THE LINKAGES BETWEEN FINANCIAL LITERACY AND ITS APPLICATION IN FINANCIAL DECISION-MAKING AMONG ACADEMICIANS IN INDONESIA

Nevi Danila[1*], Yousef Shahwan[2], Zaiton Ali[3], Ahmad Djalaluddin[4]
[1,3]Prince Sultan University, College of Business Administration, Riyadh, Kingdom of Saudi Arabia, [2]Gateway Business College, Sydney, Australia, [4]Universitas Islam Negri Maulana Malik Ibrahim, Malang, Indonesia.
Email: [1*]ndanila@psu.edu.sa, [2]Yousef40@hotmail.com, [3]zali@psu.edu.sa, [4]djalaludin@akuntansi.uin-malang.ac.id

Abstract

Purpose of the study: Financial literacy has become one of the important policies of the Indonesia government. The improvement of financial literacy is crucial for a more stable financial system and reduces financial fragility. Our research is to examine levels of financial literacy, to identify determinants of financial literacy and to investigate whether knowledge is followed by financial practices.

Methodology: This study employs the survey method, which includes questionnaires sent to academicians in Indonesia. Multiple regression analysis (MRA)is used to empirically analyze the relationship between financial literacy and its application in financial decision-making.

Main findings: The respondents are financially literate with the same level of financial literacy. Socio-demographic characteristics influence significantly the financial literacy and the capability in cash flow management of the respondents. Further, there is a linkage between the knowledge of financial products (financial literacy) and its application in financial decision-making.

Application: It implies that the knowledge about the financial product is very important for creating a high financial literacy society. The Indonesia government needs to run more seriously one of the pillars in the National Strategy for Financial Inclusion through the Ministry of Education.

Novelty: Most of the previous studies focused on conventional products, while this study includes both conventional and Islamic financial products. Further, we also consider the application of Islamic (shari'ah) financial practices. We investigate the impact of financial literacy with socio-demographic characteristics on its application in financial decision-making.

Keywords: Financial literacy, Islamic (shari'ah) financial products, cash flow management, financial decision-making, Indonesia.

INTRODUCTION

Financial literacy researchers agree that a lack of financial literacy will create several negative impacts; namely problems with debt (Lusardi & Tufano, 2015), lower participation in the stock market (Van Rooij, Lusardi, & Michigan, 2007), choosing non efficient mutual funds products (Hastings & Tejeda-Ashton, 2008), ineffective accumulation and management of wealth (Hilgert & Hogarth, 2003; Stango & Zinman, 2007), and not likely to plan for retirement (Lusardi & Mitchell, 2009). Surveys on financial literacy have been conducted in many countries, ranging from low-level income countries to high-income countries. An OECD study conducted on financial literacy suggests that most of the countries, including some of the developed countries, have a low level of financial literacy (OECD, 2006).

As the previous paragraph infers, financial literacy is important at many levels. The negative impact of failing to have financial literacy can have far-reaching effects. Some of these effects occur via individuals who use complex financial instruments to make financial decisions yet these individual bad decisions may lead to bankruptcy for a wider population. Moreover, a lack of financial literacy may distort financial markets, which will eventually influence the economy of the country(Mandell & Klein, 2007).

The Indonesian government also concerns about the level of its population financial literacy. Financial literacy has become an important policy focus of the Indonesian government. One of the pillars in the National Strategy for Financial Inclusion is financial education. The improvement of financial literacy is crucial for more stable financial systems and to reduce financial fragility. The level of financial literacy is still considered low in Indonesia (*Developing Indonesian Financial Literacy Index, 2013*). To the best of our knowledge, research about financial literacy in Indonesia is still limited to surveys about the knowledge of financial products. The aim of this study is to examine how levels of financial literacy differ across a wide range of socio-demographic characteristics; to identify the socio-demographic characteristic determinants of financial literacy among lecturers in Indonesia; and to investigate whether having knowledge of financial products is followed by behavior toward financial practices.

LITERATURE REVIEW

Financial literacy is the awareness and knowledge of financial concepts, products, institutions, and financial skills (Xu & Zia, 2012). Understanding the basic concepts of finance, such as interest rates, inflation and the time value of money, is far from ideal among households. They also had limited knowledge of stocks and bonds, the concept of risk diversification, and financial markets (Van Rooij et al., 2007). Furthermore, it is suggested that people with low financial literacy tend to rely on advice from friends when making financial decisions, and they are less likely to invest in the stock market. Stock ownership increases with the degree of financial literacy. In addition, low financial literacy also affects the way people save money. The households who are exposed to financial education save more than households without exposure to financial education (Bernheim & Garrett, 2003; Bernheim, Garrett, & Maki, 2001). In contrast, households that are not able to calculate interest rates on debts' payments borrowing more and accumulating lower amounts of wealth (Stango & Zinman, 2007). Moreover, households with low financial literacy are more likely to have no plan for retirement, and are not able to accumulate optimum wealth (Lusardi & Mitchell, 2008, 2009).

The level of financial literacy is high in developed countries, e.g. Australia, Japan, Korea, and West European countries (Christelis, Jappelli, & Padula, 2010; Lusardi & Mitchell, 2009; OECD, 2006). However, the implication of financial literacy depends on the level of income of the country. In those countries, financial knowledge is considered as a supplement to consumer protection, i.e. a financial education provides individuals with skills to manage more complex financial products and to make good financial decisions. While in low-income countries, only a small percentage of people can access complex financial products. Thus, financial literacy also increases access to financial services (Xu & Zia, 2012).

Several factors determine the level of financial literacy; among these factors are socio-demographic characteristics, which are categorized here as gender, the background of knowledge, age, level of education and religion. Schmidt & Sevak(2006) suggest that women, in general, have lower earnings, and consequently have lower savings and overall wealth compared to men. Not only do women have lower earning power but when women were asked a simple compound interest question they were found to have lower knowledge in this area than men. The finding showed that less than 20% of middle-aged college-educated women were able to answer the question. Meanwhile, 35% of college-educated males had the capability to answer the question (Fonseca, Mullen, Zamarro, & Zissimopoulos, 2012). Despite these findings, Lusardi & Mitchell(2008) interestingly find that financial literacy is more prevalent among women than men. Fonseca et al. (2012)argue that the difference in financial literacy level is due to the differences in the way women and men specialize in household decisions. Normally, men are responsible for making financial decisions for the households, thus require them to obtain financial knowledge and women focus on other household functions.

The background of knowledge also determines the level of financial literacy. Tóth, Lančarič, & Savov (2015) claim that students who major in economics have a higher level of financial literacy. This finding is not surprising as economic students learn more about finance-related knowledge than students who do not study economics. The authors also suggest that the higher the education the higher the financial literacy. Young adults that have studied economics but have low financial literacy are explained by the lack of motivation of young adults to learn and retain the skills after obtaining the course(Mandell & Klein, 2009). Other research claims that while women have lower basic knowledge than men; a higher level of education increases their financial literacy (Agrawal & Khan, 2011; Lusardi & Mitchell, 2008, 2009; Van Rooij et al., 2007). Nevertheless, Mandell & Klein (2009) found that there is no significant difference between that respondent who had taken a financial course and those "not taken" respondents in regards to their saving and spending orientation. Moreover, their financial behavior does not show any significant differences between these two groups. However, being a graduate from college does have a significant impact on financial behavior, namely paying credit card bills in full and having savings and investments for their needs.

A survey undertaken by MasterCard (2011) showed that the level of development in any given market does not go hand in hand with the level of financial literacy. In other words, the financial literacy of a developed market does not make it automatically higher than the financial literacy of a less developed market. Furthermore, education in school is not enough to increase the level of financial literacy. It is shown from the survey that married and working-women that are over 30 have a higher level of financial literacy; which suggests that financial literacy is gained through work-life experience. In line with the survey above, Hilgert & Hogarth (2003) state that further knowledge and experience can lead to improvements in financial practices, although the causal path may be the opposite of both.

Morris & Koffi (2015) argue that age has a significant influence on the level of financial literacy. It is presumed that people with more life experience have better financial knowledge. Another study by Young (2013) indicates that education and age factors influence financial literacy and capability more than ethnicity. In addition, the level of financial literacy and the perceived financial capacity among older consumers is higher than the younger consumers (Xiao, Chen, & Sun, 2015).

Research by Alderman, Forsyth, & Walton (2017) investigates how religious beliefs influence financial decision-making. The authors suggest that there is a relationship between religion and finance, particularly in relation to prohibitions on certain finance

practices according to the religion's rules. Their evidence shows that religious households chose to save, borrow, and invest in a distinct way as a result of their religious beliefs. Households with strong religious beliefs tend to save more and less likely to invest in stocks compared to non-religious households. Additionally, Rashidi (2016) supports the idea of a relationship between religion and financial literacy. The author claims that religion affects thinking and attitudes towards financial decision-making.

DATA AND METHODOLOGY

This section will elaborate on the sample, variables, and methodology in detail. This study employs the survey method, which includes questionnaires sent to 1,000 academicians in Indonesia. However, approximately 19% of the respondents have returned back the questionnaires. The questionnaires include conventional financial, shari'ah financial products and behavior toward the use of financial products. We use the questionnaires developed by Hilgert & Hogarth (2003) that combine multiple dimensions of financial literacy, and some adjustment for shari'ah financial products. The questionnaires include knowledge of credit, savings, investment, shari'ah products, and the actual behavior exhibited when using the products. Socio-demographic categories include gender, background knowledge, educational level, age, and religion. Table 1 and Table 2 list the variables and questionnaires about individuals' knowledge of financial products and their behavior around financial decision making.

Table 1 (see at the list of the table)

Table 2 ((see at the list of the table)

We utilize Spearman's rank-order correlation and multiple regression analysis to address the research questions. Best Linear Unbiased Estimators (BLUE) are assured by checking the violations of the assumptions of the classical model. The detail of the data is as follows:

Table 3: Respondent Profile

Socio-demographic variables	Number of respondents
Gender	Male = 87; Female = 99
Knowledge background	Finance-related = 141; Non finance-related = 45
Religion	Islam = 175; non-Islam = 11
Education	Undergrad = 27; Master degree = 113; Doctoral degree = 46
Age	Junior (25-40) = 70; Senior (>40) = 116

RESULT AND DISCUSSION

Level of Financial Literacy

The levels of financial literacy among the group of respondents are shown in Tables 4 and 5. Both genders had a higher amount of correct answers to all questions regarding financial product knowledge. There was only one aspect of credit (paying off credit card interest) and investments (mutual funds) that both genders had a higher percentage of wrong answers over correct answers. The outcome was the same in all other socio-demographic characteristics: knowledge background, religion, education level, and age. These results suggest that even educated consumers are only concerned with saving. The results also show the low financial literacy level of Indonesian society, with traditional saving the only financial knowledge with any familiarity. Education and income levels tend to determine the level of financial literacy, however, the evidence shows that highly educated consumers with high incomes can be just as ignorant about financial issues as less educated, lower-income consumers (OECD, 2006). In addition, mutual funds are considered to be a more sophisticated financial product. Mutual funds have been an alternative investment in Indonesia since 1990 when closed-end funds were established based on the Minister of Finance ACT no.1548. Even though the expansion of mutual funds has been rapid - indicated by the amount of Net Asset Value (NAV), which was Rp.507 trillion in 2019 up from only Rp.8 trillion in 2001 - the financial literacy rate of Indonesian society is still low at around 29.66% in 2016 (OJK, 2017). An overview of Indonesia's mutual fund industry shows that the total number of mutual fund investors is around 180,000 or less than 0.1% of the country's population (Global Business Guide Indonesia, 2014). However, that number increased to 0.4% in 2018.

Table 4 (see at the list of the table)

Table 5 (see at the list of table

Tables 6 and 7 show the behavior of respondents or financial practices. Financial practices include cash flow management, credit management, saving, investment, and shari'a. In cash flow management practices, all respondents from all socio-demographic categories have answered "yes" more than "no". This means all respondents have the capability in managing their cash flow. Meanwhile, in credit management, all respondents answered "no" more than "yes", particularly in relation to the possession of a credit card. This implies that using a credit card is not a common way in financial decisions for Indonesian. However, for the credit card users, the number of people paying balances in full each month is less than people using installment payments.

Moreover, there is less review of credit reports and less comparing credit card offers before applying for a credit card. These results infer that people in Indonesia are not keen on managing their credit.

The outcome is the difference when it comes to savings. Most people save their money for emergency funds and for long-term goals, such as education, a car, and a home. Yet most do not have a deposit account. The patterns in investment behavior are the same across the socio-demographic categories. The respondents tended to invest in different types of investment and have planned for retirement. This type of practice is supposedly common behavior for Indonesian society. However, the number of people who are investing in mutual funds, stocks and bonds are much less than those who are investing in traditional versions of investment. This also implies that society feels that saving is about choosing a traditional method of investment, such as buying land, property, and gold (jewelry). As we mentioned above, mutual funds, stocks, and bonds are relatively sophisticated investment products in Indonesia.

Regarding shari'ah practices, the number of people who put their money in the Shari'ah bank is higher than the ones who do not. However, the money deposited is limited to savings and there is no investment in other shari'ah financial instruments, such as sukuk, mudharabah, mutual funds, and stocks.

Our findings lead to the question of whether the groups of respondents are significantly different in both their level of knowledge and their behavior towards financial practices.

Difference of Means

This section will elaborate on whether each group has the same knowledge of financial products and financial practices. Tables 8 and 9 show the difference between males' and females' credit and saving knowledge, which is followed by the difference in their saving practices. These findings are supported by Fonseca et al. (2012)who suggest one reason for this is the household specializations of males and females. Men are responsible for making household financial decisions thereby acquiring financial knowledge in the process, and women are responsible for other household functions. Moreover, women in Indonesia show remarkably lower financial literacy than men, as demonstrated by the survey results of the Financial Literacy in Indonesia and the National Strategy for Financial Inclusion. The aggregate scores in the financial literacy are 18.84% for women and 24.87% men, and in utility 56.65% for women and 62.87% for men. The lowest scores are evident in the area of bank literacy (18.84% for women and 24.80% for men) and utility of financing companies (3.08% for women and 9.62% for men) (*Developing Indonesian Financial Literacy Index, 2013*).

The analysis of the knowledge background characteristic, it reveals that respondents have differences in investment and shari'ah knowledge, whereas financial practices are the same for both group samples. This result is not surprising since the respondents with a finance-related background, study investment. Moreover, shari'ah finance is one of the newest and fastest-growing areas of finance in Indonesia. As a result, that means people with business/finance/accounting expertise are more passionate to learn about this subject. On the contrary, people in pure science or other social sciences might not be as interested in studying shari'ah finance since it is not directly related to their expertise. Nevertheless, when it comes to financial decisions, they all act with the same attitude. This fact suggests that all people have the natural capability in terms of managing money, regardless of their knowledge background.

Furthermore, analysis of the religion characteristic reveals there is no difference between people who identify as Islam or non-Islam for both financial knowledge and their financial practices. This finding indicates a religious background is not necessarily responsible for people having more or less knowledge about credit, savings, investment, and shari'ah. It was expected that religion has a significant corresponding relationship with shari'ah knowledge. The reason is that practicing Muslims have an obligation to learn about their religion in all aspects of their life, including the financial aspect. However, our findings do not confirm this notion empirically.

Interestingly, the level of education characteristic revealed differences in credit, investment and shari'ah knowledge. In addition, financial practices are different between bachelor, masters and doctorate degrees. Finally, seniors have a different approach from younger people to cash flow management. It is presumed that the lifestyle and the financial needs create a difference between these two groups, as they are at different stages of their life cycle. This finding also infers that people will have more concerns about their retirement as they get older, and subsequently they learn about investment instruments for diversifying their portfolio in order to be more comfortable during their retirement period. Furthermore, this older group is more concerned about shari'ah financial literacy. As they get older, their consciousness of religion increases and they want to be on the religious path in every

aspect of their lives.

Regression of Socio-demographic Characteristics: Knowledge and Behavior

Table 10 illustrates the multiple regressions of socio-demographics, the knowledge of financial products and financial practices. We investigate whether socio-demographic characteristics are determinants of financial literacy. We also examine whether persons who are literate in finance leads to behavior around financial decisions making.

Table 10 (see at the list of the table)

All the variables influence the knowledge of financial products significantly, and only master's degrees do not have an impact on the knowledge of shari'ah finance. A positive sign implies that males, finance-related backgrounds, Islam, masters' degrees, bachelor degrees, and seniors possess higher financial literacy. The findings are supported by previous research. Tóth et al. (2015)find that people with higher education will have a higher level of financial literacy. Also, people with an economics major tend to have higher financial literacy. Hung, Parker, Yoong, & Yoong (2009) in their study claim that the level of education is related to income. Murphy (2013) suggests that the level of education has the highest correlation with financial literacy; and other factors, such as age, race gender and earnings also have an impact on financial literacy. These findings are in contrast to Lusardi & Mitchell (2011)who claim middle-aged people have the highest level of financial literacy. Whereas, Bhushan & Medury (2013) shows that age does not influence financial literacy.

Table 10 shows that all socio-demographic characteristics have an impact on cash flow management. Males are more capable of managing cash flow. This might be because of their responsibility as the head of their family. This is supported by previous research, which claims that within the household, men more often than women specialize in financial decisions, therefore acquiring more financial knowledge. In other words, men and women have different production processes for financial literacy (Fonseca et al., 2012).

People with a finance-related background also have a higher ability to manage their cash flow. The reason is that they are more knowledgeable in the area of finance. Furthermore, this finding suggests that Muslims have more ability to manage cash flow. Alderman et al., (2017)argue that there are differences between the religious and non-religious households in terms of their economic attitudes and financial decisions. In particular, households with strong religious beliefs tend to save more and less likely to invest in stocks compared to non-religious. Surprisingly, bachelor's and masters' degree backgrounds have more capability in cash flow management. It might suggest that people with doctoral degrees have more access to money, so it is easy to manage their cash flow. Lastly, seniors have more ability to manage cash flow than their younger counterparts because seniors are wiser and are heading into retirement period. Xiao et al. (2015) argue that the level of financial literacy and the perceived financial capacity among older consumers is higher than the younger consumers.

The behavior in credit management is only positively affected by gender and knowledge of credit. It means that males are more rigorous in terms of using credit. This might be due to the nature of females being conservative in all aspects of life. Thus, their attitude towards money is different. Even though females are less literate financially, they are conservative in issues related to the family's future. Further, the more knowledgeable people in credit regardless of the socio-demographic background, the more descent their attitude in the credit decision. This claim is supported by the notion of banks' excessive promotion of credit cards. As an Executive Director and Head of Bank Indonesia's Department of Payment System Policy said, the banks should not promote credit cards so rigorously as banks could end up increasing non-performing loans if the system is not managed carefully. Moreover, it is revealed that there are 17.4 million (or only nine percent) of the total bank account owners that are credit card users in Indonesia (Tempo, 2017).

The same outcomes can be applied to saving behavior. The more knowledgeable people are about saving, leads to better attitudes towards saving. As stated by Wachira & Kihiu (2012), there is a high probability of financially illiterate people remaining financially excluded. Research by Hinga (2014) finds that financial literacy is a key variable in increasing individual savings. The regression result of investment practices is slightly different from the previous results. Not only does the knowledge of investment have an impact on practicing investment, but also religion positively influences the behavior towards investment decisions. Muslims are more concerned about the type of investment, retirement planning and more sophisticated financial instruments, such as mutual funds, bonds, and stocks.

In the same vein, there is a positive correlation between shari'ah knowledge and behavior. Moreover, people with a bachelor's degree and/or senior respondents use shari'ah financial instruments more than their comparative counterparts. We make the assumption that educated people and seniors are also more religious. They also suggest that shari'ah finance is less risky. Indonesia Investment (2014) said that Indonesia's Islamic finance industry has shown rapid growth in recent years, with a compound annual growth rate of 29.2 % from 2010 to 2014. This growth is due to the increasing awareness of Islamic banking as well as government support programs. This growth is higher than the other Islamic financial forms markets. At the same time, the growth of Indonesia's conventional banking assets has increased at a much slower pace of 16.9 percent. In summary, we can say

that knowledge is followed by behavior. It implies that knowledge about financial products is very important for creating a society with high financial literacy.

CONCLUSION

Financial literacy has become one of the Indonesian government's important policy areas. One of the pillars in the National Strategy for Financial Inclusion is financial education. The improvement of financial literacy is crucial for a more stable financial system and to reduce financial fragility. Our research suggests that the respondents who took the questionnaire are financially literate. However, respondents had a lack of mutual funds knowledge. As a developing country, Indonesia considers mutual funds to be a sophisticated financial product. Mutual funds just recently started as an alternative investment in Indonesia when closed-end funds were established based on Minister of Finance ACT no.1548 in1990.

In general, the level of financial literacy revealed from socio-demographic characteristics are not that different between the two groups of respondents. Only some aspects show the differences in the level of knowledge as well as in financial practices, for example, the level of financial literacy is different between males and females in the aspects of credit and saving knowledge. This is followed by the difference in their saving practices. From the knowledge background characteristic, there were differences in investment and shari'ah knowledge.

Socio-demographic characteristics significantly influence the financial literacy and the cash flow management capability of the respondents. Furthermore, knowledge of financial products is followed by the behavior of financial decision-making. These results imply that the knowledge about financial products is very important for creating a society with high financial literacy. The Indonesian government needs to seriously look at implementing one of the pillars in the National Strategy for Financial Inclusion through the Ministry of Education. Moreover, the government should involve financial institutions as partners for propping up the level of financial literacy.

ACKNOWLEDGMENT

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LIST OF TABLES

Table 1: Knowledge of financial products*

Credit
1. creditors are required to tell you the APR that you will pay when you get a loan
2. if you expect to carry a balance on your credit card, the APR is the most important thing to look at when comparing credit card offers
3. the finance charge on your credit card statement is what you pay to use credit

4. using extra money in bank savings account to pay off high-interest rate credit card debt is a good idea

Saving

1. you should have an emergency fund that covers two to six months of your expenses
2. if you have a savings account at a bank, you may have to pay taxes on the interest you earn
3. if you buy certificates of deposit, savings bonds, or Treasury Bills, you can earn higher returns than on a savings account, with little or no added risk
4. with compound interest, you earn interest on your interest, as well as on your principal
5. You have a saving account with 6% interest, while the inflation rate also 7%, after 1 year, would you be able to buy more than today with the money in this account

Investment

1. the earlier you start saving for retirement, the more money you will have because of the effects of compounding interest increase over time
2. a stock mutual fund combines the money of many investors to buy a variety of stocks
3. over the long term, stocks have the highest rate of return on money invested
4. mutual funds pay a guaranteed rate of return
5. Stocks mutual funds have a lower risk than stocks
6. you could save thousands of dollars in interest costs by choosing a 15-year rather than a 30-year loan

Shari'ah

1. the interest rate is forbidden in Islam since it is usury
2. you cannot buy stocks of conventional financial institutions, of liquor companies, of hotels
3. you cannot buy conventional retail Indonesia bonds (ORI)
4. you cannot buy conventional insurance
5. you cannot have savings, and certificates of deposit in conventional banks

*adopted from Hilgert and Hogarth, 2003, with some modification according to the Indonesia environment.

Table 2: Financial Practices*

Cash flow management

1. Have checking/saving account
2. Pay all bills on time
3. Have a financial record-keeping system or track expenses
4. Reconcile checkbook every month
5. Use a spending plan or budget

Credit management

1. Have a credit card
2. Pay credit card balances in full each month
3. Review credit reports
4. Compare offers before applying for a credit card

Saving

1. Have a deposit account
2. Have emergency fund
3. Save or invest money out of each paycheck
4. Save for long-term goals such as education, car or home

Investment

1. Have money spread over different types of investments
2. Have any retirement planning
3. Have any investment account
4. Have mutual funds
5. Have public stock and/or Retail bonds

6. Have investment in the real sector

Shari'ah

1. Have a checking account in shariah bank
2. Have a mudarabah deposit in shariah bank
3. Have any retirement planning in takaful
4. Have shariah mutual fund
5. Choose shariah products even though they have smaller returns than conventional ones

*adopted from Hilgert and Hogarth, 2003, with some modification according to the Indonesia environment.

Table 4: Knowledge of Financial Products

Knowledge	Socio-Demographics Characteristics											
	Male (%)		Female (%)		Finance-related background (%)		Non-Finance related background (%)		Islam (%)		Non- Islam (%)	
Credit	Correct	Wrong	Correct	Wrong	Correct	Wrong	Correct	Wrong	Correct	Wrong	Correct	Wrong
Q1	92	8	99	1	96.5	3.5	93.3	6.7	95.4	4.6	100	0
Q2	90.8	9.2	93.9	6.1	90.8	9.2	97.8	2.2	92.6	7.4	92.5	7.5
Q3	60.9	39.1	72.7	27.3	69.5	30.5	60	40	68.6	31.4	45.5	54.5
Q4	*42.5*	*57.5*	*49.5*	*50.5*	*48.2*	*51.8*	*40*	*60*	*46.3*	*53.7*	*63.7*	*36.3*
Saving												
Q1	95.4	4.6	97	3	95.7	4.3	97.8	2.2	96	4	100	0
Q2	78.2	21.8	80.8	19.2	81.6	18.4	73.3	26.7	80	20	72.7	27.3
Q3	73.6	26.4	81.2	18.2	77.3	22.7	80	20	79.4	20.6	63.7	36.3
Q4	71.3	28.7	81.8	18.2	78	22	73.3	26.7	76.6	23.4	72.7	27.3
Q5	69	31	65.7	34.3	66.7	33.3	68.9	31.1	66.9	33.1	72.7	27.3
Investment												
Q1	66.7	33.3	72.7	27.3	70.9	29.1	66.7	33.3	69.1	30.9	72.7	27.3
Q2	88.5	11.5	76.8	23.2	80.9	19.1	86.7	13.3	82.9	17.1	90.9	9.1
Q3	63.2	36.8	67.7	32.3	64.5	35.5	68.9	31.1	65.7	34.3	90.9	9.1
Q4	*37.9*	*62.1*	*36.4*	*63.6*	*38.3*	*61.7*	*33.3*	*66.7*	*37.1*	*62.9*	*18.1*	*81.9*
Q5	86.2	13.8	72.7	27.3	78.7	21.3	80	20	78.9	21.1	81.9	18.1
Q6	57.5	42.5	69.7	30.3	62.4	37.6	68.9	31.1	62.9	37.1	81.9	18.1
Shari'ah												
Q1	90.8	9.2	92.9	7.1	92.2	7.8	91.1	8.9	93.7	6.3	72.7	27.3
Q2	87.4	12.6	92.9	7.1	91.5	8.5	86.7	13.3	90.9	9.1	81.9	18.1
Q3	85.1	14.9	84.8	15.2	86.5	13.5	80	20	85.1	14.9	81.9	18.1
Q4	78.2	21.8	76.8	23.2	79.4	20.6	71.1	28.9	78.9	21.1	54.5	45.5
Q5	66.7	33.3	62.6	37.4	68.8	31.2	51.1	48.9	64.6	35.4	63.6	37.3

Table 5: Knowledge of Financial Products

	Socio-Demographics Characteristics									
Knowledge	Doctoral degree (%)		Master degree (%)		Bachelor degree (%)		Junior (age 25-40) (%)		Senior (age >40) (%)	
Credit	Correct	Wrong	Correct	Wrong	Correct	Wrong	Correct	Wrong	Correct	Wrong
Q1	93.5	6.5	97.3	2.7	92.6	7.4	97	3	97	3
Q2	95.7	4.3	93.8	6.2	81.5	18.5	94	6	94	6
Q3	56.5	43.5	74.3	25.7	55.6	44.4	66	34	68	32
Q4	*30.4*	*69.6*	*51.3*	*48.7*	*51.9*	*48.1*	*43*	*57*	*48*	*52*
Saving										
Q1	95.7	4.3	95.6	4.4	100	0	99	1	95	5
Q2	73.9	26.1	81.4	18.6	81.5	18.5	71	29	89	11

Q3	67.4	32.6	79.6	20.4	88.9	11.1	79	21	82	18
Q4	76.1	23.9	80.5	19.5	63	37	77	23	81	19
Q5	82.6	17.4	64.6	35.4	51.9	48.1	60	40	70	30
Investment									
Q1	67.4	32.6	70.8	29.2	70.4	29.6	74	26	71	29
Q2	73.9	26.1	85	15	85.2	14.8	86	14	85	15
Q3	63	37	67.3	32.7	63	37	73	27	65	35
Q4	*54.3*	*45.7*	*29.2*	*70.8*	*40.7*	*59.3*	*34*	*66*	*35*	*65*
Q5	69.6	30.4	85	15	70.4	29.6	38	62	84	16
Q6	60.9	39.1	65.5	34.5	63	37	31	69	65	35
Shari'ah									
Q1	93.5	6.5	89.4	10.6	100	0	91	9	97	3
Q2	95.7	4.3	87.6	12.4	92.6	7.4	91	9	95	5
Q3	91.3	8.7	79.6	20.4	96.3	3.7	87	13	88	12
Q4	87	13	71.7	28.3	85.2	14.8	80	20	80	20
Q5	76.1	23.9	56.6	43.4	77.8	35.5	69	31	65	35

Table 6: The behavior of financial decision

Behavior	Socio-Demographics Characteristics										
	Male (%)		Female (%)		Finance-related background (%)		Non-Finance related background (%)		Islam (%)		Non- Islam (%)
Cash flow management	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Q1	97.7	2.3	100	0	98.6	1.4	100	0	98.9	1.1	100	0
Q2	93.1	6.9	96	4	94.3	5.7	95.6	4.4	94.3	5.7	100	0
Q3	54	46	59.6	40.4	59.6	40.4	48.9	51.1	57.7	42.3	45.5	54.5
Q4	60.9	39.1	50.5	49.5	56.7	43.3	51.1	48.9	44.6	55.4	54.5	45.5
Q5	52.2	44.8	63.6	36.4	60.3	39.7	57.8	42.2	60	40	54.5	45.5
Credit Management											
Q1	44.8	55.2	30.3	69.7	34	66	46.7	53.3	36	64	54.5	45.5
Q2	37.9	62.1	34.3	65.7	31.2	68.8	51.1	48.9	36	64	36	64
Q3	39.1	60.9	31.3	68.7	34.8	65.2	35.6	64.4	34.9	65.1	34.9	65.1
Q4	*37.9*	*62.1*	*29.3*	*70.7*	*29.8*	*70.2*	*44.4*	*55.6*	*32.6*	*67.4*	*45.5*	*54.5*
Saving											
Q1	31	69	42.4	57.6	40.4	59.6	26.7	73.3	37.1	62.9	37.1	62.9
Q2	66.7	33.3	76.8	23.2	72.3	27.7	71.1	28.9	71.4	28.6	82	18
Q3	79.3	20.7	85.9	14.1	80.9	19.1	88.9	11.1	81.7	17.3	100	0
Q4	78.2	21.8	90.9	9.1	84.4	15.6	86.7	13.3	84.6	15.4	90	10
Investment											
Q1	51.7	48.3	52.5	47.5	53.9	46.1	46.7	53.3	50.9	49.1	72.2	27.8
Q2	69	31	67.7	32.3	68.8	31.2	66.7	33.3	68	32	72.7	27.2
Q3	31	69	41.4	58.6	38.3	61.7	31.1	68.9	36.6	63.4	36.6	63.4
Q4	*13.8*	*86.2*	*9.1*	*90.9*	*9.2*	*90.8*	*17.8*	*82.2*	*11.4*	*88.6*	*10*	*90*
Q5	12.6	87.4	10.1	89.9	10.6	89.4	13.3	86.7	11.4	88.6	10	90
Q6	18.4	81.6	18.2	81.8	16.3	83.7	24.4	75.6	17.7	82.3	27.3	72.7
Shari'ah											
Q1	70.1	29.9	74.7	25.3	76.6	23.4	60	40	74.3	25.7	45.5	54.5
Q2	31	69	38.4	61.6	38.3	61.7	24.4	75.6	34.3	65.7	45.5	54.5
Q3	20.7	79.3	18.2	81.8	19.9	80.1	17.8	82.2	18.9	81.1	27.3	72.7
Q4	12.6	87.4	13.1	86.9	11.3	88.7	17.8	82.2	13.1	86.9	10	90
Q5	63.2	36.8	65.7	34.3	64.5	35.5	64.4	35.6	66.3	33.7	45.5	54.5

Table 7: The behavior of Financial Decision

Behavior	Socio-Demographics Characteristics									
	Doctoral degree (%)		Master degree (%)		Bachelor degree (%)		Junior (age 25-40) (%)		Senior (age >40) (%)	
Cash flow management	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Q1	100	0	99.1	0.9	96.3	3.7	100	0	98.2	1.8
Q2	97.8	2.2	93.8	6.2	92.6	7.4	98.5	1.5	92	8
Q3	56.4	43.5	57.5	42.5	55.6	44.4	61.4	38.6	54	46
Q4	50	50	56.6	43.4	59.3	40.7	62.8	37.2	50.8	49.2
Q5	52.2	47.8	59.3	48.7	74.1	25.9	77	23	57.7	42.3
Credit										
Q1	39.1	60.9	36.3	63.7	37	63	44.3	55.7	41.3	58.7
Q2	37	63	34.5	65.5	40.7	59.3	34.3	65.7	37	63
Q3	34.8	65.2	33.6	66.4	40.7	59.3	32.8	67.2	36	64
Q4	*32.6*	*67.4*	*31.9*	*68.1*	*40.7*	*59.3*	*35.7*	*64.3*	*32*	*68*
Saving										
Q1	34.8	65.2	38.1	61.9	37	63	40	60	35.3	64.7
Q2	73.9	26.1	74.3	25.7	59.3	40.7	70	30	73	27
Q3	82.6	17.4	82.3	17.7	85.2	14.8	82.8	17.2	83	17
Q4	80.4	19.6	86.7	13.3	85.2	14.8	88	22	83	17
Investment										
Q1	69.6	30.4	46	54	48.1	51.9	57	43	49	51
Q2	78.3	21.7	64.6	35.4	66.7	33.3	63	27	71.5	28.5
Q3	37	63	35.4	64.6	40.7	59.3	47	53	30	70
Q4	*8.7*	*91.3*	*12.4*	*87.6*	*11.1*	*88.9*	*14*	*86*	*9.5*	*90.5*
Q5	13	87	11.5	88.5	7.4	92.6	15.7	84.3	8.6	91.4
Q6	17.4	82.6	18.6	81.4	18.5	81.5	23	77	15.5	84.5
Shari'ah										
Q1	69.6	30.4	68.1	31.9	96.3	3.7	80	20	68	32
Q2	43.5	56.5	30.1	69.9	40.7	59.3	33	67	36.2	63.8
Q3	21.7	78.3	17.7	82.3	22.2	77.8	15.7	84.3	21	79
Q4	19.6	80.4	9.7	90.3	14.8	85.2	10	90	13	87
Q5	63	37	60.2	39.8	85.2	14.8	57	43	69	31

Table 8: Difference of Means

Attribute	Male Vs. Female		Fin. Related Vs. Non-fin. related		Islam Vs. Non-Islam		Bachelor Vs. Master/Doctoral		Master Vs. Bachelor/Doctoral		Senior (age 25-40) Vs. Junior (age >40)	
Knowledge	t	p-value	t	p-value	t	p-value	t	p-value	t	p-value	t	p-value
Credit	-2.218	0.027	0.9012	0.368	0.7534	0.4522	-1.262	0.2082	2.933	0.003	0.3582	0.720
Saving	-1.77305	0.07787	0.596657	0.5515	0.910432	0.3638	0.99746	0.3199	1.52885	0.128	-0.23635	0.8134
Investment	0.0391637	0.9688	6.85681	6.4e-11	-0.47396	0.6361	-0.4482	0.6545	2.25087	0.02558	-1.39631	0.1643
Shari'ah	-0.104513	0.9169	1.69085	0.09256	1.63922	0.1029	1.80983	0.07195	-3.1482	0.001917	-0.74789	0.4555

Behavior											
Cash flow	-0.46807	0.6403	0.74077	0.4598	0.28201	0.7780	0.5368 0	0.592	0.10369	0.9175	-1.68246	0.094
Credit	1.37416	0.1711	-1.64338	0.102	-0.62417	0.533	0.58481	0.5594	-0.50549	0.6138	0.35479	0.723
Saving	-2.39383	0.0176	0.23224	0.8166	-0.89899	0.369	-0.48792	0.6262	0.43274	0.6656	-0.40933	0.682
Investment	-0.103604	0.9176	-0.10346	0.9177	-0.62888	0.530	-0.18449	0.8538	-0.9937	0.3217	-1.47397	0.1422
Shari'ah	-0.589533	0.5562	1.0712	0.2855	0.973031	0.3318	2.18368	0.03025	-2.21	0.02796	0.529753	0.5969

Table 9: Regression result

Socio-demographic factors and Financial Knowledge

Heteroskedasticity-robust standard errors, variant HC1 (Davidson and MacKinnon)

Dependent Variable

Independent variable	Credit		Saving		Investment		Shari'ah	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
Male	0.535709	0.0471**	0.722374	0.0244**	1.23787	0.0029***	0.990161	0.0040***
Finance	1.21898	0.0001***	1.46331	0.0003***	1.54282	0.0033***	1.81735	6.51e-05***
Islam	4.37862	3.05e-16***	5.38191	1.66e-16***	6.37150	3.03e-14***	6.11862	2.52e-18***
Master	1.38067	1.06e-05***	1.62752	1.26e-05***	2.18940	8.58e-06***	0.693302	0.1015
Undergrad.	0.957230	0.0075***	1.61444	0.0001***	1.61452	0.0048***	1.19505	0.0066***
Senior	0.794162	0.0026***	0.950908	0.0034***	0.863239	0.0492**	0.922607	0.0074***
Adjusted R-squared	0.950815		0.952524		0.938653		0.946172	
P-Value(F)	3.7e-138		1.5e-142		5.8e-127		8.3e-135	

Table 10: Regression result

Socio-demographic factors and Financial Knowledge on Behaviour on Financial Decision

Heteroskedasticity-robust standard errors, variant HC1 (Davidson and MacKinnon)

Dependent Variable

Independent variable	Cash Flow		Credit		Saving		Investment		Shari'ah	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
Male	0.927207	0.0065***	0.651319	0.0121**	-0.0471228	0.8140	0.240897	0.3640	0.0481184	0.8173
Finance	1.58724	0.0003***	-0.227488	0.4863	0.236276	0.2657	0.502407	0.1303	0.283574	0.2754
Islam	5.56100	1.08e-15***	0.682514	0.2588	0.589011	0.1523	1.56549	0.0069***	0.837912	0.1300
Master	1.37849	0.0008**	-	0.9053	0.065988	0.794	-0.334940	0.287	0.247002	0.325

		*	0.038155 9		3	1		7		2
Undergrad.	1.29937	0.0048***	0.363222	0.4282	-0.132534	0.7079	-0.160752	0.7287	0.643139	0.0886 *
Senior	0.700385	0.0477**	0.358223	0.1983	0.109514	0.5809	0.140989	0.6068	0.424045	0.0534 *
Credit Knowledge	-	-	0.616180	9.63e-10***	-	-	-	-	-	-
Saving Knowledge	-	-	-	-	0.683563	3.72e-48 ***	-	-	-	-
Investment Knowledge	-	-	-	-	-	-	0.591070	8.17e-29 ***	-	-
Shari'ah Knowledge	-	-	-	-	-	-	-	-	0.600146	3.93e-22 ***
Adjusted R-squared	0.941217		0.897956		0.962285		0.950593		0.960660	
P-Value(F)	1.9e-127		3.49e-87		5.6e-131		8.1e-117		1.9e-126	