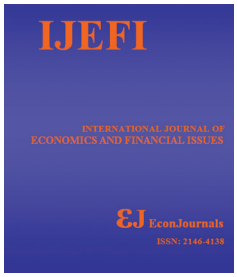

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Financial Literacy and Risk Tolerance towards Saving and Investment: A Case Study in Malaysia

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ABSTRACT

Innovation in the financial market has provided more flexible choices of financial products and services to the consumers. Financial products and services are becoming more complex and not easily comprehendible by many consumers. Due to this, consumers with low financial literacy (FL) may face difficulties to make informed decisions on their savings and investments. Therefore, the purpose of this study is to identify the level of financial literary and its relationship with risk tolerance (RT) towards savings and investments in the context of Malaysia. A total of 172 respondents have been selected using convenience sampling method through online and manual survey. Data were analysed descriptively and statistically using nonparametric techniques, which include Chi-square and Spearman's Rank Correlation to examine the relationship between variables studied. The results suggest that the overall FL in Malaysia is at moderate level. The study also found that overall FL has a positive significant relationship with the level of RT towards saving and investment. More specific analysis, however, found that only advance FL has a relationship with RT levels. Meanwhile, basic FL was not correlated with the level of respondents' RT.

Keywords: Financial Literacy, Risk Tolerance, Malaysia, Investment, Saving
JEL Classifications: G00, G10, G40, G41

1. INTRODUCTION

Financial products and services have increasingly become more complex and not easily comprehendible by individuals that have minimal understanding in finance. Consequently, consumers who do not have in-depth understanding may be confused by the financial jargons and mechanism in order to make informed investment decision. At the same time, due to financial market deregulation and retirement scheme reforms; governments or nations have transferred the responsibility to plan and manage for retirement to individuals and households (Organisation for Economic Cooperation and Development [OECD], 2006; Mandell and Klein, 2009; Faoziah et al., 2013; Nixon et al., 2017). As a result, individuals are now facing greater challenges in their investment decision as they are made more accountable for their own financial well-being.

With this development, financial literacy (FL) has become increasingly important to nations around the globe. Low FL results in poor economic health, not only to the individuals but also negatively impact the nations' reputation for its inability to provide enough aid or support to its people. This issue is not limited to developing countries such as Malaysia, but it is also faced by developed countries such as New Zealand, Japan, Sweden, Germany, Italy, and the Netherlands, even though their financial markets are mature and well-developed (Lusardi and Mitchell, 2011).

Competition and innovation in the financial market have provided more flexible investment choices to the consumers. However, these have also made the options more complex. The consumers' decision could be influenced by financial advisors or family and friends, which may skew to certain products/service offerings. Despite the increase in access to information on investments, savings and credit products via the internet and social media platform, it seems that consumers are still having difficulty to make informed decisions on which option is suitable for their needs.

Like other countries, Malaysia has adopted rather similar retirement structure, which is the dual-track retirement system consisting of both defined retirement benefit and contribution scheme (Nixon et al., 2017). Defined pension benefit scheme is given to individuals whom worked in public sectors whereas defined contribution scheme is for those whom worked in private sectors. In Malaysia, defined contribution scheme is managed by publicly-owned monopoly superannuation fund authority called employees provident fund.

Whilst financial market changes and pension scheme reforms happened at global scale, it was evident that the individual or household attitude and behaviours does not improve. Lewis and Messy (2012) showed that although people across nations are aware of the benefits of savings and investments, they still refuse to do so - even when they are given incentives, or additional benefit to save or invest. This could be caused by lack of FL where people are unaware of their saving and investment needs for both short term and long term. Complexity of the financial product itself and lack of understanding of the risk involved may lead the consumer to either decide to sign-up blindly or to not save or invest at all.

There are a number of studies on FL conducted in Malaysia context, particularly on the relationship between FL and retirement planning. For example, Yoong et al. (2012) suggested that FL is the key to retirement planning in Malaysia. There were also research that focuses on specific demographic features, such as working women in Malaysian Public Sectors, in relation to the FL, saving behaviour, and financial management on retirement confidence (Sabri et al., 2015); study on FL of Malaysian Degree Students (Ibrahim et al., 2009), and recent study on how financially prepared are Malaysian for income shock (Yiing-Jia, 2016).

Studies showed the existence of a positive relationship between FL and saving. For example, a study by Mahdzan and Tabiani (2013) found that FL has a significant and positive impact on individual savings among Malaysians. They suggested a further research to be conducted on how FL can increase people involvement in unit trust, stocks and long-term savings programs such as insurance or endowment plans. This study is further supported by Aren and Aydemir (2014), which suggested that greater effort is required by researchers to explain the relationship between FL and financial behaviour such as saving and investing behaviour.

Some studies argued that risk adverseness somewhat influence individual preference as well as their financial decision, including investment decision. There are diverse attitude and preference to risk taking, which may surface in a form of individual's respective financial-related behaviours. This means that some people are less tolerant to risk, the other has high risk tolerance (RT), and there are people who somewhat changes their risk appetite according to situational factor. In the context of FL and investment, it was suggested to include the attribute of risk tolerant or averseness in research modelling for FL to observe their influence to financial decision making. It is possible to evaluate FL relative impact through risk averseness (Van Rooij et al., 2007). However, there are limited studies that focus on the interaction between FL and RT and their impact on individual savings behaviour in case of Malaysia.

Based on the above discussion, the objective of this paper is to identify the level of FL in Malaysia. In addition, this paper seeks to examine the relationship between FL and RT among Malaysian. However, on top of examining the overall level of FL and RT, this study intends to go deeper by investigating the relationship between basic and advance levels of FL, and RT, individually.

2. LITERATURE REVIEW

In general, FL can be defined as an individual's ability to comprehend personal finance-related information and make informed decision. The definition of FL, however, has evolved over the time. There is a lack of clarity in the definition given by the mainstream research until OECD in the framework of the International Network of Financial Education (INFE) introduced a widely accepted definition of FL in 2011 which is "A combination of awareness, knowledge, skills, attitude, and behaviours necessary to make sound financial decisions and ultimately achieve individual financial wellbeing" (Atkinson and Messy, 2012. p. 659). OECD (2011) does not limit the definition of FL to knowledge level, but also includes other important characteristics of individuals such as behaviour, attitude and skills. The definition highlights the knowledge and skills that applied in real personal financial thought process, which should result in an improvement to individual financial wellbeing (Atkinson and Messy, 2012).

In the literature, there are various terminologies used to reflect FL: Financial education, financial capability, financial knowledge, financial sophistication, however the term FL is among the terminology that is widely used interchangeably (Huston, 2010; Aren and Aydemir, 2014). There are also abundant of studies conducted on the relationship between FL and wealth accumulation for retirement planning (Lusardi and Mitchell, 2007a; Van Rooij et al., 2011b; Van Rooij et al., 2012; Bernheim et al. 2012 to Behrman et al. 2012). There are also quite a number of studies that carried out FL surveys in the context of adult retirement planning in specific country. For instance, study by Alessie et al. (2011) for Netherlands; Koenen and Lusardi (2011) for Germany; Shizuka (2011) for Japan; and Yoong et al. (2012) for Malaysia. In general, these studies found a positive relationship between FL and retirement planning and readiness.

Surveys were also conducted to compare FL level and attributes across nations. One of the studies involving 14 countries concluded that financial illiteracy is significant in many countries (i.e., UK, Poland, Albenia, Malaysia, and South Africa) regardless of the country status - developed or developing nations (Atkinson and Messy, 2012). Meanwhile, several studies included the objective to understand relationship between FL and other financial dimension such as stock market participation (Van Rooij et al., 2007; Van Rooij et al., 2012), and risk aversion or tolerance behaviour (Van Rooij et al., 2011b).

There were also studies that focused on specific demographic attributes or industry scope of FL. For example, FL according to gender, baby boomer generation, women who works in public sector, students, youth, financial advisors, bank clients. Similarly,

there were numerous studies that aimed to identify which of these specific demographic attributes or industry scope were the determinants of FL. In this context, there are various literature describing the role of demographics such as gender and work environment (Sabri et al., 2014; 2015), education, experience, income on being financially literate (Mandell and Klein, 2009; Lusardi and Mitchell, 2007a; 2007b; Atkinson and Messy, 2012; Pintye and Kiss, 2016). For instance, Sabri and Teo (2014) found that the literacy level among women working in public sector is at moderate level.

With regards to previous literature on the relationship between FL and savings, there are a number of studies that acknowledge that FL is positively associated with higher wealth accumulation (Mahdzan and Tabiani, 2013; Sabri and Teo, 2014), and greater possibility to save and invest higher investment portfolio such as stock, as part of retirement plan (Van Rooij et al., 2007) and higher tendency to opt for portfolio diversification (Guiso, 2008). Some studies recognized the endogeneity of financial literateness to saving decision (Lusardi, 2008). Recent studies have found that FL is positively associated with wealth accumulation and retirement savings of households across time after controlling for RT, among other factors (Van Rooij et al., 2012).

There are notable challenges faced at individuals or household level pertaining to investing. This includes information asymmetries, which may be difficult to be comprehend by the individuals alongside the complexity of the financial products itself thus may limit the individuals or consumers to subscribe to investment products as the consumers may be afraid of the risk of scams or fraudulent activities related to the investment (Lewis and Messy, 2012). Study also showed that individual RT changed when economic condition changed. For example, during 2008 financial crises, individual show lower RT and prefer investing in less risky portfolio, which are easily turned to cash (i.e., more liquid asset) as part of preparation to any shocks and uncertainty (Nahmias, 2010).

RT is the degree of variability in investment returns that an investor is willing to withstand. RT is an important component in investing. There are a number of studies that include risk averseness or RT variable to better explain the differences in individual financial behaviour and decision (Guiso, 2008). Interestingly, the detailed results showed FL is still, as significant determinant factor that explain under-diversification of portfolio, even after RT variable were controlled. Study by Bateman et al. (2014) examined the impact of presenting investment risk with different forms of presentations to a group of pensioners in relation to their FL level. The result shows that individuals who scores poorly on basic FL (BFL) are indifferent or insensitive to the increasing risk level, regardless of the presentation forms. The research also showed that the respondents begin to take up more risk, as the BFL improves. Another study indicates that RT as most influential factors in pension and wealth accumulation for retirement (Van Rooij et al., 2007). There is also an interesting study in Switzerland on risk perception and FL, where the result shows that respondents perceived an investment product to be less risky, when they are able to comprehend or understand the product (Wang et al., 2011). Therefore, FL would make a significant protective layer to consumer from scams and fraud.

3. METHODOLOGY

3.1. Research Design and Instrument

This research uses survey questionnaire as a primary source of data and information. The questionnaire used in the survey is divided into three main sections: The first section is to gather background information of the respondents, followed by questions to gauge respondents' saving and investment preference RT, and lastly the FL questions.

The questionnaire is derive from Lusardi and Mitchell (2007a; 2007b); OECD INFE 2011 FL questionnaire guide, as well as from Tan et al. (2011) with some minor modifications. The modifications made on the basic literacy questions with the objective to minimize the effect of respondents taking a guess and randomly pick an answer. Previous studies including Almenberg and Säve-Söderbergh (2011) for Sweden; Klapper and Panos (2011) for Russia also made changes to the elements in the basic literacy questions without taking away the principal objective of the tested questions.

The literacy questions were separated into two categories (basic and advance level) with a total of 13 questions. Out of this, five questions are intended to measure BFL level of the respondent. These five questions involved basic and fundamental financial concept and economic understanding such as percentage, time value of money, compound interest and inflation. These elements are widely used to measure the level of BFL (Table 1). The remaining eight questions are aiming to measure the respondents' FL at advance level and touched upon the function of stock market, knowledge of mutual funds, relationship between interest rates and bond prices, risk diversifications, risk levels, long-term return, fluctuation in asset (Table 2). Respondents were also asked about their comfortable RT through 6 risk statements in relation to saving and investment using five-point Likert scale where 1 being "strongly disagree" and 5 being "strongly agree."

3.2. Sample and Data Collection Method

The target population for this study are Malaysian 18 years old and older. Age 18 years old is chosen as it is a minimum age where individuals can engage in formal contract or agreement. As this study does not focus on specific groups, convenience sampling is deemed sufficient. For convenience sampling, a large sample size is preferred as it would indicate more reliable and prove validity of results. The suggested size is from 200 to 500 respondents (Churchill, 1991).

The data gathering process was conducted between 15 April and 7 May 2017. The questionnaires were distributed using two methods; online survey via Google Form and manually, via hardcopy. A total of 400 surveys were sent to respondents via email and social media with a link to Google Form. In addition, a total of 20 survey questionnaires were distributed and collected manually across the Klang Valley.

Table 1: BFL

Basic literacy elements and questions	Correct (%)	Incorrect (%)	Don't know (%)
Element: Numeracy Assuming you had RM100 in a savings account and the interest rate was 2% per year. After 3 years, how much do you think you would have in the account if you left the money to grow?	84.3	7	8.7
Element: Interest compounding Assuming you had RM100 in a savings account and the interest rate is 20% per year and you never withdraw money or interest payments. After 4 years, how much would you have on this account in total?	70.9	18	11
Element: Inflation Assuming that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?	60.5	19.8	19.8
Element: Time value money Suppose that you have a friend who inherits RM10,000 today; and his sibling inherits RM10,000 3 years from now. Who is richer because of the inheritance?	61.6	30.8	7.6
Element: Money illusion Presume that in the year 2017, your income has doubled and prices of all goods have doubled too. In 2017, how much will you be able to buy with your income?	71.5	26.2	2.3

BFL: Basic financial literacy

3.3. Data Analysis Method

The analysis begins by exploring the descriptive statistic on the profile of the respondents. Non-parametric technique χ^2 test was used to test the interdependency relationship between FL and RT. Meanwhile, Spearman's rank correlation analysis was conducted to identify the direction of linear relationship and to measure the strength of the relationship between variables studied. Before that, a reliability tests will be conducted to test the internal consistency of the measures used for FL and RT. For this purpose, this study computes the Cronbach's Alpha (α) Coefficient for FL and RT. The calculated Cronbach's Alpha for FL and RT are 0.869 and 0.853, respectively. These results exceed the minimum standard of 0.7, signifies a good internal consistency of the items used to measure FL and RT.

4. FINDINGS AND DISCUSSION

From a total of 420 questionnaires distributed, a total of 179 responses received. Out of this, 172 responses are usable, which represent 41% of response rate. Although the usable sample size falls short from the suggested sample size, it is still large enough to perform the analysis.

A majority of the respondents are female, marking 54.1% of the total 172 respondents pool. Most of respondents are married (59.9%). With regards to education background, majority of the respondent have completed tertiary education, where 91.3% respondents have at least Bachelor Degree/Professional Degree or equivalent, Master or Doctorate Degree, 50.6% possess Bachelor Degree/Professional Degree or equivalent. The survey also gauge that 38.4% of respondents has obtained formal financial education. Most of the respondents are private sector employee (61.6%), followed by Government Employee (15.7%). About 54% of the respondents are of those high income group, earning RM5,501 and above, where 36.6% earning above RM7,000.

4.1. FL Result

The first five questions about FL require the respondents to make a simple calculation of basic finance knowledge on numeracy, interest compounding, inflation, time value of money and money illusion. The results in Table 1 show that majority (84.3%) of respondents are able to answer the first question correctly. However, the percentages of correctly answered questions are slightly lower for the subsequent questions. Questions on time value money and money illusion indicate results of more than 26% incorrect answers, followed by inflations with 19.8% incorrect answers.

Table 1 shows approximately 60% of respondents are able to understand the concept of time value of money and inflations. And, about 71.5% of respondents understand the concept of money illusion. Findings from this study are consistent with previous study that found higher percentage of respondents unable to answer literacy questions on time value of money, money illusion and inflation correctly. For instance, low correct response for inflation was noted in the previous FL study by Almenberg and Säve-Söderbergh (2011) in case of Sweden and Klapper and Panos (2011) for Russia.

It is also worth to note that there are high percentages of respondents answered "don't know" to literacy question related to inflation (19.8%), interest compounding (11%) and numeracy (8.7%). The higher percentage of respondents answered "don't know" to numeracy and interest compounding questions are likely due to the minor modification made to these questions, with the objective to test whether the respondents understand the basic financial knowledge, given the variation of elements in the questions and to minimize the effect of respondents taking a guess and randomly pick an answer.

A number of previous study including Almenberg and Säve-Söderbergh (2011) for FL study in Sweden; Klapper and Panos

(2011) for FL study in Russia, also made changes to the elements in the basic literacy questions such as number of years, percentage, dollar value to the inflation and numeracy questions, without taking away the principal objective of the tested questions. Similar to the result in this study, the slight changes to the elements of the question has resulted in low correct responded answers to the basic literacy questions.

Similarly, the changes to element in the question may made some of the respondents felt that these questions are tricky and difficult, where they may deemed these question require complex calculation. Therefore, the respondents may opt for answering straight to "don't know" or randomly choose an answer, as there were no direct known impact or consequences to them for answering the question wrongly.

The result shows higher median score of 80.00 for five basic literacy questions asked in this research survey. The mean score also indicate relatively high with a score of 69.77. This indicates that high number of respondents in Malaysia is equipped with high BFL. This may be contributed by the fact that majority of the respondent have completed tertiary education.

This study then further examines the advance literacy level of respondents using 8 questions. The advance literacy questions are much more complex, which are designed to assess the respondents' knowledge on different types of financial assets such as mutual funds, stocks, bonds, element of return and risk of various financial assets, and ability to distinguish different elements and mechanism of financial assets. These questions were asked with the objective to measure respondent's more advance knowledge on financial related to portfolio and investment. The results are presented in Table 2.

Statistics in Table 2 showed that the percentages of correct answers for each advance FL (AFL) questions are much lower than the BFL questions. In general, approximately 50% of the respondents are not able to answer five advance literacy questions, the first four questions and question 6; on the (i) question 1 - function of stock market, (ii) question 2 - knowledge of mutual funds, (iii) question 3 - relationship between interest rates and bond prices, (iv) question 4 - risk diversification between financial assets, and (v) question 6 - attributes of financial assets in long run.

In Table 2, the lowest correctly answered question is for Question 3. The question read as "If the interest rate falls, what should happen to bond prices?" where the question intended to gauge the respondents understanding of the relationship between interest rate and bond prices. The result showed a very percentage of respondents who understand the relationship between interest rate and bond prices. Only 22.7% of the respondents answered the question correctly, and the remaining answered incorrectly (39.5%) and indicates they don't know the answer (37.8%). This finding is similar with previous study by Mahdzan and Tabiani (2013). The result also consistent with the study conducted in Netherlands by Van Rooij et al. (2007), where the percentage of correctly answered is the lowest for all AFL questions.

About 60% of respondents were unable to distinguish the long term return rate of different financial assets such as saving, bonds, and stocks: "Considering a long time period (for example 10 or 20 years), which asset normally gives the highest return?" This question intended to measure respondents understanding of different elements of long term return rate of different financial instruments or assets. The findings are consistent with previous study in Malaysia by Mahdzan and Tabiani (2013); and Netherlands by Van Rooij et al. (2007) where found that less than 50% of respondents able to distinguish long term return rate of different financial assets such as saving, bonds, and stocks.

Respondents also had difficulties in understanding the function of stock market. For the literacy question, "Which of the following statements describes the main function of the stock market?" only 45.3% of respondents are able to understand the main function

Table 2: AFL

Advance literacy elements and questions	Correct (%)	Incorrect (%)	Don't know (%)
Element: Function of stock market Which of the following statements describes the main function of the stock market?	45.3	32.6	22.1
Element: Knowledge of mutual funds Which of the following statements is correct?	46.5	23.8	29.7
Element: Relationship between interest rates and bond prices If the interest rate falls, what should happen to bond prices?	22.7	39.5	37.8
Element: Risk diversification between financial assets i.e., Company stock and Mutual fund Buying a company stock usually provides a safer return than a stock mutual fund	52.9	14	33.1
Element: Risk elements of financial assets i.e., stocks and bonds Stocks are normally riskier than bonds	68	5.8	26.2
Element: Attributes of financial assets in long run Considering a long time period (for example 10 or 20 years), which asset normally gives the highest return?	40.1	36	23.9
Element: Attributes of financial assets i.e., highest fluctuation over time Normally, which asset displays the highest fluctuations over time?	69.2	9.3	21.5
Element: Risk diversification When an investor spreads his money among different assets, the risk of losing money	72.7	14.5	12.8

AFL: Advance financial literacy

of the stock market. The remaining 32.6% were answered the question incorrectly, while 22.1% indicates that they do not know the main function of stock market. This result is inconsistent with the previous FL study and retirement planning conducted in Netherlands by Van Rooij et al. (2007) and Malaysia by Mahdzan and Tabiani (2013) where the result indicate that more than 58% of respondents from their studies are able to answer the question correctly.

Similarly, majority of the respondents are unable to demonstrate understanding to the concept and attributes of mutual funds. The questions reads: Which of the following statements (on mutual funds) is correct? Low rate of correct answer is again witness for this question, where only 46.5% of the respondents able to answer this question correctly. Although mutual fund has been established in Malaysia for a long period, the result indicates that large respondents are still not aware or have a little understanding about the concept or attributes of mutual funds. The result for questions 1 and 2 of advance literacy questions on the function of stock market and mutual funds knowledge are consistent with the previous study by van Rooij et al. (2007) which finds quite a number of respondents does not know the attributes of stock market, and how mutual funds works.

Question 4 was designed to examine respondents understanding, and ability to compare risk diversification elements of different financial assets, which in this study, on Company stock and Mutual fund. The question reads: "Buying a company stock usually provides a safer return than a stock mutual fund." The result showed that only 52.9% of respondents able to comprehend that stock mutual fund provide safer return than company stock. On the other hand, the balance of 14% respondents answered incorrectly and 33.1% respondents indicate that they do not know the answer to the question.

Based on the descriptive analysis, the mean score, median, and standard deviation of BFL, AFL and overall FL is reported in Table 3. The results show higher median score of 80.00 for five basic literacy questions asked in this research survey. The value of mean score for basic literacy is also relatively high (69.77). This indicates that high number of Malaysian is equipped with high BFL. However, the result shows lower median score (56.25) for eight (8) advance literacy questions asked in this research survey. The overall FL mean and median score gathered from this research is 58.94 and 61.54 respectively. This indicates that FL level of the respondents is at moderate level.

4.2. FL and RT

Table 4 presents the result of cross tabulation between FL and RT towards saving and investment. In the cross tabulation, the overall level of FL has been divided into four groups; very low, low, high and very high FL. Similarly, the level of RT was also divided into four groups; very low, low, high and very high RT. The respondents are assigned into these groups based on their score on the FL questions and mean score of their RT items, respectively.

From the cross tabulation, three statistical tests have been used to examine the relationship between FL levels and RT levels. Specifically, Chi-square test has been used to test the interdependency between the two variables. While, Kendall's tau-b is used as an alternative to the Chi-square test since the variables are measured using ordinal scale, and finally non-parametric Spearman correlation is used to measure the strength of the relationship between the two variables studied.

The pattern of data in Table 4 clearly shows that there is a positive relationship between the level of FL and RT. Majority of respondents with very low FL have very low RT level. While, those have high FL generally have high RT level. To statistically test this relationship, further analysis was carried out using Chi-square test of interdependency. The result is significant at 5% level, indicating there is interdependency relationship between the level of FL and RT's level. The result from Kendall's tau-b was found consistent with the result from Chi-square tests, which provide further support on the existence of significant relationship between the two variables. Spearman correlation coefficient is positive and significant, indicating the higher the level of FL, the higher the level of RT. However, based on the value of the correlation coefficient (0.293), the strength of the relationship can be considered as low.

To further analyse the relationship between FL and RT, cross tabulation and the relevant statistical tests have been carried-out within the two levels of FL; basic literacy and advance literacy, separately. For each level of FL, respondents have been divided into two groups, those that have low level of basic literacy and those who have high level of BFL (Table 5). Similar approach applied in the case of AFL, where the respondents are divided into two groups based on their level of AFL; low advance literacy and high advance literacy (Table 6).

Table 3: Summary of descriptive statistics of FL

FL n=172	Mean	Median	SD
BFL	69.77	80.00	24.99
AFL	52.18	56.25	28.63
Overall FL	58.94	61.54	23.85

BFL: Basic financial literacy, AFL: Advance financial literacy, SD: Standard deviation

Table 4: Cross tabulation between overall FL levels and RT levels

RT level	FL level			
	Very low (%)	Low (%)	High (%)	Very high (%)
Very low tolerance	26 (45.6)	8 (22.9)	8 (17.8)	8 (22.90)
Low tolerance	16 (28.1)	8 (22.9)	11 (24.4)	4 (11.4)
High tolerance	9 (15.8)	12 (34.3)	12 (26.7)	13 (37.1)
Very high tolerance	6 (10.5)	7 (20.0)	14 (31.1)	10 (21.50)
Total	57 (100)	35 (100)	45 (100)	35 (100)
Pearson Chi-square		21.708*		
Kendall's tau-b		0.248*		
Spearman correlation		0.293*		

*Significant at 5% levels, FL: Financial literacy, RT: Risk tolerance

Table 5: Cross tabulation between BFL levels and RT levels

BFL	RT level				Total (%)
	Very low (%)	Low (%)	High (%)	Very high (%)	
Low	25 (30.5)	24 (29.3)	20 (24.4)	13 (15.9)	82 (100)
High	25 (27.8)	15 (16.7)	26 (28.9)	24 (26.7)	92 (100)
Pearson Chi-square		5.77			
Kendall's tau-b		0.116			
Spearman correlation		0.127			

RT: Risk tolerance, BFL: Basic financial literacy

Table 6: Cross tabulation between AFL levels and RT levels

AFL	RT level				Total (%)
	Very low (%)	Low (%)	High (%)	Very high (%)	
Low	33 (34.8)	22 (25.6)	18 (20.9)	13 (15.1)	86 (100)
High	17 (19.8)	17 (19.8)	28 (32.6)	24 (27.9)	86 (100)
Pearson Chi-square		11.205*			
Kendall's tau-b		0.228*			
Spearman correlation		0.250*			

*Significant at 5% levels, RT: Risk tolerance, AFL: Advance financial literacy

Cross tabulation in Table 5 shows no specific pattern with regard to the relationship between RT level of respondents those have low level of BFL and respondents those who have high level of BFL. This is supported by the result from the Chi-square tests, which is not significant at 5% levels. Therefore, we can conclude that there is no different on the level of RT between those who have low and high BFL. Similarly, the results from Kendall's tau-b and Spearman correlation analysis also show insignificant results. These results indicate that BFL has no relationship or correlation with the level of RT.

In contrast, pattern of data in Table 6 shows there is a different in the level of RT between groups of respondents those have low AFL and respondents with high AFL. Chi-square tests is significant at 5% levels indicating there is a significant different in the level of RT between group of respondents those have low AFL and group of respondents with high AFL. The result from Kendall's tau-b is also significant at 5% levels. This result provides addition support on the existence of relationship between RT level and AFL level. The finding was reaffirmed with the significant result from Spearman correlation analysis. The positive Spearman correlation coefficient indicates that the higher in AFL, the higher the level of RT. However, with the correlation coefficient of 0.250, the relationship is not strong.

5. CONCLUSION

The objective of this paper is to identify the level of FL and its relationship with RT in relation to saving and investment in case of Malaysia. In addition, this paper aims to examine the relationship between level of basic and AFL, and RT. Results from this study shows that majority of respondents are equipped with BFL. However, for advance level, relatively more respondents were found not equipped with financial knowledge particularly on the function of stock market, mutual funds, relationship between interest rates and bond prices as well as attributes of financial assets in long run. The findings of this study also showed that BFL is not correlated with RT towards saving and investment, regardless whether low or high level of BFL. In contrast, knowledge in AFL was found significantly and positively correlated with the level of RT.

The result shows that FL positively correlated with RT, low FL implies low RT to make decision and participate in investment. This has been observed previously where consumers took a "wait and see" approach, and procrastinate decision to save or invest as suggested by Ibrahim et al., 2012. Bringing this research findings close to reality, it is consistent with a study by Nixon et al., 2017 which showed participation to investment scheme such as private retirement schemes (PRS) had been low, even though Malaysian government has introduced tax exemptions up to RM3,000 per annum, to motivate consumers in Malaysia to participate in PRS as an alternative long-term retirement investment scheme.

In conclusion, FL is an important factor to stimulate household behaviour in saving and investment. Therefore, financial institutions and government agencies should drive their focus to increase financial awareness specifically to those who have low level of BFL by conducting related educational programs, detailing on the areas that people do not understand. At the same time focus should also be given to enhance the level of AFL among Malaysia. This includes the function of stock market, mutual funds, attributes and differences of financial assets and their respective relationship with financial indices such as interest rates.

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