

# INDIVIDUAL CHARACTERISTICS, FINANCIAL LITERACY AND ABILITY IN DETECTING INVESTMENT SCAMS

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## ABSTRACT

*This study aims to explore important indicators applicable for the early detection of investment scams and to investigate the effect of age, education and financial literacy on the ability to detect investment scams. Data were collected using a questionnaire survey with respondents in Semarang, Indonesia. A total of 311 respondents completed the questionnaires, for a 62.2% response rate, but only 304 questionnaires were usable. Confirmatory factor analysis was used to verify the indicators of investment scams, and a regression model was then employed to analyze the data. The findings show five main indicators applicable for early detection of investment scams: a) investments with unreasonably-high returns, b) investment involving salespeople that tend to force potential investors to make an immediate decision about the investment, c) investments without reasonable underlying cores of business, in accordance with principles of fairness and prudence in financial investment sectors, d) investments with no clear explanation on how the investment funds are managed, and e) investments without any information on the structure of management, ownership, and business, and the address of the companies. Finally, the finding shows that the level of individual financial literacy positively affects the ability to detect investment scams. However, age and education do not affect the ability to detect investment scams.*

*Keywords: investment scams, financial literacy, age, education*

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## INTRODUCTION

Investment is a financial activity where funds are invested in a certain project with the hope of generating a positive return, maintaining or increasing its value (Gitman and Joehnk, 2011). Investment can provide a proportional benefit to investors if the activity is accompanied by literacy and inclusion of investors in the financial sector as well as the presence of prudence in measuring and taking risks. Unfortunately, the level of community literacy is still low.

Based on the National Literacy and Financial Inclusion Survey (SNLIK) conducted by the Financial Services Authority (OJK) in 2016 it is known that Indonesia's financial literacy index is 29.66%, and the financial inclusion index is 67.82% (OJK, 2017). This figure is higher than the result of the SNLIK 2013, by which financial literacy index is 21.84% and financial inclusion index is 59.74%. Consequently, public literacy improved from 21.84% to 29.66%, and increased access to financial services and products (financial inclusion) from 59.74% to 67.82%. However, more specifically, the literacy rate for investment / capital market products is only 3.79% (2013) and 4.40% (2016). In addition, the understanding of community on risk is 36.25%. This figure is much lower

than the public understanding on the features of financial products and services by 84.16%. Moreover, other understanding is concerned with benefit (86,57%), acquisition method (40,58%), rights (40,75%), obligation (36,38%), cost (37,81%), and penalty (66,04%).

The above description shows that although financial literacy and inclusion are generally increasing, Indonesian literacy on investment products and risks is still low. OJK data shows that the number of victims of investment scams continues to increase, as reflected by the increase in the number of complaints of cases of investment scams. From early 2013 to 2014, OJK has received 2,772 public complaints regarding investment scam cases and financial industry disputes (OJK, 2017b).

Investment scams are fraudulent activities done by tricking investors into devoting their money in special promising projects (corporations, investment funds, real estate projects, or insurance policies), which, in reality does not exist (Reurink, 2016). Thus, investment fraud is conducted by misleading investors (victims) by using false information for the purpose of monetary gain (Beals, DeLiema and Deevy, 2015). In other words, investment scams occur when an investor (victim) is offered a very profitable

investment project, but the investment is based on false information so that the investor is deceived and suffers from a financial loss. Investment fraud tends to increase due to the high-profit offer without any explanation of investment risk.

A low understanding of investment risk also indicates that the orientation of Indonesian society is still limited to profitable returns, regardless of their risk. One example of investment scams with the lure of high returns and attracted funds from the community is the case of Cooperative Cipaganti Karya Guna Persada (KCPKG). In this case, customers' funds amounting of a Rp 3.2 trillions suffer from a default due to problems with mining operations (PT Cipaganti Inti Resources), where KCPKG plays its funds. In addition to these cases, there are other cases that also provide high yields, such as KSP Pandawa case, PRIMAZ, Asian Gold Concept, Golden Ocean Mulia, Swiss Forex International, and others.

The problem of investment scams can actually be avoided if people understand well the indicators of investment scams. Unfortunately, until now, there has been no research that tries to build an early detection model of investment scams. The previous studies on of investment frauds have been

focused more on fraudulent financial reports and employee cheating (Goel and Gangolly, 2012; Kanapickienė and Grundienė, 2015; Tan, Chapple and Walsh, 2015), and methods to prevent corruption (Dyck, Morse and Zingales, 2010; Mohamed and Handley-Schachelor, 2014; Othman et al., 2015).

So far it is not easy to find research related to investment scams. Unfortunately, the study of investment fraud is more attributed to the nature of investment frauds, such as the Ponzi (Wilkins, Acuff and Hermanson, 2012), the relationship between risk aversion and investment frauds in the form of Ponzi scheme (Tennant, 2011a). Other research suggests that Investors are more careful in accepting investment offers by reviewing all information related to the offer (Melissa S. Baucus and Mitteness, 2016). Other studies tends to be dominated by the use of statistical anomalies (Bolton and Hand, 2002; Drew and Drew, 2010); bias ratio and sharpe ratio (Sikka and Willmott, 1995; Clauss, Roncalli and Weisang, 2015; King and van Vuuren, 2016) as a method of detecting investment frauds. Nevertheless, the use of statistical anomalies and sharpe ratios is difficult for ordinary people and is considered insufficient to detect investment scams.

Such studies tend to ignore aspects of behavior related to investment scams (Drew and Drew, 2010). Behavioral aspects are important to note because behavioral abnormalities are related to unusual behavior patterns (such as sudden changes in person's lifestyle and life beyond their normal ability) can influence decisions to commit investment scams (Drew and Drew, 2010). Therefore, psychological aspects are seen as important in understanding investment scams (Lewis, 2012), especially those related to individual characteristics such as age, education and financial literacy levels.

Other studies on investment scams are associated with symptoms to identify investment scams (especially ponzi scheme). The Ponzi scheme is an investment fraud where payment of returns given to incoming investors is derived from the contributions of newly joined investors (Kaminski, Wetzel and Guan, 2004). Investment fraud with this scheme will collapse when it does not succeed in attracting new investors (OJK, 2017b). Most of the studies that generated investment fraud indicators with the Ponzi scheme have been focused on one particular case by not considering differences in the conditions of other cases, such as the case of Ezubao (Albrecht et al., 2017), Bernard Madoff case (Gregoriou, 2009), and in

Indonesia, Erni Fashion case (Soegiono, Haryani and Pranoto, 2011) and investment frauds of BPR Banks (Chariri and Meiranto, 2017).

The findings of previous studies and the phenomenon of investment frauds in Indonesia indicated that investment fraud is one of the most widespread and disturbing issues in society. Various facts show that the number of victims of investment fraud continues to increase, reflected in the increasing number of complaints of investment fraud cases and financial industry dispute received by OJK. Unfortunately, it is not easy to find any studies concerning an early detection model of investment scams from a societal perspective and the characteristics of individuals who are perceived as victims of investment frauds. Therefore, this research is conducted to answer two questions as follows: a) what factors are believed by respondents as indicators of investment scams? b) What factors may affect the ability of respondents to detect investment scams?

This research can be said to be the first attempt to build an early detection model of investment scams. In addition, this study is intended to investigate the individual characteristics that may affect the ability to detect investment scams, such as age,

education level, and financial literacy. This research is expected to provide us with an early detection model of investment scams, which can be used by the community as a reference in choosing safe investment and can be used by government as a consideration in making regulation related to investment.

### **HYPOTHESIS DEVELOPMENT**

Studies on investment scams cannot be separated from Theory of Planned Behavior (Ajzen, 1991) and Attribution Theory (Heider, 1958). The theory of planned behavior explains the underlying reasons for individual behavior. In relation to investment scams, this theory provides an explanation of the factors that drive investors to get involved in investment scams as victims. The main factor of individual behavior is the individual's intentions towards a particular behavior. The intention to behave is influenced by three components namely (Ajzen, 1991):

1. Attitude to behavior, referring to the degree of positive or negative assessment of the individual against a particular behavior. With regard to investment scams, the emergence of a positive investor assessment on investments (which apparently is "scams") can arise as a result of the success of the fraudsters in

using some tactics, such as credibility, wealth, social agreement, reciprocal, and scarcity tactics (FINRA, 2013).

2. Subjective norms, which refers to a person's perception of social pressure to perform or not to do certain behaviors. Many fraud perpetrators approach the potential victims through the closest people, such as friends, relatives or family (SEC, no date). This approach utilizes mutual trust among group members (FMA, no date). This creates pressures for potential investors to invest because of a sense of reluctance.
3. Perceived behavior control refers to the perception of ease or difficulty to perform certain behaviors. Investment scams often lead to a lot of victims because fraudsters offer easy ways in making those investments. Examples of such cases can be seen from the work at home scheme (FTC, no date). In this case, investors are asked to give money (invest) for the purposes of purchasing company supplies. However, once the investor gives the money, the perpetrator of the frauds will disappear without giving a yield to the investor.

The second theory is the attribution theory developed by (Heider, 1958). This theory explains that the effect of previous

success or failure on future expectations depends on the individual's internal or external attribution. Internal attribution includes ability, effort, nature, character, attitude, and so on. While external attribution can be a pressure situation that affects individual behavior, such as luck, culture, and social values. Attribution theory is relevant to this study because the level of individual ability in early detection of investment scams is strongly influenced by internal attributes such as education, employment, age (Shadel and Pak, 2017), and financial literacy (Clauss et al. 2009). Therefore, internal attribution (such as education, age, and financial literacy) which is previously able to attract successful individuals in investments will encourage such individuals to re-invest in similar investment areas in the future even if the investment ultimately fails to pay.

### **Education and Ability to detect Investment Scams**

Borrowing the arguments of attribution theory, the experience of past success is the reason that encourages one to do the same in the future. An educated person tends to believe that past successes are a foothold for action in the future regardless of the risk of failure. Individuals who are more educated tend to be fooled by investment fraud

because previously the individual has been successful in doing similar investments. This condition is used by fraudsters as a strategy in running investment scams. Several studies have confirmed the influence of investor education on early detection of investment scams. For example, (Wilkins, Acuff and Hermanson, 2012) found that most victims of investment scams were educated.

Other survey results show that 62.1% of victims of investment scams have been educated in college for more than 4 years (Shadel and Pak, 2017). In addition, the FCA study in 2014 also showed that the segment of highly educated investors has 2.5 times greater vulnerability to victims of investment scams (Graham, no date). Negative relationships between education and early detection of investment scams can occur because investors with higher education perceive themselves to have better investment knowledge than investors with low education (Graham, no date). In other words, more educated investors than other investors have optimism bias, ie the tendency of individuals to feel confident that they have a lower probability than others to be victims of adverse events (Fletcher and Pessanha, no date). Thus, more educated investors will make good investment

decisions if not affected by bias (Iqbal, 2015).

H1: The higher the investor education the lower the investor's ability to detect investment scams

### **Age and Ability to detect Investment Scams**

Another factor that is believed to affect individual ability to detect investment scams is the investor age. The relationship has been confirmed in the study by (Wilkins et al. 2012), which suggests that investors belonging to older age groups have higher levels of vulnerability to deceived investment scams than younger age investors. The study is supported by the AARP survey that shows the number of victims of investment scams dominated by investors over the age of 50 years. In addition, research conducted by (Ganzini et al. 1990) on 77 victims of investment scams in Oregon shows that 88% of victims of investment scams are investors with ages 45 to 65. The findings are in accordance with the survey conducted by the Fed that is the tendency of young investors to choose investment with low risk (Sablik, 2014). Hence, the second hypothesis can be formulated as follows.

H2: The older the investor age the lower the ability to detect investment scams

### **Financial Literacy and Ability to detect Investment Scams**

Mason and Wilson (2000) define financial literacy as the ability of individuals to acquire, understand, and evaluate the relevant information necessary to make decisions with awareness of the possible financial consequences. Financial literacy is an important element of investment activity, so one can avoid investment scams. (Lokanan, 2014) found that investors who are most vulnerable to investment scams are investors with limited investment knowledge. According to (Titus et al. 1995) fraudulent attempts against investors who have heard of fraudulent investments in the past have little chance of success. This argumen is in accordance with the findings by (Shiller, 1984) regarding investment decision making for unprofessional investors. When investing, this type of investor does not have objective evidence of the legality of the investment; and unprofessional investors more easily believe in the advice of others who lure high returns (Shiller, 1984). Thus, we propose the following hypothesis:

H3: The better the financial literacy of investors the higher their ability to detect investment scams

## RESEARCH METHOD

There are two main objectives of this research: developing an early detection model of investment scams and testing the factors affecting the early detection ability of investment scams. Therefore, the main methodology of this research is to identify indicators of early detection of investment scams and develop a multivariate regression model to test the proposed hypothesis. There are two variables used in this study: independent variables consisting of education, age, financial literacy and dependent variable that is early detection of investment scams. Data were obtained through questionnaires. The questionnaire consists of three parts: the respondent's demography, the financial literacy (10 indicators), and investment scams (15 indicators)

The population consist of 300 respondents consisting students of faculty of economics and business and students from other faculties in Semarang. Students are used as respondents because some previous studies show that students can describe the actual conditions so as can be used as a proxy for investors (Hirst, Koonce and Simko, 1995; Maines and Mcdaniel, 2000; Elliott *et al.*, 2004; Ugrin and Odom, 2010). Sampling was conducted using

disproportionate stratified random sampling. Data were then analysed using descriptive analysis and inferential analysis. To test the early detection indicators of investment scams, the data were analyzed with Confirmatory Factor Analysis. Multivariate regression models were used to examine the effects of education, age, and financial literacy on the ability to detect investment scams.

$$INV = \alpha + b_1AGE + b_2EDU + b_3FIN + e$$

Notes

$\alpha$  : constanta

INV : Ability to detect Investment Scams

AGE : Investor age

EDU : Investor education

FIN : Financial Literacy of investor

e : errors

## RESEARCH FINDINGS AND DISCUSSION

This study is intended to identify indicators that can be used as an early detection model of investment scams. Second, this study is intended to examine the effect of individual characteristics and financial literacy on the ability to detect investment scams. Based on the sample we used, the description of research data can be seen in Table 1.



Table 1  
Descriptive Statistics

Variable	Obs		Undergraduate	Master	Doctoral
EDU	304		231 (76%)	62 (20%)	11(4%)
	Obs	Min	Mean	Max	SD
AGE	304	19	22.19	47	3.92
FIN	304	0.10	0.75	1.00	0.19
INV	304	8	13.31	15	1.88

Table 1 shows that the majority of respondents consist of undergraduate students (76%), and the remaining are master and doctoral students (20% and 4% respectively). From the age perspective, the average respondents are 22-year old with a maximum of 47-years old. Financial literacy data show that respondents have an average financial literacy of 72%. Previous study indicates that (Mandell, 2004):

- a. A score of 70% or more is viewed as a high level of financial literacy
- b. Scores between 50% and 70% are seen as the average level of financial literacy

c. A 50% or less is seen as a low level of financial literacy

If associated with the opinion, then the average respondents in this study has a high level of financial literacy. Meanwhile, from the description of the data it can be seen that the capability to detect investment scams has an average of 13.31 (from a maximum of 15). Given that the median of this variable is 7.5, then the finding indicates that the ability in detecting investment scams is high. To ensure further on the indicators that can be used in detecting investment scams, we need to examine the indicators using confirmatory factor analysis as shown in Table 2.

Table 2  
Confirmatory Factor Analysis

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.609
Bartlett's Test of Sphericity (Approx. Chi-Square)	624.367
df	105
Sig.	0.000
<b>Components</b>	<b>Mean Rank</b>
<i>Return on Investment:</i>	
1. Investments with unreasonably-high returns	2.16*
2. Investment offering inconsistent return	1.92
3. Investment offering tax-free return	1.92
<i>Investment Offering Styles:</i>	
1. Investment offered individually with unreasonable promises	2.48
2. Investment focusing on recruitment of new members	2.49
3. Investment by which its member recruitment and activities is similar to multi level marketing	2.47
4. Investment involving salespeople that tend to force potential investors to make an immediate decision about the investment	2.56*
<i>Form of Investment:</i>	
1. Investments without reasonable underlying cores of business, in accordance with principles of fairness and prudence in financial investment sectors	2.78*
2. Investment in goods or commodities but the quality is not consistent with its prices	2.34
3. Investment by which its products are not clearly registered	2.28
4. Investment without any clear documentation	2.60
<i>Investment Management:</i>	
1. Investments with no clear explanation on how the investment funds are managed	2.63*
2. Investments without any information on the structure of management, ownership, and business, and the address of the companies	2.63*
3. Investment providing bonus and the payment of bonus depends on recruitment of new members	2.37
4. Investment offered by complex strategies that is difficult to understand	2.37
Note: *) Friedman test results	

The result of confirmatory factor analysis shows significant results (KMO = 0.609, Chi-squares = 624.367, df = 105 sig. = 0.000), which means that all indicators can be used to detect investment scams. More specifically, the Friedman test of the mean rank can be

used to identify the most dominant indicators of investment scams.

The most dominant factor determining investment scams is investments with unreasonably-high returns (mean rank = 2.16). In terms of investment offering styles, the most

dominant indicator of investment scams is investment involving salespeople that tend to force potential investors to make an immediate decision about the investment (mean rank = 2.56). Furthermore, in terms of investment form, the most dominant indicator that can be used to detect investment scams is investments without reasonable underlying cores of business, in accordance with principles of fairness and prudence in financial investment sectors (mean rank = 2.78). Finally, in terms of investment management, there are two most dominant indicators that can be used to detect investment scams: a) investments with no clear explanation on how the investment funds are managed (mean rank = 2.63), and b) investments without any information on the structure of management, ownership, and business, and the address of the companies (mean rank = 2.63).

The second objective of this research is to investigate the effect of age, education and financial literacy on the ability to detect investment scams. The

result of Pearson correlation test (Table 3) show that age and education have a significant correlation with financial literacy but have no correlation with investment scams. These results are in line with previous findings that gender, employment status, ethnicity, family income, and education are some factors related to financial literacy (Danes and Hira, 1987; Markovich and DeVaney, 1997; Chen and Volpe, 2002; Murphy, 2005; Thaden and Rookey, 2005). Furthermore, Table 3 shows that financial literacy has a positive effect on the ability to detect investment scams. To ensure the effect of age, education and financial literacy on the ability to detect investment scams, we employed multiple regression test. Based on the result of classic assumption test (normality, linearity, multicollinierity and heteroscedasticity), it is found that there is no problem with the regression model used in this research. The results of Regression test can be seen in Table 4.

Table 3  
Pearson Correlation matrix

Variabel	EDU	AGE	LIT	INV
EDU	1.000			
AGE	0.0037 (0.7370)	1.000		
LIT	0.1203* (0.0360)	0.1295* (0.0240)	1.000	
INV	0.0084 (0.8836)	0.0396 (0.4917)	0.1456* (0.0110)	1.000

Table 4  
Regression: Ability to Detect Investment Scams (Dependent)

Variable	Coef.	t	Sign.	Keterangan
AGE	0.011	0.24	0.809	H1 not supported
EDU	-0.107	-0.31	0.760	H2 not supported
FIN	1.54	2.80	0.005*	H3 Supported
Cons	12.05	14.97	0.000	-

\*Significant at 5%. N = 304, F(3.300) = 2.68, Prob > F = 0.0469, Adj R-Squared = 0.016

Table 4 shows that only financial literacy has a positive and significant effect on the ability to detect investment scams (Sig. 0.005) while other variables (age and education) did not affect the ability to detect investment scams. To

ensure the accuracy of the regression model, we applied robustness check (see Table 5). The results of robustness check explain that the regression model is constant, which means that only financial literacy affected the ability to detect investment scams.

Tabel 5  
Robustness Check: Ability to Detect Investment Scams (Dependent)

Variable	Coef.	t	Sign.	Keterangan
AGE	0.011	0.25	0.799	H1 not supported
EDU	-0.107	-0.35	0.727	H2 not supported
FIN	1.54	2.75	0.006*	H3 Supported
Cons	12.05	14.47	0.000	-

The results of statistical test show some interesting findings that need to be discussed further. The indicators of investment scams can be categorised into four groups: Return on investment, investment offering styles, form of investment and investment management.

From the dimension of return on investment, indicators of investment scams consist of a) investments with unreasonably-high returns, b) investment offering inconsistent return, and c) investment offering tax-free returns. The three indicators can be used to early detect investment scams. However, based on Friedman test, it can be seen that from the perspective of return on investment, the most dominant indicator of investment scams is investments with unreasonably-high returns (indicator 1). This finding implies that the victim of investment scams is easily fooled by the fraudsters with unreasonably-high returns of investment and completely ignore the risk. The finding is consistent with the arguments that victims of investment scams have a higher desire to take risks than those who are not victims (Nolasco, Vaughn and del Carmen,

2013; Melissa S Baucus and Mitteness, 2016). In fact, the reason for people being deceived by investment scams is that they have a high tolerance for risk (Tennant, 2011a).

From the dimension of investment offering styles, the findings indicate that the indicators of investment scams comprise of: a) investments offered individually with unreasonable promises, b) investment focusing on recruitment of new members, c) investment by which its member recruitment and activities are similar to multi level marketing, d) investment involving salespeople that tend to force potential investors to make an immediate decision about the investment. Based on the mean rank of the indicator, it can be seen that the most dominant indicator of investment scams is investment involving salespeople that tend to force potential investors to make an immediate decision about the investment. This finding is in line with the views of previous studies (Baker and Faulkner, 2003; Shover, Coffey and Hobbs, 2003; Shover, Coffey and Sanders, 2004; Frankel, 2012; Lewis, 2012), which reveal that investment

scams can be propagated through impersonal methods. The operators of fraudulent investment can use paid salespeople to promote investment scams. They may, for example, recruit a door-to-door telemarketing team to sell certain "investment opportunities" that are actually bulging (see (Baker and Faulkner, 2003; Shover, Coffey and Hobbs, 2003; Shover, Coffey and Sanders, 2004). Fraudsters can also recruit brokers or registered dealers to advertise the investment to their clients (Reurink, 2016). In other cases, fraudsters utilise social networks, which quickly arouse interest in word of mouth deception (Baker and Faulkner, 2003; Nash, Bouchard and Malm, 2013).

In addition, the finding shows that from the dimension of investment form, four indicators can be used to detect investment scams: a) investments without reasonable underlying cores of business, in accordance with principles of fairness and prudence in financial investment sectors, b) investment in goods or commodities but the quality is not consistent with its prices, c) investment by which its products are not clearly registered, d) investment without any clear documentation. The result of

Friedman test indicates that investments without reasonable underlying cores of business, in accordance with principles of fairness and prudence in financial investment sectors is the dominant indicator to detect investment scams. The finding is consistent with one resulted from phenomenology study on investment frauds (Chariri and Meiranto, 2017).

The final dimension of investment scams is investment management. The finding shows that four indicators can be used to detect investment scams: a) investments with no clear explanation on how the investment funds are managed, b) investments without any information on the structure of management, ownership, and business, and the address of the companies, c) investment providing bonus and the payment of bonus depends on recruitment of new members, and d) investment offered by complex strategies that is difficult to understand. However, from the result of Friedman test, it can be seen that the most easily identifiable indicator of investment scams is the first and second indicator (the highest mean rank). This is reasonable because any investment should have clear and understandable

investment management, especially the clarity of the investment project identity. For example, in the case of Equity Crowdfunding, business persons are required to disclose certain information to potential investors, such as business names, names of company directors, business descriptions in which companies are involved, and their business plans (Morsy, 2014). However, ' people seeking funding through the crowdfunding portal do not have to adhere to the same level of disclosure as normal business (Sullivan and Ma, 2012).

The second objective of this study was to examine the effect of age, education and financial literacy on the ability to detect investment scams. The results showed that age did not affect the ability to detect investment scams. This means that investment scams can happen to everyone both young and old people. These results are inconsistent with previous findings (Agarwal *et al.*, 2009) suggesting that financial decision-making ability peaks at age 50 and declines during retirement age. (Gamble *et al.*, 2015) show that the decline in cognition due to age causes decreased financial literacy so one needs to seek

help in managing finances. Our finding is essentially not different from the previous findings, which resulted in contradictory findings. The most cited first study of investment scams found that older consumers were three times less likely to be victims of frauds than younger consumers (Titus, Heinzelmann and Boyle, 1995). Two studies of the Federal Trade Commission also found that adults were more likely to be victims of frauds (Anderson, 2004, 2007). And other studies have found that the risk of fraud victims declines after the age of 50 (DeLiema, 2015). In addition, there is no strong evidence to suggest that there is a relationship between age and victim deception (Ross, Grossmann and Schryer, 2014).

The second hypothesis states that education has a positive effect on the ability to detect investment scams. However, the results show that investment scams is not influenced by the level of individual education. The reason for the rejection of this hypothesis can be attributed to the arguments by (Greenspan, 2009) that 'intelligent and educated people, some naive about finances and others with enough knowledge, have been deceived

by dubious and often fraudulent financial schemes'. This findings is not in line with the results of previous studies which say that victims of the Ponzi scheme (one of the forms of investment scams) occur because they are too brave to take big risks but do not have very high level of education (Tennant, 2011b). (Hastings, Madrian and Skimmyhorn, 2013) claim that financial education may be an effective mechanism for improving financial results, but causality in this relationship is essentially difficult to pin down.

The third hypothesis states that financial literacy positively influences the ability to detect investment scams. The finding shows that empirical data support the hypothesis. This means that the higher the level of financial literacy level the better the ability to detect investment scams. Individuals with good financial insights can differentiate profitable and misleading investments according to the degree of risk at hand. This finding is in line with previous research which states that the level of knowledge, level of interest, and level of commitment play very important roles in making investment decisions (Singh and Sharma, 2016). Individuals featuring

higher financial literacy have better financial results (Scheresberg, 2013). Understanding the level of literacy will have implications for financial service providers on how to improve the knowledge of individual investors and assist them in finding the appropriate investment for their portfolio and guiding them in the right direction (Arora and Marwaha, 2014). Moreover, investment failure occurs due to lack of knowledge about the perpetrators of investment (Soegiono, Haryani and Pranoto, 2011). This finding is also in line with the argument that documents the strong relationship between financial knowledge and the ability to diversify investments (Hilgert, Hogarth and Beverly, 2003).

## CONCLUSION

This study has two main objectives. First, this study is intended to explore indicators that can be used to early detect investment scams. The indicators are built on the concepts created by the Financial Services Authority, both in Indonesia and other countries as well as the experience of the perpetrators told in the national media (Chariri and Meiranto, 2017). Second, if the



investment scams indicator can be well identified, this research aims to examine the effect of age, education and financial literacy on the ability to detect investment scams.

This study indicates several interesting findings. From the results of statistical tests, it can be concluded that that investment scams can be detected by using 15 indicators, which can be grouped into four dimensions, namely: return on investment, investment offering styles, form of investment, and investment management. Of the 15 indicators, there are five key indicators that can be used as an early detection model of investment scams. These indicators are: a) investments with unreasonably-high returns, b) investment involving salespeople that tend to force potential investors to make an immediate decision about the investment, c) investments without reasonable underlying cores of business, in accordance with principles of fairness and prudence in financial investment sectors, d) investments with no clear explanation on how the investment funds are managed, and e) investments without any information on the structure of

management, ownership, and business, and the address of the companies.

When the 15 indicators are used to detect investment scam, the respondents' answers indicate that their ability to detect investment scams is high (over 70%). This indicates that the 15 indicators (especially the five main indicators) can be used as a model of early detection of investment scams. The ability to detect investment scams can be influenced by various factors. However, the finding shows that financial literacy has a significant influence on the ability to detect investment scams, while age and education did not significantly affect investment scams. This means that investment scams can threaten anyone no matter the age and level of education of the victims.

Since financial literacy has a high correlation with the ability to detect investment scams, individuals need to increase their level of financial literacy. To support this, the regulators, especially Financial Service Authority (OJK), need to routinely conduct socialization related to financial literacy and investment scam indicators that must be understood by the community.

Apart from the resulting contribution, this study has two major drawbacks. Firstly, respondents in this study are students so that the results cannot be generalised to the real victims of investment scams. Secondly, this research uses only 10 indicators of financial literacy so that it has not been able to fully reflect the level of actual financial literacy. Further research is expected to involve more in-depth interviews with the victims of investment scams through qualitative research and needs to include more complete financial literacy indicators.

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