
FINANCIAL LITERACY, DEMOGRAPHIC DIFFERENCES AND FINANCIAL RISK TOLERANCE LEVEL: A CASE STUDY**Ernie Hendrawaty ^{1*}, Nisrul Irawati ², Isfenti Sadalia ³**¹ *Faculty of Economics and Business, Universitas Lampung, Bandar Lampung, Indonesia*^{2,3} *Faculty of Economics and Business, Universitas Sumatera Utara, Medan, Indonesia**E-mail:*^{1*} ernie.hendrawaty@feb.unila.ac.id (Corresponding author)*Received 15 November 2019; accepted 15 April 2020; published 30 May 2020*

Abstract. This study examines the effect of the level of financial literacy on the level of tolerance for risk and to determine the role of several demographic variables, such as age, gender, income level, marital status in moderating the influence of financial literacy levels on risk tolerance levels. The data collected using a questionnaire. Questionnaires are available online (in the network) and are also distributed questionnaires offline (outside the network) to 200 individual potential investors. The results of this study indicate that the level of personal literacy does not affect the level of tolerance to risk. These empirical findings indicate that other factors determine the level of individual risk tolerance, in addition to the level of financial literacy given that investment decision making is a complex decision determined by a combination of several factors. Demographic factors are one of the factors that determine investment decision making. The next finding supports this because age has a significant influence on the level of tolerance to risk. Besides that, income and gender (Men) also have a significant influence on the level of tolerance to risk. Subsequent findings failed to prove the role of demographic factors in clarifying the benefits of financial literacy levels on risk tolerance levels.

Keywords: financial literacy; demographics; financial risk tolerance

Reference to this paper should be made as follows: Hendrawaty, E., Irawati, N., Sadalia, I. 2020. Financial literacy, demographic differences and financial risk tolerance level: a case study. *Journal of Security and Sustainability Issues*, 9(M), 187-201.

[https://doi.org/10.9770/jssi.2020.9.M\(15\)](https://doi.org/10.9770/jssi.2020.9.M(15))

JEL Codes: J01

I. INTRODUCTION

Financial literacy in the structure of global financial policy seems to have a real role in the financial sector. The better public literacy in the financial sector, then the better the ability of public financial planning. The Indonesian government, through the Financial Services Authority, has put in place a program to increase financial literacy and expand public access to the formal financial industry as one of the priority programs. The Financial Services Authority targets that by 2019, the public's understanding of financial management (literacy) will increase by 31.8%, as well as the level of utility can also increase.

According to the results of the Financial Services Authority's latest survey of 80,000 respondents in Indonesia, the level of understanding and financial confidence of the community is still very low at 22% and varies between sectors, the level of utility is also still less than 60%. As a comparison, the utilization rate achieved by Singapore was 96%, followed by Malaysia with 81% and Thailand 78%. In detail, the survey results show that the community's level of understanding and confidence in banking is only 22%. Meanwhile, the utility rate and utilization is only 57%. The next rating is insurance, where the literacy rate (understanding and confidence) reaches 18%, but the insurance utility rate is lower, which is 12%. In the mortgage sector, the literacy rate reaches 15%, and the utility level reaches 5%. In the financing sector, the literacy rate is 10%, and the utility level is 6%. As for the pension sector, the literacy

rate reaches 7%, and the utility rate is only 2%. At the lowest, the capital market sector, whose literacy rate is only 4%, while the utility rate is only 0.1%.

The capital market in Indonesia is still relatively new but is overgrowing. Until 2015, the ratio of stock market capitalization only reached 53% of Gross Domestic Product, but this ratio is expected to continue to increase from year to year. Share ownership in the Indonesia Stock Exchange, or abbreviated as IDX, is still dominated by institutional investors compared to individual investors. In March 2015, the share ownership percentage of individual investors was only 27%, so the dominance of share ownership by institutional investors was considerable, namely 73% of the total shares. Other individual investors still prefer to allocate funds in the form of savings or deposits rather than investing them in financial instruments.

The Indonesia Stock Exchange responds to the low interest of the public in accessing the capital market by routinely disseminating and educating the capital market to the community every week on campus and in companies or government institutions, in all provinces in Indonesia, including in Lampung Province. The hope is that with better financial knowledge and understanding, better public access to the capital market.

The results of a study conducted by (Crysel, L., Crosier, B. and Webster, G. 2012), show that the link between financial literacy education programs and the desire to access finance is weak. On the contrary, the results of (Anbar, A., & Eker, M. 2010) show that financial literacy plays a vital role in determining the level of risk-taking on financial investment. Investors are less interested in transacting transactions that they do not understand well. (Grable, J. E. 2000) revealed that respondents with a higher level of financial knowledge would show a high level of risk tolerance. Thus the benefits of financial literacy about individual financial behavior are still controversial.

The study of the benefits of financial literacy programs is still controversial because financial literacy has not consistently affected risk tolerance levels (Crysel, L., Crosier, B. and Webster, G. 2012), So it is necessary to combine financial literacy factors with other demographic factors to explain the investment decision-making process. (Pak, O., & Mahmood, M. 2015) stated that the investment decision making process includes a complex combination of various factors, such as demographic factors (e.g., age, gender, income, and education level), personal characteristics, for example, traits, values, emotions, tolerance to risk. Other factors are markets (such as expected risk, the rate of return, transaction costs, market environment, and other related factors). Thus, the decision-making process becomes more complicated and not at all simple (Imran, M., Binti Aziz, A., Binti Abdul Hamid, S. N., Shabbir, M. S., Salman, R., & Jian, Z. 2018, & Jabarullah, N. H., Shabbir, M. S., Abbas, M., Siddiqi, A. F., & Berti, S. 2019 & Shabbir, M. S., Shariff, M. N. M., Alshaibani, Y. H., Faisal, M., & Salman, R. 2018 & Shabbir, M. S., Shariff, M. N. M., & Shahzad, A. 2016 & Shabbir, M. S., Shariff, M. N. M., & Shahzad, A. 2017). This study focuses on the role of demographic factors, the role of personal characteristics (personal characteristics) in the form of risk-taking attitudes, in influencing investors' desire to invest shares in the capital market. Personal characteristics (personal characteristics) can influence individual attitudes in taking risks to various areas of individual life, such as when making social decisions, gambling decisions, and investment decisions. Many behavioral and psychological factors support as factors that influence individuals in making investment decisions. Researchers such as (Kourtidis, D., Šević, Ž., & Chatzoglou, P. 2011) and (Weller, J. A., & Thulin, E. W. 2012) and (Pak, O., & Mahmood, M. 2015) strongly support the use of behavioral factors and psychology and do not agree with Market Efficiency Theory and Portfolio Theory, which holds that investors always use relevant information and behave rationally in making investment decisions. (Simon, H. A. 1987) explained that changes in the decision-making process that initially based on rational and logical could turn into the opposite because it influenced by very complex factors, such as cognitive abilities and external environmental factors (Shabbir, M. S., Shariff, M. N. M., & Shahzad, A. (2017).

Demographic factors are age, gender, income level, and marital status. The age factor has not consistently explained its effect on individual risk-taking according to the results of the study by (Kourtidis, D., Šević, Ž., &

Chatzoglou, P. 2011), (Kannadhasan, M. 2015), (Bannier, C. E., & Neubert, M. 2016), (Fisher, P. J., & Yao, R. 2017) and (Brooks, C., Sangiorgi, I., Hillenbrand, C., & Money, K. 2018) who found that the risk tolerance level increased with increasing age, whereas a study conducted by (Selcuk, E., Zayas, V., & Hazan, C. 2010) revealed that risk tolerance levels increase as age increases. Studies that link gender factors with risk tolerance levels indicate that consistently male sex is more tolerant of risk than women (Selcuk, E., Zayas, V., & Hazan, C. 2010) and (Anbar, A., & Eker, M. 2010). Other demographic factors are marital status and income level. According to the results of previous studies by married individuals, the loss aversion rate is lower than single individuals (Selcuk, E., Zayas, V., & Hazan, C. 2010) and (Goral, R., & Akgoz, E. 2017).

The risk level is one of the basic concepts of the investment decision-making process. Grouping risk tolerance levels are risk-averse, risk-neutral, and risk-lovers. Furthermore, the individual's level of tolerance for risk will influence investment decisions taken by individuals. High and low tolerance to risk determines the type of investment chosen by individual investors. Investors who hold cash and have investments in bonds indicate low-risk tolerance. Conversely, investors who are prepared to take higher risks will be more willing to buy shares (Jabarullah, N. H., Shabbir, M. S., Abbas, M., Siddiqi, A. F., & Berti, S. 2019), (Ramli, A., Shabbir, M. S., Bakar, M. S. Bin, Shariff, M. N. M., Yusof, M. S., & Ahmad, I. 2018) and (Shabbir, M. S., Shariff, M. N. M., Alshaibani, Y. H., Faisal, M., & Salman, R. 2018).

Share ownership by individual investors is only 27% of the total shares issued on the Indonesia Stock Exchange, which indicates that individual investors generally prefer to allocate funds in the form of savings or deposits rather than investing in financial instruments. Since the investment decision-making process is a complex decision-making process from a combination of various factors, financial literacy factors alone are not enough to explain investors' financial behavior but combined with demographic factors (Pak, O., & Mahmood, M. 2015) and (Esiagu, L. N., Okoroji, L. I., & Anyanwu, J. O. 2016).

The results of this research are expected to help in understanding how the process of making investment decisions, the attitude of investors in taking risks, and the investment strategies chosen by investors. The benefits of this research are that it can help policymakers, investment companies and investment advisors in finding ways to motivate individual investors to access and participate actively in the Indonesian capital market by developing appropriate methods to educate and provide training for potential investors and help policymakers in developing and managing the stock market effectively (Faisal, M., Shabbir, M. S., Javed, S., & Shabbir, M. F. 2016) and (Shabbir, M. S., Asad, M., Faisal, M., & Salman, R. 2019).

There are two research objectives, namely, first, to determine the effect of financial literacy level on the level of tolerance of risk. Second, the purpose of the study was to determine the role of several demographic variables, such as age, gender, income level, marital status in moderating the influence of financial literacy levels on risk tolerance levels (Ramli, A., Shabbir, M. S., Bakar, M. S. Bin, Shariff, M. N. M., Yusof, M. S., & Ahmad, I. (2018), (Shabbir, M. S., Shariff, M. N. M., Bin Yusof, M. S., Salman, R., & Hafeez, S. 2018), (Shabbir, M. S., Shariff, M. N. M., & Shahzad, A. 2016) and (Ul-Hameed, W., Shabbir, M. S., Imran, M., Raza, A., & Salman, R. 2019).

Section 2 of this paper highlights data, sample, and methodology. Section 3 presents an empirical result as well as descriptive statistics — section 4 conclusion.

II. DATA, SAMPLE METHODOLOGY, AND VARIABLE EXPLANATIONS

Data and Sample

Methods of collecting data using a questionnaire. Questionnaires are available online (in the network) and are also distributed using form questionnaires (outside the network) to 200 individual potential investors.

Methodology and Variable Explanations

The survey listed in the questionnaire consists of three parts. The first part consists of some information related to the background of the respondents. Respondents were asked to fill in age, gender, income, and marital status. The

second part aims to assess the level of financial literacy with the number of questions 11 items developed by (Rooij, M., Lusardi, A., & Alessie, R. 2011). The third section has five questions and seeks to estimate individual risk-taking behavior. Risk attitudes divided into two dimensions, above the average risk and below the average risk. Questions were chosen from the study of Rooij, M., Lusardi, A., & Alessie, R. 2011). A preliminary study and Cronbach's Alpha calculations were carried out for the scale of the question items to test the validity and reliability of the questionnaires used in this study (Imran, M., Binti Aziz, A., Binti Abdul Hamid, S. N., Shabbir, M. S., Salman, R., & Jian, Z. 2018), (Shabbir, M. S., Asad, M., Faisal, M., & Salman, R. 2019), (Shabbir, M. S., Shariff, M. N. M., & Shahzad, A. 2016) and (Ul-Hameed, W., Shabbir, M. S., Imran, M., Raza, A., & Salman, R. 2019). (See table 1)

Table 1: Identification of Variables and Measurement of Variables

Variable type	Measurement	Variable Name
Dependent Variable		
The financial risk tolerance level	Scores are obtained from the test results in measuring the level of risk tolerance [25]	TOLRISK
Independent Variables		
Level of financial literacy	Scores are obtained from the test results to measure the level of financial literacy [25]	FINLIT
Age	Categorical variables 1,2,3, 4, 5 respectively if the age group (18-30), (30-40), (40-50), (50-60) and (+60)	AGE
Gender	Dummy variables which are declared one if male respondents, 0 if female respondents	GENDER
Income level	Categorical variables 1,2,3, 4, 5 respectively if the income group (500 thousand-1.5 million), (1.5 million - 2.5 million), (2.5 million-3.5 million), (3.5 million-4.5 million), (4.5 million and above)	INCOME
Marital status	Dummy variables which are declared one if respondents get married, 0 if the respondent is single	MARITAL

The purpose of econometrics in this study is to estimate the β coefficient using the basic model $Y_{i,t} = \alpha_0 + \beta_1 X_{i,t} + \varepsilon_i$. Coefficient β estimated using regression analysis and the Moderated Regression Analysis approach (Faisal, M., Shabbir, M. S., Javed, S., & Shabbir, M. F. 2016), (Hussain, S., Fangwei, Z., Siddiqi, A. F., Ali, Z., & Shabbir, M. S. 2018) and (Jabarullah, N. H., Shabbir, M. S., Abbas, M., Siddiqi, A. F., & Berti, S. 2019).

Individual investors who lack knowledge or information will make inappropriate or inefficient financial decisions because individual investors will experience considerable difficulties in collecting relevant financial information so that their decisions are less efficient. The basic concept in the investment decision-making process is the concept of risk. Investors grouped according to their risk tolerance levels into three categories: risk-averse, risk-neutral, and risk-lovers. Research on financial risk

tolerance tends to lead to the economic theory that explains risk through the concept of risk aversion or low tolerance to accept the risk. Individuals who have a low tolerance for risk, then he will want to consider the ratio of higher risk assets compared to individuals who are low-risk tolerance (Shabbir, M. S., Shariff, M. N. M., & Shahzad, A. 2016).

According to (Pak, O., & Mahmood, M. 2015), the level of financial literacy plays a critical role in influencing the risk that is willing to be accepted about certain financial investments. Generally, investors are less interested in carrying out a transaction that they do not understand (Anbar, A., & Eker, M. 2010) and (Fengyang, W. U. 2018). The results of the study show that respondents with a higher level of financial knowledge showed higher risk tolerance (Grable, J. E. 2000) and (Chang, P. 2017). On the contrary, leading research did not find a significant effect on the level of financial literacy on the level of risk tolerance (Hallahan, T., Faff, R., & McKenzie, M. 2003), (Willis, L. E. 2008) and (Selcuk, E., Zayas, V., & Hazan, C. 2010). Similarly, other previous research found doubts about the benefits of financial literacy on investor financial behavior because the causal relationship between the two variables is weak (Cole, S. A., Sampson, T. A., & Zia, B. H. 2009) and (CHE, G. N., & Sundjo, F. 2018).

$$TOLRISK_i = \alpha_1 + \beta_1 FINLIT_{i,t} + \varepsilon_{it} \dots\dots\dots(1)$$

The existence of a controversial causal relationship and the results of the conflict indicate that there may be other variables that moderate the previous causal relationship. Demographic factors have a significant impact on investors' attitudes to risk, including age, gender, income level, and marital status (Pak, O., & Mahmood, M. 2015) and (Edeme, R. K. 2017). The risk tolerance level can be different between old individual investors and young individual investors. Similarly, the risk tolerance level can differ between male investors with male sex investors. The risk tolerance level differs between high-income individual investors and low-income individual investors. Finally, the tolerance level of risk of married individual investors is higher than the level of tolerance for the risk of married individual investors. Testing the causal relationship between the level of financial literacy and the level of risk tolerance on the total sample regardless of the demographic characteristics of the sample can make the causal relationship controversial and the results of the conflict. In Hartono's opinion, this study includes demographic variables as moderating variables to clarify the causal relationship between financial literacy levels and risk tolerance levels.

$$TOLRISK_i = \alpha_1 + \beta_1 FINLIT_i + \Sigma\beta_2 DEMOGRAPHIC_i + \varepsilon_{it} \dots\dots\dots(2)$$

Research findings related to the relationship of age to financial risk tolerance are still conflicting, but generally, indicate that risk tolerance increases with age (Grable, J. E. 2000 & Kourtidis, D., Šević, Ž., & Chatzoglou, P. 2011).

$$TOLRISK_i = \alpha_1 + \beta_1 FINLIT_i + \beta_2 AGE_i + \beta_3 FINLIT_i * AGE_i + \Sigma\beta_4 OTHER DEMOGRAPHIC_i + \varepsilon_{it} \dots\dots\dots(3)$$

The majority of research findings support that men have more risk tolerance than women (Grable, J. E. 2000), (Selcuk, E., Zayas, V., & Hazan, C. (2010) and (Anbar, A., & Eker, M. 2010). One of the rational reasons is the role of women as mothers who are more interested in stable income than significant but uncertain income. However, in the setting of managerial decisions, it was found that women became risk-neutral Maxfield, (S., Shapiro, M., Gupta, V., & Hass, S. 2010) and (Dong, T., & Qiu, L. 2018).

$$TOLRISK_i = \alpha_1 + \beta_1 FINLIT_i + \beta_2 GENDER_i + \beta_3 FINLIT_i * GENDER_i + \Sigma\beta_4 OTHER DEMOGRAPHIC_i + \varepsilon_{it} \dots\dots\dots(4)$$

Other demographic factors are marital status and income level. The survey results show that married respondents have a higher tolerance for financial risk compared to single respondents. The reason for this is that married individuals can share risks with their partners, so they are more willing to take on higher financial risks.

$$TOLRISK_i = \alpha_1 + \beta_1 FINLIT_i + \beta_2 INCOME_i + \beta_3 FINLIT_i * INCOME_i + \Sigma\beta_4 OTHER DEMOGRAPHIC_i + \varepsilon_{it} \dots\dots\dots(5)$$

It is also consistently found that respondents whose income is higher the level of risk aversion are lower than subjects whose income is lower (Selcuk, E., Zayas, V., & Hazan, C. 2010).

$$TOLRISK_i = \alpha_1 + \beta_1 FINLIT_i + \beta_2 MARITAL_i + \beta_3 FINLIT_i * MARITAL_i + \Sigma\beta_4 OTHER DEMOGRAPHIC_i + \varepsilon_{it} \dots\dots\dots(6)$$

III. RESULTS

Descriptive Statistics

The number of questionnaires distributed was 250, but only 215 questionnaires returned. The number of questionnaires that met the criteria for use in the research was 192 questionnaires. Based on Table 3, which presents the profile of 192 respondents, concerning the age of the respondents indicated in the sample, it can seem that in general, the majority of respondents are between the ages of 18-40 years. This table also shows that, based on the survey, 59.9 percent (115) were male, and 40.10 percent (77) were female participants. The highest income level of respondents as having an income of Rp. 4.5 million and above (53.65 percent). The status of most respondents was married 66.67 percent (128) while the rest were single (64) — information on the profile of the respondent in the following detail (see table 2).

Table 2: Descriptive Statistics of Demographic Variables

Variable	Percent	Cumulative Percent
Age		
Between 18 and 30 years	40.6%	40.6%
Between 30 and 40 years	33.3%	74.0%
Between 40 and 50 years	18.8%	92.7%
Between 50 and 60 years	7.3%	100.0%
Gender		
Man	59.90%	59.90%
Woman	40.10%	100.00%
Income		
Rp. 500 thousand - Rp. 1.5 million	10.42%	10.42%
Rp.1.5 million - Rp.2.5 million	7.81%	18.23%
Rp.2.5 million - Rp.3.5 million	14.58%	32.81%
Rp.3.5 million - Rp.4.5 million	13.54%	46.35%
Rp.4.5 million and above	53.65%	100.00%
Marital		
Married	66.67%	66.67%
Single	33.33%	100.00%

The results of the research statistics in Table 3 show that female and male respondents generally have similarities concerning risk tolerance levels. The dominant risk tolerance level for female and male respondents is average / moderate risk tolerance. Moderate risk tolerance dominates married respondents, whereas single respondents actually tolerate balanced risk does not only average / moderate risk tolerance, but also has above average risk tolerance and high-risk tolerance. In respondents whose income levels are higher tend to have average / moderate risk tolerance, while respondents with lower income levels, tolerance for risk mixed between tolerance levels of low-risk tolerance, average / moderate risk tolerance, and above-average risk tolerance so that they do not tend at a particular risk tolerance level (table 3).

Table 3: Cross Tabulation Between Risk Tolerance Levels and Demographic Variables

	RISK TOLERANCE LEVEL					Total
	1	2	3	4	5	
Age						
Between 18 and 30 years	2	6	26	21	23	78
Between 30 and 40 years	0	9	21	21	13	64
Between 40 and 50 years	0	6	21	8	1	36
Between 50 and 60 years	1	1	6	6	0	14
Gender						
Man	2	10	35	18	12	77

Woman	1	12	39	38	25	115
<i>Income</i>						
Rp. 500 thousand - Rp. 1.5 million	1	5	8	4	2	20
Rp.1.5 million - Rp.2.5 million	1	1	4	4	5	15
Rp.2.5 million - Rp.3.5 million	0	4	8	11	5	28
Rp.3.5 million - Rp.4.5 million	0	3	7	8	8	26
Rp.4.5 million and above	1	9	47	29	17	103
<i>Marital</i>						
Married	1	6	20	20	17	64
Single	2	16	54	36	20	128

This table presents information on risk tolerance levels with specifications for demographic variables from 192 respondents (age, gender, income, and marital status). The level of risk tolerance has five levels. Level 1: Low-risk tolerance (i.e., conservative investor), Level 2: Below-average risk tolerance, Level 3: = Average/moderate risk tolerance, Level 4: Above-average risk tolerance, Level 5: High-risk tolerance (i.e., aggressive investor). The statistical results of this study related to financial literacy show that the age of respondents less than 40 years old has better financial literacy (able to answer more than five questions correctly) compared to respondents aged over 40 years. The financial literacy of male and female respondents is generally functional because most can answer more than five questions correctly. Likewise, if it relates to the income level of respondents, then respondents' income in the high group has better financial literacy. Married status respondents have better financial literacy than unmarried respondents (table 4).

Table 4: Cross Tabulation Between Levels of Financial Literacy and Demographic Variables

	LEVEL OF FINANCIAL LITERATION			
	1	2	3	Total
<i>Age</i>				
Between 18 and 30 years	2	18	58	78
Between 30 and 40 years	5	13	46	64
Between 40 and 50 years	4	11	21	36
Between 50 and 60 years	2	7	5	14
<i>Gender</i>				
Man	4	23	50	77
Woman	9	26	80	115
<i>Income</i>				
Rp. 500 thousand - Rp. 1.5 million	1	6	13	20
Rp.1.5 million - Rp.2.5 million	1	5	9	15
Rp.2.5 million - Rp.3.5 million	2	9	17	28
Rp.3.5 million - Rp.4.5 million	3	8	15	26
Rp.4.5 million and above	6	21	76	103
<i>Marital</i>				
Married	3	15	46	64
Single	10	34	84	128

This table presents information on financial literacy levels with specifications for demographic variables from 192 respondents (age, gender, income, and marital status). The level of financial literacy has three levels. Level 1: Less than three correct questions. Level 2: Between 3-5 right questions, Level 3: = More than five correct questions.

The statistical description of the research variables contains information on the characteristics of respondents according to the specifications of the research model proposed to test the hypothesis of the influence of financial literacy levels on the level of risk tolerance (table 5).

Table 5: Description of Research Variables Overall Respondents

	TOLRISK	FINLIT	AGE	GENDER	INCOME	MARITAL
Mean	28.22	6.54	33.73	0.60	6,102,004.00	0.66
Median	28.00	7.00	32.00	1.00	5,000,000.00	1.00
Maximum	41.00	10.00	57.00	1.00	20,000,000.00	1.00
Minimum	14.00	0.00	20.00	0.00	700,000.00	0.00
Std. Dev.	5.11	2.48	8.94	0.49	3,977,641.00	0.47

This table presents statistical description information (Mean, maximum, minimum, and standard deviation) of the research variables from 192 respondents. These variables are: TOLRISK is the level of financial risk tolerance calculated using the respondent's answer score, FINLIT is the level of financial literacy, which will divide into three levels, AGE is the age of the respondents divided into 5 levels of age, GENDER is the sex stated 1 if the respondent is Male and 0 (zero) if female, INCOME is the level of income divided into 5 levels and MARITAL is the marital status stated 1 if the respondent is married and 0 (zero) if single.

Table 5. shows that the average risk tolerance variable (TOLRISK) is 28.22, which means that, on average, the respondents have moderate risk tolerance levels. The average value of financial literacy (FINLIT) is 6.54, which means that the average level of financial literacy is right because it can answer more than five questions correctly. The average age (AGE) is 33.73 years — the average income level (INCOME) of Rp.6.1 million.

Table 6: Description of Research Variables Classified Using Demographic Variables

VARIABLE	AGE					
	AGE <=40 YEARS OLD			AGE >40 YEARS OLD		
	Mean	Maximum	Minimum	Mean	Maximum	Minimum
TOLRISK1	28.94	41	14	26.18	35	16
FINLIT1	6.77	10	0	5.78	10	0
INCOME1	5320423	20000000	700000	8499656	20000000	2000000
MARITAL	0.55	1	0	1	1	1
NObs	142			50		

VARIABLE	GENDER					
	MAN			WOMAN		
	Mean	Maximum	Minimum	Mean	Maximum	Minimum
TOLRISK1	28.82	40	14	27.32	41	16
FINLIT1	6.70	10	0	6.31	10	0
AGE1	35.48	57	21	31.14	55	20
INCOME1	6769586	20000000	700000	5113636	15000000	700000
MARITAL	0.70	1	0	0.61	1	0
NObs	114			77		

VARIABLE	INCOME	
	INCOME Rp<4.5 MILLION	INCOME >= Rp4.5 MILLION

	Mean	Maximum	Minimum	Mean	Maximum	Minimum
TOLRISK1	28.37	41	14	28.08	41	16
FINLIT1	6.13	10	0	6.90	10	0
AGE1	30.16	53	20	36.84	57	22
MARITAL	0.50	1	0	0.80	1	0
NObs	89			102		

VARIABLE	MARITAL					
	MARRIED			SINGLE		
	Mean	Maximum	Minimum	Mean	Maximum	Minimum
TOLRISK1	27.74	41	14	29.17	41	16
FINLIT1	6.52	10	0	6.59	10	0
AGE1	37.58	57	22	26.09	35	20
INCOME1	7193959	20000000	1500000	3935156	10000000	700000
NObs	127			64		

The total sample size is 191 respondents. Descriptive statistics of respondents classified by demographics (AGE, GENDER, INCOME, and MARITAL) Subsample AGE / AGE using age criteria <= 40 years and AGE> 40 years. Subsample GENDER uses both Male and Female criteria. Subsample INCOME uses INCOME criteria <Rp.4.5 million and INCOME> = Rp.4.5Million. Subsample MARITAL uses Married and Unmarried criteria.

Table 6 shows that the average value of the subsample variable classified according to USIA shows respondents who are less than 40 years old have a risk tolerance level, financial literacy rates are slightly higher than the subsample of respondents who are over 40 years old. The average value of the subsample variable classifies according to GENDER. It shows that the subsample of MEN has a risk tolerance level, financial literacy rate, the income level of MEN that is slightly higher than the subsample of WOMEN. The average subsample variable value classified according to INCOME. It shows that the high subsample INCOME has a level of financial literacy and a slightly higher age than the subsample INCOME is low.

Baseline Regressions

This study focuses on testing the effect of financial literacy level on risk tolerance level to find out whether the level of financial literacy can be a significant clue in measuring the level of public participation in the capital market. Table 8 presents a summary of the test results (table 7).

Table 7: Testing Results of the Effect of Financial Literacy Levels on Risk Tolerance Levels
Dependent Variable: TOLRISK

Independent Variables	Coef.	1	
		t-Stat	
C	31.592	16.678	****
FINLIT	-0.116	-0.797	
AGE	-0.195	-3.683	***
GENDER	2.209	2.969	***
INCOME	0.682	2.493	**
MARITAL	-0.057	-0.059	

Observations	191
---------------------	------------

Sign *** = significant at level 1%, ** = significant at level 5% and * = significant at level 10%.

The test results show that the level of financial literacy does not affect the level of risk tolerance. The regression estimation results show the regression coefficient of financial literacy variables, FINLIT ($\beta_1 = -0.116$) marked negative and not significant. In contrast, demographic factors, namely AGES, GENDER, INCOME, have a significant influence on the level of risk tolerance. GENDER Men have a more positive influence on risk tolerance levels. The regression estimation results show the GENDER variable regression coefficient ($\beta_2 = 2.209$) marked positive and significant at level 1%. The role of INCOME in the risk tolerance level is also the same. The higher the INCOME, the higher the tolerance level to risk. Regression estimation results show a regression coefficient of INCOME variable ($\beta_2 = 0.682$), which is positive and significant at level 5%.

Conversely, the AGES has a negative influence on the level of risk tolerance. That is, the more a person's age increases, the lower the tolerance for risk, or in other words, the tolerance for the risk is also higher for young people. Regression estimation results show regression coefficients of age variable, AGE ($\beta_2 = -0.195$), which is negative and significant at level 1%. MARITAL status is not proven to affect risk tolerance levels. The regression estimation results show the regression coefficient of the marriage status variable, MARITAL ($\beta_2 = -0.057$), which is negative and not significant. This study also focuses on testing the role of demography in influencing the level of financial literacy on risk tolerance levels to find out whether demographic factors play a role in influencing literacy levels towards risk tolerance levels. The aim is to clarify the effect of the level of financial literacy on the level of risk tolerance that has tested before, but the effect is not significant.

Table 8: Results of the hypothesis testing of the role of AGE / AGE in influencing the level of financial literacy on the level of risk tolerance

Dependent Variable: TOLRISK

Independent Variables	1		2	
	Coef.	t-Stat	Coef.	t-Stat
C	31.592	16.678****	34.632	9.082****
FINLIT	-0.116	-0.797	-0.616	-1.093
AGE	-0.195	-3.683***	-0.279	-2.632***
GENDER	2.209	2.969***	2.157	2.890***
INCOME	0.682	2.493**	0.710	2.577**
MARITAL	-0.057	-0.059	-0.114	-0.119
FINLIT1*AGE			0.0139	0.919
Observations	191		191	

Sign *** = significant at level 1%, ** = significant at level 5% and * = significant at level 10%.

Estimation of the role of USIA in influencing the level of financial literacy on risk tolerance levels using the MRA approach shows that the FINLIT * AGE interaction coefficient is positive ($\beta_3 = +0,013$) and not significant.

Table 9: Test Results of GENDER's Role in Influencing the Level of Financial Literacy on Risk Tolerance Levels

Dependent Variable: TOLRISK

Independent Variable	1			2		
	Coef.	t-Stat		Coef.	t-Stat	
C	31.592	16.678	***	32.011	13.997	***
FINLIT	-0.116	-0.797		-0.177	-0.746	
AGE	-0.195	-3.683	***	-0.196	-3.687	***
GENDER	2.209	2.969	***	1.585	0.777	
INCOME	0.682	2.493	**	0.682	2.487	**
MARITAL	-0.057	-0.059		-0.058	-0.061	
FINLIT*GENDER				0.097	0.329	

Observations	191	191
---------------------	-----	-----

Sign *** = significant at the level 1%, **= significant at the level 5% and *= significant at the level 10%.

The estimated GENDER role in influencing the level of financial literacy on risk tolerance levels using the MRA approach shows that the FINLIT * GENDER interaction coefficient is positive ($\beta_3 = + 0.097$) and not significant.

Table 10: Testing Results of INCOME Roles in Affecting the Level of Financial Literacy on Risk Tolerance Levels

Dependent Variable: TOLRISK

Independent Variable	1			2		
	Coef.	t-Stat		Coef.	t-Stat	
C	31.592	16.678	***	32.857	10.479	***
FINLIT	-0.116	-0.797		-0.323	-0.744	
AGE	-0.195	-3.683	***	-0.189	-3.497	***
GENDER	2.209	2.969	***	2.184	2.923	***
INCOME	0.682	2.493	**	0.317	0.410	**
MARITAL	-0.057	-0.059		-0.097	-0.101	
FINLIT*INCOME				0.053	0.507	
Observations	191			191		

Sign *** = significant at the level 1%, **= significant at the level 5% and *= significant at the level 10%.

The estimation of INCOME's role in influencing the level of financial literacy on the level of risk tolerance using the MRA approach shows that the FINLIT * INCOME interaction coefficient is positive ($\beta_3 = +0.053$) and not significant. Conversely, by including the INCOME moderating variable, it reduces the main variable effect of INCOME on the level of risk tolerance.

Table 11: Testing Results of Marital Roles in Influencing the Level of Financial Literacy on Risk Tolerance Levels

Dependent Variable: TOLRISK

Independent Variable	1			2		
	Coef.	t-Stat		Coef.	t-Stat	
C	31.592	16.678	***	30.825	12.936	***
FINLIT	-0.116	-0.797		0.009	0.034	
AGE	-0.195	-3.683	***	-0.197	-3.708	***
GENDER	2.209	2.969	***	2.229	2.986	***
INCOME	0.682	2.493	**	0.680	2.480	**
MARITAL	-0.057	-0.059		1.100	0.463	
FINLIT*MARITAL				-0.172	-0.532	
Observations	191			191		

Sign *** = significant at the level 1%, **= significant at the level 5% and *= significant at the level 10%.

The estimation of a MARITAL role in influencing the level of financial literacy on the level of risk tolerance using the MRA approach shows that the FINLIT * MARITAL interaction coefficient is negative ($\beta_3 = -0.172$) and not significant.

Thus, based on the results of the testing, none of the DEMOGRAPHY factors has a contingency role that can influence the strength of the influence of the financial literacy level on the level of risk tolerance. The effect showed

by the interaction coefficient between FINLIT or the level of financial literacy with each DEMOGRAPHIC factor, none of which is significant.

Further Investigation

The findings in this research on the benefits of financial literacy programs have not consistently affected the risk tolerance level, as stated by (Crysel, L., Crosier, B. and Webster, G. 2012). This study has combined the level of financial literacy and the role of demographic factors to explain the investment decision-making process, referring to (Pak, O., & Mahmood, M. 2015) which states that the investment decision making process includes a complex combination of various factors, including demographic factors (e.g., age, gender, income, and education level). As a result, individually demographic factors that include age, gender, income affect the level of tolerance to risk. Age factors consistently explain their influence on individual risk-taking according to the results of the study by (Kourtidis, D., Šević, Ž., & Chatzoglou, P. 2011), who found that the risk tolerance level increased with increasing age, whereas a study conducted by (Selcuk, E., Zayas, V., & Hazan, C. 2010) revealed that risk tolerance levels increase as age increases. The results of the study support the findings of (Selcuk, E., Zayas, V., & Hazan, C. (2010) and (Anbar, A., & Eker, M. 2010) who linked gender factors to the level of tolerance to risk indicated that consistently male sex had a higher tolerance for risk than women. Another demographic factor is marital status. The results of the study are not in line with previous studies that married individuals have lower levels of loss aversion than single individuals (Selcuk, E., Zayas, V., & Hazan, C. 2010) and (Cossiga, G. A. 2018).

CONCLUSION

The first finding shows that individual literacy levels do not affect risk tolerance levels. These empirical findings indicate that other factors determine the level of individual risk tolerance, in addition to the level of financial literacy given that investment decision making is a complex decision determined by a combination of several factors. Demographic factors are one of the factors that determine investment decision making. The second finding supports this because age has a significant influence on the level of tolerance to risk. Besides that, income and gender (Men) also have a significant influence on the level of tolerance to risk. The third finding failed to prove the role of demographic factors in clarifying the benefits of financial literacy on risk tolerance levels.

The theoretical implications of this research are that this research supports demographic factors as a determinant of the level of tolerance to risk, and this research strengthens previous empirical findings that financial literacy has not consistently affected the level of tolerance to risk. Investor behavior factors play an important role in investment decisions. The practical implications of this research can give to investment companies or the Financial Services Authority, especially capital markets, in mapping the profile of potential investors to focus on demographic characteristics, such as age, gender, and income level.

The findings of the study are limited to using assumptions based on rational and logical decision-making processes and ignoring very complex factors, such as cognitive abilities and external environmental factors.

The researcher gives some suggestions for academics who will develop this research in the future to overcome the weaknesses of this research, by incorporating behavioral and psychological factors as factors that influence individuals in making investment decisions in the next study.

References

Crysel, L., Crosier, B. and Webster, G. (2012), "The dark triad and risk behavior," *Personality and Individual Differences*, 1, pp. 35-40. <https://doi.org/10.1016/j.paid.2012.07.029>

Anbar, A., & Eker, M. (2010). An empirical investigation for determining the relationship between personal financial risk tolerance characteristic. *Ege Academic Review*, 10(2), 503-523.

Grable, J. E. (2000). Financial risk tolerance and additional factors that affect risk-taking in everyday money matters. *Journal of Psychology*, 14(4), 625-630. <https://doi.org/10.1023/A:1022994314982>

- Pak, O., & Mahmood, M. (2015). Impact of personality on risk tolerance and investment decisions: A study on potential investors. *International Journal of Commerce and Management*, 25(4), 370-384.
- Imran, M., Binti Aziz, A., Binti Abdul Hamid, S. N., Shabbir, M. S., Salman, R., & Jian, Z. (2018). The mediating role of total cognitive complexity between entrepreneurial orientation and SMEs export performance. *Management Science Letters*, 8(6), 519–532. <https://doi.org/10.5267/j.msl.2018.06.010>
- Jabarullah, N. H., Shabbir, M. S., Abbas, M., Siddiqi, A. F., & Berti, S. (2019). Using random inquiry optimization method for predicting cooling demand in hub systems for smart buildings. *Sustainable Cities and Society*, 47(July 2018), 101475. <https://doi.org/10.1016/j.scs.2019.101475>
- Shabbir, M. S., Shariff, M. N. M., Alshaibani, Y. H., Faisal, M., & Salman, R. (2018). Entrepreneurship and skills development growth; Present landscape and future agenda for Pakistan. *Academy of Entrepreneurship Journal*, 24(3), 1–12.
- Shabbir, M. S., Shariff, M. N. M., & Shahzad, A. (2016). A Conceptual Development of Entrepreneurial Skills and Entrepreneurial Intentions of IT employees in Pakistan. *International Journal of Academic Research in Business and Social Sciences*, 6(3). <https://doi.org/10.5267/j.ijarbs.2016.03.010>
- Shabbir, M. S., Shariff, M. N. M., & Shahzad, A. (2017). *Mediating Role of Trust*. 56(6), 915–929. <https://doi.org/10.1002/hrm.2017.56.6.915>
- Kourtidis, D., Šević, Ž., & Chatzoglou, P. (2011). Investors' trading activity: A behavioral perspective and empirical results. *The Journal of Economic Surveys*, 40(5), 548-557. <https://doi.org/10.1016/j.jes.2011.04.008>
- Weller, J. A., & Thulin, E. W. (2012). Do honest people take fewer risks? Personality correlates of risk-taking to achieve gains in a HEXACO space. *Personality and Individual Differences*, 53(7), 923-926. <https://doi.org/10.1016/j.paid.2012.06.010>
- Simon, H. A. (1987). Making management decisions: The role of intuition and emotion. *The Academy of Management Executive*, 1(1), 57-64. <https://doi.org/10.5465/ame.1987.4275905>
- Kannadhasan, M. (2015). Retail investors' financial risk tolerance and their risk-taking behavior: The role of demographics as classifying factors. *IIMB Management Review*, 27(3), 175–184. <https://doi.org/10.1016/j.iimb.2015.06.004>
- Bannier, C. E., & Neubert, M. (2016). Gender differences in financial risk-taking: The role of financial literacy and risk tolerance. *Journal of Economic Surveys*, 30(1), 145, 130–135. <https://doi.org/10.1016/j.jes.2016.05.033>
- Fisher, P. J., & Yao, R. (2017). Gender differences in financial risk tolerance. *Journal of Economic Psychology*, 63, 1–12. <https://doi.org/10.1016/j.joep.2017.03.006>
- Brooks, C., Sangiorgi, I., Hillenbrand, C., & Money, K. (2018). Why are older investors less willing to take financial risks? *International Journal of Financial Analysis*, 56, 52–72. <https://doi.org/10.1016/j.irfa.2017.12.008>
- Selcuk, E., Zayas, V., & Hazan, C. (2010). Beyond satisfaction: The role of attachment in marital functioning. *Journal of Family Psychology*, 24(4), 258-279. <https://doi.org/10.1037/a0019111>
- Goral, R., & Akgoz, E. (2017). Tourism Price Competition Index for National Destinations. *Journal of Tourism Management Research*, 3(1), 17-29. <https://doi.org/10.18488/journal.31.2017.41.17.29>
- Ramli, A., Shabbir, M. S., Bakar, M. S. Bin, Shariff, M. N. M., Yusof, M. S., & Ahmad, I. (2018). Mediating role of E-learning readiness on entrepreneurial inclinations amongst undergraduate students at Universiti Utara Malaysia. *International Journal of Engineering and Technology*, 7(4), 51–56. <https://doi.org/10.14419/ijet.v7i4.7.20381>
- Esiagu, L. N., Okoroji, L. I., & Anyanwu, J. O. (2016). Assessment of the Role of Private Enterprises/Small Businesses on Economic Growth of Some Selected SME'S in Imo State, Nigeria. *International Journal of Economics, Business and Management Studies*, 4(3), 127-135. <https://doi.org/10.20448/802.3.3.127.135>
- Faisal, M., Shabbir, M. S., Javed, S., & Shabbir, M. F. (2016). Measuring Service Quality and customer satisfaction in Pakistan: A Modified SERVQUAL Model. *International Business Management*, Vol. 10, pp. 5011–5016.

Shabbir, M. S., Asad, M., Faisal, M., & Salman, R. (2019). The relationship between product nature and supply chain strategy: An *International Journal of Supply Chain Management*, 8(2), 654–658.

Shabbir, M. S., Shariff, M. N. M., Bin Yusof, M. S., Salman, R., & Hafeez, S. (2018). Corporate social responsibility and customer banks of Pakistan: A mediating role of brand image. *Academy of Accounting and Financial Studies Journal*, 22(Specialissue), 2011-

Ul-Hameed, W., Shabbir, M. S., Imran, M., Raza, A., & Salman, R. (2019). Remedies of low performance among Pakistani E-logi: role of firm's IT capability and information communication technology (ICT). *Uncertain Supply Chain Management* <https://doi.org/10.5267/j.uscm.2018.6.002>

Roosj, M., Lusardi, A., & Alessie, R. (2011). Financial literacy and stock market participation. *Journal of Financial Economics* <https://doi.org/10.1016/j.jfineco.2011.03.006>

Weber, E. U., Blais, A. R., & Betz, N. E. (2002). A domain-specific risk-attitude scale: Measuring risk perceptions and risk behavioral decision making, 15(4), 263-290. <https://doi.org/10.1002/bdm.414>

Faisal, M., Shabbir, M. S., Javed, S., & Shabbir, M. F. (2016). Measuring Service Quality and customer satisfaction in Pakistan: Carter Model. *International Business Management*, Vol. 10, pp. 5011–5016.

Hussain, S., Fangwei, Z., Siddiqi, A. F., Ali, Z., & Shabbir, M. S. (2018). Structural Equation Model for evaluating factors affecting infrastructure projects. *Sustainability (Switzerland)*, 10(5), 1–25. <https://doi.org/10.3390/su10051415>

Fengyang, W. U. (2018). An Analysis of China's Poverty Research Based on CiteSpace. *Journal of Social Economics Research* <https://doi.org/10.18488/journal.35.2018.52.75.84>

Chang, P. (2017). The Importance Performance Analysis of Taiwan tourism mobile marketing. *Journal of Tourism Management Research* <https://doi.org/10.18488/journal.31.2017.41.12.16>

Hallahan, T., Faff, R., & McKenzie, M. (2003). An exploratory investigation of the relationship between risk tolerance score characteristics. *Journal of Multinational Financial Management*, 13(4), 483-502. [https://doi.org/10.1016/S1042-444X\(03\)00022-7](https://doi.org/10.1016/S1042-444X(03)00022-7)

Willis, L. E. (2008). Against financial literacy education. *Iowa Law Review*, 94, 08- 10.

Cole, S. A., Sampson, T. A., & Zia, B. H. (2009). Financial literacy, financial decisions, and the demand for financial services in India and Indonesia (pp. 09-117). Cambridge, MA: Harvard Business School.

CHE, G. N., & Sundjo, F. (2018). Determinants of Female Labour Force Participation in Cameroon. *International Journal of Applied Management and Accounting*, 3(2), 88-103. <https://doi.org/10.33094/8.2017.2018.32.88.103>

Edeme, R. K. (2017). Analysis of the responsiveness of non-oil exports to fiscal and monetary policy actions.

Maxfield, S., Shapiro, M., Gupta, V., & Hass, S. (2010). Gender and risk: women, risk-taking, and risk aversion. *Gender in International Journal*, 25(7), 586-604. <https://doi.org/10.1108/17542411011081383>

Dong, T., & Qiu, L. (2018). Research on Self-Mentions and Author Identity in Academic English Writing. *International Journal of Language and Literature Studies*, 7(4), 115-121. <https://doi.org/10.18488/journal.23.2018.74.115.121>

Cossiga, G. A. (2018). Signals from the World of Economics. The Price Constant and the Democratic Issue. *International Journal of Administrative Sciences*, 3(1), 1-21.

Register for an ORCID ID:

<https://orcid.org/register>

This work is licensed under the Creative Commons Attribution International License (CC BY).

<http://creativecommons.org/licenses/by/4.0/>

