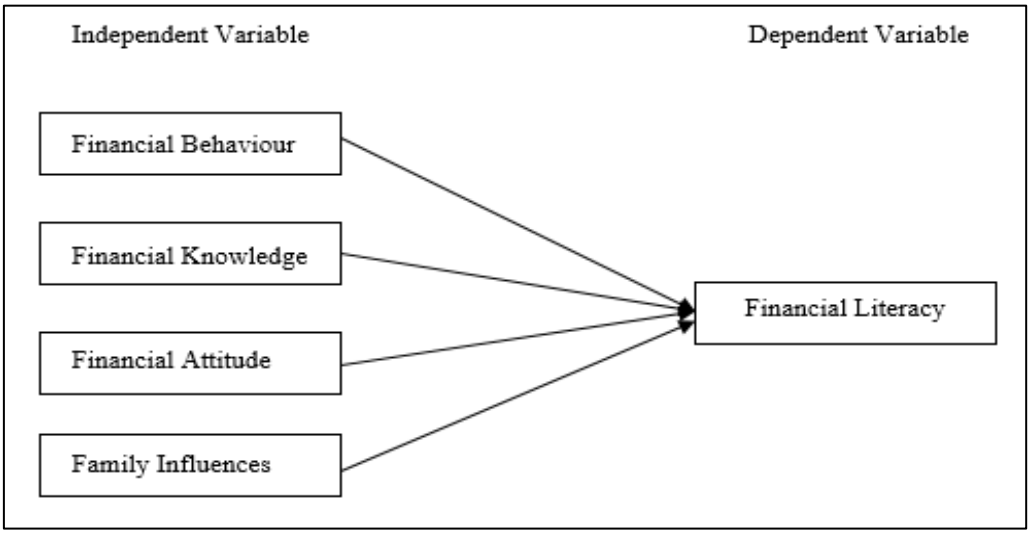

Figure 1: Theoretical Framework

B Method of Analysis

The respondents' demographic profiles were identified using descriptive statistics. Pie charts and bar graphs summarise the information about the gender, age, program, and semester of the students. The independent t-test was used to identify the difference in the mean of financial literacy based on gender (male and female), while one-way Analysis of Variance was performed to explore differences in the mean of financial literacy based on GPA (lowest, middle, and highest passing grades) and allowance (RM0-RM400, RM400-RM800, RM800-RM1200, and RM1200-RM1600). Furthermore, multiple linear regression (MLR) was applied to discern the relationships between financial behaviour, financial knowledge, financial attitude, and family influences with financial literacy among students.

3 Finding

A Reliability Analysis

Table 3 shows the reliability tests of the pilot and actual study. The Cronbach's Alpha Coefficient of the pilot study is in the range of 0.641 to 0.874, which indicates that the internal consistency for all constructs varies from acceptable to good. Meanwhile, the Cronbach's Alpha Coefficient of the actual study is in the range of 0.661 to 0.888, which indicates that the internal consistency for all constructs also varies from acceptable to excellent. Therefore, this can confirm that all the items from the questionnaire used in the study are proven to be reliable.

Table 3: Cronbach's Alpha for Pilot and Actual Study

Variables	Number of Items	Cronbach's Alpha for Pilot Study	Cronbach's Alpha for Actual Study
Financial Behaviour	5	0.641	0.818
Financial Knowledge	5	0.874	0.888
Financial Attitude	5	0.783	0.865
Family Influences	5	0.694	0.823
Financial Literacy	5	0.691	0.661

B Demographics of Respondents

Figure 2 explains that from the total of 329 students of UiTM Kota Bharu that took part in this study, 206 of them were female students (62.61%), while male students only consist of 123 students (37.39%).

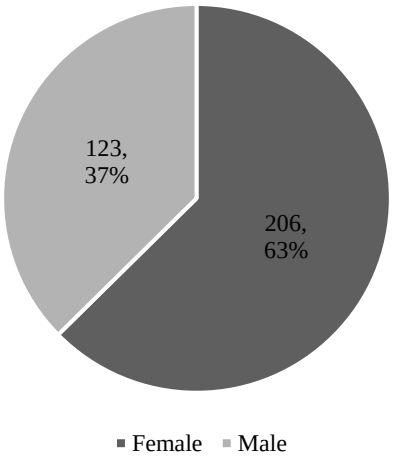

Figure 2: Pie Chart for Gender of Students

Figure 3 represents the bar chart of the allowance (in RM) among students. Most of the students (160 students) received a monthly allowance in the range of RM0 to RM400. It is the largest group and

indicates that a significant proportion of students have a lower monthly allowance. The smallest group consists of 6 students who received a monthly allowance in the range of RM1201 to RM1600. This group represents students with relatively higher monthly allowances.

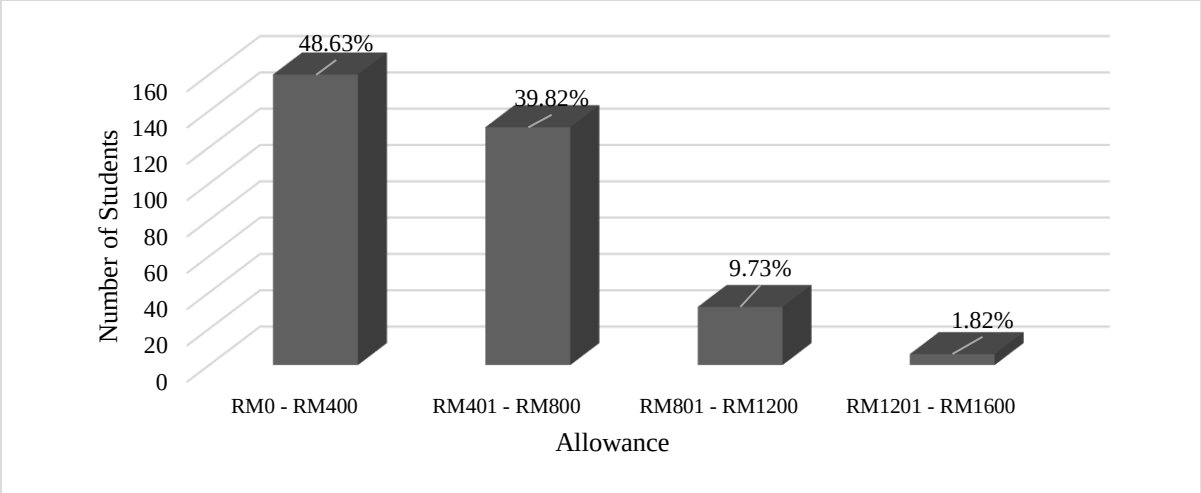

Figure 3: Bar Chart of Respondents' Allowance (RM)

C One-Way ANOVA

The differences in the mean of financial literacy between the groups of demographic factors (GPA and allowance), which have three or more unrelated groups, were assessed using one-way ANOVA. Results in Table 4 indicate that there were significant mean differences in financial literacy between GPA ($F = 4.616$, p-value < 0.05). Meanwhile, for variable allowance, the value suggests the same result as the variable GPA. There were statistically significant mean differences in financial literacy between allowance groups ($F = 2.949$, p-value < 0.05).

Table 4: One-way ANOVA

Variable	ANOVA	F	P-value
GPA	Financial Literacy	4.616	0.011
Allowance	Financial Literacy	2.949	0.033

D Multiple Linear Regression

ANOVA for the model was conducted using the stepwise method. Table 5 shows that model 1 has F and p-value of 222.233 and 0.000, respectively. P-value less than 0.05 indicates that the model is significant. Therefore, at least one of the independent variables is significant.

Moreover, the value of R-squared for the model is 0.733. It indicates that 73.3% of the financial literacy was explained by financial behaviour, financial knowledge, financial attitude, and family influence. The other percentage of 26.7% was explained by other factors. Since the R-squared value was more than 70%, it can be concluded that the model explains well the financial literacy among students.

Table 5: ANOVA for Multiple Linear Regression Test

Model	ANOVA	F	Sig	R Square
1	Regression	222.233	0.000	0.733

As shown in Table 6, the p-values for all the independent variables, such as financial behaviour, financial knowledge, financial attitude, and family influence, are 0.012, 0.000, 0.000, and 0.000, respectively. All the p-values that were lower than 0.05 are considered statistically significant. This means that all the independent variables have a significant impact on financial literacy.

When all significant predictor variables are zero, the estimated value of financial literacy is 1.944. It can be concluded that, for every one-unit increase in mean score of financial behaviour, financial knowledge, financial attitude, and family influence, the mean score for financial literacy will also increase by 0.111, 0.194, 0.295, and 0.172, respectively. This interpretation is valid for each significant factor, provided that other factors are held constant.

From the result of MLR, it can be concluded that the most affecting factor that contributes to the financial literacy among students was Financial Attitude (β=0.295), followed by Financial Knowledge (β=0.194), Family Influences (β=0.172) and Financial Behaviour (β=0.111).

Table 6: Coefficients for All Variables

Model	Unstandardised Coefficients	t	p-value	95.0% Confidence Interval	
				Lower Bound	Upper Bound
(Constant)	1.944	9.553	.000	1.544	2.345
Financial behavior	.111	2.529	.012	.025	.198
Financial knowledge	.194	4.265	.000	.105	.284
Financial attitude	.295	6.445	.000	.205	.384
Family influence	.172	5.799	.000	.114	.230

The model for this study is shown in Eq. (1).

$$\hat{Y} = 1.944 + 0.111(X_1) + 0.194(X_2) + 0.295(X_3) + 0.172(X_4) \quad (1)$$

where:
$\hat{Y}$: financial literacy
X_1: financial behavior
X_2: financial knowledge
X_3: financial attitude
X_4: family influence

E Model Adequacy Checking

Model adequacy checks include the assumption of homoscedasticity, the linearity between independent and dependent variables, normality of residuals, multicollinearity, and independence.

i. Homoscedasticity

The scatter plot in Figure 4 reveals that the points are randomly distributed and does not have any obvious pattern. Since the homogeneity assumption is met, it means that the variance of the residuals is constant.

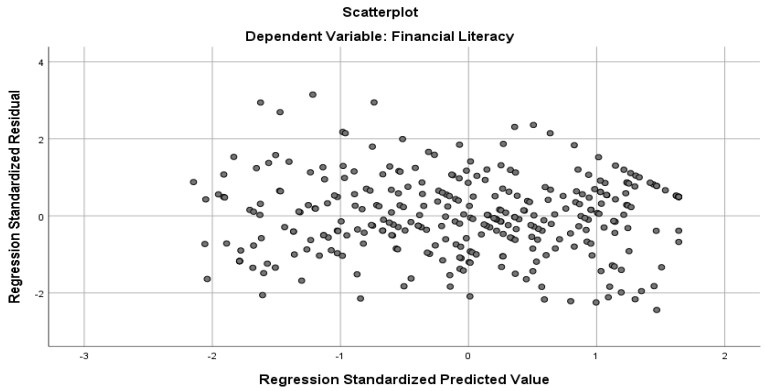

Figure 4: Scatter Plot of Financial Literacy

ii. Linearity

Scatter plots of the dependent variable against each independent variable can help verify linearity. Linearity assumption implies that changes in the dependent variable are proportional to changes in the independent variables. The scatter plot matrix in Figure 5 shows that the relationship between financial literacy and financial behaviour, financial knowledge, financial attitude, and family influences appears to be linear and positive.

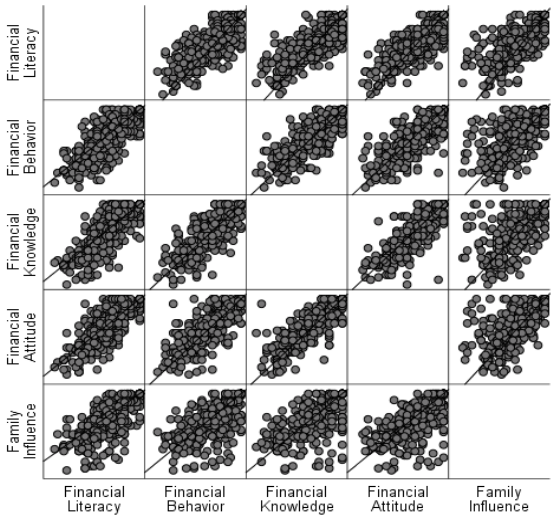

Figure 5: Scatter Plot Matrix

iii. Normality

The normality assumption in regression analysis refers to the assumption that the residuals of a regression model are normally distributed. P-P plot standardised residuals were used to assess the normality assumption of the standardised residuals. In Figure 6, the plot aligns with a straight line, indicating that the residuals are normally distributed and hence meet the normality assumption.

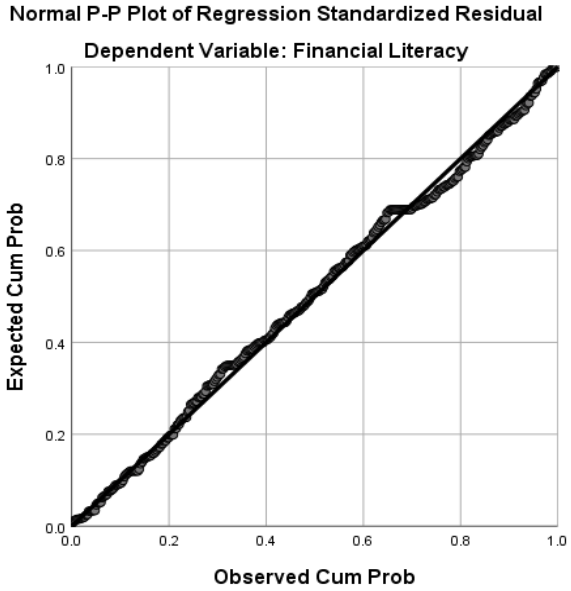

Figure 6: Normal P-P Plot of Financial Literacy

iv. Multicollinearity

Multicollinearity refers to a situation in regression analysis where two or more independent variables are highly correlated with each other. This correlation makes it difficult to determine the individual effect of each variable on the dependent variable because the independent variables move together. If variance inflation (VIF) is greater than 10 and tolerance is less than 0.2, it indicates that there is a strong presence of multicollinearity in the model. By referring to Table 7, since the VIF of all the independent variables is less than 10 and the tolerance value is more than 0.2, therefore this confirms that there is no multicollinearity in the model.

Table 7: Value of VIF and Tolerance for the Independent Variables

Model	Collinearity	
	Tolerance	VIF
Financial Behaviour	0.299	3.349
Financial Knowledge	0.244	4.094
Financial Attitude	0.274	3.653
Family Influence	0.547	1.828

v. Independence

Durbin-Watson can be used as a test for checking autocorrelation in the residuals of a statistical regression analysis. If autocorrelation is present, it is a sign that the regression model may need to be revised or extended to improve the accuracy of the results and ensure valid statistical inference. The result of Durbin-Watson in Table 8 indicates that the assumption for independence is satisfied since it is 1.788, within the range of 1.5 to 2.5.

Table 8: Result of Durbin-Watson

Model	Durbin-Watson
1	1.788

F Independent T-test

The independent t-test was employed to identify the difference in mean financial literacy between male and female students. According to Table 9, the Levene's test shows that the F-value is 0.624 (p-value > 0.05), indicating homogeneity of variance. Furthermore, for the independent t-test, the p-value is 0.119, which is greater than the alpha value, $\alpha = 0.05$. Therefore, there is no significant mean difference in the financial literacy between male and female.

Table 9: Independent T-test Result

	Levene's Test for Equality of Variances		T-test for Equality Means	
Financial Literacy	F	P-value	T	P-value
	0.624	0.430	1.562	0.119

While some studies do suggest gender differences in financial literacy, the context and specific conditions of a study can heavily influence the results. In many cases, the focus on education, increased access to resources, and shifting gender roles have mitigated historical differences. Financial literacy is increasingly being understood as a skill set that is not inherently determined by gender but rather shaped by individual experiences, access to education, and personal choices. Therefore, in certain contexts, gender may not play a significant role in determining financial literacy levels. Hence, it explains the reason why the finding in this study was not supported by the previous studies.

G Summary of the Findings

The results of the entire study are summarised in Table 10.

Table 10: Summary of the Findings

Hypotheses	Result
There is a significant relationship between financial behaviour towards financial literacy.	Supported
There is a significant relationship between financial knowledge towards financial literacy.	Supported
There is a significant relationship between financial attitude towards financial literacy.	Supported
There is a significant relationship between family influences towards financial literacy.	Supported
There is significant mean difference in the financial literacy between male and female.	Not Supported
There is a significant mean difference in financial literacy between GPA groups.	Supported
There is a significant mean difference in financial literacy between allowance groups.	Supported

4 Conclusion

The result of the independent t-test reveals that there were no significant mean differences in financial literacy between genders among UiTM Kota Bharu students. This result tallies with the finding from [3] where students' financial literacy was not affected by gender. The government is making sure men and women achieve equality in all aspects of life, including access to education [15].

Grade Point Average (GPA) groups were found to have significant mean differences in financial literacy, which indicates similar results to [3]'s study. Thus, GPA factor has a significant effect on students' financial literacy. Students who have a high intellectual level tend to be more knowledgeable about financial concepts. Besides, from this study, there was a significant mean difference in financial literacy between Allowance groups among UiTM Kota Bharu students. The result contrasted with the finding from [3], which stated that students' financial literacy is not affected by variable allowance.

Family influences, financial attitude, and financial knowledge were found to have significant positive relationships towards financial literacy [9][10]. Findings from this study also proved that family influences, financial attitude, financial behaviour, and financial knowledge have a significant impact on the financial literacy among UiTM Kota Bharu students.

Based on this study, financial attitude was the most affecting factor that contributed to the financial literacy among students, followed by financial knowledge, family influences, and financial behaviour. This finding was different from [10]'s study, where family influences have the highest significant effect on financial literacy compared to personality characteristics such as financial attitude, financial behaviour, and financial knowledge.

It is recommended that future research consider different scopes of target populations for their study, such as other public universities or private universities. Besides, it is proposed that future investigations incorporate additional factors, for instance, time preference, financial competence, risk preference, and financial status to improve the understanding of financial literacy.

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