Cognitive bias and stock investment decisions among the individual investors

Mohan Prasad Sapkota[1*]; Shiva Bhandari[2]
[1]Birendra Multiple Campus, Faculty of Management, Tribhuvan University [Email: mohansapkota24@gmail.com/mohan.sapkota@bimc.tu.edu.np]
[2]Freelance Researcher, Tribhuvan University [Email: Shivaa.bhandari2054@gmail.com]
*Corresponding author, ORCID ID: https://orcid.org/0000-0003-4945-3070

Abstract

Decision-making is a complex activity and cannot be made in a vacuum. Human behavior is the fundamental concern for stock investment decisions of the individual investors. This study sought to establish the cognitive biases which influence the individual investors' stock investment decisions. Descriptive cum causal-comparative research design was employed. A sample of 385 individual investors was used among the stock investors in Chitwan district. Final usable responses were collected from 273 individual investors via 5-point Likert-type self-administered closed-end structured questionnaires. Data were analyzed through descriptive and inferential statistics by using SPSS - 25 and MS excel. This study found that overconfidence bias, excessive optimism, herding bias, and accounting information has significant positive influence on equity investment decisions of the investors. Evidence indicates that cognitive bias plays the significant role for stock investment decisions of the investors. Finally, this study concluded that investors should properly aware and handle such biases for better investment decisions to obtained the appropriate return on investment decisions and such biases should be properly handled by the investors through participation in training, education, seminar and information analysis. The study also suggests that the NEPSE and SEBON should offer proper investment education,

financial literacy related to stock market and knowledge to investors in order to minimize the adverse effects of such biases.

Keywords: Accounting information; Behavioral biases; Excessive optimism; Herding; Investment decision; Overconfidence

1. Introduction

Investment is the process of sacrificing current resources and committing money for a mentioned time with the expectation of acquiring returns (Reilly & Brown, 2006). The obtained benefit should be compensating the investors for that time, risk and other factors like inflation, liquidity and uncertainty associated with making investment decisions. Mostly, investment decisions are made on the basis of stock price and expected rate of return which is affected by corporate governance (Sapkota, 2020; Sapkota & Poudel, 2022); behavioural biases (Sapkota, 2022; Dhungana et al., 2022). Ultimately, Investment decisions are affected by behavioral biases (Zahera & Bansal, 2018; Sapkota, 2022) including cognitive and emotional biases (Pompain, 2012; Kumar & Goyal, 2015; Novianggie & Asandimitra, 2019).

Kumar and Goyal (2015) emphasized on combining different types of investors such as individuals and institutional investors to identify the differences in their behavior and the effect of behavioral biases in their financial decision-making process. Investors are guided by their behavioral biases and they make mistakes and biases in their financial decisions because of their emotions (Dimitrios et al., 2007; Kourtidis et al., 2017). Cognitive biases, which are unconscious mental errors stemming from simplified information processing strategies, have the potential to distort decision-making in a wide range of scenarios (Serfas, 2011). Investors' decisions are influenced by overconfidence due to overestimating their capacity (Sapkota, 2022; Dhungana et al., 2022; Agrawal, 2012). Likewise, investors' decisions are influenced by herding due to investors following the market rumors and noises (Sapkota, 2022; Pahlevi & Oktaviani, 2018). Similarly, investment decisions are influenced by accounting information due to accounting information presents the financial position and performance of the firm (Zhu & Niu, 2016; Cho & Kang, 2019). In addition, investment decisions are affected by excessive optimism due to Overlooking potential risks and inadequately assessing the true value of investments (Ullah et al., 2017; Riaz & Iqbal, 2015; Pahlevi & Oktaviani, 2018). Hence, cognitive bias is the mental shortcut that violates the principle of rationality and irrational investment decisions might occurred.

As per the best knowledge of the researchers, there is very sparse literature that deals with cognitive bias and stock investment decisions of individual investors. Apart from this, researchers are unable to access the literature that deals with cognitive bias and stock investment decisions of individual investors in Chitwan district by incorporating the

constructs of herding, accounting information, overconfidence, and optimism. Hence, the basic objective of this study is to examine the influence of cognitive bias on the stock investment decisions of individual investors. This study is divided into following sections. Section one is the introduction, section two is the literature review and hypothesis, research methodology is the section three, followed by results and discussion in section four, and conclusion is presented into section five. Finally, refences are incorporated at the end of the study.

2. Literature Review And Hypothesis

This section presents a literature review including some related hypotheses are formulated based on the literature.

Agrawal (2012) reveals that overconfidence usually drives people to overrate their knowledge, underestimate risks and overrate their capacity to control events. Likewise, Sapkota (2022); Pahlevi and Oktaviani (2018); Dhungana et al. (2022) found that overconfidence bias has significant positive impact on the decisiveness of individual investors regarding stock investment.

H_{1A}: Overconfidence bias has significant positive impact on the stock investment decisions of individual investors.

In optimizing the choice of capital investment, accounting information quality can play a crucial role (Zhai & Wang, 2016). Increasing the scope and amount of reported data may be seen as potentially beneficial to investors (Martin, 1971). This is based on the ability of current information to explain investor expectations. Rahayu et al. (2021) argued that investors know fundamental accounting principles and information before making any investment as it significantly assists in choosing more profitable reliance. Wright and Robbie (1996) mentioned in their findings that unpublished accounting information and subjective information are important for investment decisions. Zhu and Niu (2016) found that accounting information has a significant influence on stock price. Likewise, Cho and Kang (2019) found that sound accounting information has a significant positive influence on investment decisions.

H_{1B}: Accounting information has significant positive impact on the stock investment decision of individual investors.

Investors are affected by herding bias because of two major reasons, first to protect themselves from loss and then to be rewarded with maximum profit which is more likely to happen in not a well-developed society where the balance of information available is low (Qasim et al., 2019). Considering themselves as part of a group is very common in-between

them and they therefore agree on where to invest (Chandra, 2008). In addition, Sapkota (2022); Pahlevi and Oktaviani (2018); and Dhungana et al. (2022) found that herding bias has significant positive influence on the stock investment decisions of individual investors.

H_{1C}: Herding effect has a significant positive impact on the stock investment decisions of individual investors.

Optimistic managers may tend to overvalue their own corporate projects (Heaton, 2002). Investors despite having a high level of optimism it is necessary to consider the risks in each investment decision. Pahlevi and Oktaviani (2018) described that optimistic investor ignore the risk, as the asset model price states that the higher the risk, the return received is also high. Individuals are likely to react excessively to positive market information and under-react to negative information. Positive optimism is positively significant in investment decisions (Ullah et al., 2017). Likewise, Riaz and Iqbal (2015); Pahlevi and Oktaviani (2018) found that excessive optimism has a significant positive influence on stock investment decisions of individual investors.

H_{1D}: Excessive optimism has significant positive impact on stock investment decisions of individual investors.

Based on mentioned literature, the following conceptual framework is formulated. The detailed of the conceptual framework is depicted into Figure 1.

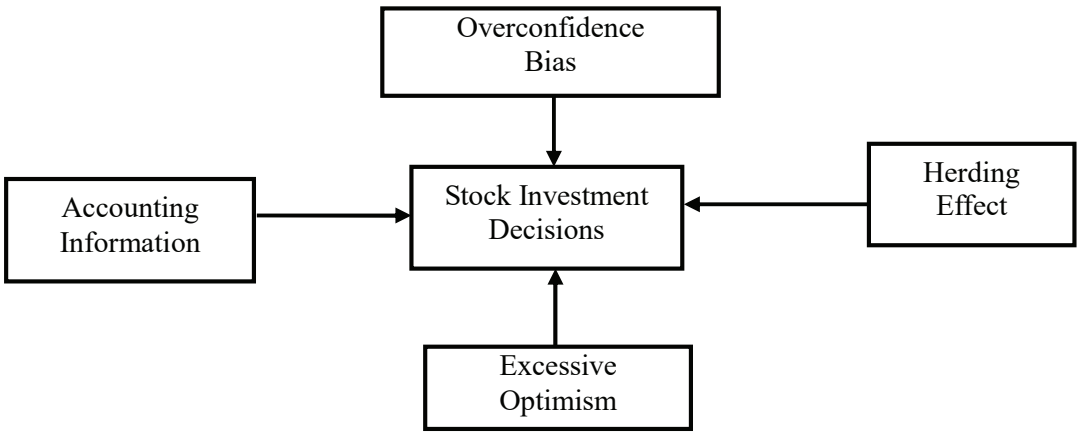

Figure 1: *Research Framework*

Likewise, Table 1 presents the notation, description and the sources of the variables including the expected impact of independent variables on stock investment decisions.

Table 1: *Description, Measurement, and Sources of the Variables*

Notation	Variables	Source	Expected Sign
SID	Stock investment decision	Razek (2011); Agrawal (2012); Sapkota (2022).	
OVB	Overconfidence	Dhungana et al. (2022); Sapkota (2022).	+
HEB	Herding effect	Qasim et al. (2019); Caparrelli et al. (2014); Sapkota (2022).	+
ACI	Accounting information	Wright and Robbie (1996); Rahayu et al. (2021).	+
EXO	Excessive optimism	Puri and Robinson (2007); Shefrin (2007); Ullah et al. (2017); Sharot (2007).	+

Source: Researchers' collection

3. Methodology

This study utilized descriptive cum analytical research design which is based on a quantitative viewpoint through the deductive method to deal with the issue raised in this study. The population of the study is the total number of individual share investors from the Chitwan district who trade at the Nepal Stock Exchange (NEPSE) are unknown. Hence, there is no sampling frame. The sample of the study was the 385 individual investors from the Chitwan district using some criteria like they have more than one year of experience in investment decisions, they are mainly engaged in other full-time jobs like academician, business houses, business owners, technical staffs, employees of Nepal government, and bankers. Finally, the responses were collected from 273 respondents representing a usable response rate of 70.91 percent. The details of the sample and responses are presented in Table 2.

Table 2: *Sample, Responses, and Response Rate*

Items	Responses	Rate	Items	Responses	Items	Responses	Rate
Received	297	77.14	Usable	273	Applicable	273	70.91
Not Received	88	22.86	Unusable	24	Not-applicable	112	29.09
Total	**385**	**100**	**Total**	**297**	**Total**	**385**	**100**

Source: Field Survey, 2022

This study was based on a primary source of data which was gathered using survey technique by utilizing 5-point Likert-type closed end structured questionnaire and ranges

from strongly disagree to strongly agree representing '1' to '5' respectively. Respondents ranked their responses from 1 to 5 points of each statement to reflect their opinion on each statement. There are altogether '32' statements representing '7' from stock investment decisions, '6' from overconfidence, herding have '8' statements, '5' from excessive optimism and '6' statements from accounting information. These questionnaires were divided into three sections including section 'A' general information, section 'B' stock investment decisions, and section 'C' is cognitive bias. Statements are taken from the previous studies and already tested by the researchers' so utilized statements are considered valid. In addition, the internal consistency of the statements is tested by Cronbach alpha with a minimum coefficient of 0.70 (Saunders et al., 2019) considered reliable.

Table 3: *Reliability Analysis (Cronbach Alpha) of the Constructs*

Constructs	Items	Cronbach Alpha
Stock Investment Decisions (SID)	7	0.911
Overconfidence (OVE)	6	0.820
Herding Effect (HEE)	8	0.891
Excessive Optimism (EXO)	5	0.803
Accounting Information (ACI)	6	0.876

Source: Field survey, 2022

Table 3 depicts that the Cronbach alpha of each construct is higher than 0.70 indicates that there is sound internal consistency (Saunders et al., 2019) among the statements of the constructs. The highest alpha coefficient is 0.911 in stock investment decisions and followed by 0.891, 0.876, 0.820, and 0.803 from herding effect, accounting information, overconfidence, and excessive optimism respectively. The fitted model can be given as,

Stock investment decision = f (Cognitive bias)

Or

Stock investment decision = f (Herding effect, Overconfidence bias, Accounting information, and Excessive optimism)

Symbolically,

$$SID = \beta_0 + \beta_1 OCB + \beta_2 HEE + \beta_3 ACI + \beta_4 EXO + e_i \ldots\ldots\ldots\ldots\ldots\ldots (i)$$

Finally, the fitted model was appraised employing variance inflation factor (VIF) for multicollinearity with a VIF of 10 (Saunders et al., 2019).

4. Results and Discussion

Demographic Profile

The demographic profile of respondents in a survey technique of research typically refers to the characteristics or information about the individuals who participate in the survey. These characteristics help researchers categorize and analyze the responses to better understand how different demographic factors may influence the results or outcomes of the study. The details of the demographic profile of the respondents are documented in Table 4.

Table 4: *Demographic Profile of the Respondents*

Dimensions	Characters	Frequency	Percent
Gender	Male	179	65.568
	Female	94	34.432
Age Group	Below 25	51	18.681
	25 to 40 years	103	37.729
	41 to 55 years	81	29.670
	Above 55 years	38	13.919
Level of Education	Intermediate	98	35.897
	Bachelor	112	41.026
	Master	59	21.612
	M Phil / Ph. D.	4	1.465
	Others (If any)	-	-
Experience	Below 5 years	137	50.183
	5 to 10 years	93	34.066
	11 to 15 years	31	11.355
	Above 15 years	14	5.128
Total		**273**	**100**

Source: Field survey, 2022

Table 4 depicts that demographic profile of the respondents where majority (65.568 percent) are the male and remaining are the female investors. Similarly, 56.41 percent of

the respondents having up to 40 years indicates that majority of the respondents are young. Likewise, the majority of the respondents (76.923 percent) up to academic qualification of a bachelor degree. Finally, the majority of the respondents have below 5 years of experience indicating that most of respondents entered into the share market after the pandemic of COVID-19.

Descriptive Statistics and Correlation Coefficient

Summarizing and organizing characteristics of a data set assists researchers in describing the distribution, central tendency, and variability of the data, thus enabling them to acquire insights and make well-informed decisions by the descriptive statistics (Saunders et al., 2019). Furthermore, the correlation coefficient is the numerical value ranges between -1 to 1 that illuminates the strength and direction of the relationship between variables, serving as an indicator of the degree of similarity in measurements among two or more variables within a mentioned dataset (Saunders et al., 2019). The details of the descriptive statistics and correlation coefficient of the study variables are documented in Table 5.

Table 5: *Descriptive Statistics and Correlation Coefficient Matrix of Cognitive Bias and Investment Decision*

Constructs	Minimum	Mean	Maximum	S. D.	SID	OVE	HEB	ACI	EXO
SID	13	28.893	35	2.132	1				
OVE	11	24.791	30	1.998	0.712**	1			
HEE	15	31.772	40	2.795	0.695**	0.435**	1		
ACI	14	25.784	30	1.894	0.794**	0.399**	0.401**	1	
EXO	9	21.573	25	2.673	0.701**	0.413**	0.219*	0.447**	1

Source: Field survey, 2022

*** Significant at 1 percent and * significant at 5 percent*

Table 5 dispenses that minimum SID is 13 and the maximum is 35 with the average value of stock investment decision is 28.893 (mean 4.27 in 5-point scale with standard deviation of 2.132) indicates that stock investment decision is striving towards strongly agree. Moreover, the minimum value of OVE is 11 and the maximum of 30 with average of 24.791 (mean = 4.132 in 5-point and S. D. = 1.998) indicates that OVE is in the level of agree. Correspondingly, mean value of HEE, ACI, and EXO are 31.772 (mean = 3.972, and S. D. = 2.795), 25.784 (mean = 4.315, and S. D. = 1.894), and 21.573 (mean = 4.297, and S. D. = 2.673) respectively. In addition, all these values are striving towards agree to strongly agree.

Furthermore, the correlation coefficient between stock investment decisions and all cognitive bias variables has positive and significant at 5 percent level. The highest correlation coefficient is 0.794 and the lowest is 0.695 which is corresponding to SID and ACI, and SID and HEE respectively. In addition, the correlation coefficient among all independent variables is less than 0.70 indicating that there is no serious problem of multicollinearity among the variables.

Multiple Regression Analysis (MRA)

The impact of cognitive bias on equity investment decisions of individual investors' is examined by multiple regression analysis. The adjusted 'R' square ranges from 17.10 percent in model '4' to maximum of 57.70 percent in model '7'. The details of the result of multiple regression analysis are dispensed in Table 6.

Table 6 *Multiple Regression Coefficients of Cognitive Bias on Investment Decisions*

		Regression Coefficients				Adj.			
Models	**Intercept**	**OCB**	**HEE**	**ACI**	**EXO**	**R^2**	**SEE**	**F**	**Sig.**
1	4.201	1.103				0.192	0.791	11.837	0.000
	(0.000)	(0.000)							
2	3.994		1.197			0.215	0.833	12.592	0.000
	(0.000)		(0.000)						
3	5.349			1.377		0.227	0.545	14.795	0.000
	(0.000)			(0.000)					
4	3.177				1.091	0.171	0.897	12.980	0.000
	(0.000)				(0.001)				
5	4.146	1.109	1.013			0.277	0.914	17.905	0.000
	(0.000)	(0.000)	(0.001)						
VIF	-	1.121	1.101						
6	5.508	1.182	1.239	1.347		0.415	0.976	31.096	0.000
	(0.000)	(0.009)	(0.000)	(0.000)					
VIF	-	1.125	1.146	1.098					
7	6.095	1.099	1.135	1.299	1.105	0.577	0.991	39.561	0.000
	(0.000)	(0.002)	(0.001)	(0.000)	(0.001)				
VIF	-	1.012	1.337	1.306	1.431				

Source: Field Survey, 2022

Note: Parenthesis presents the p values

The Table 6 depicts that each variable of cognitive bias has significant positive influence on stock investment decisions of individual investors. The fitted multiple regression line can be given as,

$$SID = 6.095 + 1.099\ OCB + 1.135\ HEE + 1.299\ ACI + 1.105\ EXO + e_i \quad \text{..... (ii)}$$

The overconfidence bias has significant positive influence on the stock investment decisions of individual investors and this finding is consistent with the finding of (Sapkota, 2022; Dhungana et al., 2022; and Pahlevi & Oktaviani, 2018) due to investors overestimating their capacity and assuming that they are smarter than the other investors. The herding bias has a significant positive influence on the stock investment decisions of individual investors and this finding is parallel with the finding of (Sapkota, 2022; Dhungana et al., 2022; Pahlevi & Oktaviani, 2018) due to individual investors excessively following the crowd, rumour, and noise in the market place. Accounting information has a significant positive influence on the stock investment decisions due to accounting information presenting the financial health and performance of the firm and this finding is consistent with the finding of (Zhu & Niu, 2016; Cho & Kang, 2019). Finally, excessive optimism has a significant positive influence on the stock investment decisions because investors perceived excessive optimism as an unwarranted or unrealistic level of positive outlook or belief in the future, often to the point of ignoring potential risks or downplaying challenges and this finding is consistent with the findings of (Ullah et al., 2017; Riaz & Iqbal, 2015; and Pahlevi & Oktaviani, 2018). Finally, evidence justified that cognitive bias has a significant positive influence on the stock investment decisions of individual investors.

5. Conclusion

The basic objective of this study is to examine the influence of cognitive bias on stock investment decisions of the individual investors. This study found that cognitive bias has significant influence on the stock investment decisions of individual investors and they violate the principles of standard finance and are guided by behavioral biases. Finally, this study concludes that investor decisions are not fully rational but are influenced by behavioural biases. These biases are manifested in different forms like herding, overconfidence, excessive optimism, and accounting information. These factors were most prevalent among stock investors manifested in the form of overconfidence where investors overestimated their skills and knowledge in making investment decisions, they also believed that they were knowledgeable in share investments through proper analysis of accounting information in the market place. Similarly, they frequently follow the rumour, crowd and are guided by others' investment decisions. In addition, they are excessively optimistic about stock return, market and their predictive capacity of the market. Hence, this study concluded that cognitive bias is the one fundamental behavioral bias that

influences the stock investment decisions of individual investors. Hence, investors should be properly aware of handling such biases for better investment decisions and to obtain the appropriate return on investment decisions.

Finally, this study recommend that investors should properly be aware and handle such biases for better investment decisions to obtain the appropriate return on investment decisions and such biases should be properly handled by the investors through participation in training, education, seminars, and information analysis. The study also suggests that the NEPSE and SEBON should offer proper investment education, financial literacy related to the stock market, and knowledge and awareness to investors in order to minimize the adverse effects of such biases.

References

Agrawal, K. (2012). A Conceptual Framework of Behavioral Biases in Finance. *The IUP Journal of Behavioral Finance, 9*(1), 7-18.

Caparrelli, F., D'Arcangelis, A. M., & Cassuto, A. (2004). Herding in the Italian stock market: a case of behavioral finance. *The Journal of Behavioral Finance*, *5*(4), 222-230. https://doi.org/10.1207/s15427579jpfm0504_5

Chandra, A. (2008). *Decision Making in the Stock Market: Incorporating Psychology with Finance.* New Delhi.

Cho, S. M., & Kang, S. A. (2019). The effect of accounting information quality and competition on investment inefficiency: evidence from Korea. *Asia-Pacific Journal of Accounting & Economics*, *26*(4), 489-510. https://doi.org/10.1080/16081625.2017.1392879

Dhungana, B. R., Bhandari, S., Ojha, D., & Sharma, L. K. (2022). Effect of Cognitive Biases on Investment Decision Making: A Case of Pokhara Valley, Nepal. *Quest Journal of Management and Social Sciences*, *4*(1), 71-84. http://doi.org/10.3126/qjmss.v4i1.45868

Dimitrios, I. M., Šević, Ž., & Theriou, N. G. (2007). Investors' behaviour in the Athens Stock Exchange (ASE). *Journal of Accountancy*, *120*(6), 67-72.

Heaton, J. B. (2002). Managerial optimism and corporate finance. *Financial management*, 33-45. https://doi.org/10.2307/3666221

Kourtidis, D., Chatzoglou, P., & Sevic, Z. (2017). The role of personality traits in investors trading behaviour: Empirical evidence from Greek. *International Journal of Social Economics*, *44*(11), 1402-1420. https://doi.org/10.1108/IJSE-07-2014-0151

Kumar, S., & Goyal, N. (2015). Behavioral biases in investment decision making–a systematic literature review. *Qualitative Research in financial markets*, *7*(1), 88-108.https://doi.org/10.1108/QRFM-07-2014-0022

Martin, A. (1971). An empirical test of the relevance of accounting information for investment decisions. *Journal of accounting research*, 9, 1-31. https://doi.org/10.2307/2490082

Novianggie, V., & Asandimitra, N. (2019). The influence of behavioral bias, cognitive bias, and emotional bias on investment decision for college students with financial literacy as the moderating variable. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, *9*(2), 92-107.http://dx.doi.org/10.6007/IJARAFMS/v9-i2/6044

Pahlevi, R. W., & Oktaviani, I. I. (2018). Determinants of individual investor behaviour in stock investment decisions. *Financial Review*, *1*(2), 53-61. https://doi.org/10.26905/afr.v1i2.2427

Pompian, M. M. (2012). *Behavioral finance and wealth management: how to build investment strategies that account for investor biases*. John Wiley & Sons.

Puri, M., & Robinson, D. T. (2007). Optimism and economic choice. *Journal of financial economics*, *86*(1), 71-99. https://doi.org/10.1016/j.jfineco.2006.09.003

Qasim, M., Hussain, R., Mehboob, I., & Arshad, M. (2019). Impact of herding behavior and overconfidence bias on investors' decision-making in Pakistan. *Accounting, 5*(2), 81-90

Rahayu, S., rohmanRohman, A., & hartoHarto, P. (2021). Herding Behavior Model in Investment Decision on Emerging Markets: Experimental in Indonesia. *The Journal of Asian Finance, Economics and Business*, *8*(1), 53–59. https://doi.org/10.13106/JAFEB.2021.VOL8.NO1.053

Razek, Y. H. A. (2011). An Overview of Behavioral Finance and Revisiting the Behavioral Life Cycle Hypothesis, *The IUP Journal of Behavioral Finance*, *8*(3), 7-24.

Riaz, T., & Iqbal, H. (2015). Impact of overconfidence, illusion of control, self-control and optimism bias on investors decision making; evidence from developing markets. *Research Journal of Finance and Accounting*, *6*(11), 110-116.

Sapkota, M. P. (2020). Corporate Governance and Financial Performance of Nepalese Commercial Banks. *PYC Nepal Journal of Management*, *13*(1), 40-50. https://doi.org/10.3126/pycnjm.v13i1.31496

Sapkota, M. P. (2022). Behavioural Finance and Stock Investment Decisions. *Saptagandaki Journal*, *13*(1), 70-84. https://doi.org/10.3126/sj.v13i1.54947

Sapkota, M. P., & Poudel, O. (2022). Corporate Governance and Market Base Performance of Commercial Banks of Nepal. *BMC Journal of Scientific Research*, *5*(1), 111-124.https://doi.org/10.3126/bmcjsr.v5i1.50682

Saunders, M. N. K., Lewis, P., & Thornhill, A. (2019). *Research methods for business students*. Pearson.

Serfas, S. (2011). The impact of cognitive biases on capital investments: Empirical evidence regarding the anchoring heuristic. *Zeitschrift für Planung & Unternehmenssteuerung*, *21*(4), 427-446.https://doi.org/10.1007/s00187-011-0120-0

Sharot, T. (2011). The optimism bias. *Current Biology*, *21*(23), R941-R945.

Ullah, I., Ullah, A., & Rehman, N. U. (2017). Impact of overconfidence and optimism on investment decision. *International Journal of Information, Business and Management*, 9(2), 231-243.

Wright, M., & Robbie, K. (1996). Venture capitalists, unquoted equity investment appraisal and the role of accounting information. *Accounting and Business research*, *26*(2), 153-168.

Zahera, S. A., & Bansal, R. (2018). Do investors exhibit behavioral biases in investment decision making? A systematic review. *Qualitative Research in Financial Markets*, *10*(2), 210-251.https://doi.org/10.1108/QRFM-04-2017-0028

Zhai, J., & Wang, Y. (2016). Accounting information quality, governance efficiency and capital investment choice. *China Journal of Accounting Research*, *9*(4), 251-266.https://doi.org/10.1016/j.cjar.2016.08.001

Zhu, B., & Niu, F. (2016). Investor sentiment, accounting information and stock price: Evidence from China. *Pacific-Basin Finance Journal*, *38*, 125-134.https://doi.org/10.1016/j.pacf