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Influence of Gender and Academic Program on Financial Literacy among Malaysian University Students
(Pengaruh Gender dan Program Akademik Terhadap Literasi Kewangan dalam kalangan Mahasiswa Universiti)

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ABSTRACT

This study examines financial literacy among Malaysian university students. It is conducted among undergraduate students at the Universiti Kebangsaan Malaysia. It also examines the effect of gender and different academic program on FL level. Various test such as the Independence T-test, ANOVA and Tukey Honest Significant Difference HSD are employed on 300 samples of primary data collected using questionnaires distributed among students from selected faculties. The questionnaire contains questions among others on financial attitude, knowledge as well personal characteristics items. The results show that the level of FL among UKM students is moderate. From the Independent T-Test, the results show a significant difference in FL scores for males and females which suggest that males are more financially literate than females. From the ANOVA and Tukey HSD the study finds that there is a statistically significant different between type of majoring and FL level with business majoring students have higher level of FL when compared to non-business majoring. From the business majoring, Financial Services and Risk Management specialization has the highest FL level. It is therefore recommended that a comprehensive and aggressive program of financial education be carried out among young people in Malaysia especially to university students from all academic program.

Keyword: Financial literacy, gender differences, academic program, university students

ABSTRAK

Kajian ini mengkaji tahap celik kewangan (FL) dalam kalangan pelajar universiti di Malaysia. Ia dijalankan dalam kalangan pelajar sarjana muda di Universiti Kebangsaan Malaysia. Ia juga mengkaji kesan jantina dan program akademik yang berbeza terhadap tahap FL. Pelbagai ujian seperti Ujian Bebas-t, ANOVA dan *Tukey Honest Significant Difference* HSD dilakukan ke atas 300 sampel data primer yang dikumpul dengan menggunakan soal selidik yang diedarkan di kalangan pelajar dari fakulti terpilih. Soal selidik mengandungi soalan antaranya mengenai sikap kewangan, pengetahuan dan juga ciri-ciri peribadi. Hasil kajian menunjukkan bahawa tahap FL dalam kalangan pelajar UKM adalah sederhana. Daripada ujian bebas-t, keputusan menunjukkan perbezaan yang signifikan dalam skor FL bagi lelaki dan perempuan yang mencadangkan bahawa lelaki adalah lebih celik kewangan daripada perempuan. Dari ujian ANOVA dan Tukey HSD, kajian ini mendapati bahawa terdapat tahap yang ketara secara statistik yang berbeza antara jenis pengkhususan dan tahap FL dengan pengkhususan perniagaan mempunyai tahap celik kewangan lebih tinggi berbanding pengkhususan bukan perniagaan. Daripada jurusan perniagaan, pelajar yang mengkhusus dalam Perkhidmatan Kewangan dan Pengurusan Risiko mempunyai tahap celik kewangan yang tertinggi. Oleh itu, adalah disyorkan bahawa satu program menyeluruh dan agresif untuk pendidikan kewangan dijalankan di kalangan anak-anak muda di Malaysia.terutama sekali untuk semua pengkhususan program akademik di universiti.

Kata kunci: celik kewangan, perbezaan jantina, program akademik, pelajar universiti

INTRODUCTION

Financial literacy (FL) is defined in many textbook as the ability to read, analyse, manage and communicate about financial matters to make effective financial decision making. Definition of FL given by Mason and Wilson (2000) is the integration of skills, resources and contextual knowledge to process information towards achieving a meaning-making process in which decisions were made with the knowledge of the financial consequences of that decision. Alan Greenspan, the chairman of the US Federal Reserve Board, views FL as 'a tool for economic progresses and a means to prevent 'abusive lending practices that target vulnerable segments of the population which result in unaffordable payments, equity stripping and foreclosure' (Greenspan, 2002). Thus from these definition, a person with FL enjoys a range of capabilities such as an understanding of the key concepts central to money management; a working knowledge of financial systems comprises of the institutions, services and products which allow effective management of financial affairs.

In today's dynamic and challenging financial landscape, having a financially-literate person is important not only for the individual financial wellness but also the country's economic development. Janor et al. (2016) and Yakob (2016) highlight the relevance of financial skills partly due to the following development in financial environment: i. Deregulation of financial markets and strong competition among financial institutions for market share makes credit become easier to obtain. ii. Spending on consumption becomes easier facilitated by the easy issue and ubiquitous acceptance of credit cards and also debit cards. iii. Advancement in information technology has burgeoned the development and marketing of financial products, encouraged individual to invest directly by means of the internet and motivated discussion of financial strategies so much so that it has become part of everyday conversation. iv. Efforts taken by governments and private sectors world-wide in encouraging individuals to move away from public pensions and be more responsible for their retirement incomes and their own investment strategies for eventual retirement benefits. v. Higher cost of living inconsistent with income. Moreover, a large number of financial products (i.e., different retirement plans, investment products, etc.) and financial products being offered in the financial market are becoming more high technology and complex. For example, the increasing number of different alternatives of home, car and education financing; individuals have greater responsibility for their retirement income security with the advent of defined contribution pension plans and declines in benefit pension plans. These trends imply that financial decision making may require higher levels of financial knowledge. Hence improving FL through various programs has become a national agenda throughout the countries in the world. In Malaysia for example, enhancing the levels of FL is being accorded high priority due to the rapid change of current environment in financial technology, product innovation, deregulation and greater competition that have dramatically transformed the financial system (Koid Swee Lian, 2008).

Low level of FL has been documented throughout both the developed and lesser developed countries during the last decade. Among the financial actions that could be associated with the symptoms of such personal financial illiteracy are rising individual debt levels with overuse of credit cards, using personal loans for consumption and undertaking over-optimistic loans including car loan, marriage loan and home-loan obligations, lower saving, involving in the get-rich-quick schemes, spending and investing in high risk investments inconsistent with earning power, easily falling into financial scams and relying on the buy now pay later purchases. In regard to personal debt, in the UK for instance, The NatWest (Banking) Group established a charitable fund in 1994 to make a significant contribution to the society in which it operated due to the dramatic increases in personal debt levels in the 1990s (Mannion, 1992). Likewise in Australia, household debt has risen much faster than household disposable income in 1992 with the ratio of household debt to disposable income was about 1:2 or 50% and rising to 1.1:1 or 110% (RBA, 2002) in 2002.

Widely documented evidence of the financial illiteracy among younger generation have raised concern among policy makers in the world. In the USA, many programs to improve financial skills have been initiated for the high school leavers due to the increasing concern on the lack of basic financial skills in 1995 (www.jumpstart.org, August 2002). In March of 2010, the Obama administration said that the lack of FL among America's youth is the next major crisis that will plague the economy in the future if there is no action taken as a nation (Bartley, 2011). Among the reasons could be due to the little emphasis on financial education especially to those programs outside the dedicated business, finance and economics courses at tertiary level so that high-school leavers are little prepared for the major, and minor, financial decisions in life. For Malaysia, Youth Development Research Institute of Malaysia (IPPBM) points out that FL can be considered to be low among youth as most of the research had shown that it was due to the level of

complexities and variety in the financial world.

This research is to examine the FL among the students in Malaysia taking UKM students as sample study. Studies on university students is important considering their role as future leaders and also the rising number of personal debts being highlighted among university students. Moreover, Huddleston and Danes (1999) urged that personal finance subject become a mandatory component of consumer education in schools based on their study that teaching personal finance in high schools can increase financial knowledge and have a positive impact on both teenage financial behavior and subsequent behavior as adults. Knowing FL among university students hence could determine the urgency of the financial training programs in the university. Additionally, measuring the current state of preparedness provides a benchmark against which any improvements gained through financial education programs may be measured at a later stage. We also examine the influence of gender on the FL among the students. There are literatures documenting that gender could influence level of FL. Among others Chen and Volpe (2002) find gender differences at younger ages, Lusardi and Mitchell (2008) document that financial illiteracy is even more prevalent among women than men and Zissimopoulos, Karney, and Rauer (2008) found that less middle-aged college-educated women were able to answer a basic compound interest question compared to college-educated males of the same age. Understanding the differences and how male and female have different levels of FL is crucial to developing policies aimed at reducing the gender gap and improving financial decisions such as the saving and investing decisions among university students. In addition our study also consider the effect of different academic program on FL among students. Mixed findings have been documented on the significance of academic field/ program on level of FL. Changing demographic trends that also linked to gender and education background and changes in the types of financial decisions being made, couple with the advancements of financial instruments and products being offered in the market further increase the importance of understanding what accounts for the low levels of financial knowledge and literacy.

The next section briefly reviews the FL literature, next the research methodology in terms of the data collection and analytical method. The penultimate section reports the findings and discusses the results and the final section is the conclusion.

RESEARCH ON FINANCIAL LITERACY

Literatures on FL have been focusing on several issues among others testing for FL level among differing cohorts or populations; evaluations on the factors influencing level of FL. The impact of financial illiteracy on individual and economic development has increased the importance of having adequate FL and research interest on the FL level.

One of the focus areas is the study of FL level among younger generations. It is important to educate young people especially students because they are the consumers of the future (Mundy, 2008). Moreover, since college students are expected to have higher earnings after graduation, they are also expected to be financially literate or at least more literate as a part of their preparation for a career (Furtuna, 2007). Chatzky (2002), in a study on the personal finance of American teenagers agrees that the majority are not getting such education. This is based on the evidence that the average high-school senior was able to answer only 50% of 31 Jump$tart Coalition for Personal FL multi-choice questions correctly, whilst students who had completed a money-management course were only able to answer 48% correctly. One of the reason given is due to the timing of personal education in which high school is too late to start to teach FL because many students may have a high chance of missing such education, yet they are the students who later typically have to deal with repaying student loans. On this issue, he argue that financial education is more effective before people start to practise, yet 7% of US teenagers have their own credit cards and 18% have access to their parents' cards. On the issue of youngsters having financial difficulties, Schagen and Lines (1996) who study FL in UK recognized that among the groups that are particularly susceptible to difficulties with debt include young people aged 16-21 years in work or training and students in higher education and not living at home. In their studies, they find that almost all students had bank accounts, but few kept good records and students were least confident in dealing with financial affairs.

Demographic factors have been identified in past research that has resulted in a difference in FL levels. Gender, employment status, ethnicity, family income, and college major have been some of the factors shown to be related to students (Chen et al., 1996; Murphy, 2005 and Thaden & Rookey, 2004). These factors have been identified as affecting FL levels. McKenzie (2009) said study's findings show that gender, employment status, ethnicity and college major can be used to predict FL levels in graduating university students. Knowing that gender and ethnicity

are predictors of FL levels can aid in identifying persons who might benefit from personal finance assistance.

Studies have argued that gender differences may influence FL. Studies such as Harris/Scholastic Research (1993) and Chen and Volpe (1998) document that women know less about financial management than men. Moreover, Hira and Mugenda (2000) report that women are more likely to be dissatisfied with their finances than men. Likewise, Lusardi and Mitchell (2008) document that financial illiteracy is even more prevalent among women than men. Similarly, Zissimopoulos et al. (2008) found that less than 20% of middle-aged college-educated women were able to answer a basic compound interest question compared to about 35% of college-educated males of the same age. McKenzie (2009) also finds that males had significantly higher FL score than females as males scored 76.18% compared to females with a mean FL score of 69.59%. However in contrast to all these studies, Wagland and Taylor (2009) show that females to be slightly more financial literate than males. This is supported by Bucher-Koenen & Lusardi (2011) who finds that women in the West Germany are significantly more likely to answer all FL questions correctly compared to men in the East Germany. They show that among respondents in the West there is a strong gender difference: 65% of men and only 52% of women living in West Germany gave three correct answers. However, among respondents living in East Germany, there is no significant gender difference in which on average 42% of the women and 48% of the men gave three correct answers to the question implying that in East Germany women and men know equally little. In Malaysia, a study on the financial well-being of older men and women (aged over 55 years) with FL measures as one of the variables by Yen-Fah et al. (2010) shows that there are differences between male and female respondents where by female respondents reported having a higher mean score than male respondents in FL. These mixed conclusions thus reflect that the question whether males or females are more illiterate is still a debatable issue.

Studies have also identified contributing factors towards gender effects on FL. In comparison to men, women share a larger burden of raising families, start to work later and earn less during their careers, live longer, have inadequate pension or survivors' benefits and face more challenges in financial management (Anthes and Most, 2000; Timmerman, 2000). Chen and Volpe (2002) highlight that risk taking and confidence as contributors to gender differences in FL. Fonseca et al. (2012) who examine potential explanations for the gender gap in FL test whether the role of marriage and who within a couple makes the financial decisions. Their findings show that majority of the gender gap in FL is not explained by differences in the characteristics of men and women but rather differences in coefficients, or how literacy is produced. They find that financial decision making of couples is not centralized in one spouse although it is sensitive to the relative education level of spouses. Their study reveals that women tend to live longer than men, have shorter work tenures, lower earnings and levels of pension or survivors' benefits which according to Weir and Willis (2000) may put women at higher risk than men of having financial problems and of approaching retirement with insufficient savings. Unmarried, particularly divorced, women near retirement age have substantially lower wealth levels than married couples and unmarried men, and the difference is only partially explained by lower levels of permanent earnings and labor force attachment (Levine et al. 2002; Zissimopoulos et al., 2008). Thus a lack of adequate FL are contributed by low wealth levels of divorced women compared to men near retirement.

Other studies have examined whether FL is influenced by types of courses offered in college. There are studies that have identified FL among business major students and non-business students are different. One of the studies is by Chen and Volpe (1998) who examine FL among 924 students at 14 colleges in the US. Among the independent variables are type of course (business or not), year at college, age and sex. They find that the less knowledgeable group was found to be highly likely not to be studying business, but to be from lower classes (i.e. not in final-year undergraduate or graduate classes), to be female and to have less work experience and to be under 30 years of age. Their study shows that business majors perform better on FL surveys than non-business majors. Consistent with their study, Mandell (2004) and McKenzie (2009) finds that students majoring in business perform significantly better than non-business students. According to Chen et al. (1996) and Chen and Volpe (1998) business major students are expected to have high level of FL compared to non-business major students because they have been exposed to financial issues and more interested in reading and learning about financial related material. Moreover, they had studied and been exposed to the basic concept of finance as they are taught on how to search for financial information and how to use them in decision making. Besides, the differences can be seen by comparing the student who has finance background and those who are not. Those who are said to have a finance background are those who are study in business field such as management, human resource, finance and also marketing. According to study by McKenzie

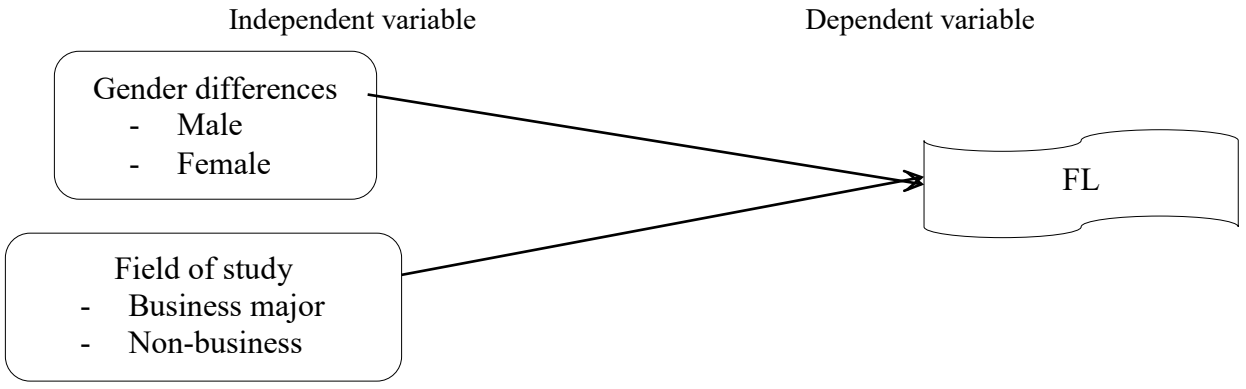
(2009) students majoring in business had a significantly higher FL level than non-majors. This is because they are taught about basic financial concepts on how to research and gather financial information, learn to make financial decisions. However, Ibrahim et al. (2009) shows students have high level of FL is influenced by gender and mother's education background but not programs and parts (semester). Similarly, there are argument stating that non business student also have been exposed to financial issues. For example, for the psychology students, since many psychological problems in the community are connected with financial difficulties and that practising psychologists should have an understanding of PF issues.

From the discussions above, issues concerning FL revolve on the level of FL and the effects of gender and field of study which becomes the central point of our study.

DATA AND METHODOLOGY

Figure 1 depicts the conceptual framework for this study. FL is the dependent variable and gender is one of the independent variables which consists of female and male. Academic program or field of study is another independent variable to be examined for this study, divided into two groups namely business and non-business major. Previous studies have shown mixed conclusions on the effect of differences of field of study on the level of FL.

FIGURE 1: Conceptual Framework

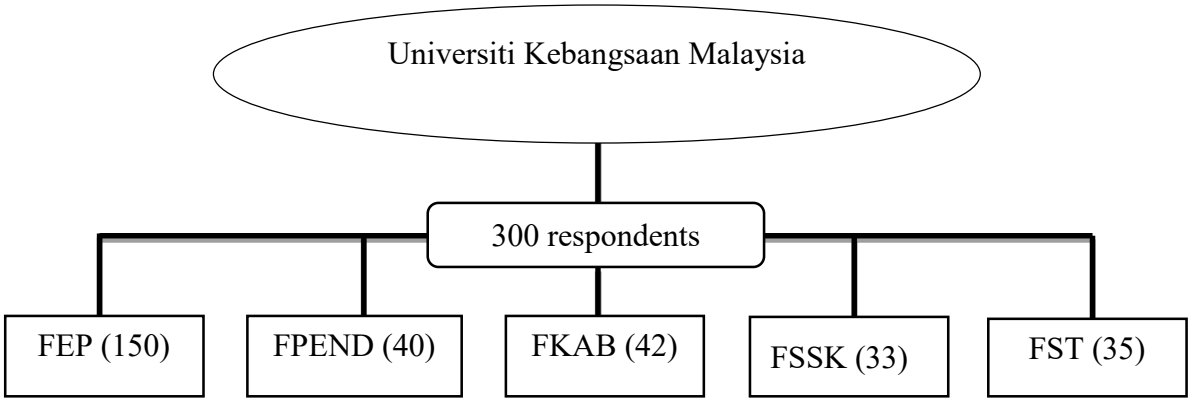


Data

This study is conducted among students at the Universiti Kebangsaan Malaysia in Bangi, Selangor, during the first semester of 2013. In order to meet the objective of the effect of different academic disciplines/program on FL level, the sample covers selected undergraduate students from five different faculties at Bangi campus namely Faculty of Economics and Management (FEP), Faculty of Education (FPEND), Faculty of Social Sciences and Humanities (FSSK), Faculty of Engineering and Built Environment (FKAB) and Faculty of Science and Technology (FST). Students majoring in Business disciplines are only approached in the first-year first semester units. The basis in doing so is that students in any year of study throughout the university would generally be acceptable as representative of a typical university student with regards to financial knowledge, with an exception to Business majors, whom we assume should improve their financial knowledge as they go to higher level of years of their study.

The samples is obtained based on simple random sampling with a total of 350 questionnaires distributed with 300 questionnaires completed and returned. Figure 2 presents the breakdown of the sample.

FIGURE 2: Selected Faculty and Number of Samples for each Faculty



The questionnaire consists of four sections designed to meet the objectives of this study. Section A require the respondents to provide their demographic characteristic such as gender, race, entry level, age, faculty, majoring and year of study, section B consists of 12 questions designed to measure financial knowledge among the respondents, section C with 14 questions about attitude towards their spending while section D with 9 questions about their experience encountered on financial elements. The questionnaires are distributed randomly among five selected faculties and the respondents are required to answer all the questions.

Data Analysis

In this study, data collected is analyzed statistically using the following testing and formulas:

i. Formula for Class intervals:
   Class intervals = [Maximum score – Minimum score]/3* (1)
   **represent 3 class intervals (low, moderate, high)*
ii. Independence T-test
iii. One-way Analysis of Variance (ANOVA)
iv. Formula for Eta squared:
   Eta squared (T-Test) $=t^2/[t^2+(N1+ N2–2)]$ (2)

   Eta squared (ANOVA) = Sum of squares between groups/Total sum of squares (3)

FINDINGS AND DISCUSSION

This study attempts to discover the FL level and the relationship between gender and field of study on FL among UKM students which is conducted at UKM, Bangi, Selangor. From figure 2, there are 300 respondents with 150 respondents from Business major students in FEP and 150 respondents from non-business students in UKM which comes from four faculties namely FPEND, FSSK, FKAB and FST.

The data gathered is analyzed by using IBM Statistical Package for Social Science (SPSS). As can be seen from Table 1, there are seven demographic characteristics that are included in the questionnaire. Overall there are 300 respondents participated in this study with 150 (50%) are males and 150 (50%) are females. The gender mean is 1.500 and its standard deviation is 0.501. Majority of them are Malay which is 228 out of 300 (76%) respondents, 55 (18.3%) and 7 (2.3%) of them are Chinese and Indian respectively. 3.3% of them are identified as others (from Sarawak, Sabah and Indonesia). The mean for the race is 1.330 and its standard deviation is 0.685.

Academic background shows that 46% of these students are from the Matriculation program, 37.7% are from the Sijil Tinggi Pelajaran Malaysia (STPM), 7% Diploma and 9.3% others comprising of foreign students coming from Indonesia. The entry level mean is 1.797 and its standard deviation is 0.939. Most of these students are from the undergraduate program, thus 234 (78%) of them are in the range of 21-24 years

old. 19.7% and 2.3% out of 300 respondents are from the age range of 17-20 years old and 25-28 years old respectively. The age mean is 1.827 and its standard deviation is 0.437. As mentioned above, 50% of the students are from FEP while the rest are from FPEND (13.3%), FSSK (14%), FKAB (11%) and FST (11.7%)

TABLE 1 Characteristics of the sample

Variable	N	(%)	Mean	SD
Gender			1.5	0.55584
Male	150	50		
Female	150	50		
Race			1.33	0.68508
Malay	228	76		
Chinese	55	18.3		
Indian	7	2.3		
Others	10	3.3		
Entry Level			1.7967	0.92998
Matriculation	138	46		
STPM	113	37.7		
Diploma	21	7		
Others	28	9.3		
Age			1.8267	0.43657
17-20	59	19.7		
21-24	234	78		
25-28	7	2.3		
Faculty			2.21	1.44668
FEP	150	50		
FPEND	40	13.3		
FSSK	42	14		
FKAB	33	11		
FST	35	11.7		
Majoring			4.8567	2.4853
Finance	59	19.7		
Financial Services & Risk Management	20	6.7		
Human Resource	23	7.7		
International Business	19	6.3		
Management	11	3.7		
Marketing	18	6		
Others	150	50		
Year			2.64	0.63119
1	25	8.3		
2	58	19.3		
3	217	72.3		

Note: SD = standard deviation, Min. = minimum, Max. = maximum, Gender: min. = 1, max. = 2
Race: min. = 1, max. = 4, Entry Level: min. = 1, max. = 4, Age: min. = 1, max. = 3

respectively. The faculty mean is 2.210 and its standard deviation is 1.447. 150 of them (50%) are majoring in business such as Finance (19.7%), Financial Services and Risk Management (FSRM) (6.7%), Human Resource (HR) (7.7%), International Business (IB) (6.3%), Management (3.7%) Marketing (6%) and 50% of them are identified as others which is known as non-business major. The major mean is 4.857 and its standard deviation is 2.485.From 300 respondents, 217 of them (72.3%) are in final year while the rest are in the first year (8.3%) and second year (19.3%) with the mean of 2.640 and its standard deviation is 0.631.

FL level among university students

This section reports and discusses the findings from the analysis using Equation 1-3. The FL Scale (FLS) consists of 35 items that focused on one's financial knowledge, attitude and experience. In this section we discuss the level of FL based on the subscales and score level. From Table 2 (a), it shows that all subscales have different range of mean. Attitude has the highest mean which is 47.77, followed by the mean for knowledge 44.33 and experience 32.32. Thus, FL among the respondents for each subscale shows a big difference.

The score level of FL is to identify how many respondents score for each level. It can be categorized into three classes namely low, moderate and high. The score level is formulated by using formula in equation 1. The higher the score implies the higher FL level.

TABLE 2 (a) Subscale of FL

Subscale	Mean	SD
Knowledge	44.33	5.11
Attitude	47.77	4.428
Experience	32.32	4.942

From Table 2 (b), it shows that for knowledge aspect, majority of the respondents have scored a moderate level (39-48) with 70.3%, whilst 12.0% and 17.7% of them score low and high level respectively. For attitude aspect 62.0% of them have moderate score (41-49) and only 4.3% of them have low score (31-40), 33.7% of respondents score high level of FL. For experience aspect, respondents with moderate score are approximately 59.3%, and 14% and 26.7% of them score low and high level respectively. For the overall FL, the result shows that 31 (10.3%) of them have low score (84-109), 74% moderate score (110-134), and 15.7% high score. The results show that the majority of the respondents having a moderate score which reflect that most of them have moderate level of FL. Thus it can be concluded that the FL level among UKM students from these selected number of respondents, are moderate with moderate score for each of FL aspects namely knowledge, attitude and experience.

TABLE 2 (b) FL score level

Sub-item	Low (%)	Moderate (%)	High (%)
Knowledge	36 (12.0)	211 (70.3)	53 (17.7)
Attitude	13 (4.3)	186 (62.0)	101 (33.7)
Experience	42 (14.0)	178 (59.3)	80 (26.7)
Overall FL	31 (10.3)	222 (74.0)	47 (15.7)

Note: Knowledge: low (28-38), moderate (39-48), high (49-58)
Attitude: low (31-40), moderate (41-49), high (50-59)
Experience: low (17-26), moderate (27-35), high (36-45)
Overall FL: low (84-109), moderate (110-134), high (135-159)

Independent T-Test

An independent-samples t-test is used to compare the mean score, on some continuous variable, for two different groups of participants.

An independent-samples t-test is conducted to compare the FL scores for males and females. There is a significant difference in FL scores for males (M = 123.6533, SD = 12.02402) and females (M = 125.1867, SD = 10.02774; t (298) = -1.199, p = 0.231, two-tailed). The magnitude of the differences in the means (mean difference = -1.53333, 95% CI: –4.04910 to 0.98243) is very small (eta squared = .005).

Using formula from Equation 2, we obtain the

Eta squared as follows:

$= (-1.199)^2/ (-1.199)^2 + (150 + 150 – 2) = 0.005 = 0.5\%$

The result for the eta squared of 0.005 which is based on classification given by Cohen (1988, pp. 284–7) shows a small effect. (Cohen classifies eta squared of 0.01 as having a small effect, 0.06 medium effect and 0.14 large effect).

The results from Table 3 show the equal variances assumed as the significant value for Levene's test is larger than .05 which is 0.084. Meanwhile the value in the Sig. (2-tailed) column is above 0.05 which is 0.231 signifying that there is a slight difference between male and female. Thus it can be concluded that there is a statistically significant difference in the mean FL scores for males and females.

TABLE 3 Results for Independent T-Test

Gender	N	Mean	Standard deviation	Standard error mean
Male	150	123.6533	12.024	.98176
Female	150	125.1867	10.028	.81876

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std Error Difference	95% Confidence Interval of Difference	
								Lower	Upper
Equal variances assumed	3.008	.084	-1.199	298	.231	-1.533	1.2784	-4.0491	.9824
Equal variances not assumed			-1.199	288.69	.231	-1.533	1.2784	-4.0494	.9828

One-way Analysis of Variance (ANOVA)

ANOVA involves one independent variable (referred to as a factor) which has a number of different levels. These levels correspond to a different group or condition. Next post-hoc test using Tukey Honest Significant Difference HSD test is used to compare for the effect of academic program on FL. Tukey HSD test is a post-hoc test, meaning that it is performed after an analysis of variance (ANOVA) test to determine which groups in the sample behave differently. It compares all possible pairs of means, and is based on a studentized range distribution (q) (this distribution is similar to the distribution of t from the t-test).

Eta squared = 4139.585/ 36701.08 = 0.11

A one-way between-groups analysis of variance is conducted to explore the impact of majoring on levels of FL. Participants are divided into seven groups according to their majoring which is Finance, Financial Services and Risk Management, Human Resource, International Business, Management, Marketing and others.The results show a statistically significant different at the F (6, 293) = 6.208, p = 0.00

with a huge actual difference in mean scores between the groups. The effect size, calculated using eta squared, is 0.11. Post-hoc comparisons using the Tukey HSD test indicate that the mean score for Financial Services and Risk Management(*M* = 132.9, *SD* = 12.88), Management (*M* = 121.72, *SD* = 11.26), Marketing(*M* = 126.06, *SD* = 9.46) and others (*M* = 121.2, *SD* = 11.83) are significantly different from Finance (*M* = 126.97, *SD* = 7.64),Human Resource (*M* = 128.39, *SD* = 7.80), International Business (*M* = 128.21, *SD* = 7.66)

TABLE 4: Test of homogeneity of variances and ANOVA

Levene Statistic	df1	df2	Sig.
3.382	6	293	.003

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4139.59	6	689.931	6.208	.000
Within Groups	32561.5	293	111.131		
Total	36701.08	299			

Figure 3 depicts the mean plots graph which shows that significance value (Sig.) for Levene's test is greater than 0.05 which shows that the homogeneity of variance assumption is not violated. The overall significant value is 0.00 which is less than 0.05, indicating no statistically significant result among the groups of major/program. Besides, the effect size obtained from the eta squared is 0.11 which shows that majoring has a large effect on FL. The post-hoc tests from Table 5 show exactly where the differences among the groups occur. The exact significance value is given in the column labelled significant (Sig.). From the Table, the results show that Finance, Financial Services and Risk Management, Human Resource and others are statistically significantly different from one another, meaning differ significantly in terms of their FL scores. Meanwhile the mean plots graph above shows that both the Financial Services and Risk Management have the lowest optimism scores, and the highest score goes to other major.

FIGURE 3: Mean Plots Graph

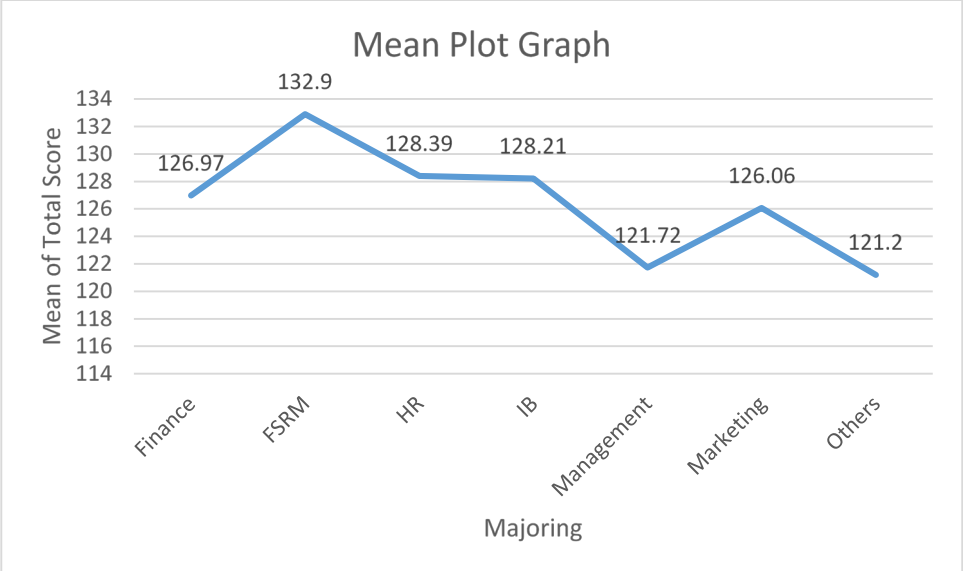


TABLE 5: Effect of different academic program on FL: Tukey HSD test.

(I) Majoring	(J) Majoring	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Finance	FSRM	-5.93390	2.72766	.312	-14.0322	2.1644
	HR	-1.42520	2.59141	.998	-9.1190	6.2686
	IB	-1.24442	2.78076	.999	-9.5004	7.0115
	Management	5.23883	3.46214	.737	-5.0401	15.5178
	Marketing	.91055	2.83858	1.000	-7.5171	9.3382
	Others	5.76610*	1.62002	.008	.9563	10.5759
FSRM	Finance	5.93390	2.72766	.312	-2.1644	14.0322
	HR	4.50870	3.22310	.802	-5.0605	14.0779
	IB	4.68947	3.37722	.808	-5.3373	14.7163
	Management	11.17273	3.95720	.074	-.5760	22.9215
	Marketing	6.84444	3.42499	.418	-3.3242	17.0131
	Others	11.70000*	2.50947	.000	4.2495	19.1505
HR	Finance	1.42520	2.59141	.998	-6.2686	9.1190
	FSRM	-4.50870	3.22310	.802	-14.0779	5.0605
	IB	.18078	3.26815	1.000	-9.5222	9.8838
	Management	6.66403	3.86454	.600	-4.8096	18.1377
	Marketing	2.33575	3.31749	.992	-7.5137	12.1852
	Others	7.19130*	2.36065	.040	.1826	14.2000
IB	Finance	1.24442	2.78076	.999	-7.0115	9.5004
	FSRM	-4.68947	3.37722	.808	-14.7163	5.3373
	HR	-.18078	3.26815	1.000	-9.8838	9.5222
	Management	6.48325	3.99398	.667	-5.3747	18.3412
	Marketing	2.15497	3.46742	.996	-8.1396	12.4496
	Others	7.01053	2.56708	.094	-.6110	14.6321
Management	Finance	-5.23883	3.46214	.737	-15.5178	5.0401
	FSRM	-11.17273	3.95720	.074	-22.9215	.5760
	HR	-6.66403	3.86454	.600	-18.1377	4.8096
	IB	-6.48325	3.99398	.667	-18.3412	5.3747
	Marketing	-4.32828	4.03445	.936	-16.3064	7.6498
	Others	.52727	3.29298	1.000	-9.2494	10.3040
Marketing	Finance	-.91055	2.83858	1.000	-9.3382	7.5171
	FSRM	-6.84444	3.42499	.418	-17.0131	3.3242
	HR	-2.33575	3.31749	.992	-12.1852	7.5137
	IB	-2.15497	3.46742	.996	-12.4496	8.1396
	Management	4.32828	4.03445	.936	-7.6498	16.3064
	Others	4.85556	2.62961	.518	-2.9516	12.6627
Others	Finance	-5.76610*	1.62002	.008	-10.5759	-.9563
	FSRM	-11.70000*	2.50947	.000	-19.1505	-4.2495
	HR	-7.19130*	2.36065	.040	-14.2000	-.1826
	IB	-7.01053	2.56708	.094	-14.6321	.6110
	Management	-.52727	3.29298	1.000	-10.3040	9.2494
	Marketing	-4.85556	2.62961	.518	-12.6627	2.9516

Notes:*The mean difference is significant at the 0.05 level.

Thus to summarize the findings for the three objectives of this study, we find that for the first objective the level of FL among UKM students is moderate based on the data analysis which shows that 74% of 300 respondents scored 109-134. While the remaining 10.3% and 15.7% respondents have low and high level of FL respectively. The second objective on the gender effect, the level of FL between male and female is tested by using Independent T-Test. The finding shows there is a significant difference in mean

FL scores for males (M = 123.6533, SD = 12.02402) and females (M = 125.1867, SD = 10.02774; t (298) = -1.199, p = 0.231, two-tailed). The results suggest that male students are more financially literate than females as the males scored higher mean than females. For the third objective, the effect of different academic program/field of study on FL level is tested using ANOVA. The results show a statistically significant different at the F (6, 293) = 6.208, p = 0.00. This means that type of majoring do affect the FL level in which students majoring in business have higher level of FL compared to non-business major. Based on the graph it is shown that students from the Financial Services and Risk Management program has the highest FL level. This support the argument provided by studies such as Chen and Volpe (1998), Mandell (2004) and McKenzie (2009) that the level of FL among business major students is high compared to non-business major students.

CONCLUSION

This study examines FL level among university students at UKM. In addition we examine the gender effect and also the effect of different academic program on FL level. Based on the analysis, the results show that the level of FL among UKM students is moderate. From the Independent T-Test, the results show a significant difference in FL scores for males and females which suggest that males are more financially literate than females. On the different academic program, the ANOVA test shows that there is a statistically significant different between type of majoring and FL level with students majoring in business have higher level of FL compared to non-business majoring. From the business program. Financial Services and Risk Management specialization has the highest FL level. Based on the findings of this study, it is therefore recommended that a comprehensive and aggressive program of financial education be carried out among young people in Malaysia especially to university students from all academic program

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