

# Determinants of Financial Behaviour of Individual Investors: In Context with Financial Literacy, Overconfidence and Herding

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## Abstract

**Purpose:** Financial decisions largely depend upon Financial Literacy and psychological biases of an individual investor. Drawing upon the behavioural finance theory, this paper articulates the association of Financial Literacy, overconfidence and herding bias of individual investors with their financial behaviour.

**Methodology:** The survey method was employed to collect data from 171 salaried individuals, who are living in Delhi, India and investing through Angle Broking Co. (Securities co.). Online structured questionnaires were circulated by using a purposive sampling method to collect the responses. To examine the strength of the relationship between variables, partial correlation and hierarchical regression tests were applied using SPSS software.

**Findings:** The findings revealed that only investor's Financial Literacy have a strong positive association with their financial behavior whereas overconfidence and herding bias have negative impact.

**Practical Implications:** The findings of this study may serve as a guide to policymakers and the management of financial institutions in developing investment policies as per the financial behavior of individuals.

**Originality/Value:** This article is useful for the policy makers, insurance companies and Government agencies should focus on conducting financial education programs for the purpose of increasing financial awareness among individuals.

**Keywords:** Financial Literacy, Herding, Overconfidence, Behavioral biases & Financial Behaviour

## Introduction

In traditional finance, an individual investor is considered to be a rational economic person based on the notion that the investor is risk averse. (Chandra, 2008). The utility theory has defined a rational person as an individual who holds the capability to evaluate and choose the best option out of all the options available to him. Moreover, a rational person

is also expected to capitalize on his expected utility. However, in reality, individuals are found to be irrational, far from the assumptions of traditional finance as individual investors are influenced by various and multiple biases and emotions (Statman, 1999). Theory of traditional finance works on the assumption that an individual as an investor holds and collect all the available information and evaluate the same information to make a decision but in reality, it is found that individual investor makes his/her decision not only on the basis of information he/she collects but also on his/her own set of emotions, perception, understanding, priorities, attitude and biases (Pompian, 2006). Therefore, the concept of a rational man in the era of traditional finance is being replaced by the word normal man in the new branch of finance called behavioral finance (Statman, 1999). Psychological biases lead to irrational decision making among investors (Kumar & Goyal, 2016). One such bias is called overconfidence.

Overconfidence bias is being defined as a state of mind wherein an individual trusts his/her knowledge, skills, aptitude, accuracy about financial product more than reasonably accepted, and performs more than usual and desired trading in the financial market (Lewellen, Lease, & Schlarbaum, 1977; Odean, 1998a; Barber & Odean, 2000 & 2001). Many previous research studies have observed that overconfidence bias increases the prediction error unconsciously. Kufepaksi (2007) in the research stated that overconfidence bias is a self-deception behavior of the investor which causes an error in predicting the prices of different financial products. (Pompian, 2006) concluded in the research that overconfidence bias induces the investor to underestimate the risk profile of the financial product and ignore the risky aspect of the investment avenue. It has been observed that overconfidence is the most commonly occurring trait in humans and therefore it is necessary to study and investigate further into this domain. Previous researchers have stated that the majority of investors possess overconfidence bias (Fischhoff & MacGregor, 1982) therefore, a lot of research work investigates the association between overconfidence bias and decision-making process.

Another most commonly occurring bias is the tendency of

the investors to believe in the capabilities of others and blindly follow the decisions of others instead of believing in one's own skills and thought process. This is commonly known as herding bias (Fernández, Garcia-Merino, Mayoral, Santos, & Vallelado, 2011). Many factors lead to herding bias among investors again leading to biased decisions. Limited knowledge and low level of information forces the investors to imitate the actions of other fellow investors (Ngoc, 2014; Kumar & Goyal, 2016).

Another important factor influencing financial behavior of the investor is the level of knowledge regarding financial terminology, products, known as Financial Literacy (FL). Presence of vivid variety of financial products in the financial market, there is dire need to spread awareness about financial terms, concepts, theories. This will improve the investors' ability to evaluate the available choices in a better way (Lusardi & Mitchell, 2007). Thus, the present research work investigates the role of the variables of FL, overconfidence and herding in predicting and influencing the financial behavior of the individual investor.

## Literature Review

Indian economy is growing rapidly across the globe. The stock market can be considered as an important element to for the development of any economy. The Indian stock market consists both debt and equity market. The larger part of Indian stocks traded through Bombay Stock Exchange (BSE) and National Stock Exchange (NSE). The mass investors of the Indian stock market are household participants, NRIs, OCIs (overseas citizens of India) and AMCs (domestic asset management companies), domestic institutions, and FIIs. The economic development of any country can be observed with developed stock market. In recent years, domestic participation in Indian stock market has been increased but investors need more awareness about the stock market for rational investment.

Sharpe (1977) and Markowitz (1999) developed the theory of behavioural finance assuming that the investor to be a 'rational man'. But now this concept has been changed that all investors are rational investors. Barberis & Thaler (2003) proposed two important factors that affect the rationality of financial decisions i.e., behavioural factors and cognitive factors studied in behavioural finance.

Behavioural finance concerned with the role of FL& behavioural biases in predicting the rational behaviour of an investor. Behavioural finance also deals with the reason for Behavioural biases and why do investors make irrational decisions. It has been observed that heuristics are the root cause of behavioural biases. Ritter (2003) defined heuristics as the mental shortcuts that affect the investors at the time of taking complex and difficult financial decisions. The different heuristics like anchoring, representativeness and availability bias were found important for investors to deal with the mental shortcuts for making efficient financial decisions (Tversky and Kahneman, 1974). Further, Waweru, Munyoki, & Uliana (2008) added overconfidence and gamblers' fallacy to the study of heuristics. Odean (1998a) defined the term overconfidence as an individual's tendency to embellish their aptitude, abilities, knowledge & skills about their financial decisions. In many previous researches it was identified that overconfidence of an investor leads to numerous money related flaws in financial markets (Lewellen et. al., 1977; Kahneman et al. 1998; Odean, 1998a; Hirshleifer & Luo, 2001; Kumar and Goyal, 2016). Baker et. al, (2018) conducted research and concluded that various psychological biases like overconfidence bias, self-attribution bias, the disposition effect bias, representativeness, mental accounting, emotional biases, anchoring bias and herding bias influences the investment decision making of the individual investors.

Ainia, N. S. N., & Lutfi, L. (2019) and Qasim et. al., (2019) along with Ahmad et. al., (2020) found in their research that investors are influenced by overconfidence bias while making investment decisions.

Overconfidence affects the investors in two ways; they undervalue the risks associated with an investment and estimate their skills and ability to take financial decisions. Further it makes investors aggressive and generally they drive the market toward shocks that are adverse and undesirable (Kahneman et al. 1998; Barber and Odean, 2000; Hirshleifer & Luo, 2001). In some researches, overconfidence has been observed to be negatively associated with Socio-demographic variables and positively correlated with the substandard alternatives

while making difficult decisions (Dittrich, Güth, & Maciejovsky, 2005). Sometimes overconfidence leads to financial satisfaction; it is not always negative (Sahi, 2017). Parveen, S., Satti, Z. W., Subhan, Q. A., & Jamil, S. (2020). concluded a significant effect of overconfidence on the investment decision making of the investors. Investors are generally over confident with respect to their abilities and take decisions accordingly. Wang (2001) identified that moderate overconfident investors are more feasible for the financial markets. They play a dominant role in the financial market, whereas underconfident investors face more difficulty to survive in this market. In many cases male investors have been observed more overconfident as compared to female investors which lead to diminished returns (Barber & Odean, 2001; Kumar & Goyal, 2016; AlZubi, 2023). Baker & Nofsinger (2002) found a negative association of overconfidence bias with Overconfidence bias has a negative association with cautious financial behaviour. The reason behind this is, the overconfident investors overvalue their financial skills and underestimate the risk associate with investment avenues. According to Shefrin (2000), sometimes due to overconfidence individuals cannot predict the future properly and make inefficient financial decisions. Overconfidence also refrain investors from diversifying their funds in different investment products that leads to losses (Park et al. 2010; Kumar et al., 2023; Na et al., 2024). Thus, from the aforementioned discussion, the following hypothesis can be formulated:

**H1: Overconfidence is negatively associated with financial behaviour of an investor.**

Herding is another bias that is followed by many investors to avoid risks at the time of taking difficult decisions. Sometimes people herd when there is variance in the quality of information they have (Bikhchandani & Sharma, 2000). Qasim et. al., (2019) found in their research that investors are influenced by herding bias while making investment decisions. The study was conducted among Pakistani Investors Agarwal, D., Singhal, T., & Swarup, K. S. (2016) stated that investors in India generally follow the financial behavior of others while making investments as they are inclined to avoid the risks of the market thus, they

are prone to herd bias. Liang (2011) investigated the reasons for herd behaviour and observed that it is on neural networks of brains. When there are high price instabilities, the two portions of the brain “medial prefrontal cortex” and “anterior insula” is triggered. In many cases people herd intentionally despite having discreet information about the investment products (Scharfstein & Stein, 1990). Madaan, G., & Singh, S. (2019) conducted research and found that investors possess herding bias while making financial decisions. It also stated that investors with limited knowledge are more prone to possess these psychological biases. It has been observed in previous studies that along with individual investors, herding also influence institutional investors and foreign investors. Further foreign investors are more likely to affect by herd than household investors (Agarwal, Chui, & Rhee, 2011; Hirshleifer & Luo, 2001). Mahmood et. al., (2016) also found a significant effect of herding bias in the investment decision making process of the individual investors. In many researches, an association has been examined between global risk factor and herd behaviour of an individual investor. It has also been observed that, investors are more likely to herd when market is highly unstable (Balcilar & Demirel, 2015). Thus, from the aforementioned discussion, the following hypothesis can be formulated:

**H2: Herding is negatively associated with financial behaviour of an investor.**

Many previous studies have correlated the FL with financial behaviour and found a positive association of FL& knowledge with financial behaviour of individual investors. Özen, E., & Ersoy, G. (2019) in their research stated that FL influences the cognitive biases of the investors. They also stated that with an increase in the level of financial knowledge of the investors, influence of cognitive biases reduces. The terms FL, financial knowledge and financial education can be used interchangeably (Howlett, Kees, and Kemp, 2008; Huston, 2010). The proper definition of FL is still not clear. An effort has been made by OECD (2013) to define FL. FL may be blend of skill, attitude, awareness, behaviour and knowledge of individual which can help in making financial decision in order to achieve financial well-being.

Servon & Kaestner (2008) defined, FL as an ability to know various financial concepts and practice to make appropriate financial decisions. Al-Tamimi, H. A. H. (2009) found a significant association between FL and investment decisions. They also stated that significant difference exists between FL amongst gender as females possess low level of FL as compared to men. Bonga and Mlambo (2016) concluded that the initiative for improving FL can have a long-term effect on behavioural changes of women. Due to lack of financial know-how, investors may become irrational that may the financial behaviour of an investor (Friedman & Kraus, 2011). Sabri, N. A. A., & Afiqah, N. (2016) through their research found that the FL level of the individual investor is related with the investment. Van Rooij et al's (2011) in their study stated that person who is less literate is less likely to invest in the stock market. Awais et. al. (2016) experienced that lack of financial knowledge leads to poor financial decision-making by domestic investors. In many previous studies, a significant impact of the literacy level has been found on both the long term and short-term financial behaviour of an individual (Sayinzoga, Bulte, & Lensink, 2016). Many developing economies have taken initiative to increase FL among people. As it is very important to make rational decision before taking an investment decision and FL is the only key that leads to financial well-being of any country (Agarwalla et.al., 2013). The Reserve Bank of India and many educational institutes are continuously attempting and have taken many initiatives to increase FL level of Indian citizen (RBI, 2012).

**H3: FL is positively associated with financial behaviour of an investor.**

## Methodology

### Instruments

To measure the financial behaviour, the present study was conducted among salaried individuals of Delhi, India. A descriptive research design was utilized to collect data. The data was collected through online survey method by distributing structured questionnaire. To measure the dependent & independent variables, a five-point Likert scale has been used by the authors. The demographic characteristics like age, gender of the respondents was

examined by using categorical scale. The questionnaire contained 5 questions of FL, 4 questions of overconfidence bias, 4 questions of herding bias and 4 questions of financial behaviour at five-point Likert scale. Cronbach's alpha scores were considered to analyze the reliability of scales and all the variables having more than .07 score considered as reliable.

### Participants

The sample size of the study was 171 and the population comprises individual investors residing in Delhi, India who were investing through Angle Broking Co. (Securities co.). The area of this study was limited to the salaried individuals and the rationale for choosing this sample was that they cover the large active population of the economy (OECD, 2013) & also the financial behaviour these individuals are anticipated to be diverse due to a fixed & regular income (Thakur, 2018). The sampling method for the data collection was purposive sampling because this is the most suitable method when data is collected from the population on the predetermined criteria (Patton, 2001). The population of the study comprised the individuals of the

salaried class who had a minimum of one year of experience in investing. The final dataset comprised 171 respondents that fulfilled the ten times rule of sufficient sample size (Barclay et.al; 1995) where the respondents belong to different socio-demographic backgrounds. Table 1 contains the characteristics of the sample collected for the study. In the collected responses, nearly fifty-seven percentage of the respondents are male while only 42 percent are female respondents. Out of all the respondents, nearly forty three percent of the respondents are in the age bracket of twenty-one years to forty yearly while the second largest percentage is of the respondents of the age above fifty-one years of age to sixty years of age. The lowest percentage is of the investors in the age bracket of forty-one years to fifty years of age. Maximum respondents are earning less than ten lakhs of annual income representing nearly fifty-two percentage of respondents followed by twenty-six percentage of investors earning between twenty-one lakhs to thirty lakhs of annual income while the lowest percentage of respondents are in the income bracket of above eleven lakhs but less than twenty lakhs of income.

**Table 1: Demographic Details of the Respondents**

Demographic	N	%
Age		
21-41 years	75	43.85%
42-51 years	42	24.56%
52-61 years	54	31.57%
Gender		
Male	99	57.89%
Female	72	42.10%
Income (Annual)		
Less than 10 Lakh	89	52.04%
11Lakh-20 Lakh	36	21.05%
21 Lakh-30 Lakh	46	26.90%

*Source:* Author's Own

### Data Collection

Keeping in view the covid pandemic situation, researchers prefer to collect data through online mode. Online questionnaire was distributed to 310 individual investors in in two months period but very low-rate responses were

received. Only 195 responses received by the investors out of which 24 responses were dropped due to incomplete and missing information (Hair, Black, Babin, Anderson, & Tatham, 2010). Thus total 171 dataset were coded into IBM SPSS software for further analysis.

## Data Analysis

The first distribution analysis summary of variables has been shown in Table 2. In the analysis results, the skewness & kurtosis values were found between the range of -3 and +3. As per Kline, 2005, if these values lie within the range of -3 and +3, the data can be treated as normally distributed. Also, the reliability of all constructs was measured using the cronbach alpha statistics and it was found to be above the minimum threshold limit of 0.7. The reliability statistics stood as 0.908, 0.864, 0.893 and 0.914 respectively for overconfidence, herding, FL and financial behavior.

To check the dependency of financial behaviour upon the demographic factors like age and gender, analysis of variance tests was done. Further the researchers tested the dependency of financial behaviour on the demographic factors like age and gender (Table 3). For this purpose, ANOVA test was used to check the dependency financial behaviour on age and independent samples t-test was used to check the variance of financial behaviour on gender. The

results showed that financial behaviour significantly associated with gender  $F(.000) t = (11.67) .000 (p < 0.05)$  S.D whereas financial behaviour of an individual investor was found insignificant with different age groups. At the time of final analysis, gender was controlled.

After testing the relationship between demographic variable and financial behaviour, the next step was to analyze the relationship among other constructs of financial behaviour. The gender variable was controlled, while establishing the relationship between FL, herding, overconfidence and financial behaviour of an investor. Table 2 summarizes the results of the study. The results indicated the negative moderate correlation between herding (Mean=2.69 SD=1.10) ( $r = -.625, p = .000$ ) and overconfidence (Mean=2.77, SD=1.16) ( $r = -.570, p = .000$ ) (Table:4) with financial behaviour. However, a positive correlation was found between FL (Mean=3.20, SD=.770) ( $r = .622, p = .006$ ) and financial behaviour (Mean=3.01, SD=.849).

**Table 2: Descriptive Statistics**

Variables	N	Mean	Standard Deviation	Skewness	Kurtosis	Cronbach Alpha
Overconfidence	171	2.77	1.16	.106	-1.56	.908
Herding	171	2.69	1.10	.153	-1.65	.864
FL	171	3.20	.770	-.049	-.693	.893
Financial Behaviour	171	3.01	.849	-.099	-1.25	.914

Source: Author's Own

**Table 3: Analysis of variance**

Variable	Test	Test Statistic	Sig.
1 Age	One-way ANOVA	2.41	0.92
2 Gender	t-test	11.63	.000

Source: Author's Own

**Table 4: Correlation Matrix**

Variables		Overconfidence	Herding	FL	Financial Behaviour
Overconfidence	Pearson Correlation	1			
	Sig. (2-tailed)				

Variables		Overconfidence	Herding	FL	Financial Behaviour
Herding	Pearson Correlation	.733	1		
	Sig. (2-tailed)	.000	-.535		
FL	Pearson Correlation	-.424	.000	1	
	Sig. (2-tailed)	.000			
Financial Behaviour	Pearson Correlation	-.570	-.625	.622	1
	Sig. (2-tailed)	.000	.000	.006	

*Source:* Author's Own

Since the result indicates a positive correlation of FL and financial behaviour, the correlation analysis predicts that the higher level of FL increases the favorable financial decisions making capability of an individual investor. The analysis result also predicts when the behavioural biases increase; it influences imprudent financial behaviour because results found a moderate negative correlation between behavioral bias (herding & overconfidence) and the financial behaviour of an individual investor.

### Regression Results

To assess the hypotheses of the study, regression analysis was done. The main purpose of this study was to investigate the impact of FL, herding & overconfidence bias on the financial behaviour of an individual investor. For this purpose, hierarchical regression was done. Hierarchical regression is very useful tool to investigate the impact of one variable on the other. Thus, the financial behaviour of

an individual investor was predicted by using hierarchical regression on gender, herding, overconfidence and FL variables. The proposed model was found statistically significant where results provide a significant contribution to the models. The results of Model1 explain 44.9 % variance of financial behaviour where,  $F(1,170) = 135.030$   $p < .005$ , which means the model is statistically fit. The results of Model2 explain 74.4% variance of financial behaviour, where  $F(4,166) = 120.068$   $p < .005$ . However, after including FL, overconfidence and herding variables in this model, it explains an additional 29.67%  $F(3,167) = 63.120$  of variance of financial behavior. Finally, the results indicate that FL is having stronger impact on financial behaviour, with the highest beta value, ( $B = .350$   $p < .000$ ). Overconfidence and herding variables have also been found statistically significant.

**Table 5: Summary of regression analysis**

	R2	R2 Change	Sig.
MODEL 1	.670a .449	0.449	.000
MODEL 2	.863b .744	0.296	.000
	Beta	t	r Sig.
	-0.670a	11.70	0.00
Gender	-0.201b	3.70	0.00
FL	0.350	6.40	0.00
OC	-0.248	2.10	0.00
HERD	-0.210	2.70	0.01

*Source:* Author's Own

## Discussion and Conclusion

The present study offers some important findings that have potential to make significant theoretical and practical contribution to existing literature. With the evolution of the field of behavioral finance, lot of research has been done to study the various behavioral and emotional aspects which influence the financial behavior of the investors. The anomalies in the financial market are intensified due to the presence of different emotional behavioral biases like herding, overconfidence, and lack of FL. One of the most complicated decisions is the investment decision because of the availability of numerous financial products in the financial market. Being complicated in nature, it takes lots of efforts on the part of investors to take a financial decision and thus results in losing of good opportunities also.

As a rational investor, one has to make sound financial decisions by choosing the best available option after careful analysis of all information and alternatives. An investor will be called “rational” provided he understands his/her own biases and role of FL (Kannadhasan & Nandagopal, 2010a).

Studies conducted in the past lay due emphasis that investors often imitate other investors while making financial decisions. Imitation often results in biased thinking (Baddeley, Burke, Schultz, & Tobler, 2012) instead of rational thinking. Thus, to reduce the influence of bias and to promote rational thinking, FL needs to be strengthened among investors. Numerous past studies evaluated the influence of various emotional biases on the financial behavior of the investors. Similarly, this study also tried to investigate the influence of two major emotional bias i.e., overconfidence and herding bias along with the FL on the investor's financial decision making and also to explore the influence of FL on financial behavior of an investor in the presence of gender as a control variable.

The results of the analysis indicate that gender influences the financial behavior of the investor. The findings of the study also suggested that overconfidence as emotional bias has a significant negative impact on the financial behavior of an investor as found in the previous studies (Barber & Odean, 2000; Sahi, 2017, Park, et al. 2010; Trinugroho & Sembel, 2011). This holds back the prudent financial decision making. Rational decision making is hampered

due to exaggeration of one's capabilities and undermining the involved risk of the market.

As the present study also tried to explore the association among another emotional bias i.e., herding bias and financial behavior the findings are in line with previous studies which also highlighted a significant negative relationship of herding bias with financial behavior. (Baddeley et al. 2012, Bikhchandani & Sharma, 2000; Scharfstein & Stein, 1990). Herding bias majorly occurs whenever an investor gives more than required importance to information that is accessible in open market rather than his own understanding. This is further exaggerated when investors lack trust in their own decision and are more interested in following other blindly. Investors follow other investors on the perception that others are better informed (Baddeley, et al. 2012, Agarwal, et al. 2011).

Another important role in predicting financial behavior is of FL (Adams & Rau (2011)) and the same has been explored in the current study also. FL is an important factor as being financial literate a person is in a better position to take informed and prudent decisions. It increases the basic awareness about financial term, theories and promotes skill development, attitude and knowledge of the investor to take well planned decisions (Hilgert, Hogarth, & Beverly, 2003). FL influences the spending behavior of the person as it affects the saving and investment pattern along with borrowing pattern of the person (Nelson & Wambugu, 2008) The data analysis shown a significant positive relationship between the FL and financial behavior as found in the previous studies (van Rooji, Lusardi, & Alessie, 2011) suggesting higher the level of FL lesser the influence of emotional bias. Higher the level of FL lower is the chances of irrational decision making. Financially literate persons are more inclined to make judgments on the facts rather than perceptions.

## Limitation and Future Scope of Study

This research study has some limitations. Firstly, the study is limited to the respondents of salaried individuals only and that to residing in Delhi (India) which is not necessary to be equally applicable in other cities of country. Secondly, the participants of this study include individuals, who invested through Angel Broking Co. (Securities co.), which



itself is a limitation. Further only few factors of financial behaviour like herding, overconfidence and FL have been included in the study; however other factors like financial awareness, socio-economic factors, and family background may also influence the investment decisions. The sample size of the study is also very small, because it was little difficult to connect with the salaried employees who are investors in stock market. Since the study has been conducted on salaried employees only, it is not applicable on the individuals who are doing business or profession. Since the investigation has been done by preparing self-structures questionnaire, which may lead the chances of biasness. All these limitations may provide an opportunity for future study in other fields like personality traits, financial behaviour and investment decisions, working and non-working individuals, students and working professionals, etc. For any further studies, authors could try to minimize all these limitations and can try to include a big sample size.

### Practical Implications

The present study offers some important findings that have potential to make significant theoretical and practical contribution to existing literature. The main aim of this study was to find out the impact of behavioural biases of financial behaviour of individual investors. The two main behavioural biases —overconfidence and herding—were recognized as a mental shortcut that affect individual's both short-term and long-term investment decisions. The outcome of this study explains that FL of salaried individual is highly associated with financial behaviour. The findings of this study would be useful for the Government and policy makers to make policies as per the financial behaviour of individuals. The findings suggested that the policy makers, insurance companies and Government agencies should focus on conducting financial education programs for the purpose of increasing financial awareness among individuals.

### Acknowledgements

#### Funding

This research did not receive any specific grant from funding agencies in the public.

### Authors' contributions

All authors contributed toward data analysis, drafting and revising the paper and agreed to be responsible for all the aspects of this work.

### Declaration of Conflicts of Interests

Authors declare that they have no conflict of interest.

### Declarations

Author(s) declare that all works are original and this manuscript has not been published in any other journal.

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