

# Stock Investment Decision: The Effects of Personal Factors and Moderating Role of Years of Service

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## ABSTRACT

This paper aims to elaborate stock investment decision and to examine the impact of five influential factors as independent variables and the influence of years of investment as mediating variable. This paper is based on empirical study which involved 286 individual investors in Indonesia Stock Exchange. Structural equation modelling approach was used for estimating relationship between influential factors (e.g., overconfidence, self-image / firm image, social relevance, advocate recommendation, personal financial needs) on stock investment decisions. The result found that stock investment decision was influenced by overconfidence, social relevance, advocate recommendation, and personal financial needs positively and significantly. Years of Investment has played moderating role on relationship between for advocate recommendation and personal with stock investment decisions.

## Keywords:

stock investment decisions, years of investment, structural equation model

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## Introduction

Investment in stock has high risk compared to other investment instrument. Investor should consider many things before, during, and after making decision in a stock investment in the market. The discussion on stock investment decision is a combination of psychology and finance theories which is called behaviour finance. Some researcher investigated psychological aspect especially personal factor on stock investment decisions. Zahera and Bansal (2018) developed systematic literature review on individual behaviour to stock investment decisions. Wang (2001) explored the survival of non-rational investors in an evolutionary game model with a population dynamic for a large economy and focus on the survival of overconfidence and investor sentiment. Nagy and Obenberge (1994) investigated this case to individual equity investors with substantial holdings in Fortune 500 firm. Rizvi and Abrar (2015) and Ahmad (2017) studied affecting factors on individual investor behaviour in Pakistan. Phan and Zhou (2014a, 2014b)

examined influential factors on individual investor behaviour in Vietnam. Chang (2010) and Riri and Manurung (2020) investigated the psychological factors which influences investment decision making in Indonesia.

Intention to buy stock in the market is sometimes called as stock investment decisions. Research in this area mostly related to psychology and finance. Selden (1912) introduced psychological aspect which is related in the stock market at the first time. Then, it was followed by Festinger (1957) who introduced theory of cognitive dissonance; Slovic (1972) who studied psychological of human judgment and its implications in investment decision making. Kahneman and Tversky (1979) introduced prospect theory which is related to analysis about decision making under risk. Daniel et.al (1998) studied investor psychology and stock market that related under and over reactions. Daniel et.al (2002) examined investor psychology in capital markets evidence and policy implication. Markowitz (1952) introduced portfolio theory that it explained behaviour of investor individual. They

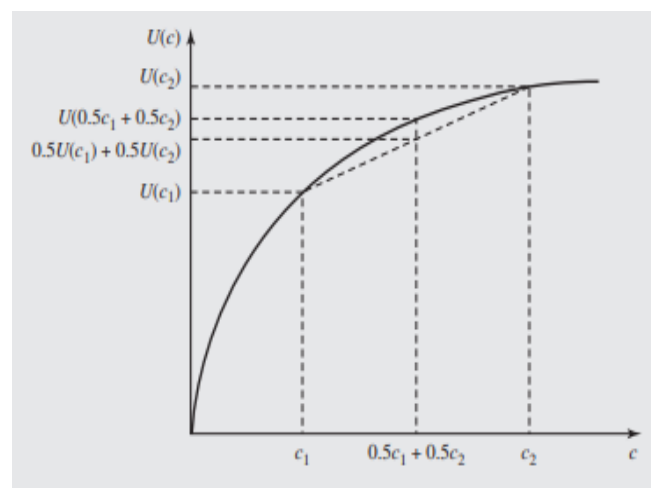
select high return and small risk for investment instrument. Boda and Sunitha (2018) studied investor's psychology in investment decision making which was focused on cognitive psychology and limits to arbitrage. Pang and Zhou (2014) studied overconfidence, excessive optimism, herd behaviour and psychology of risk on behavioural intention which mediated by attitude toward investment behaviour. Riri and Manurung (2020) stated that there are five personal factors (e.g., overconfidence, self-image / firm image, social relevance, advocate recommendation, and personal financial needs) impacted on stock investment decisions.

Previously empirical studies examined psychology factors directly impact on stock investment decisions. This paper addressed years of investment as moderating variable. Does year of investment strengthen or weaken the relationship five personal factors (e.g., overconfidence, self-image / firm image, social relevance, advocate recommendation, personal financial needs) on stocks investment decisions? As moderating variable, years of investment could strengthen or weaken relationship between dependent and independent variables (Manurung, 2019, Sharma 1981). Moderating variable is a research contribution for stock investment decisions. This paper proposes a contribution by examining years of investment as moderating variable.

### Literature Review

Stock investment decisions is about individual perspective on making decisions about how individual to decide buying or selling stocks in the market. At least, there are three conceptual theories: (1) utility theory, (2) personal intention, and (3) theory of planned behaviour (TPB). Utility theory is related on investment decision and explained how goods or services provide benefit to the individual by doing personal investment activities. Second, Selden (1912) had pioneered to establish the conceptual connection between psychology and stock market activities. Slovic (1972) studied psychological of human judgment and impacted on investment decision making. Kahneman and Tversky (1973) introduced a judgmental heuristic analysis on stock investment decision. Tversky and Kahneman (1979) introduced prospect theory to investment decision.

This theory improved utility theory. Festinger's (1957) cognitive dissonance theory suggests that we have an inner drive to hold all our attitudes and behaviour in harmony and avoid disharmony or dissonance. This is known as the principle of cognitive consistency



**Figure 1.** Utility for Personal  
Source: Danthine and Donaldson (2015, p.5).

Third theory is theory of planned behaviour (TPB) which explains about individual intention for buying something. TPB was introduced by Ajzen (1991) which stated the intentions can be predicted with high accuracy from attitudes toward the behaviour, subjective norms, and perceived behavioural control.

### Methods

This paper is based on quantitative study which cross-sectional approach for examining the relationship between five individual factors as independent variables and year of investment as mediating variable with stock investment decision as dependent variable. Structural equation modelling was used for estimating effects of independent and mediating variables on dependent variable. The research used data which were provided by Riri et.al (2020). The profile of respondents is displayed in Table 1. The data was collected by utilizing online questionnaire from 385 individual stock investors in Indonesia Stock Exchange. The questionnaire consists of 29 indicators with Likert scale for measuring seven variables.

**Table 1. Profile of Respondents**

		Categories		
Gender	Male	252	65,28%	65,28%
	Female	134	34,72%	100,00%
Marital Status	Single	193	50,00%	50,00%
	Married	175	45,34%	95,34%
	Divorced	18	4,66%	100,00%
Age	Less than 26 years old	92	23,83%	23,83%
	26 - 35 years old	187	48,45%	72,28%
	36 - 45 years old	94	24,35%	96,63%
	More than 45year old	13	3,37%	100,00%
Profession	Governmental employee	42	10,88%	10,88%
	Private sector employee	123	31,87%	42,75%
	<i>Entrepreneur</i>	118	30,57%	73,32%
	Other	103	26,68%	100,00%
Education	High school	39	10,10%	10,10%
	Vocational Education	37	9,59%	19,69%
	Bachelor's Degree	260	67,36%	87,05%
	Master's Degree	50	12,95%	100,00%
Years of Investment	Less than 1 year	78	20,21%	20,21%
	1 - 3 years	136	35,23%	55,44%
	4 - 5 years	106	27,46%	82,90%
	Less than 5 years	66	17,10%	100,00%

**Table 2. Validity and Reliability Analysis**

VARIABLE	ITEMS	OUTER LOADING	AVE	CA	CR
Overconfidence	OC01	0,833	0,728	0,875	0,914
	OC02	0,873			
	OC03	0,867			
	OC04	0,838			
Firm Image	FI01	0,826	0,602	0,868	0,901
	FI02	0,744			
	Fi03	0,799			
	FI04	0,777			
	FI05	0,759			
	FI06	0,799			
Social Relevance	SR01	0,839	0,682	0,845	0,895
	SR02	0,848			
	SR03	0,8			
	SR04	0,815			
Advocate Recommendation	AR01	0,816	0,657	0,826	0,884
	AR02	0,752			
	AR03	0,826			
	AR04	0,844			
Personal Need	PN01	0,827	0,609	0,786	0,862
	PN02	0,783			

	PN03	0,794			
	PN04	0,714			
	SID01	0,761			
	SID02	0,815			
Stock Investment Decision	SID03	0,817	0,613	0,842	0,888
	SID04	0,748			
	SID05	0,771			

**Table 3.** Discriminant Validity Analysis

Dimension	[1]	[2]	[3]	[4]	[5]	[6]
[1] <i>Advocate Recommendation</i>	<b>0,810</b>					
[2] <i>Firm Image</i>	0,764	<b>0,776</b>				
[3] <i>Overconfidence</i>	0,686	0,675	<b>0,853</b>			
[4] <i>Personal Need</i>	0,827	0,634	0,633	<b>0,781</b>		
[5] <i>Stock Investment Decision</i>	0,780	0,733	0,683	0,733	<b>0,783</b>	
[6] <i>Social Relevance</i>	0,730	0,852	0,625	0,654	0,721	<b>0,826</b>

**Table 4.** Hypotheses Testing

Structural Model	Path Coefficient	t-Statistics	p-Values	Conclusion
H1 Overconfidence ==> Stock Investment Decision	0,186	4,041	0,000	Accepted
H2 Firm Image ==> Stock Investment Decision	0,127	1,955	0,051	<b>Rejected</b>
H3 Advocate Recommendation ==> Stock Investment Decision	0,263	3,706	0,000	Accepted
H4 Social Relevance ==> Stock Investment Decision	0,149	2,485	0,013	Accepted
H5 Personal Need ==> Stock Investment Decision	0,227	4,081	0,000	Accepted
Moderating Role	Path Coefficient	t-Statistics	p-Values	Conclusion
Overconfidence ==> Stock Investment Decision	0,052	1,233	0,218	<b>Rejected</b>
Firm Image ==> Stock Investment Decision	-0,039	0,687	0,493	<b>Rejected</b>
Years of Investment Advocate Recommendation ==> Stock Investment Decision	-0,173	2,458	0,014	Accepted
Social Relevance ==> Stock Investment Decision	-0,012	0,107	0,915	<b>Rejected</b>
Personal Need ==> Stock Investment Decision	0,170	2,524	0,012	Accepted

## Methodology

Figure 2. describes the research model with five independent variables, one dependent variable, and

one moderating variable. The independent variables consist of personal financial needs, overconfidence, social relevance, self-Image / firm image, and advocate recommendation. Stock

investment decisions is a dependent variable and years of investment as moderating variable.

The mathematic model is as follows:

$$SID_i = a_1 PFN_i + a_2 OVC_i + a_3 SR_i + a_4 SIM_i + a_5 AVR_i + a_6 YOI_i + a_7(PNF*YOI)_i + a_8(OVC*YOI)_i + a_9(SR*YOI)_i + a_{10}(SIM*YOI)_i + a_{11}(AVR*YOI)_i + \varepsilon$$

- SID = Stock Investment Decisions for *i*
- PFN = Personal Financial Needs for *i*
- OVC = overconfidence for *i*
- SR = Social Relevance for *i*
- SIM = Self Image / Firm Image for *i*
- AVR = Advocate Recommendation for *i*
- YOI = Years of Investment.

In this discussion, research reported three finding which are validity and reliability instruments. It followed to discuss relationship independent variable to dependent variable. At the end, discussion of years of investment used as moderating variable in in this research.

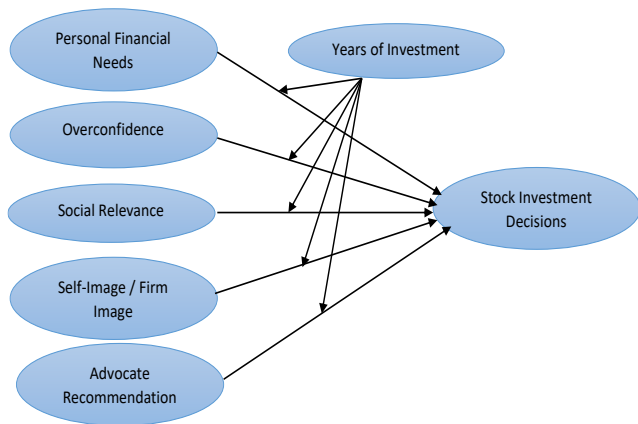


Figure 2. Research Model

### Data Analysis

Table 2 and 3 show the validity and Reliability test. This research used Questionnaire to get data for analysing of Stock Investment Decisions which are affected some variables. Loading Factor, AVE, communality, and composite reliability is used to test validity. Value of AVE should be more than 0.5 that it explained variance of indicator. Chain (1998) stated that an indicator should have validity

when it has loading factor equal and more than 0.7 and T-Statistics more than 1.96. There are 27 indicators for 5 constructs. These indicators have Loading factor varying from 0.714 to 0.873, and AVE also varying from 0.609 to 0.728. It means that all indicator has validity to reflect constructs.

Then, this research also tested the reliability of indicators or instrument. Cronbach's Alpha and Composite Reliability are used to test reliability. Value of Cronbach's Alpha should be more than 0.7 and value of composite reliability should be also more than 0.7. The value of Cronbach's Alpha is varying from 0.786 to 0.875. Value of composite reliability for construct is varying from 0.862 to 0.901. Those information have provided that all constructs have significant the reliability.

Based on the previous explanation, the instrument has validity and reliability, and it could be to do further exploration.

In this sub-section, the discussion is how relationship overconfidence, Firm Image, advocate recommendation, social relevance, and personal need to stock Investment Decision. Riri et.al (2020) investigated determinant of stock investment decisions which is overconfidence, self-image / firm image, social relevance, advocate recommendation, and personal financial Needs. The research model shows by Figure 2 and empirical research shows by Figure 3.

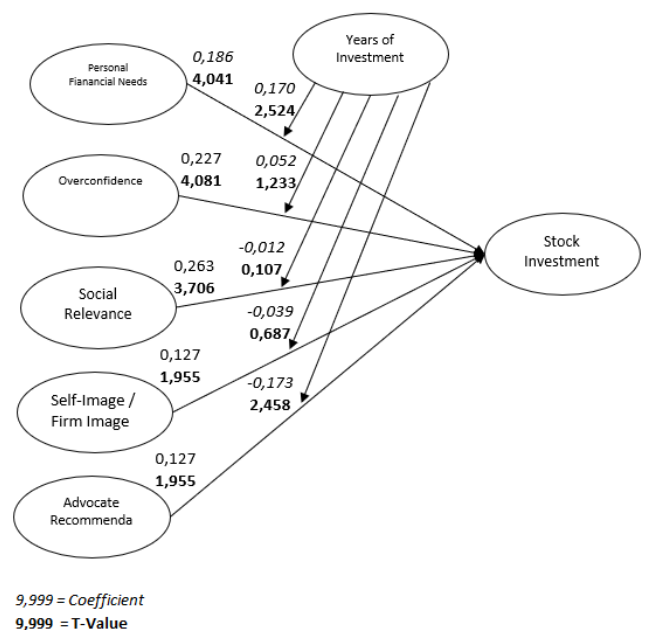


Figure 3. Statistical Output

## Results

Personal Need has relationship to stock investment decision which has weak relationship and significant of 10%. The coefficient path is 0.227 or less than relationship advocate recommendation with stock investment decision that it is small, and it called weak relationship. This personal need has the second highest effect to stock investment decision. This research supports the previous research and the theory. Ali and Tariq (2013) investigated Personal Needs on Stock Investment Decisions. They found that strong influence Personal needs on individual equity investor decision making. Kabete and Kipkirong (2018) investigated personal need on stock investment decision. They found that personal financial needs had a positive effect on individual short-term investment decisions. Riri et.al (2020) examined effect of overconfidence on Stock Investment Decisions. They found that Personal Need significantly positive affect stock investment decisions.

Overconfidence has relationship to stock investment decision which has weak relationship and significant of 1%. The coefficient path is 0.186 that value is small and it called weak relationship. Wang (2001) examined overconfidence on Stock Investment Decision. We find that underconfidence or pessimism cannot survive, but moderate overconfidence or optimism can survive and even dominate, particularly when the fundamental risk is large. This research supports the previous research and the theory. Phan and Zhou (2014) studies this variable to affect stock Investment decisions dan found that it has positive effect to stock investment decisions. Xia et.al (2014) examined overconfidence on stock investment decision. The found that financial literacy overconfidence is positively correlated with stock market participation. Tekçe, B., and N. Yılmaz (2015) explored overconfident on stock investment decisions. They findings show that overconfident behaviour is common among individual stock investors. Male, younger investors, investors with a lower portfolio value, and investors in low income and low education regions exhibit more overconfident behaviour. Moreover, we find that overconfidence has a negative effect on portfolio wealth. Riri et.al (2020) studies effect of overconfidence to Stock

Investment Decisions, that it has positive effect to stocks investment decisions.

Firm Image has relationship to stock investment decision which has weak relationship and significant of 10%. The coefficient path is 0.127 or less than relationship overconfidence with stock investment decision that is small, and it called weak relationship. These results supported previous studies and theory. Ali and Tariq (2013) examined Personal Needs on Stock Investment Decisions. The study found strong influence of self-image/firm-image on individual equity investor decision making. Riri et.al (2020) explored effect of firm-image on Stock Investment Decisions. They found that firm image significantly positive affect stock investment decisions.

Advocate Recommendation has relationship to stock investment decision which has weak relationship and significant of 1%. The coefficient path is 0.263 or higher than relationship between Overconfidence and Stock Investment Decision, relationship firm image and stock investment decision a that is small, and it called weak relationship. These results supported previous studies and theory. Ali and Tariq (2013) investigated Advocate Recommendation on Stock Investment Decisions. They found that strong influence advocate recommendation on individual equity investor decision making. Akbar et.al (2016) examined investor decision to buy shares that stated based on recommendation by stock brokerage, colleague in office, friend, and family. Somathilake (2020) investigated Advocate recommendation on stock investment decisions. He found that advocate recommendation influenced the individual investment decisions, but they do not much consider about accounting information. Riri et.al (2020) studied effect of advocate recommendation on Stock Investment Decisions. They found that advocate recommendation significantly positive affect stock investment decisions.

Social Relevance has relationship to stock investment decision which has weak relationship and significant of 10%. The coefficient path is 0.149 or higher than relationship firm image with stock investment decision that is small, and it called weak relationship. These results supported previous studies and theory. William (2007)

investigated social relevance on stock investment decisions. They found that it strongly influenced to invest in stocks. Riri et al (2020) explored effect of Social Relevance on Stock Investment Decisions. They found that Social Relevance significantly positive affect Stock Decisions.

### *Years of Investment*

In this research, year of investment was used to be moderating variable to estimate relationship Overconfidence, self-image / firm image, Social Relevance, Advocate Recommendation, Personal Financial Needs on stock investment decisions. Sharma (1991) and Manurung (2019) stated that moderating variable is a variable to strength or weak the relationship independent variable to dependent variable.

This research found that Advocate Recommendation and Personal Financial Needs Variables are significantly to have relationship with stock investment decisions by year of investment as moderating variable.

### **Conclusion**

Based on previously explanation, this paper come to two conclusions: (1) all variable internal and external personal variable has effect to stock investment decisions by individual investor. (2) Year of investment could be a moderating variable for relationship between personal needs and advocate recommendation with stock investment decisions.

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Reviewer 1

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Remarks:

- The problem is important from practical point of view. It is necessary that the authors clearly discuss how their work provides a contribution beyond alternative studies for stock investment decisions.

- In the introduction section the authors should explain better the problem and analyze other publications. A brief description in corresponding studies about stock investment decisions would be useful.

- The presentation of the results in section 6 is poor. Please rewrite this section.

Additional Questions:

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Does the paper contribute to the body of knowledge?: The contribution should be better clarified.

Is the paper technically sound?: Yes.

Is the subject matter presented in a comprehensive manner?: Yes.

Are the references provided applicable and sufficient?: Recent references would be welcome.

Recommendation: Major Revision.

Reviewer 2

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The authors' study is based on a sample of 286 individual investors . The sample size of 286 individual investors is quite small. How will this affect the results? More details should be mentioned. A bigger sample will improve the reliability of the results.

Can the author explain with more details why this study is useful for the readers of your respected journal?

The paper should be reviewed by native English reviewers who will advise the authors about misprints and better sentence construction.

Additional Questions:

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Does the paper contribute to the body of knowledge?: Yes.

Is the paper technically sound?: Yes

Is the subject matter presented in a comprehensive manner?: Revision is required.

Are the references provided applicable and sufficient?: Yes.

Recommendation: Published after major revision.

Reviewer 3

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Comments:

Abstract need improvement in writing related to the fields it is covering.

The Introduction must be revised. The authors must present the general research area to unfamiliar readers and at most to present the current state-of-the-art in order to show the contribution/novelty of their work.

This paper describes the results but little discussion is included, therefore the authors should improve notably the discussion of their results to show the scientific contribution.

The conclusion gives only well known facts about subject being presented. Are there any more interesting findings?

Additional Questions:

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Does the paper contribute to the body of knowledge?: Yes.

Is the paper technically sound?: Yes.

Is the subject matter presented in a comprehensive manner?: The Introduction must be revised. The discussion section should be extended.

Are the references provided applicable and sufficient?: Yes.

Recommendation: Accepted after the proposed corrections.

Reviewer 1

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A list of points that appears to deserve to be better clarified in the paper together with some suggestions follows.

- 1) WSEAS does not accept the system (Author, Year) for the references, but the system [1], [2], [3] etc. All the references included in the reference list should be cited in the text. The reference list should be ordered numerically according to the order of the first citation in the text.
- 2) All the sections should be numbered.
- 3) The data in the table 3 should be commented. A description of this table is required.
- 4) Table 5 'Regression Weights' should be further analysed in the main text.
- 5) The statistical analysis in this paper is poor and should be extended.

Additional Questions:

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Does the paper contribute to the body of knowledge?: Yes.

Is the paper technically sound?: Yes.

Is the subject matter presented in a comprehensive manner?: It should be improved.

Are the references provided applicable and sufficient?: Yes

Recommendation: The paper can be published after major revision.

Reviewer 2

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- a) The presentation of the problem solution(section 3) should be improved and extended.
- b) In results section, it is mentioned that 'The influence of promotion, convenience, and security factors directly or indirectly affects consumer purchasing decisions through purchase intention.' Can you give us more details and explanations?
- c) Most of references are much older than five years, so you should include the latest research and consider whether all previous sources are really necessary and relevant to your work.
- d) A conclusion section should be added.

Additional Questions:

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Does the paper contribute to the body of knowledge?: Yes.

Is the paper technically sound?: Improvements are needed.

Is the subject matter presented in a comprehensive manner?: Improvements are needed.

Are the references provided applicable and sufficient?: Please, add recent publications.

Recommendation: Accepted after major revision.

Reviewer 3

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Comments:

The authors write 'These findings suggest that the higher the consumer's purchasing interest, the more excellent the consumer's purchase choice.' Please specify this claim.

The authors should explain the contribution of their study in comparison with the corresponding studies and analysis of other researchers. It is necessary that the authors clearly discuss how their work provides a contribution beyond alternative studies.

The author needs to more accurately describe the purpose and objectives of the study.

Additional Questions:

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Does the paper contribute to the body of knowledge?: It can be improved.

Is the paper technically sound?: It can be improved.

Is the subject matter presented in a comprehensive manner?: Yes.

Are the references provided applicable and sufficient?: Yes

Recommendation: Publish the paper after revision.

# Stock Investment Decision: The Effects of Personal Factors and Moderating Role of Years of Service

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*Abstract:* - This paper aims to elaborate stock investment decision and to examine the impact of five influential factors as independent variables and the influence of years of investment as mediating variable. This paper is based on empirical study which involved 286 individual investors in Indonesia Stock Exchange using data from Riri et.al (2020). Structural equation modelling approach was used for estimating relationship between influential factors (e.g., personal financial needs, overconfidence, advocate recommendation, social relevance, and self or firm image) on stock investment decisions. The result found that decision on stock investment is determined by social relevance, overconfidence, personal financial need, and advocate recommendation significantly and positively. Years of Investment has played moderating role on relationship between for advocate recommendation and personal with stock investment decisions. Years of Investment is moderating variable to become a novelty this paper.

*Key-Words:* - stock investment decisions, years of investment, structural equation model

## 1 Introduction

Investment in stock has high risk compared to other investment instrument. Investor should consider many things before, during, and after making decision in a stock investment in the market. The discussion on stock investment decision is a combination of psychology and finance theories which is called behaviour finance. Topic behaviour finance become a hot topic discussion in area of Finance Research. Some researcher investigated

psychological aspect especially personal factor on stock investment decisions. Zahera and Bansal (2018) developed systematic literature review on individual behaviour to stock investment decisions. Wang (2001) have explored non-rational investors' survival in a game model with a large population. The study focused on sentiment and overconfidence of the investors Nagy and Obenberge (1994) investigated this case to individual equity investors with substantial holdings in Fortune 500 firm. Rizvi and Abrar (2015) and Ahmad (2017) studied

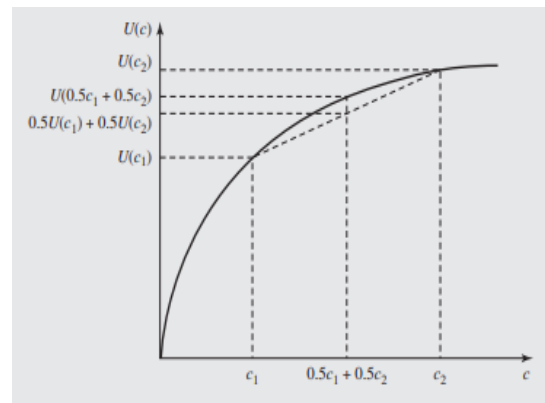
affecting factors on individual investor behaviour in Pakistan. Phan and Zhou (2014a, 2014b) examined influential factors on individual investor behaviour in Vietnam. Chang (2010) and Riri and Manurung (2020) investigated the psychological factors which influences investment decision making in Indonesia.

Intention to buy stock in the market is sometimes called as stock investment decisions. Research in this area mostly related to psychology and finance. Selden (1912) introduced psychological aspect which is related in the stock market at the first time. Then, it was followed by Festinger (1957) who introduced theory of cognitive dissonance; Slovic (1972) who studied psychological of human judgment and its implications in investment decision making. Kahneman and Tversky (1979) introduced theory of prospect which is linked to analysis about decision making under risk. Daniel et.al (1998) have examined the relationship between psychology of investors and stock market over and under reaction. Daniel et.al (2002) have examined the psychology of investor in policy implication and capital markets. Markowitz (1952) introduced portfolio theory that it explained behaviour of investor individual. They select high return and small risk for investment instrument. Boda and Sunitha (2018) have studied the psychology of investors in investment decision making which were focused on cognitive psychology and arbitrage limits. Pang and Zhou (2014) have proved that excessive optimism, overconfidence, psychology of risk, and herd behaviour on behavioural intention which mediated by attitude toward investment behaviour. Riri and Manurung (2020) stated that there are five personal factors (e.g., self or firm image, overconfidence, advocate recommendation, social relevance, and personal financial needs) have impacted on decisions of stock investment.

Previously empirical studies examined psychology factors directly impact on stock investment decisions. This paper addressed years of investment as moderating variable. Does year of investment strengthen or weaken the relationship five personal factors (e.g., firm or self-image, overconfidence, personal financial needs, social relevance, and advocate recommendation) on the decision of stocks investment? As moderating variable, years of investment could strengthen or weaken relationship between dependent and independent variables (Manurung, 2019, Sharma 1981). Moderating variable is a research contribution for stock investment decisions. This paper proposes a contribution by examining years of investment as moderating variable.

## 2 Literature Review

Stock investment decisions is about individual perspective on making decisions about how individual to decide buying or selling stocks in the market. At least, there are three conceptual theories: (1) utility theory, (2) personal intention, and (3) theory of planned behaviour (TPB). Utility theory is related on investment decision and explained how goods or services provide benefit to the individual by doing personal investment activities. Second, Selden (1912) had pioneered to establish the conceptual connection between psychology and stock market activities. Slovic (1972) studied psychological of human judgment and impacted on investment decision making. Kahneman and Tversky (1973) introduced a judgmental heuristic analysis on stock investment decision. Tversky and Kahneman (1979) introduced the theory of prospect to investment decision. This theory improved theory of utility, theory of cognitive dissonance advises that people have an inner drive to avoid dissonance or disharmony or to hold all related attitudes and behaviour in a dynamic harmony (Festinger, 1957). This is known as the principle of cognitive consistency



**Figure 1.** Utility for Personal  
Source: Danthine and Donaldson (2015, p.5).

Third theory is theory of planned behaviour (TPB) which explains about individual intention for buying something. TPB was introduced by Ajzen (1991) which stated the intentions can be estimated with high accuracy from attitudes toward the perceived behavioural control, and subjective norms.

## 3 Methods

This paper is based on quantitative study which cross-sectional approach for examining the relationship between five individual factors as independent variables and year of investment as mediating variable with stock investment decision as dependent variable. Structural equation modelling



was used for estimating effects of independent and mediating variables on dependent variable. The research used data which were provided by Riri et.al (2020). The respondent profile is demonstrated on Table 1. The data was collected by utilizing online questionnaire from 385 individual stock investors in Indonesia Stock Exchange. The questionnaire consists of 29 indicators with Likert scale for measuring seven variables.

#### 4 Methodology

Figure 2. shows the research model which consist of one moderating, one dependent, and five independent variables. The independent variables consist of personal financial needs, overconfidence, social relevance, self or firm image, and advocate recommendation. Stock investment decisions is a dependent variable and years of investment as moderating variable.

The mathematic model is as follows:

$$SID_i = a_1 PFN_i + a_2 OVC_i + a_3 SR_i + a_4 SIM_i + a_5 AVR_i + a_6 YOI_i + a_7(PNF*YOI)_i + a_8(OVC*YOI)_i + a_9(SR*YOI)_i + a_{10}(SIM*YOI)_i + a_{11}(AVR*YOI)_i + \epsilon$$

- SID = Stock Investment Decisions for i
- PFN = Personal Financial Needs for i
- OVC = overconfidence for i
- SR = Social Relevance for i
- SIM = Self Image / Firm Image for i
- AVR = Advocate Recommendation for i
- YOI = Years of Investment.

In this discussion, research reported three finding which are validity and reliability instruments. It followed to discuss relationship independent variable to dependent variable. At the end, discussion of years of investment used as moderating variable in in this research.

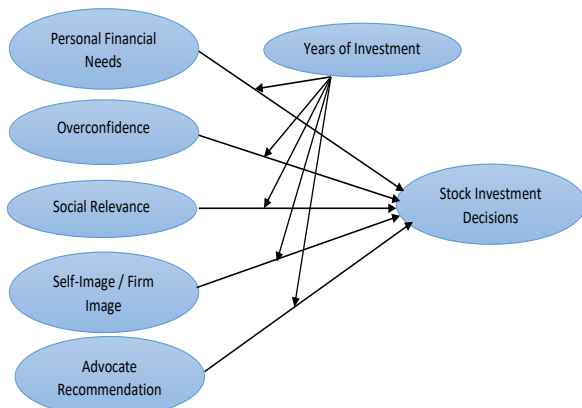


Figure 2. Research Model

#### 5 Hypothesis

Someone needs more income to provide their life. Income is a variable of Personals Needs. Ali and Tariq (2013), Kabete and Kipkirong (2018) and Riri et al (2020) has proved their Hypothesis which is Personal Financial Needs affected Stock Investment Decision. Wang (2001), Zhou (2014), Xia et.al (2014), Tekçe, B., and N. Yılmaz and Riri et.al (2020) has done research for Overconfidence to affect Stock Investment Decision.

Ali and Tariq (2013) and Riri et.al (2020) has also proved their hypothesis about firm image affect stock Investment Decision.

Ali and Tariq (2013), Akbar et.al (2016) and Riri et al (2020) also proved the hypothesis of advocate recommendation affected stock investment decision.

#### 6 Result and Data Analysis

Data is collected using a questioner which is processed by Smart PLS. The Result is shown by Table 1, Table 2. Table 3 and Table 4. Table 1 showed that Statistical Descriptive about profile the sample. Table 2 and 3 show the validity and Reliability test. This research used Questionnaire to get data for analysing of Stock Investment Decisions which are affected some variables. Loading Factor, AVE, communality, and composite reliability is used to test validity.

Value of AVE should be more than 0.5 that it explained variance of indicator. Chain (1998) stated that an indicator should have validity when it has loading factor equal and more than 0.7 and T-Statistics more than 1.96. There are 27 indicators for 5 constructs. These indicators have Loading factor varying from 0.714 to 0.873, and AVE also varying from 0.609 to 0.728. It means that all indicator has validity to reflect constructs.

Then, this research also tested the reliability of indicators or instrument. CR (composite reliability) and CA (Cronbach's alpha) scores used to indicate reliability. CA score should be more than 0.7 and CR score should be also more than 0.7. CA scores are varying from 0.786 to 0.875. CR scores of constructs are varying from 0.862 to 0.901. The results indicate all constructs have reliability significantly. Based on the results, the instrument has validity and reliability, and it could be to do further exploration.

Table 4 shows the result of Hypothesis testing. Variable of Overconfidence, Advocate Recommendation, Social Relevance and Personal Needs significantly affected Stock Investment Decision. Firm Image does not affect Stock Investment Decision. Year of Investment as Moderating Variable could moderate Personal Needs

and Advocate Recommendation to Stock Investment Decision.

## 7 Discussion

	Categories			
Gender	Male	252	65.28%	65.28%
	Female	134	34.72%	100.00%
Marital Status	Single	193	50.00%	50.00%
	Married	175	45.34%	95.34%
	Divorced	18	4.66%	100.00%
Age	Less than 26-year-old	92	23.83%	23.83%
	26- to 35-year-old	187	48.45%	72.28%
	36- to 45-year-old	94	24.35%	96.63%
	More than 45-year-old	13	3.37%	100.00%
Profession	Governmental employee	42	10.88%	10.88%
	Private sector employee	123	31.87%	42.75%
	Entrepreneur	118	30.57%	73.32%
	Other	103	26.68%	100.00%
Education	Senior high school	39	10.10%	10.10%
	Vocational education	37	9.59%	19.69%
	Bachelor's degree	260	67.36%	87.05%
	Master's degree	50	12.95%	100.00%
Years of Investment	Less than 1 year	78	20.21%	20.21%
	1 - 3 years	136	35.23%	55.44%
	4 - 5 years	106	27.46%	82.90%
	Less than 5 years	66	17.10%	100.00%

**Table 1.** Respondent Profile

In this sub-section, the discussion is how relationship overconfidence, self or firm image, advocate recommendation, personal needs, and social relevance toward decisions on stock investment. Riri et.al (2020) investigated determinant of stock investment decisions which are firm image or self-image, overconfidence, social relevance, personal financial need, and advocate recommendation. The research model shows the results on Figure 2 and Figure 3.

Personal Need is a factor that someone to do for fulfil it. Income from salary does not enough to fulfil daily expenditure for his life, so she should do something to get another income by investment.

Personal need has relationship to stock investment decision which has weak relationship and significant of 10%.

The coefficient path is 0.227 or less than relationship advocate recommendation with stock investment decision that it is small, and it called weak relationship. This personal need has the second highest effect to stock investment decision.

This research supports the previous research and the theory. Ali and Tariq (2013) investigated Personal Needs on Stock Investment Decisions. They found that strong influence Personal needs on individual equity investor decision making. Kabete and Kipkirong (2018) investigated personal need on stock investment decision. They found that personal financial needs had a positive effect on individual short-term investment decisions. Riri et.al (2020) examined effect of overconfidence on Stock Investment Decisions. They found that Personal Need significantly positive affect stock investment decisions.

Sources: Process by Researcher

**Table 2.** The Analysis of Validity and Reliability

VARIABLE	ITEMS	OUTER LOADING	AVE	CA	CR
Overconfidence	OC01	0.833	0.728	0.875	0.914
	OC02	0.873			
	OC03	0.867			
	OC04	0.838			
Firm Image	FI01	0.826	0.602	0.868	0.901
	FI02	0.744			
	Fi03	0.799			
	FI04	0.777			
	FI05	0.759			
	FI06	0.799			
Social Relevance	SR01	0.839	0.682	0.845	0.895
	SR02	0.848			
	SR03	0.8			
	SR04	0.815			
Advocate Recommendation	AR01	0.816	0.657	0.826	0.884
	AR02	0.752			
	AR03	0.826			
	AR04	0.844			
Personal Need	PN01	0.827	0.609	0.786	0.862
	PN02	0.783			
	PN03	0.794			
	PN04	0.714			
Stock Investment Decision	SID01	0.761	0.613	0.842	0.888
	SID02	0.815			
	SID03	0.817			
	SID04	0.748			
	SID05	0.771			

Sources: Process by Researcher

**Table 3.** Analysis of Discriminant Validity

Dimension	[1]	[2]	[3]	[4]	[5]	[6]
[1] <i>Advocate Recommendation</i>	<b>0.810</b>					
[2] <i>Firm Image</i>	0.764	<b>0.776</b>				
[3] <i>Overconfidence</i>	0.686	0.675	<b>0.853</b>			
[4] <i>Personal Need</i>	0.827	0.634	0.633	<b>0.781</b>		
[5] <i>Stock Investment Decision</i>	0.780	0.733	0.683	0.733	<b>0.783</b>	
[6] <i>Social Relevance</i>	0.730	0.852	0.625	0.654	0.721	<b>0.826</b>

Sources: Process by Researcher

Advocate recommendation has relationship to stock investment decision which has weak relationship and significant of 1%. The coefficient path is 0.263 or higher than relationship between Overconfidence and Stock Investment Decision, relationship firm image and stock investment decision a that is small, and it called weak relationship. These results supported previous

Social relevance has relationship to stock investment decision which has weak relationship and significant of 10%. The coefficient path is 0.149 or higher than relationship firm image with stock investment decision that is small, and it called weak relationship. These results supported previous studies and theory. William (2007) investigated social relevance on stock investment decisions. They found

**Table 4.** Hypotheses Testing

Structural Model		Path Coefficient	t-Statistic	p-Value	Conclusion
H1	Overconfidence ==> Stock Investment Decision	0.186	4,041	0.000	Accepted
H2	Firm Image ==> Stock Investment Decision	0.127	1,955	0.051	<i>Rejected</i>
H3	Advocate Recommendation ==> Stock Investment Decision	0.263	3,706	0.000	Accepted
H4	Social Relevance ==> Stock Investment Decision	0.149	2,485	0.013	Accepted
H5	Personal Need ==> Stock Investment Decision	0.227	4,081	0.000	Accepted
Moderating Role		Path Coefficient	t-Statistic	p-Value	Conclusion
Years of Investment	Overconfidence ==> Stock Investment Decision	0.052	1,233	0.218	<i>Rejected</i>
	Firm Image ==> Stock Investment Decision	-0.039	0.687	0.493	<i>Rejected</i>
	Advocate Recommendation ==> Stock Investment Decision	-0.173	2,458	0.014	Accepted
	Social Relevance ==> Stock Investment Decision	-0.012	0.107	0.915	<i>Rejected</i>
	Personal Need ==> Stock Investment Decision	0.170	2,524	0.012	Accepted

Sources: Process by Researcher

studies and theory.

Ali and Tariq (2013) found advocate recommendation on Stock Investment Decisions. They found that strong influence advocate recommendation on individual equity investor decision making. Akbar et.al (2016) examined investor decision to buy shares that stated based on recommendation by stock brokerage, colleague in office, friend, and family.

Somathilake (2020) investigated advocate recommendation on stock investment decisions. He found that advocate recommendation influenced the individual investment decisions, but they do not much consider about accounting information. Riri et.al (2020) studied effect of advocate recommendation on Stock Investment Decisions. They found that advocate recommendation significantly positive affect stock investment decisions.

that it strong influenced to invest in stocks. Riri et.al (2020) explored effect of Social Relevance on Stock Investment Decisions. They found that Social Relevance significantly positive affect Stock Decisions.

*Years of Investment*

In this research, year of investment was used to be moderating variable to estimate relationship Overconfidence, self-image / firm image, Social Relevance, Advocate Recommendation, Personal Financial Needs on stock investment decisions. Sharma (1991) and Manurung (2019) stated that moderating variable is a variable to strength or weak the relationship independent variable to dependent variable. This research found that Advocate Recommendation and Personal Financial Needs Variables are significantly to have relationship with stock investment decisions by year of investment as moderating variable.

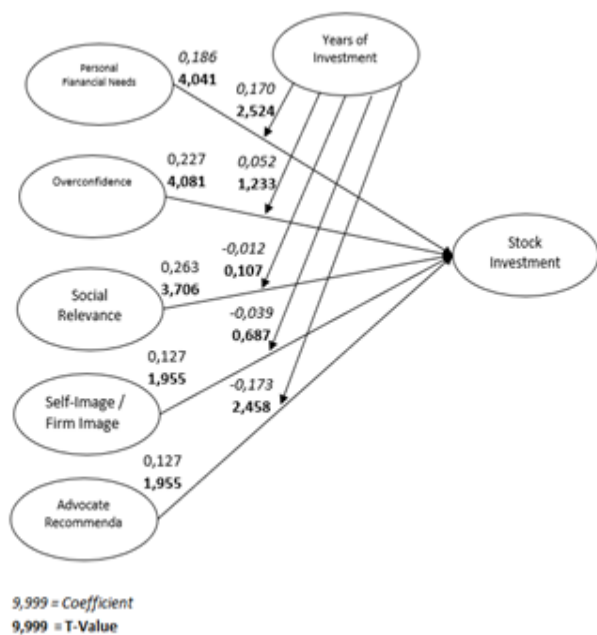


Figure 3. Statistical Output

## 8 Conclusion

This research has objective to investigate internal and external personal variable to affect stock investment decisions. This research is a research of behavior finance which is combined investment and psychology. Previous research mostly investigated directly factors affecting stock investment Decision without including moderating variable. This research entered year of investment as moderating variable. Based on result and previously explanation, this paper come to two conclusions: (1) all variable internal and external personal variable has effect to stock investment decisions by individual investor. (2) Year of investment could be a moderating variable for relationship between personal needs and advocate recommendation with stock investment decisions.

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# Stock Investment Decision: The Effects of Personal Factors and Moderating Role of Years of Service

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*Abstract:* - This paper aims to elaborate stock investment decision and to examine the impact of five influential factors as independent variables and the influence of years of investment as mediating variable. This paper is based on empirical study which involved 286 individual investors in Indonesia Stock Exchange. Structural equation modeling approach was used for estimating relationship between influential factors (e.g., overconfidence, self-image / firm image, social relevance, advocate recommendation, personal financial needs) stock investment decisions. The result found that stock investment decision was influenced by overconfidence, social relevance, advocate recommendation, and personal financial needs positively and significantly. Years of Investment has played moderating role on relationship between for advocate recommendation and personal with stock investment decisions.

*Key-Words:* - stock investment decisions, years of investment, structural equation model

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## 1 Introduction

Investment in stock has high risk compared to other investment instrument. Investor should consider many things before, during, and after making decision in a stock investment in the market. The discussion on stock investment decision is a combination of psychology and finance theories which is called behaviour finance. Some researcher investigated psychological aspect especially personal factor

on stock investment decisions. Zahera and Bansal (2018) developed systematic literature review on individual behaviour to stock investment decisions [1]. Wang (2001) explored the survival of non-rational investors in an evolutionary game model with a population dynamic for a large economy and focus on the survival of overconfidence and investor sentiment [2]. Nagy and Obenberge (1994) investigated this case to individual equity investors with substantial holdings in Fortune

500 firm [3]. Rizvi and Abrar (2015) studied affecting factors on individual investor behaviour in Pakistan [4]. Phan and Zhou (2014a, 2014b) examined influential factors on individual investor behaviour in Vietnam [5-6]. Chang (2010) and Riri and Manurung (2020) investigated the psychological factors which influences investment decision making in Indonesia [7-8].

Intention to buy stock in the market is sometimes called as stock investment decisions. Research in this area mostly related to psychology and finance. Selden (1912) introduced psychological aspect which is related in the stock market at the first time [9]. Then, it was followed by Festinger (1957) who introduced theory of cognitive dissonance; Slovic (1972) who studied psychological of human judgment and its implications in investment decision making [10-11]. Kahneman and Tversky (1979) introduced prospect theory which is related to analysis about decision making under risk [12]. Daniel et.al (1998) studied investor psychology and stock market that related under and over reactions [13].

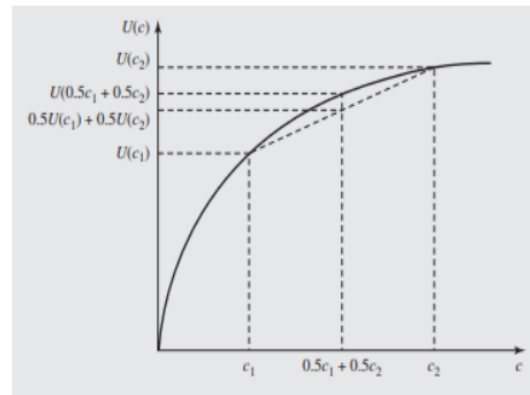
Daniel et.al (2002) examined investor psychology in capital markets evidence and policy implication [14]. Markowitz (1952) introduced portfolio theory that it explained behaviour of investor individual. They select high return and small risk for investment instrument. Boda and Sunitha (2018) studied investor's psychology in investment decision making which was focused on cognitive psychology and limits arbitrage [15]. Pang and Zhou (2014) studied overconfidence, excessive optimism, herd behaviour and psychology of risk on behavioural intention which mediated by attitude toward investment behaviour. Riri and Manurung (2020) stated that there are five personal factors (e.g., overconfidence, self-image / firm image, social relevance, advocate recommendation, and personal financial needs) impacted on stock investment decisions [8].

Previously empirical studies examined psychology factors directly impact on stock investment decisions. This paper addressed years of investment as moderating variable. Does year of investment strengthen or weaken the relationship five personal factors (e.g.,

overconfidence, self-image / firm image, social relevance, advocate recommendation, personal financial needs) on stocks investment decisions? As moderating variable, years of investment could strengthen or weaken relationship between dependent and independent variables (Manurung, 2019, Sharma 1981) [16-17]. Moderating variable is a research contribution for stock investment decisions. This paper proposes a contribution by examining years of investment as moderating variable.

## 2 Literature Review

Stock investment decisions is about individual perspective on making decisions about how individual to decide buying or selling stocks in the market. At least, there are three conceptual theories: (1) utility theory, (2) personal intention, and (3) theory of planned behaviour (TPB). Utility theory is related on investment decision and explained how goods or services provide benefit to the individual by doing personal investment activities. Second, Selden (1912) had pioneered to establish the conceptual connection between psychology and stock market activities [9]. Slovic (1972) studied psychological of human judgment and impacted on investment decision making [11]. Kahneman and Tversky (1973) introduced a judgmental heuristic analysis on stock investment decision.



**Figure 1:** Utility for Personal

Source: Danthine and Donaldson (2015, p.5) [18].

Tversky and Kahneman (1979) introduced prospect theory to investment decision. This theory improved utility theory [12]. Festinger's

(1957) cognitive dissonance theory suggests that we have an inner drive to hold all our attitudes and behaviour in harmony and avoid disharmony or dissonance. This is known as the principle of cognitive consistency [10].

Third theory is theory of planned behaviour (TPB) which explains about individual intention for buying something. TPB was introduced by Ajzen (1991) which stated the intentions can be predicted with high accuracy from attitudes toward the behaviour, subjective norms, and perceived behavioural control [19].

the relationship between five individual factors as independent variables and year of investment as mediating variable with stock investment decision as dependent variable. Structural equation modelling was used for estimating effects of independent and mediating variables on dependent variable. The research used data which was provided by Riri et.al (2020) [8].

The profile of respondents is displayed in Table 1. The data was collected by utilizing online questionnaire from 385 individual stock investors in Indonesia Stock Exchange. The questionnaire consists of 29 indicators with Likert scale for measuring seven variables.

### 3 Methods

This paper is based on quantitative study which cross-sectional approach for examining

**Table 1:** Profile of Respondents

		Categories		
Gender	Male	252	65,28%	65,28%
	Female	134	34,72%	100,00%
Marital Status	Single	193	50,00%	50,00%
	Married	175	45,34%	95,34%
	Divorced	18	4,66%	100,00%
Age	Less than 26 years old	92	23,83%	23,83%
	26 - 35 years old	187	48,45%	72,28%
	36 - 45 years old	94	24,35%	96,63%
	More than 45 year old	13	3,37%	100,00%
Profession	Governmental employee	42	10,88%	10,88%
	Private sector employee	123	31,87%	42,75%
	Entrepreneur	118	30,57%	73,32%
	Other	103	26,68%	100,00%
Education	High school	39	10,10%	10,10%
	Vocational Education	37	9,59%	19,69%
	Bachelor's Degree	260	67,36%	87,05%
	Master's Degree	50	12,95%	100,00%
Years of Investment	Less than 1 year	78	20,21%	20,21%
	1 - 3 years	136	35,23%	55,44%
	4 - 5 years	106	27,46%	82,90%
	Less than 5 years	66	17,10%	100,00%

**Table 2:** Validity and Reliability Analysis

VARIABLE	ITEMS	OUTER LOADING	AVE	CA	CR
Overconfidence	OC01	0,833	0,728	0,875	0,914
	OC02	0,873			
	OC03	0,867			

	OC04	0,838			
Firm Image	FI01	0,826			
	FI02	0,744			
	FI03	0,799	0,602	0,868	0,901
	FI04	0,777			
	FI05	0,759			
	FI06	0,799			
Social Relevance	SR01	0,839			
	SR02	0,848	0,682	0,845	0,895
	SR03	0,8			
	SR04	0,815			
Advocate Recommendation	AR01	0,816			
	AR02	0,752	0,657	0,826	0,884
	AR03	0,826			
	AR04	0,844			
Personal Need	PN01	0,827			
	PN02	0,783	0,609	0,786	0,862
	PN03	0,794			
	PN04	0,714			
Stock Investment Decision	SID01	0,761			
	SID02	0,815			
	SID03	0,817	0,613	0,842	0,888
	SID04	0,748			
	SID05	0,771			

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**Table 3: Discriminant Validity Analysis**

Dimension	[1]	[2]	[3]	[4]	[5]	[6]
[1] <i>Advocate Recommendation</i>	<b>0,810</b>					
[2] <i>Firm Image</i>	0,764	<b>0,776</b>				
[3] <i>Overconfidence</i>	0,686	0,675	<b>0,853</b>			
[4] <i>Personal Need</i>	0,827	0,634	0,633	<b>0,781</b>		
[5] <i>Stock Investment Decision</i>	0,780	0,733	0,683	0,733	<b>0,783</b>	
[6] <i>Social Relevance</i>	0,730	0,852	0,625	0,654	0,721	<b>0,826</b>

**Table 4: Hypotheses Testing**

	Structural Model	Path Coefficient	t-Statistics	p-Values	Conclusion
H1	Overconfidence ==> Stock Investment Decision	0,186	4,041	0,000	Accepted
H2	Firm Image ==> Stock Investment Decision	0,127	1,955	0,051	<b>33</b> Rejected
H3	Advocate Recommendation ==> Stock Investment Decision	0,263	3,706	0,000	Accepted
H4	Social Relevance ==> Stock Investment Decision	0,149	2,485	0,013	Accepted
H5	Personal Need ==> Stock Investment Decision	0,227	4,081	0,000	Accepted

	Moderating Role	Path Coefficient	t-Statistics	p-Values	Conclusion
	Overconfidence ==> Stock Investment Decision	0,052	1,233	0,218	<i>Rejected</i>
	Firm Image ==> Stock Investment Decision	-0,039	0,687	0,493	<i>Rejected</i>
Years of Investment	Advocate Recommendation ==> Stock Investment Decision	-0,173	2,458	0,014	Accepted
	Social Relevance ==> Stock Investment Decision	-0,012	0,107	0,915	<i>Rejected</i>
	Personal Need ==> Stock Investment Decision	0,170	2,524	0,012	Accepted

#### 4 Methodology

Figure 2 describes the research model with five independent variables, one dependent variable, and one moderating variable. The independent variables consist of personal financial needs, overconfidence, social relevance, self-Image / firm image, and advocate recommendation. Stock investment decisions is a dependent variable and years of investment as moderating variable.

The mathematic model is as follows:

$$\begin{aligned}
 SID_i = & a_1 PFN_i + a_2 OVC_i + a_3 SR_i + a_4 SIM_i \\
 & + a_5 AVR_i + a_6 YOI_i + a_7 (PNF * YOI)_i \\
 & + a_8 (OVC * YOI)_i + a_9 (SR * YOI)_i \\
 & + a_{10} (SIM * YOI)_i + a_{11} (AVR * YOI)_i + \varepsilon
 \end{aligned}$$

SID = Stock Investment Decisions for *i*

PFN = Personal Financial Needs for *i*

OVC = overconfidence for *i*

SR = Social Relevance for *i*

SIM = Self Image / Firm Image for *i*

AVR = Advocate Recommendation for *i*

YOI = Years of Investment.

In this discussion, research reported three finding which are validity and reliability instruments. It followed to discuss relationship independent variable to dependent variable. At the end, discussion of years of investment used as moderating variable in in this research.

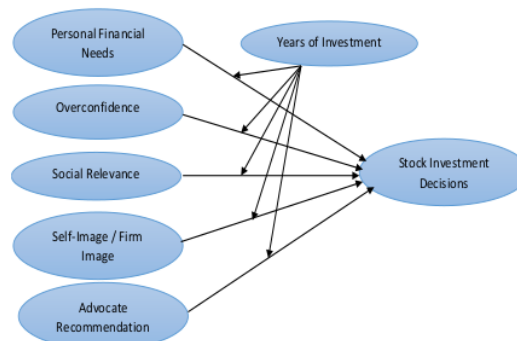


Figure 2: Research Model

#### 5 Data Analysis

Table 2 and 3 show the validity and Reliability test. This research used Questionnaire to get data for analysing of Stock Investment Decisions which are affected some variables. Loading Factor, AVE, communality, and composite reliability is used to test validity. Value of AVE should be more than 0.5 that it explained variance of indicator. Chin (1998) [20] stated that an indicator should have validity when it has loading factor equal and more than 0.7 and T-Statistics more than 1.96. There are 27 indicators for 5 constructs. These indicators have Loading factor varying from 0.714 to 0.873, and AVE also varying from 0.609 to 0.728. It means that all indicator has validity to reflect constructs.

Then, this research also tested the reliability of indicators or instrument. Cronbach's Alpha and Composite Reliability are used to test reliability. Value of Cronbach's Alpha should be more than 0.7 and value of composite reliability should be



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 also more than 0.7. The value of Cronbach's Alpha is varying from 0.786 to 0.875. Value of composite reliability for construct is varying from 0.862 to 0.901. Those information have provided that all constructs have significant the reliability. Based on the previous explanation, the instrument has validity and reliability, and it could be to do further exploration.

In this sub-section, the discussion is how relationship overconfidence, Firm Image, advocate recommendation, social relevance, and personal need to stock Investment Decision. Riri et.al (2020)[8] investigated determinant of stock investment decisions which is overconfidence, self-image / firm image, social relevance, advocate recommendation, and personal financial Needs. The research model shows by Figure 2 and empirical research shows by Figure 3.

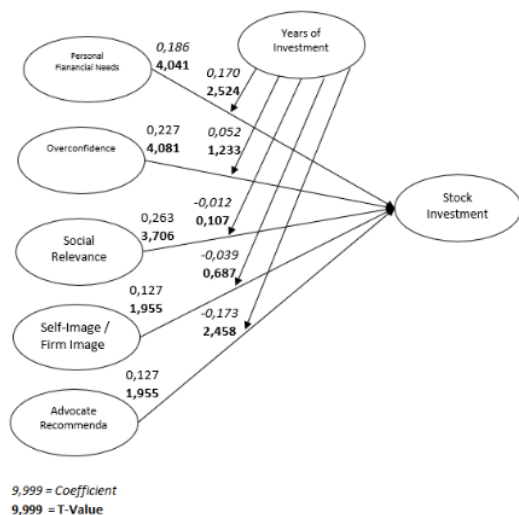


Figure 3. Statistical Output

## 6 Results

Personal Need has relationship to stock investment decision which has weak relationship and significant of 10%. The coefficient path is 0.227 or less than relationship advocate recommendation with stock investment decision that it is small, and it called weak relationship. This personal need has the second highest effect to stock investment decision. This research supports the previous research and the theory. Ali and Tariq (2013) investigated Personal Needs on Stock Investment Decisions. They found that strong influence Personal needs on individual equity

investor decision making. Kabete and Kipkirong (2018) investigated personal need of stock investment decision [21]. They found that personal financial needs had a positive effect on individual short-term investment decisions. Riri et.al (2020) examined effect of overconfidence on Stock Investment Decisions. They found that Personal Need significantly positive affect stock investment decisions.

Overconfidence has relationship to stock investment decision which has weak relationship and significant of 1%. The coefficient path is 0.186 that value is small and it called weak relationship. Wang (2001) [8] examined overconfidence on Stock Investment Decision. We find that underconfidence or pessimism cannot survive, but moderate overconfidence or optimism can survive and even dominate, particularly when the fundamental risk is large. This research supports the previous research and the theory. Phan and Zhou (2014) studies this variable to affect stock Investment decisions dan found that it has positive effect to stock investment decisions. Xia et.al (2014) [22] examined overconfidence on stock investment decision. The found that financial literacy overconfidence is positively correlated with stock market participation. Tekçe, B., and N. Yılmaz (2015) explored overconfident on stock investment decisions [23]. They findings show that overconfident behaviour is common among individual stock investors. Male, younger investors, investors with a lower portfolio value, and investors in low income and low education regions exhibit more overconfident behaviour. Moreover, we find that overconfidence has a negative effect on portfolio wealth. Riri et.al (2020) [8] studies effect of overconfidence to Stock Investment Decisions, that it has positive effect to stocks investment decisions.

Firm Image has relationship to stock investment decision which has weak relationship and significant of 10%. The coefficient path is 0.127 or less than relationship overconfidence with stock investment decision that is small, and it called weak relationship. These results supported previous studies and theory. Ali and Tariq (2013) examined Personal Needs on Stock Investment Decisions. The study found strong influence of self-image/firm-image on individual equity investor decision making. Riri et.al (2020) [8] explored

effect of firm-image on Stock Investment Decisions. They found that firm image significantly positive affect stock investment decisions.

Advocate Recommendation has relationship to stock investment decision which has weak relationship and significant of 37%. The coefficient path is 0.263 or higher than relationship between Overconfidence and Stock Investment Decision, relationship firm image and stock investment decision a that is small, and it called weak relationship. These results supported previous studies and theory. Ali and Tariq (2013) investigated Advocate Recommendation on Stock Investment Decisions. They found that strong influence advocate recommendation on individual equity investor decision making. Akbar et.al (2016) [24] examined investor decision to buy shares that stated based on recommendation by stock brokerage, colleague in office, friend, and family. Somathilake (2020) investigated Advocate recommendation on stock investment decisions. He found that advocate recommendation influenced the individual investment decisions, but they do not much consider about account information. Riri et.al (2020) [8] studied effect of advocate recommendation on Stock Investment Decisions. They found that advocate recommendation significantly positive affect stock investment decisions.

Social Relevance has relationship to stock investment decision which has weak relationship and significant of 10%. The coefficient path is 0.149 or higher than relationship firm image with stock investment decision that is small, and it called weak relationship. These results supported previous studies and theory. William (2007) investigated social relevance on stock investment decisions [25]. They found that it strong influenced to invest in stocks. Riri et.al (2020) [8] explored effect of Social Relevance on Stock Investment Decisions. They found that Social Relevance significantly positive affect Stock Decisions.

#### Years of Investment

In this research, year of investment was used to be moderating variable to estimate relationship Overconfidence, self-image / firm image, Social Relevance, Advocate Recommendation, Personal

Financial Needs on stock investment decisions. Sharma (1991) [17] and Manurung (2019) [16] stated that moderating variable is a variable to strength or weak the relationship independent variable to dependent variable.

This research found that Advocate Recommendation and Personal Financial Needs Variables are significantly to have relationship with stock investment decisions by year of investment as moderating variable.

## 7 Conclusion

Based on previously explanation, this paper come to two conclusions: (1) all variable internal and external personal variable has effect to stock investment decisions by individual investor. (2) Year of investment could be a moderating variable for relationship between personal needs and advocate recommendation with stock investment decisions.

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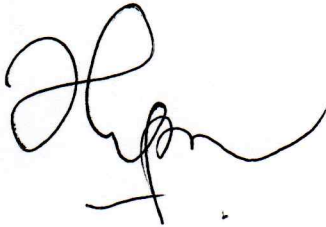
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TIRRI ROSE Kartika

# Stock Investment Decision: The Effects of Personal Factors and Moderating Role of Years of Service

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*Abstract:* - This paper aims to elaborate stock investment decision and to examine the impact of five influential factors as independent variables and the influence of years of investment as mediating variable. This paper is based on empirical study which involved 286 individual investors in Indonesia Stock Exchange using data from Riri et.al (2020). Structural equation modelling approach was used for estimating relationship between influential factors (e.g., personal financial needs, overconfidence, advocate recommendation, social relevance, and self or firm image) on stock investment decisions. The result found that decision on stock investment is determined by social relevance, overconfidence, personal financial need, and advocate recommendation significantly and positively. Years of Investment has played moderating role on relationship between for advocate recommendation and personal with stock investment decisions. Years of Investment is moderating variable to become a novelty this paper.

*Key-Words:* - stock investment decisions, years of investment, structural equation model

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## 1 Introduction

Investment in stock has high risk compared to other investment instrument. Investor should consider many things before, during, and after making decision in a stock investment in the market. The discussion on stock investment decision is a combination of psychology and finance theories which is called behaviour finance. Topic behaviour finance become a hot topic discussion in area of Finance Research. Some researcher investigated

psychological aspect especially personal factor on stock investment decisions. Zahera and Bansal (2018) developed systematic literature review on individual behaviour to stock investment decisions. Wang (2001) have explored non-rational investors' survival in a game model with a large population. The study focused on sentiment and overconfidence of the investors Nagy and Obenberge (1994) investigated this case to individual equity investors with substantial holdings in Fortune 500 firm. Rizvi and Abrar (2015) and Ahmad (2017) studied

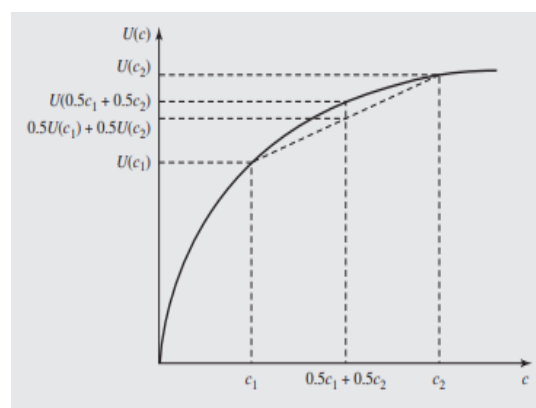
affecting factors on individual investor behaviour in Pakistan. Phan and Zhou (2014a, 2014b) examined influential factors on individual investor behaviour in Vietnam. Chang (2010) and Riri and Manurung (2020) investigated the psychological factors which influences investment decision making in Indonesia.

Intention to buy stock in the market is sometimes called as stock investment decisions. Research in this area mostly related to psychology and finance. Selden (1912) introduced psychological aspect which is related in the stock market at the first time. Then, it was followed by Festinger (1957) who introduced theory of cognitive dissonance; Slovic (1972) who studied psychological of human judgment and its implications in investment decision making. Kahneman and Tversky (1979) introduced theory of prospect which is linked to analysis about decision making under risk. Daniel et.al (1998) have examined the relationship between psychology of investors and stock market over and under reaction. Daniel et.al (2002) have examined the psychology of investor in policy implication and capital markets. Markowitz (1952) introduced portfolio theory that it explained behaviour of investor individual. They select high return and small risk for investment instrument. Boda and Sunitha (2018) have studied the psychology of investors in investment decision making which were focused on cognitive psychology and arbitrage limits. Pang and Zhou (2014) have proved that excessive optimism, overconfidence, psychology of risk, and herd behaviour on behavioural intention which mediated by attitude toward investment behaviour. Riri and Manurung (2020) stated that there are five personal factors (e.g., self or firm image, overconfidence, advocate recommendation, social relevance, and personal financial needs) have impacted on decisions of stock investment.

Previously empirical studies examined psychology factors directly impact on stock investment decisions. This paper addressed years of investment as moderating variable. Does year of investment strengthen or weaken the relationship five personal factors (e.g., firm or self-image, overconfidence, personal financial needs, social relevance, and advocate recommendation) on the decision of stocks investment? As moderating variable, years of investment could strengthen or weaken relationship between dependent and independent variables (Manurung, 2019, Sharma 1981). Moderating variable is a research contribution for stock investment decisions. This paper proposes a contribution by examining years of investment as moderating variable.

## 2 Literature Review

Stock investment decisions is about individual perspective on making decisions about how individual to decide buying or selling stocks in the market. At least, there are three conceptual theories: (1) utility theory, (2) personal intention, and (3) theory of planned behaviour (TPB). Utility theory is related on investment decision and explained how goods or services provide benefit to the individual by doing personal investment activities. Second, Selden (1912) had pioneered to establish the conceptual connection between psychology and stock market activities. Slovic (1972) studied psychological of human judgment and impacted on investment decision making. Kahneman and Tversky (1973) introduced a judgmental heuristic analysis on stock investment decision. Tversky and Kahneman (1979) introduced the theory of prospect to investment decision. This theory improved theory of utility, theory of cognitive dissonance advices that people have an inner drive to avoid dissonance or disharmony or to hold all related attitudes and behaviour in a dynamic harmony (Festinger, 1957). This is known as the principle of cognitive consistency



**Figure 1.** Utility for Personal

Source: Danthine and Donaldson (2015, p.5).

Third theory is theory of planned behaviour (TPB) which explains about individual intention for buying something. TPB was introduced by Ajzen (1991) which stated the intentions can be estimated with high accuracy from attitudes toward the perceived behavioural control, and subjective norms.

## 3 Methods

This paper is based on quantitative study which cross-sectional approach for examining the relationship between five individual factors as independent variables and year of investment as mediating variable with stock investment decision as dependent variable. Structural equation modelling

was used for estimating effects of independent and mediating variables on dependent variable. The research used data which were provided by Riri et.al (2020). The respondent profile is demonstrated on Table 1. The data was collected by utilizing online questionnaire from 385 individual stock investors in Indonesia Stock Exchange. The questionnaire consists of 29 indicators with Likert scale for measuring seven variables.

#### 4 Methodology

Figure 2. shows the research model which consist of one moderating, one dependent, and five independent variables. The independent variables consist of personal financial needs, overconfidence, social relevance, self or firm image, and advocate recommendation. Stock investment decisions is a dependent variable and years of investment as moderating variable.

The mathematic model is as follows:

$$SID_i = a_1 PFN_i + a_2 OVC_i + a_3 SR_i + a_4 SIM_i + a_5 AVR_i + a_6 YOI_i + a_7(PNF*YOI)_i + a_8(OVC*YOI)_i + a_9(SR*YOI)_i + a_{10}(SIM*YOI)_i + a_{11}(AVR*YOI)_i + \epsilon$$

- SID = Stock Investment Decisions for i
- PFN = Personal Financial Needs for i
- OVC = overconfidence for i
- SR = Social Relevance for i
- SIM = Self Image / Firm Image for i
- AVR = Advocate Recommendation for i
- YOI = Years of Investment.

In this discussion, research reported three finding which are validity and reliability instruments. It followed to discuss relationship independent variable to dependent variable. At the end, discussion of years of investment used as moderating variable in in this research.

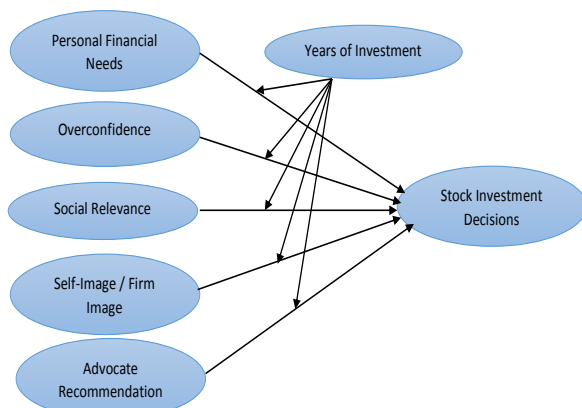


Figure 2. Research Model

#### 5 Hypothesis

Someone needs more income to provide their life. Income is a variable of Personals Needs. Ali and Tariq (2013), Kabete and Kipkirong (2018) and Riri et al (2020) has proved their Hypothesis which is Personal Financial Needs affected Stock Investment Decision. Wang (2001), Zhou (2014), Xia et.al (2014), Tekç, B., and N. Yılmaz and Riri et.al (2020) has done research for Overconfidence to affect Stock Investment Decision.

Ali and Tariq (2013) and Riri et.al (2020) has also proved their hypothesis about firm image affect stock Investment Decision.

Ali and Tariq (2013), Akbar et.al (2016) and Riri et al (2020) also proved the hypothesis of advocate recommendation affected stock investment decision.

#### 6 Result and Data Analysis

Data is collected using a questioner which is processed by Smart PLS. The Result is shown by Table 1, Table 2. Table 3 and Table 4. Table 1 showed that Statistical Descriptive about profile the sample. Table 2 and 3 show the validity and Reliability test. This research used Questionnaire to get data for analysing of Stock Investment Decisions which are affected some variables. Loading Factor, AVE, communality, and composite reliability is used to test validity.

Value of AVE should be more than 0.5 that it explained variance of indicator. Chain (1998) stated that an indicator should have validity when it has loading factor equal and more than 0.7 and T-Statistics more than 1.96. There are 27 indicators for 5 constructs. These indicators have Loading factor varying from 0.714 to 0.873, and AVE also varying from 0.609 to 0.728. It means that all indicator has validity to reflect constructs.

Then, this research also tested the reliability of indicators or instrument. CR (composite reliability) and CA (Cronbach's alpha) scores used to indicate reliability. CA score should be more than 0.7 and CR score should be also more than 0.7. CA scores are varying from 0.786 to 0.875. CR scores of constructs are varying from 0.862 to 0.901. The results indicate all constructs have reliability significantly. Based on the results, the instrument has validity and reliability, and it could be to do further exploration.

Table 4 shows the result of Hypothesis testing. Variable of Overconfidence, Advocate Recommendation, Social Relevance and Personal Needs significantly affected Stock Investment Decision. Firm Image does not affect Stock Investment Decision. Year of Investment as Moderating Variable could moderate Personal Needs

and Advocate Recommendation to Stock Investment Decision.

## 7 Discussion

		Categories		
Gender	Male	252	65.28%	65.28%
	Female	134	34.72%	100.00%
Marital Status	Single	193	50.00%	50.00%
	Married	175	45.34%	95.34%
	Divorced	18	4.66%	100.00%
Age	Less than 26-year-old	92	23.83%	23.83%
	26- to 35-year-old	187	48.45%	72.28%
	36- to 45-year-old	94	24.35%	96.63%
	More than 45-year-old	13	3.37%	100.00%
Profession	Governmental employee	42	10.88%	10.88%
	Private sector employee	123	31.87%	42.75%
	Entrepreneur	118	30.57%	73.32%
	Other	103	26.68%	100.00%
Education	Senior high school	39	10.10%	10.10%
	Vocational education	37	9.59%	19.69%
	Bachelor's degree	260	67.36%	87.05%
	Master's degree	50	12.95%	100.00%
Years of Investment	Less than 1 year	78	20.21%	20.21%
	1 - 3 years	136	35.23%	55.44%
	4 - 5 years	106	27.46%	82.90%
	Less than 5 years	66	17.10%	100.00%

**Table 1.** Respondent Profile

In this sub-section, the discussion is how relationship overconfidence, self or firm image, advocate recommendation, personal needs, and social relevance toward decisions on stock investment. Riri et.al (2020) investigated determinant of stock investment decisions which are firm image or self-image, overconfidence, social relevance, personal financial need, and advocate recommendation. The research model shows the results on Figure 2 and Figure 3.

Personal Need is a factor that someone to do for fulfil it. Income from salary does not enough to fulfil daily expenditure for his life, so she should do something to get another income by investment.

Personal need has relationship to stock investment decision which has weak relationship and significant of 10%.

The coefficient path is 0.227 or less than relationship advocate recommendation with stock investment decision that it is small, and it called weak relationship. This personal need has the second highest effect to stock investment decision.

This research supports the previous research and the theory. Ali and Tariq (2013) investigated Personal Needs on Stock Investment Decisions. They found that strong influence Personal needs on individual equity investor decision making. Kabete and Kipkirong (2018) investigated personal need on stock investment decision. They found that personal financial needs had a positive effect on individual short-term investment decisions. Riri et.al (2020) examined effect of overconfidence on Stock Investment Decisions. They found that Personal Need significantly positive affect stock investment decisions.

Sources: Process by Researcher

**Table 2.** The Analysis of Validity and Reliability

VARIABLE	ITEMS	OUTER LOADING	AVE	CA	CR
Overconfidence	OC01	0.833	0.728	0.875	0.914
	OC02	0.873			
	OC03	0.867			
	OC04	0.838			
Firm Image	FI01	0.826	0.602	0.868	0.901
	FI02	0.744			
	Fi03	0.799			
	FI04	0.777			
	FI05	0.759			
	FI06	0.799			
Social Relevance	SR01	0.839	0.682	0.845	0.895
	SR02	0.848			
	SR03	0.8			
	SR04	0.815			
Advocate Recommendation	AR01	0.816	0.657	0.826	0.884
	AR02	0.752			
	AR03	0.826			
	AR04	0.844			
Personal Need	PN01	0.827	0.609	0.786	0.862
	PN02	0.783			
	PN03	0.794			
	PN04	0.714			
Stock Investment Decision	SID01	0.761	0.613	0.842	0.888
	SID02	0.815			
	SID03	0.817			
	SID04	0.748			
	SID05	0.771			

Sources: Process by Researcher

**Table 3.** Analysis of Discriminant Validity

Dimension	[1]	[2]	[3]	[4]	[5]	[6]
[1] <i>Advocate Recommendation</i>	<b>0.810</b>					
[2] <i>Firm Image</i>	0.764	<b>0.776</b>				
[3] <i>Overconfidence</i>	0.686	0.675	<b>0.853</b>			
[4] <i>Personal Need</i>	0.827	0.634	0.633	<b>0.781</b>		
[5] <i>Stock Investment Decision</i>	0.780	0.733	0.683	0.733	<b>0.783</b>	
[6] <i>Social Relevance</i>	0.730	0.852	0.625	0.654	0.721	<b>0.826</b>

Sources: Process by Researcher



Advocate recommendation has relationship to stock investment decision which has weak relationship and significant of 1%. The coefficient path is 0.263 or higher than relationship between Overconfidence and Stock Investment Decision, relationship firm image and stock investment decision a that is small, and it called weak relationship. These results supported previous

Social relevance has relationship to stock investment decision which has weak relationship and significant of 10%. The coefficient path is 0.149 or higher than relationship firm image with stock investment decision that is small, and it called weak relationship. These results supported previous studies and theory. William (2007) investigated social relevance on stock investment decisions. They found

**Table 4.** Hypotheses Testing

Structural Model		Path Coefficient	t-Statistic	p-Value	Conclusion
H1	Overconfidence ==> Stock Investment Decision	0.186	4,041	0.000	Accepted
H2	Firm Image ==> Stock Investment Decision	0.127	1,955	0.051	<i>Rejected</i>
H3	Advocate Recommendation ==> Stock Investment Decision	0.263	3,706	0.000	Accepted
H4	Social Relevance ==> Stock Investment Decision	0.149	2,485	0.013	Accepted
H5	Personal Need ==> Stock Investment Decision	0.227	4,081	0.000	Accepted
Moderating Role		Path Coefficient	t-Statistic	p-Value	Conclusion
Years of Investment	Overconfidence ==> Stock Investment Decision	0.052	1,233	0.218	<i>Rejected</i>
	Firm Image ==> Stock Investment Decision	-0.039	0.687	0.493	<i>Rejected</i>
	Advocate Recommendation ==> Stock Investment Decision	-0.173	2,458	0.014	Accepted
	Social Relevance ==> Stock Investment Decision	-0.012	0.107	0.915	<i>Rejected</i>
	Personal Need ==> Stock Investment Decision	0.170	2,524	0.012	Accepted

Sources: Process by Researcher

studies and theory.

Ali and Tariq (2013) found advocate recommendation on Stock Investment Decisions. They found that strong influence advocate recommendation on individual equity investor decision making. Akbar et.al (2016) examined investor decision to buy shares that stated based on recommendation by stock brokerage, colleague in office, friend, and family.

Somathilake (2020) investigated advocate recommendation on stock investment decisions. He found that advocate recommendation influenced the individual investment decisions, but they do not much consider about accounting information. Riri et.al (2020) studied effect of advocate recommendation on Stock Investment Decisions. They found that advocate recommendation significantly positive affect stock investment decisions.

that it strong influenced to invest in stocks. Riri et.al (2020) explored effect of Social Relevance on Stock Investment Decisions. They found that Social Relevance significantly positive affect Stock Decisions.

*Years of Investment*

In this research, year of investment was used to be moderating variable to estimate relationship Overconfidence, self-image / firm image, Social Relevance, Advocate Recommendation, Personal Financial Needs on stock investment decisions. Sharma (1991) and Manurung (2019) stated that moderating variable is a variable to strength or weak the relationship independent variable to dependent variable. This research found that Advocate Recommendation and Personal Financial Needs Variables are significantly to have relationship with stock investment decisions by year of investment as moderating variable.

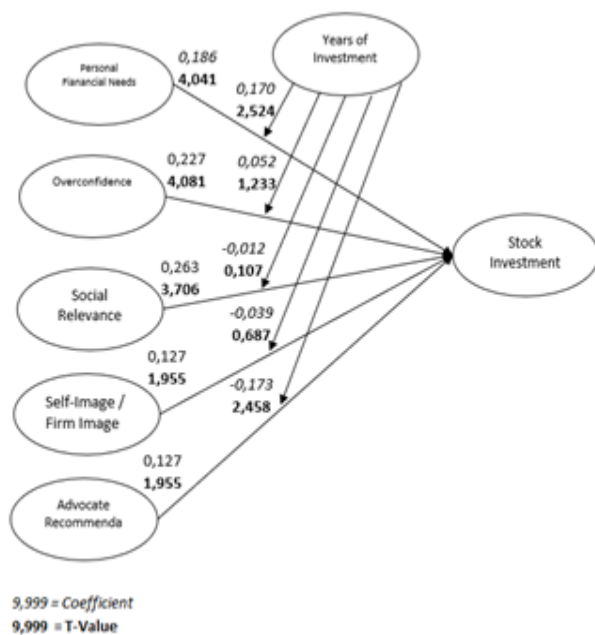


Figure 3. Statistical Output

## 8 Conclusion

This research has objective to investigate internal and external personal variable to affect stock investment decisions. This research is a research of behavior finance which is combined investment and psychology. Previous research mostly investigated directly factors affecting stock investment Decision without including moderating variable. This research entered year of investment as moderating variable. Based on result and previously explanation, this paper come to two conclusions: (1) all variable internal and external personal variable has effect to stock investment decisions by individual investor. (2) Year of investment could be a moderating variable for relationship between personal needs and advocate recommendation with stock investment decisions.

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