



MEASURING VALIDITY OF THE BEHAVIOURAL BIASES OF INVESTMENT DECISION MAKING

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Abstract: The purpose of the present study is to validate the items to measure Mental Accounting & Loss Aversion (Prospect Theory), Herding Bias, Overconfidence Bias, Recency Bias, Self attribution Bias, Anchoring Bias, Representative Bias, disposition effect, ostrich effect and status quo effect as antecedents of investment decision making. The study collected response from 107 equity investors. Initially the scale items were 36 of behavioural Biases and 6 items from Investment performance). Out of 36, The instrument of thirty five (35) items and out of 6 items 5 items of Investment Performance are finalized after applying confirmatory factor analysis using AMOS version 16. Further study may be carried out to use the validated items of variables using descriptive analysis and investigate the interrelationships of the variables.

Index Terms: Investment Decision Making, Investment Mental Accounting & Loss Aversion (Prospect Theory), Herding Bias, Overconfidence Bias, Recency Bias, Self attribution Bias, Anchoring Bias, Representative Bias, disposition effect, Ostrich Effect and Status Quo effect

1. Introduction

The field of Behavioural finance has gained popularity over the last three decades as the validity of assumptions underlying theoretical frameworks (such as the capital Asset Pricing Model and the Efficient Market Hypothesis) developed to analyse financial markets and hence, the practical application of these frameworks in the real world, have been increasingly questioned. Behavioural finance suggests that investors do not always act rationally when making Investment decisions, even if they possess the inputs required to make a rational decision, such as information, knowledge, and understanding. Attention was first drawn on the impact of human psychology on the stock market when Selden (1912) proposed that the movements of prices on the exchanges are dependent to a very considerable degree on the mental attitude of the investing and Trading public. For a long period of time, the investors' full rationality was the main hypothesis of the most academic research in finance.

Rationality refers to the comprehensive and objective treatment of all available as well as latent information to arrive at correct decisions that maximize the pay-off to the decision maker. It also refers to the exhaustive and objective treatment of available as well as potential information.

Since Long time, the rationality assumption was challenged by a new research studies and experiments. These changing perceptions lead to considerable experimental research being conducted to prove the irrationality of human beings. It was found through multiple experiments and studies, that in real life humans are not as rational as previously thought to be. It was also found that mostly normal humans, consciously or sub-consciously, influence various non-rational factors to their decision making. Researchs suggest that individuals with different personalities (Durand, Newby and Sanghani,2008; Durand, Newby, Peggs and Siekierka, 2010), different demographics (Ricciardi, 2008), varying degree of risk-taking capacities (Bauer, 1960; Conchar et al., 2004; Dohmen, Faulk et al, 2009) and levels of involvement (Richins and Bloch, 1986) engage in different types of choice processes.

The financial marketplace is too heterogeneous, populated in the form of retail investors, Investment advisors, fund managers and Investment institutions, each person having unique demographic and psychographic characteristics, financial objectives, time horizons, risk tolerance levels, attitudes, beliefs and motivations. In short, each of these Investment participants has a unique personality and more to add that each investor is also affected by the behaviour of other investors in the financial marketplace.

Researchers in finance therefore were forced to discard the full rationality hypothesis and to recognize the impact of the individual's unique characteristics, personalities and behaviours on his decisions.

More and more investors are involved in the stock markets ; their emotions, attitude, behaviour, perception, and style of investing have major impact on the share price movement. The presences of various financial decision makers including financial planner or advisor , an individual, an organization and the market provide a large population for research in the emerging discipline of behavioral finance (Ricciardi and Simon, 2000). The key concept of behavioral finance is that finance practitioners do not always make rational financial decisions (Sewell, 2010). The significance of behavioral finance is further confirmed in the World Wealth Report of 2010 by Capgemini and Merrill Lynch Global Wealth Management. The report concludes increasing prominence of emotional factors in decision making process of investors.

Investors critically observe different dimensions and corporate attributes while making investment decisions (McCahery et al., 2010). The propose study will help financial planners/ advisor to understand how emotional, psychological, and behavioural factors influence the decision making thus helping in reducing the stock price fluctuation and market volatility. The purpose of the present study is to analyse the importance of Mental Accounting & Loss Aversion (Prospect Theory), Herding Bias, Overconfidence Bias, Recency Bias , Self attribution Bias, Anchoring Bias , Representative Bias, disposition effect , ostrich effect and status quo effect as antecedents of investment decision making. In continuation to this, the study attempts to validate the scale to measure these variables.

2. Review of Related Literature

Prospect Theory supposes that people's utility derives from losses and gains, rather than from final wealth. People work from a psychological reference point and strongly prefer to avoid losses below it. The value function shows the sharp asymmetry between the values that people put on gain and losses. This asymmetry is called "Loss Aversion.". empirical tests indicate that losses are weighted about twice as heavily as gains i.e. losing Re.1 is about twice as painful as the pleasure of gaining Re. 1

Tversky and Kahneman (1973) introduced availability heuristic - a judgmental heuristic in which a person evaluates the probability of events by availability, that is, by the ease with which relevant instances come to mind. The reliance on the availability heuristic leads to systematic Biases which make people think that what they have in mind to do is the most correct despite what the market indicators present. This means that people do not always act rationally nor do they fully utilize all the information available to them.

In complex and uncertain situation individuals use rules of thumb for making decisions and is referred to heuristics. Common examples of heuristics include: Representativeness, Gambler's fallacy, Anchoring, Overconfidence, and Availability bias. Representativeness occurs in financial markets when investors buy hot stock and avoid stocks that perform poorly (DeBondt and Thaler, 1995).

Tversky & Kahneman (1991) presented a reference-dependent model of riskless choice. The central assumption of the Theory is Loss Aversion, i.e., losses and disadvantages have greater impact on preferences than gains and advantages.

Anchoring begins when a value is fixed (anchored) by current observations. Optimistic behavior occurs in investors when market rises and they become pessimistic when it falls (Shiller, 1998). When investors overestimate analytical skills it leads to overconfidence and studies have shown that it leads to excessive trading (Allen and Evans, 2005). Another type of heuristics appears when investors give unnecessary weight to easily available information. Such type is referred to as availability bias (Barberis, 2001).

Risk aversion is also a major determinant of investment decision making (Pennings and Smidts, 2000). Weber et al., (2002) engaged a scale of psychology to find out that individual's risk taking and conclude that individuals are highly domain specific rather than a stable attitude. Studies show that risk averse investors are less interested in risky investment (Shum and Faig, 2006). Expected utility and prospect theory have dominated the analysis of decision making under risk. The earlier argued that individuals are risk averse, rational, and try to maximize the wealth under complex alternatives (Nagy and Obenberger, 1994). Whereas, the later, suggest that investor is irrational and they are not consistent towards risk tendency under risky choices (Kahneman and Tversky, 1979).

3. Method

The scale for this research study was adapted after an extensive literature review. The total numbers of items in the scale were 42.

Sr.no.	Behavioural Biases	Major references
1	Mental Accounting	Baker Nofsinge(2002); Abhijeet Chandra (2008); <i>Le Phuoc Luong (2011)</i> ; Rahul Subash (2012); Chak Choy Sim(2012); Jayaraj s. (2013); Bshir et. al. (2013); Chetna Chapadia(2014), Geoffrey Citau Mwangi(2011)
2	Loss Aversion	Barberis & Huang, 2001; Lehenkari and Perttunen ,2004; <i>Le Phuoc Luong (2011)</i> ; Rahul Subash (2012); Ndiege Clement O. (2012), Omery Celestine Shikuku(2014); Chak Choy Sim(2012); Waweru <i>et al</i> (2003), Edward Khisa kisaka(2015), William Coffie(2013), Chetna Chapadia(2014), Geoffrey Citau Mwangi(2011)
3	Herding Bias	<i>Le Phuoc Luong (2011)</i> ; Rahul Subash (2012);Waweru <i>et al</i> (2003), Winnie Iminza Nyamute(2016), William Coffie(2013), Mamta Prosad(2014)
4	Overconfidence	<i>Le Phuoc Luong (2011)</i> ; Rahul Subash (2012); Winnie Iminza Nyamute(2016), Waweru <i>et al</i> (2003), Mamta Prosad(2014), Chak Choy Sim(2012), Chetna Chapadia(2014), Thomas c(2014), Geoffrey Citau Mwangi(2011)
5	Anchoring	<i>Le Phuoc Luong (2011)</i> ; Rahul Subash (2012); Chak Choy Sim(2012); Dolreen Kaimuri Murithi(2014), Geoffrey Citau Mwangi(2011),
6	Representative Bias	<i>Le Phuoc Luong (2011)</i> ; Rahul Subash (2012); Chetna Chapadia(2014), (Pompian, 2006), Geoffrey Citau Mwangi(2011)
7	Recency Bias	Thomas T.C (2014), Pompian, (2006).
8	Self Attribution Bias	Chak Choy Sim(2012), Chetna Chapadia(2014)
9	Disposition Effect	<i>Le Phuoc Luong (2011)</i> ; Winnie Iminza Nyamute(2016), Mamta Prosad(2014)
10	Status Quo effect	Chak Choy Sim(2012)
11	Ostrich Effect	Chak Choy Sim(2012), Karlsson et al (2005), Brown and KAgel (2009)

12	Investment Performance	<i>Le Phuoc Luong (2011);</i> Rahul Subash (2012); Oberlechner and Osler (2004); . Botti and Iyengar (2004), Ranjbar et al (2014)

The items were measured on a 5 point Likert scale (check the level of frequency). The structured questionnaire is checked for the content validity before administering same for data collection. The Investment experts who are dealing with the capital market have been chosen to check the content validity of the questionnaire. The capital market experts chosen have been involved in all stages of Investment Management like mutual fund managers, leading stock brokers, and Investment analyst and capita

l market intermediaries. A total of five experts have been drawn from the above areas to validate the contents of the questionnaire. Based on their assessment, the statements in the questionnaire have been modified for better clarity. As questionnaire has also prepared in regional level language, its validity is also required to check whether in Gujarati language questions derive same meaning and interpretation as in English language. So an expert of Gujarati literature field and expert from stock broking firm who understand regional language also in context of this research field have contacted to validate the contents of questionnaire in Gujarati.

Data from 107 equity share Investors was collected and CFA was applied for the instrument refinement.

4. Instrument Refinement

To reassure the validity of the items of each variable the present study applied confirmatory factor analysis using AMOS version 16. The estimates or factor loading of all the items against each variable are shown in table 1 below:

Table. 1: Factor Loadings of Mental Accounting & Loss Aversion (Prospect Theory), Herding Bias, Overconfidence Bias, Recency Bias , Self attribution Bias, Anchoring Bias , Representative Bias, disposition effect, ostrich effect , status quo effect and Investment Performance

		Variable	Estimate >= 0.5	P-value
“I only consider return of individual share in portfolio rather than return of entire portfolio “.	<---	Mental Accounting & Loss Aversion (Prospect Theory)	.596	0.000
“I feel dissatisfaction for return even though return of portfolio increases but done of share is in loss position against that other one is in profit .” Agree?	<---	Mental Accounting & Loss Aversion (Prospect Theory)	.600	0.000
Take more risk after earning profit	<---	Mental Accounting & Loss Aversion (Prospect Theory)	.713	0.000
Avoid risk after getting loss	<---	Mental Accounting & Loss Aversion (Prospect Theory)	.840	0.000
Not invest in high volatile market	<---	Mental Accounting & Loss Aversion (Prospect Theory)	.749	0.000
Take Investment decision by consulting advisor/ broker	<---	Herding Bias	.740	0.000
Choice of shares as per the choice of other investors	<---	Herding Bias	.858	0.000
Buy or sale the shares according to buy-sale decision of other investors	<---	Herding Bias	.802	0.000
confident to find out profit making share from stock market	<---	Overconfidence Bias	.970	0.000
my skill & knowledge about stock market helps to perform well	<---	Overconfidence Bias	.981	0.000
Go ahead with my calculation and prediction about shares rather than experts’ views	<---	Overconfidence Bias	.878	0.000
Avoid investing in companies with history of poor earning.	<---	Recency Bias	.672	0.000
13) “event” occurred in recent past is more important than in distant past	<---	Recency Bias	.706	0.000

14)How many and How fast information are passing in market is more important than what are sources of information?	<---	Recency Bias	.601	0.000
15)By hearing attractive launching news of one IPO of company for that have no or little knowledge. But I prefer to apply.	<---	Recency Bias	.560	0.000
16)keep on changing my portfolio according to the market scenario.	<---	Recency Bias	.587	0.000
17)My loss is due to unpredictable factors. Then What can I do?	<---	Recency Bias	.372	0.197
18)Others seek information about shares or share market from me	<---	Self_attribution Bias	.557	0.000
19)Have ability to access to lots of market information as they always readily available.	<---	Self_attribution Bias	.977	0.000
20)Fix a target price for buying and selling in advance before starting of Trading time	<---	Self_attribution Bias	.982	0.000
21)Have ability to predict changes in share price by looking recent share price	<---	Anchoring Bias	.724	0.000
22)prefer to sale share once it crosses recent 52 week high price	<---	Anchoring Bias	.715	0.000
23)prefer to buy share at recent 52 week low price	<---	Anchoring Bias	.683	
24)Use past performance as indicator to buy or sale shares	<---	Anchoring Bias	.665	0.000
25)Use trend analysis for buying or selling shares	<---	Representative Bias	.720	0.000
26)Prefer to buy “ Hot favourite” shares	<---	Representative Bias	.775	0.000
27)You wanted to buy share at RS. 500 as it is 52 week low price. But price in market is Rs.550. so you are waiting and now price is at Rs. 600.	<---	Representative Bias	.641	0.000
28) Sale shares whose price recently increased	<---	Disposition effect	.816	0.000

29) hold of shares whose price recently decreased	<---	Disposition effect	.844	0.000
30) Not frequent change in portfolio and keep as it is generally	<---	Status quo effect	.795	0.000
33) Categorize myself as passive customers	<---	Status quo effect	.734	0.000
34) ignore to listen bad news but ready to listen good news for investment	<---	Ostrich effect	.799	0.000
35) to reduce pressure, ignore to monitor share account during crisis	<---	Ostrich effect	.782	0.000
36) have experienced a loss in past by ignoring bad news	<---	Ostrich effect	.752	0.000
37) Overall Return from your portfolio	<---	Investment Decision	.791	0.000
38) Return from your investment as compare to return of investment of other persons	<---	Investment Decision	.780	0.000
39) For share selection decision	<---	Investment Decision	.449	0.000
40) For share volume decision	<---	Investment Decision	.790	0.000
41) For marketability of shares (i.e. Easy to sale the shares whenever I want)	<---	Investment Decision	.682	0.000
42) For action of holding some shares	<---	Investment Decision	.382	0.297

The table shows strong factor loadings i.e., ≥ 0.5 (Cua et al., 2001) of all items of Mental Accounting & Loss Aversion (Prospect Theory), Herding Bias, Overconfidence Bias, Recency Bias, Self attribution Bias, Anchoring Bias, Representative Bias, disposition effect, status quo effect, ostrich effect and investment performance with significant p-values = $0.000 < 0.05$. Therefore, all the items are included in the instrument. Additionally, it proves that all the items of Recency Bias(load on the factor except statement no. 17 with factor loadings less than 0.5 with insignificant p-values, 0.197 which is > 0.05 . Therefore, these items should be deleted from the instrument. The table also confirms that all items except statement no. 42 load on Investment Decision Making positively, as their factor loadings ≥ 0.5 with p-value < 0.05 . statement no. 42 should be deleted as its p-value is 0.297 with 0.387 estimates.

5. Conclusion and Future Direction

The instrument of forty Two (40) items is finalized after applying confirmatory factor analysis using AMOS version 16. Items less than 0.5 estimates/factor loadings shall not be included in the instruments. To validate the scale prior conducting research in different environment and culture is of great importance. Scale items to measure the above mentioned variables have been validated in Indian culture and business environment. Future research may be conducted to use the items of the variables through the analysis of descriptive statistics and exploring the interrelationships of the variable.

6. References

1. Allen, D.W., and Evans, A.D. (2005), Bidding and overconfidence in experimenting financial markets, *Journal of Behavioral Finance*, 6(3), 8 -12.
2. Acker, D. and Nigel W. (2008). Cross-cultural Overconfidence and Biased self attribution. *Journal of Socio-Economics* 37:5, 1815–1824. Retrieved from <http://isiarticles.com/bundles/Article/pre/pdf/10836.pdf>
3. Ali, Muhammad Arif and Saman Ali. (2014). “Status Quo Bias Prevailing in the Economy of Pakistan : A Comparative Study of Investors and Bankers.” 12–15.
4. Baker, kent J. and John Nofsinger. *Behavioural Finance: An Overview* , p.3. John Wiley & Sons, Inc. Retrieved from http://samples.sainsburysebooks.co.uk/9780470769669_sample_411526.pdf
5. Baker, Kent and John Nofsinger. (2002). Psychological Biases of Investors. *Financial Service Review*, 11, 97-116. Retrieved from https://www.researchgate.net/profile/John_Nofsinger/publication/230720757_Psychological_Biases_of_Investors/links/0fcfd50d0c09f84410000000.pdf
6. Banerjee, A. (1992) . A simple model of herd behaviour. *The Quarterly Journal of Economics*. 57(3), 797-817. Retrieved from <http://economics.mit.edu/files/8869>
7. Bange, Mary. (2000). Do the portfolios of small investors reflect positive feedback Trading? *Journal of Financial and Quantitative Analysis* 35:2, 239–255.
8. Barbaries, Nicholas, and Richard Thaler. (2005). A survey of Behavioral finance. In *Advances in Behavioral finance*, ed. Richard Thaler. 2, 1-78. Princeton, NJ: Princeton University Press.
9. Barber, B and Odean, T. (2001). Boys Will Be Boys: Gender, Overconfidence and Common Stock Investment. *The Quarterly Journal of Economics*. 116(1), 261-292. Retrieved from <https://faculty.haas.berkeley.edu/odean/papers/gender/BoysWillBeBoys.pdf>
10. Li, J, Ren, G, Ma, Q and Liu, L. (2009). An Experimental Study on Investors’ Status Quo Bias and its Determinants. *Frontiers of Business Research in China*. 3(4),543-565. DOI: 10.1007/s11782-009-0026-y
11. Lin, Huei-wen. (2011a). Elucidating Rational Investment Decisions and Behavioral Biases : Evidence from the Taiwanese Stock Market. 5(5),1630–41. Retrieved from Elucidating Rational Investment Decisions and Behavioral Biases : Evidence from the Taiwanese Stock Market.
12. Lin, Huei-wen. (2011b). Elucidating the Influence of Demographics and Psychological Traits on Investment Biases. 5(5),424–29. Retrieved from <http://waset.org/publications/13900/elucidating-the-influence-of-demographics-and-psychological-Traits-on-Investment-Biases>
13. Kahneman, D., and Tversky, A. (1979), Prospect theory: An analysis of decision under risk, *Econometrica*, 47(2), 263-290.
14. Kempf, A., and Ruenzi, S. (2006), Status quo bias and the number of alternatives: an empirical illustration from the mutual fund industry, *Journal of Behavioral Finance*, 7(4), 204–213.
15. Nagy, R. A., and Obenberger, R. W. (1994), Factors influencing individual investor behavior, *Financial Analysts Journal*, 50(4), 63-68.
16. Pennings, M. E., and Smidts, A. (2000), Assessing the construct validity of risk attitude, *Management Science*, 46(10), 1337-1348.
17. Ricciardi, V and Simon, H. (2000), What is Behavioral Finance? *The Business, Education and Technology Journal*, 2 (1).

18. Sewell, M. (2010). Behavioral Finance. Working paper, University of Cambridge. Retrieved from <http://www.math.chalmers.se/~rootzen/finrisk/Behavioural%20Finance.pdf>.
19. Sewel, Martin, (2007). (Revised 2010). Behavioural Finance. <http://www.Behaviouralfinance.net/>.
20. Shiller, R. (1998) Human behaviour and the efficiency of the financial system, National Bureau of Economic Research, working paper n°w 6375.
21. Thaler, RH (1985).Mental Accounting and Consumer Choice”. *Marketing Science*, 4(3),199-214. Retrieved from https://www.researchgate.net/publication/227351867_Mental_Accounting_and_Consumer_Choice
22. Thaler, RH.(1999). Mental Accounting Matters. *Journal of Behavioral Decision Making*. 12(3),183-206. Retrieved from <http://faculty.chicagobooth.edu/richard.thaler/research/pdf/mentalaccounting.pdf>
23. Thanh, Hoang, Hue Ton, and Trung Kien Dao. (2014). The Effects of Psychology on Individual Investors ' Behaviors : Evidence from the Vietnam Stock Exchange. 4(3):125–34. Retrived from <http://www.orsc.edu.cn/UTL/jzhou/homepage/201413.pdf>
24. Thi, Luu and Bich Ngoc. (2014). Behavior Pattern of Individual Investors in Stock Market. 9(1),1–16. Retrived from <https://www.researchgate.net/file.PostFileLoader.html?id=56f3d4b893553ba6c41653c1&assetKey=AS%3A343131275972610%401458820279436>
25. Tversky, A and Kahneman, D (1973). Availability: A Heuristic for Judging Frequency and Probability. *Cognitive Psychology* . 5(2), 207-232. Retrived from https://www.researchgate.net/publication/209410222_Availability_A_Heuristic_for_Judging_Frequency_and_Probability
26. Waweru, N. M., Munyoki, E. and Uliana, E. (2008), The effects of behavioral factors in investment decision making: a survey of institutional investors operating at the Nairobi Stock Exchange, *International Journal of Business and Emerging Markets*, 1(1), 24-41.
27. Weber, E. U., Blais, A., and Betz, N. E. (2002), A domain-specific risk attitude scale: Measuring risk perceptions and risk behaviors, *Journal of Behavioral Decision Making*, 15(4), 263-290.
28. Wong, M.C.S., and Cheung, Y-L. (1999), The practice of investment management in Hong Kong: market forecasting and stock