Investment Behaviour: A Study of Relationship between Investor Biases and Myers Briggs Type Indicator Personality

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Abstract

Times are changing and so are investors, investment options and investment managers. Investment managers need to bring together a dynamic mix of understanding of the financial market and the investor's profile. The study is aimed at identifying relationship between demographic variables, risk taking behaviour, investor biases, investment pattern and MBTI personality assessment of investors in India. Myers-Briggs Type Indicator (MBTI) is an individual personality preference instrument; which has been used in this paper to predict investment biases. This relationship should throw some light on how should investment managers respond to changing investment behavior based on investors' personality types.

It was seen that most of the sample investors are balanced or conservative in terms of their investment behaviour. MBTI personality types are a significant factor which affects risk taking behaviour of investors. Age, gender, work place activity, marital status are non significant factors to shape up investor`s risk taking behaviour. The results of this study can be highly useful for investment advisors, portfolio managers, and financial investment agencies as they can choose and define a product for their clients based on their gender, age, work experience, marital status, personality type and risk taking attitude. The investment advisors should try to evaluate personality of their client before offering them any product.

Keywords: *Investor Profile, Investment Pattern, Investment Bias, Myers-Briggs Type Indicator*

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INTRODUCTION

At some point of time, we've all made a spontaneous, emotional decision that we later regret. Financial experts note that, while investors should focus on making logical, careful decisions that support a long-term goal (e.g. retirement); a person's personality type or emotions can blur their investment decisions, leading to choices that are not in best of their favour. Personality typing is a new tool that is helping investment advisors better understand an individual investor's willingness to take risk and other behavioural tendencies. Keeping all this in mind, the Barclays behavioural finance team was set up in 2006, and was the first of its kind established by a bank. It asks clients to complete a financial personality assessment that is aimed at tailoring their investment portfolio to their psyche.

In recent decades it has increasingly come to be accepted that psychological factors play a major role in economic behaviour including investment decisions. Every investor is different, with different financial goals, different risk tolerance, different personal situations and different desires. To help ensure that customers receive suitable investment advice, investment managers are required to learn as much about a customer's investment profile as possible before recommending an investment strategy. As investment options are increasing, investment choices have become complex and investment pattern is ever changing. Empirical evidence indicates that factors such as age, education, income, wealth, and marital status play an important role in distinguishing risk tolerance among individuals (Riley and Chow (1992); Schooley and Worden (1999), and investor preferences for cash dividends (Fama and French (1992); Shefrin and Statman (1995); Statman (1999). Investment psychologists have finally agreed that the only pattern that will influence investing success is individual's behavior. And this behavior can somehow be understood via personality. Behavioural motivations have been advocated as a main driving force in investment portfolio choice. Investment pattern of an individual comes from systemic deviations from rational thought. Behavioural bias is defined as a pattern of variation in judgment that occurs in particular situations, which may sometimes lead to perceptual alteration, inaccurate judgment, illogical interpretation, or what is largely called irrationality. There is no way to eliminate biases. However, biases can be mitigated by identifying and creating trading and investing rules - but only if we know what to look for. Understanding personality perspective would be interesting to add on this deliberation.

A country's financial market depends on making decisions about available information to resolve two different orders of uncertainty; one that is caused by unavoidable information asymmetries at the moment of decision-making, and second that is determined by the fact that the future is inherently unknown. Understanding investor profile along with market conditions will help the investment manager to select a better investment instrument.

In this study we have used MBTI questionnaire to predict personality of respondents. The Myers-Briggs Type Indicator (MBTI) is a thoughtful self-report questionnaire which is designed to specify psychological preferences in how individuals perceive the world around them and make their decisions. This instrument was constructed by mother-daughter duo, Katharine Cook Briggs and her daughter Isabel Briggs Myers. The questionnaire is based on the typological theory proposed by Carl Jung, who had speculated that there are four principal psychological functions by which all of us experience the world-sensation, intuition, feeling, and thinking. The basis of formulation of this questionnaire, strongly believes that; one of the above four functions is dominant for any individual most of the time. This instrument was constructed for normal populations and emphasizes the value of naturally occurring differences. The MBTI sorts some psychological differences into four opposite pairs, or "dichotomies", with a resulting 16 possible psychological types. It is important to note that none of these types are "better" or "worse". The four pairs of opposite characteristics, include- Introversion or Extroversion, Thinking or Feeling, Sensing or iNtuition, and Perceiving or Judging. Four letters are used to represent a type of personality; e.g. E for extrovert, I for introvert, T for thinking, F for feeling, S for sensing, N for intuition, P for perceiving and J for judging. For example a person with preferences for Extraverted, Sensing, Thinking, Judging is called an ESTJ. There are a total of 16 possible "types" based on unique combinations of the preferences.

The rest of the paper is organized as follows. Section two reviews the existing literature, section three describes methodology of the study, section four is dedicated to results and discussion and section five gives conclusion and scope for further research.

REVIEW OF LITERATURE

The changes in the demographic sketch and social constitution in the country, rise in income levels, technology advancement, have brought about

a major shift in the attitudes and preferences of the Indian Investors (Sahi, 2009). These changes make it difficult for financial services companies to cater to the financial consumer's needs and preferences. Investor decision-making and their resultant financial performance is influenced by many psychological factors. Failure of investors to act rationally due to the expression of psychological biases that affect financial decision-making is called as investment biases. They result from human emotions, which are often at odds with rationality. The representative of this theory, the American scholar, Richard. H. Thaler (1999) believed that investment behaviour awareness deviation and psychological fluctuations would cause distortions in the pricing of assets, and then affected the efficiency of the investment decision-making. Among the most commonly described biases are overconfidence (Odean, 1999), self-attribution (Daniel, Hirshleifer, & Subrahmanyam, 1998), and the house-money effect (Thaler & Johnson, 1990). Biases typically result in detrimental financial outcomes because they promote irrational financial choices such as too much trading and taking unnecessary risks. According to Goodwin (2010), the results of the study of Biais and Weber (2008) are disturbing, as stockbrokers responded in the same way as students, even though they, as professionals, were expected to be better immune to behavioural effects. A variety of investor personality profiles exist to explain investor preferences. Bailard, Biehl and Kaiser (1986) classify investors into five categories: adventurers, celebrities, individualists, guardians, and straight arrows based on two personality characteristics. Barnewall (1987) offers a model of classifying differences in risk aversion based on the notion that individuals are passive or active, careful/impetuous, and anxious/confident, respectively.

Overconfidence is a key idea to understand why investment strategies are so actively pursued and trading is extreme, according to DeBondt and Thaler (1995). According to Daniel et al. (1998), even small individual investors may be overconfident, though they apparently have less information. In this area, three most important consequences of overconfidence have been documented: overconfidence causes too much trade (Barber and Odean, 2000; Glaser and Weber, 2007; Kim and Nofsinger, 2002; Odean, 1999; Statman, Thorley, and Vorkink, 2004), excessive volatility (Daniel, Hirshleifer, and Subrahmanyam, 1998; Gervais and Odean, 2001) and a collective phenomenon of under-and overreaction to information (Daniel and Titman, 1999; Daniel et al., 1998; Glaser and Weber, 2007; Lee and Swaminathan, 2000). In corporate finance important impacts have been observed such as overinvestment or preference for debt financing (Malmendier and Tate, 2005). The theoretical

models developed by Odean (1998) and Gervais and Odean (2001) propose that overconfident investors will more readily engage in trading than they would if they were rational investors, thereby overestimating their expected profits and continually getting involved in costly trading. Barber and Odean (2001) proved that males trade more forcefully than females, incur higher transaction costs, and consequently earn lower (post-transaction cost) returns. Also consistent with overconfidence, traders in experimental markets do not place sufficient weight on the information and actions of others (Bloomfield et al., 1999). In such markets, investors also have a propensity to overreact more to unreliable information than to reliable information (Bloomfield et al., 2000). Barber and Odean (1999) also found that investors who have experienced the greatest past success in trading are the most likely to change to online trading and will trade the most in the future because of overconfidence. Herding can be described as the duplication of one's behavior by many others and often lead to inefficient outcome (Bikhchandani et al. 1992). Asch (1952) studied the impact of environment on the human behavior for decision making; individuals primarily rely on the group opinion as an alternative of their own judgment. Herding is a behavior that follows the majority decisions instead of relying on movements of stock prices (Lin, 2011). Amir and Ganzach (1998) shed light on different heuristics (i.e. Representativeness, Anchoring and Adjustment, leniency) while making investment decisions. These heuristics show significant influence over decision making and it causes market over-reaction and under-reaction as well. The availability deviation is a general rule or a mental shortcut which lets people guess the probability of a result and to what percent it may appear in their daily life. Those who commit such a deviation consider the easily recalled events more probable than those they can hardly imagine or perceive. Another deviation which may occur in decisions is escalation decision. It occurs when there are successive decision making processes. Escalation of commitment refers to the argument that even if there is a wrong decision and the consequences confirm this, still there is an insist for continuing and it intensifies the case. Research results indicate that financial managers may follow the investment choices of other managers because they will not bear all losses once the investment fails. The managers are thus apt to suppress their own beliefs, and their investment decisions are more likely to rely on collective actions (Scharfstein, Stein 1990). Hindsight Bias is the faulty tendency to believe, after the act, in the would-be ability to foresee it. Shiller (2006) defines the hindsight bias as the tendency to believe in the ability to anticipate the scenario of events that has already taken place

before its actual occurrence. Optimism bias refers to people's tendency to believe that they are better than average, and that misfortunes are more prone to ensue on other people than themselves. Optimism or confidence may even shape an individual's family life. For example, the relationship between marriage and confidence, optimism, or related activity could be positive (Puri and Robinson (2007), Grinblatt and Keloharju (2009)), negative (Sundén and Surette (1998), Barber and Odean (2001)), or non-existent (Bhandari and Deaves (2006)). According to Freidman (2005) Marriage is associated with optimistic economic expectations, probably because the family serves as a support base that may enhance optimism.

Pompian and Longo's (2004) empirical investigation states that the next phase in the practical application of behavioral finance would to correlate established investor biases with the psychographic and gender profiles of specific investors. Sedghi Khorasgani (2007) classified the investors of Tehran stock Market based on investment behavior's style into three categories including conservative, safe and assured people and people with absolute risk.

The MBTI is a widely used personality indicator for the purpose of better understanding personality preferences and differences [Keirsey and Bates, 1978; Lawrence, 1994; McCaulley, 1976; Myers, 1979, 1980; and Myers and McCaulley, 1998]. The Myers-Briggs is divided into four dichotomies: Extraversion-Introversion, Sensing-Intuitive, Thinking-Feeling and Judging-Perceiving. It is one of the most widely used psychological measures in use today. The MBTI questionnaire measures the strength of individuals' preferences on four dimensions that indicate (1) where individuals prefer to focus their attention (extraversion versus introversion), (2) how they acquire information about their surroundings (sensing versus intuition), (3) how they make decisions (thinking versus feeling), and (4) how they orientate to the environment (judging versus perception). Filbeck, Hatfield and Horvath (2005) looked at personality types and investment decisions. They administered the Myers-Briggs Type Indicator to a group of college students and also administered a survey of risk tolerance. The authors were concerned about risk tolerance in an expected utility sense, so that the survey questions were geared towards comfort level with variation and skewness as risk measures. In their results, the thinking dimension of the MBTI had a preference for more risk-taking in the form of both variance and skewness. Those with the judging dimension also indicated a strong preference for variance. Other studies using the MBTI have found similar results. Bringhurst [1994] used the MBTI typology to examine the behavior of successful currency

options traders. The types most closely associated with successful traders were also those with the thinking dimension. Pompian and Longo (2004) studied 100 investors using the Myers-Briggs Type Indicator (MBTI) personality test and a questionnaire to uncover investor biases. Their study found that susceptibility to overconfidence and optimism biases were distinguishable by personality type (Pompian and Longo, 2004; Durand et al., 2008).

In the Indian context, the studies that segment individual investors have been even fewer in number. Nagpal and Bodla (2009) classified investors into three categories, namely Aggressive, Moderate and Conservative, on the basis of their lifestyles. Mittal and Vyas (2008) based their classification of Indian investors based on personality types, namely – casual, technical, informed and cautious, and they found behavioural linkage to the choice of investments.

METHODOLOGY

Objectives

The objective of the study is to identify relationship between demographic variables, risk taking behaviour, investor biases and MBTI personality assessment of investors in Delhi NCR.

Sample

For carrying out this study a structured questionnaire was administered on 205 respondents in Delhi NCR which includes questions related to demographic variables, overconfidence bias, optimism bias, investment pattern and MBTI (Myers-Briggs Type Indicator®) personality assessment.

Tools Used

The MBTI assessment test is the most popular psychographic model used in industry today which describes 16 personality types based on assessment of four aspects of personality.

a. How one interacts with the world and where one directs one's energy (Extraverted or Introverted - E vs. I).
b. What kind of information one naturally notices (Sensing or Intuitive - S vs. N).
c. How one makes decisions (Thinking or Feeling - T vs. F).
d. Whether one prefers to live in a structured or a spontaneous way (Judging or Perceiving - J vs. P).

One's personality type can be designated by a four-letter classification. For example, an introverted, Intuitive, Feeling, Judging person is labeled

as INFJ. The sixteen personality types are ISTJ, ISFJ, INFJ, INTJ, ISTP, ISFP, INFP, INTP, ESTP, ESFP, ENFP, ENTP, ESTJ, ESFJ, ENFJ, and ENTJ

The following hypotheses were framed.

HYPOTHESIS

H_{01}: There is no significant difference between optimist and pessimist investor's behaviour in securities market.

H_{02}: There is no significant relationship between demographic variables and overconfidence level.

H_{03}: There is no significant relationship between demographic variables and optimism bias.

H_{04}: There is no significant relationship between demographic variables and risk taking behaviour.

H_{05}: There is no significant relationship between investment biases and MBTI Personality type of investors.

ANALYSIS AND DISCUSSION

The data was collected from 205 respondents. The questionnaire consists of questions related to demographic profile, risk taking and investment biases including overconfidence bias and optimism bias. The respondent's personality types was also judged using MBTI (Myers-Briggs Type Indicator® (MBTI)) personality assessment. Out of 205 respondents 82.50 per cent were males. 90.80 per cent were respondents were between the age group of 20-35 years. 80.60 per cent respondents were unmarried and 31.80 per cent were working in corporate sector. 8.80 per cent respondents were undertaking finance related activities at workplace. 82.0 per cent respondents had less than 5 years of experience out of the total sample.

Table 1: Demographic Profile of Respondents

		Frequency	Per cent
Gender	Male	170	82.5
	Female	35	17.5
Age	20-35 years	187	90.8
	35-50 years	16	8.3
	50-65 years	2	1

Marital Status	Married	40	19.4
	Unmarried	165	80.6
Nature of Employment	Self Employed	11	5.5
	Government Employee	25	12.4
	Corporate Sector	64	31.8
	Non-Corporate Sector	8	4
	Not Employed	93	46.3
Workplace Activity	Finance Related	17	8.8
	Non-Finance Related	177	91.2
Work Experience	1-5 years	168	82
	5-10 years	19	9.3
	10-15 years	6	2.9
	15 years and above	12	5.9

14.6 per cent respondents belong to ESTJ personality. 11.2 per cent belongs to INTJ personality type which is reflected in Table 2. 9.7 per cent respondents belong to both ENTJ and INFJ personality type.

Table 2: MBTI Personality Type of Respondents

MBTI Personality Types	Frequency	Per cent
ENFJ	10	4.9
ENFP	14	6.8
ENTJ	20	9.7
ENTP	5	2.4
ESFJ	7	3.4
ESFP	10	4.9
ESTJ	30	14.6
ESTP	8	3.9
INFJ	20	9.7
INTJ	23	11.2
INTP	1	0.5
ISFJ	10	4.9
ISFP	7	3.4
ISTJ	33	16
ISTP	7	3.4
Total	205	100

Table 3 covers various investment biases of investors. 57.10 per cent investors are balanced investors in terms of their risk taking behaviour. 40 per cent of Indian investors are conservative when it comes to taking risk in investment. Overconfidence is defined as the tendency to place an irrationally excessive degree of confidence in one's abilities and beliefs. The result of over confidence bias shows that 69.30 per cent respondents are balanced. 15.6 per cent respondents are less confident about their investment decisions. Only 15.10 per cent of Indians were found to be affected by overconfident bias while investing. 65.90 per cent respondents are affected by optimism bias.

Table 3: Investment Biases of Respondents

		Frequency	Per cent
Risk Taking Behaviour	Conservative Investor	82	40
	Balanced Investor	117	57.1
	Aggressive Investor	6	2.9
	Total	205	100
Overconfidence Bias	Less Confident	32	15.6
	Balanced	142	69.3
	Over Confident	31	15.1
	Total	205	100
Optimism Bias	Pessimist	70	34.1
	Optimist	135	65.9
	Total	205	100

Table 4 shows descriptive statistics of investment pattern of respondents. The average investment out of total income is 39.39 per cent for Indian investors. Maximum investors invest in saving bank account with average investment of 39.16 per cent. Average investment in real estate sector is 30.55 per cent. Average investment in pension fund is 19.95 per cent and 19.96 per cent in insurance policy. Average investment in equity shares is 11.1 per cent and 10 per cent in derivatives market.

Table 4: Descriptive Statistics of Investment Pattern of Respondents

	Mean	Median	Mode	Std. Deviation	Skewness	Kurtosis	Minimum	Maximum
Total Investments	39.39	38	30	19.787	0.421	-0.183	0	100
Saving Bank Account	39.16	30	10	31.762	0.806	-0.696	2	100

Contd.

Fixed Deposit	18.75	15	10	14.864	2.226	6.084	3	80
Govt. Securities	12.21	10	5	13.712	2.962	11.521	0	70
Provident Fund	19.95	20	10	14.557	1.474	2.095	3	70
Insurance Plans	19.96	15	5	18.022	1.966	4.034	3	80
Gold	14.17	10	10	12.621	2.907	10.596	5	70
Mutual Fund	17	15	10	12.066	1.939	5.514	2	60
ETFs	11.67	10	5	6.831	0.523	-1.875	5	20
Real Estate	30.55	25	20	22.921	1.21	1.341	5	100
Bonds	7.33	7	10	2.646	0.006	-2.305	4	10
Equity Shares	11	10	10	5.921	1.102	0.509	5	25
Derivatives Market	10	7.5	5	6.547	1.018	-0.7	5	20

Table 5 depicts ANOVA results between optimism bias of investors and investment in securities market. The F value is 1.307 which is not significant (0.255) which reflect that there is no significant difference in optimist or pessimist investor`s investment behaviour when it comes to investment in securities market. So null hypothesis (H_{01}) is accepted i.e. there is no significant difference between optimist and pessimist investor's investment in securities market.

Table 5: ANOVA Results on Optimism Bias and Investment in Securities Market

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	59.464	1	59.464	1.307	0.255
Within Groups	5233.118	115	45.505		
Total	5292.581	116			

Table 6 shows demographic factors and over confidence bias among investors. On the basis of gender 68.80 per cent males and 71.40 per cent females are balanced. 15.90 per cent male investors are found to be having over confidence in their attitude. The chi-square result accepted the null hypothesis that there is no significant difference between gender of the investors and level of over confidence bias.

With respect to age 15.60 per cent respondents between the age group of 20-35 years are over confident. 64.70 per cent of the respondents in

the age group of 35-50 years are balanced. The chi-square result is 2.966 which is not significant (0.564) shows that age of the investors doesn`t affect level of confidence among respondents.

On the basis of marital status, it was found that 70.30 per cent of respondents are unmarried and are balanced with respect to the level of over confidence. 22.50 per cent married respondents are less confident in terms of investment. 31.00 per cent respondents are having over confidence bias. The chi-square results 1.868 accepts the null hypothesis with the level of significance (0.393) which shows over confidence level is not affected by marital status of respondents.

On the basis of nature of employment 90.90 per cent respondents who are self-employed are having balanced attitude. 72 per cent government employees are also balanced in nature. 15.60 per cent respondents who are working in corporate sector are over confident. The chi square result 7.638 is also not significant which shows that there is no significant difference in overconfidence bias of investors based on their nature of employment. So, null hypothesis is accepted.

The relationship between workplace activity of the respondents and their over confidence level is also not significant (0.183 level of significance). 88.20 per cent respondents who are involved in finance related activities, are balanced in nature and 66.50 per cent whose work profile is non-finance related are also balanced in terms of level of over confidence.

67.70 per cent respondents with work experience 1-5 years are balanced. 73.70 per cent respondents with work experience of 5-10 years are also balanced. The chi-square result of 4.290 is not significant (0.637) which depicts that there is no significant relationship between level of over confidence and work experience of the respondents.

Table 6: Demographic Factors and Overconfidence Bias among Investors

		Less Confident	Balanced	Over Confident	Total	Chi Square Result
Gender	Male	26	117	27	170	0.473 (0.789)
		15.30%	68.80%	15.90%	100.00%	
	Female	6	25	4	35	
		17.10%	71.40%	11.40%	100.00%	
	Total	32	142	31	205	
		15.60%	69.30%	15.10%	100.00%	

Contd.

Age	20-35 years	27	130	29	186	2.966 (0.564)
		14.50%	69.90%	15.60%	100.00%	
	35-50 years	4	11	2	17	
		23.50%	64.70%	11.80%	100.00%	
	50-65 years	1	1	0	2	
		50.00%	50.00%	0.00%	100.00%	
	Total	32	142	31	205	
		15.60%	69.30%	15.10%	100.00%	
Marital Status	Married	9	26	5	40	1.868 (0.393)
		22.50%	65.00%	12.50%	100.00%	
	Unmarried	23	116	26	165	
		13.90%	70.30%	15.80%	100.00%	
	Total	32	142	31	205	
		15.60%	69.30%	15.10%	100.00%	
Nature of Employment	Self Employed	0	10	1	11	7.638 (0.438)
		0.00%	90.90%	9.10%	100.00%	
	Government Employee	4	18	3	25	
		16.00%	72.00%	12.00%	100.00%	
	Corporate Sector	14	40	10	64	
		21.90%	62.50%	15.60%	100.00%	
	Non-Corporate Sector	1	7	0	8	
		12.50%	87.50%	0.00%	100.00%	
	Not Employed	12	63	17	92	
		13.00%	68.50%	18.50%	100.00%	
	Total	31	138	31	200	
		15.50%	69.00%	15.50%	100.00%	
Workplace Activity	Finance Related	1	15	1	17	3.395 (0.183)
		5.90%	88.20%	5.90%	100.00%	
	Non-Finance Related	30	117	29	176	
		17.00%	66.50%	16.50%	100.00%	
	Total	31	132	30	193	
		16.10%	68.40%	15.50%	100.00%	
Work Experience	1-5 years	27	113	27	167	4.290 (0.637)
		16.20%	67.70%	16.20%	100.00%	
	5-10 years	2	14	3	19	
		10.50%	73.70%	15.80%	100.00%	
	10-15 years	0	6	0	6	
		0.00%	100.00%	0.00%	100.00%	
	15 years and above	3	8	1	12	
		25.00%	66.70%	8.30%	100.00%	
	Total	32	141	31	204	
		15.70%	69.10%	15.20%	100.00%	

It was found that overconfidence bias as investor's attitude is not affected by gender, age, workexperience, workplace activity and marital status of investors. Hence null hypothesis (H_{02}) is accepted.

We tried to evaluate our respondents for optimism bias. This is a bias that causes a person to believe that they are less at risk of experiencing a negative event compared to others.

Table 7 analyses the level of optimism bias among investors and their demographic factors. 65.90 per cent respondents are optimist. The results show that 67.10 per cent of males are optimist and 60.00 per cent of females are optimist. 34.10 per cent are pessimist while taking investment decision. The chi-square result of 0.643 is insignificant (0.432) which reflects that there is no significant difference in optimism bias of males and females, so null hypothesis could not be rejected. On the basis of age it was found that 64.00 per cent of respondents in the age group of 20-35 years are optimist and 82.40 per cent respondents between the age group of 35-50 years are also optimist. The chi-square result of 3.386 is not significant (0.184) which shows no significant difference between levels of optimism of respondents of different age groups.

The result of chi square test (10.356) between optimism bias and marital status of respondent is found to be significant at 0.001 level of significance. It shows that null hypothesis is rejected and there is significant difference between level of optimism of married and unmarried investors. 87.50 per cent of married investors are found to be optimist as compared with 60.60 per cent of unmarried investors. Marriage brings family into picture which serves as a support system for the investor. Marriage may also be linked with an assumption that the spouse is also an earning member and thus the kitty to invest expands. Family charges up an investor emotionally to earn more and thus they have an optimistic outlook towards investment.

80 per cent of government employees, 67.20 per cent of employees working in corporate sector are optimist. 40.20 per cent of not employed respondents are pessimist in nature. The chi square results of 6.035 per cent are non significant at 0.197 level. The relationship between workplace activity and optimism bias is also not significant, so null hypothesis is accepted that there is no significant difference between optimism level of finance related work profile and non-finance related activities carried out by investors. The chi square result of 6.792 between respondents having work experience and level of optimism is found to be non significant at 0.073. The results also confirm that 78.90 per cent respondents with

work experience of 5-10 years are optimist as compared to 37.70 per cent respondents with 1-5 years of experience who are pessimist.

Table 7: Demographic Factors and Optimism Bias among Investors

		Pessimist	Optimist	Total	Chi Square Result
Gender	Male	56	114	170	0.643 (0.432)
		32.90%	67.10%	100.00%	
	Female	14	21	35	
		40.00%	60.00%	100.00%	
	Total	70	135	205	
		34.10%	65.90%	100.00%	
Age	20-35 years	67	119	186	3.386 (0.184)
		36.00%	64.00%	100.00%	
	35-50 years	3	14	17	
		17.60%	82.40%	100.00%	
	50-65 years	0	2	2	
		0.00%	100.00%	100.00%	
	Total	70	135	205	
		34.10%	65.90%	100.00%	
Marital Status	Married	5	35	40	10.356 (0.001)*
		12.50%	87.50%	100.00%	
	Unmarried	65	100	165	
		39.40%	60.60%	100.00%	
	Total	70	135	205	
		34.10%	65.90%	100.00%	
Nature of Employment	Self Employed	5	6	11	6.035 (0.197)
		45.50%	54.50%	100.00%	
	Government Employee	5	20	25	
		20.00%	80.00%	100.00%	
	Corporate Sector	21	43	64	
		32.80%	67.20%	100.00%	
	Non-Corporate Sector	1	7	8	
		12.50%	87.50%	100.00%	
	Not Employed	37	55	92	
		40.20%	59.80%	100.00%	
	Total	69	131	200	
		34.50%	65.50%	100.00%	

Contd.

Workplace Activity	Finance Related	4	13	17	0.943 (0.332)
		23.50%	76.50%	100.00%	
	Non-Finance Related	62	114	176	
		35.20%	64.80%	100.00%	
	Total	66	127	193	
		34.20%	65.80%	100.00%	
Work Experience	1-5 years	63	104	167	6.792 (0.073)
		37.70%	62.30%	100.00%	
	5-10 years	4	15	19	
		21.10%	78.90%	100.00%	
	10-15 years	1	5	6	
		16.70%	83.30%	100.00%	
	15 years and above	1	11	12	
		8.30%	91.70%	100.00%	
	Total	69	135	204	
		33.80%	66.20%	100.00%	

It can be concluded that level of optimism of investors is affected by marital status. Nature of employment, work experience of investors, age, gender and work place activity has no relation with an individual's optimist or pessimist outlook towards their investments.

Table 8 depicts relationship between risk taking behaviour of respondents and demographic factors. Based on gender it is found that 57.10 per cent respondents are balanced and 40.00 per cent are conservative investors. The chi square result is insignificant and null hypothesis is accepted.

On the basis of age group, it can be seen that 55.90 per cent respondents between age group of 20-35 years and 70.60 per cent respondents lie in the age group of 35-50 years, are balanced investors. The chi-square results (1.779) is non-significant which shows that there is no difference in risk taking behaviour of respondents of different age groups.

70 per cent of married respondents are balanced investors as compared to 55.30 per cent unmarried investors. The chi-square test accepts the null hypothesis that marital status of investors does not affect their risk taking behaviour.

62.50 per cent of respondents in corporate sector are balanced in terms of their risk taking behaviour. 45.50 per cent of self employed, 52 per cent government employees are balanced investors. The chi square result of 5.937 is non significant (0.654) which depicts that there is no differece between risk taking behaviour of investors and their working in different sectors.

On the basis of their work profile related to finance, it is seen that 56.50 per cent investors are balanced and 56.20 per cent investors are working in non financed profile is also balanced when it comes to investment. The result shows that there is no significant difference in risk taking behaviour related to work place activity so, H_{04} is accepted.

The chi square test value 2.854 which is insignificant (0.827) for risk taking behaviour and work experience shows that null hypothesis is accepted. Investors with 1-5 years of experience are balanced (55.70 per cent). 68.40 per cent investors with 5-10 years of experience and 66.70 per cent investors having more than 15 years of experience are balanced, who are taking risk in investment.

Table 8: Demographic Factors and Risk Taking Behaviour among Investors

		Conservative Investor	Balanced Investor	Aggressive Investor	Total	Chi-Square Test
Gender	Male	68	97	5	170	0.001 (1.000)
		40.00%	57.10%	2.90%	100.00%	
	Female	14	20	1	35	
		40.00%	57.10%	2.90%	100.00%	
	Total	82	117	6	205	
		40.00%	57.10%	2.90%	100.00%	
Age	20-35 years	76	104	6	186	1.779 (0.776)
		40.90%	55.90%	3.20%	100.00%	
	35-50 years	5	12	0	17	
		29.40%	70.60%	0.00%	100.00%	
	50-65 years	1	1	0	2	
		50.00%	50.00%	0.00%	100.00%	
	Total	82	117	6	205	
		40.00%	57.10%	2.90%	100.00%	
Marital Status	Married	11	28	1	40	3.472 (0.180)
		27.50%	70.00%	2.50%	100.00%	
	Unmarried	71	89	5	165	
		43.00%	53.90%	3.00%	100.00%	
	Total	82	117	6	205	
		40.00%	57.10%	2.90%	100.00%	

Contd.

Nature of Employment	Self Employed	5	5	1	11	5.937 (0.654)
		45.50%	45.50%	9.10%	100.00%	
	Government Employee	12	13	0	25	
		48.00%	52.00%	0.00%	100.00%	
	Corporate Sector	23	40	1	64	
		35.90%	62.50%	1.60%	100.00%	
	Non-Corporate Sector	2	6	0	8	
		25.00%	75.00%	0.00%	100.00%	
	Not Employed	39	50	4	93	
		41.90%	53.80%	4.30%	100.00%	
	Total	81	114	6	201	
		40.30%	56.70%	3.00%	100.00%	
Workplace Activity	Finance Related	6	10	1	17	0.600 (0.741)
		35.30%	58.80%	5.90%	100.00%	
	Non-Finance Related	72	99	5	176	
		40.90%	56.20%	2.80%	100.00%	
	Total	78	109	6	193	
		40.40%	56.50%	3.10%	100.00%	
Work Experience	1-5 years	69	93	5	167	2.854 (0.827)
		41.30%	55.70%	3.00%	100.00%	
	5-10 years	5	13	1	19	
		26.30%	68.40%	5.30%	100.00%	
	10-15 years	3	3	0	6	
		50.00%	50.00%	0.00%	100.00%	
	15 years and above	4	8	0	12	
		33.30%	66.70%	0.00%	100.00%	
	Total	81	117	6	204	
		39.70%	57.40%	2.90%	100.00%	

To summarize, we can say that most of the indian investors are balanced or conservative in terms of their investment behaviour. Age, gender, work place activity, marital status are non significant factors to shape up investor`s risk taking behaviour.

MBTI Personality Types and Investment Biases - Managerial Implications

The study tries to explain the relationship between MBTI personality types of individuals and three investment biases namely risk taking behaviour, optimism bias and overconfidence bias. In a world filled with unique individuals, when it comes to personality there are only four different temperaments and 16 types of personalities. NF (intuitive – feeling) combination is the idealist temperament. They exemplify how to live an authentic life and majority of people are critical of the NF's values and priorities. Idealists are rare, making up no more than 10 to 15 percent of the population. INFJ is the rarest personality type. Individuals of this type make up little more than one percent of the total population.

- I-Introverts tend to be reflective, reserved and private.
- N-intuitive pay more attention to information that is imaginative and original. Intuitive focus on the future
- F-Feelers let their feelings and emotions play a leading role because of their concern for other people.
- J-Judgers prefer a lifestyle that is decisive, planned and orderly.

The highly developed intuition of INFJs warns them when trouble lies ahead - for themselves or other people around them. Thus they are most balanced when it comes to risk taking as an investment bias as they can foresee future and can plan accordingly. They will prefer investments for unknown future that assures them safety and security; not only for them but also for other important ones in their lives.

Table 9: MBTI Personality Types and Investment Biases

	Risk Taking Behaviour			Optimism Bias		Overconfidence Bias		
MBTI Personality Types	Conservative Investor	Balanced Investor	Aggressive Investor	Pessimist	Optimist	Less Confident	Balanced	Over Confident
ENFJ	6	3	1	4	6	2	5	3
	60.00%	30.00%	10.00%	40.00%	60.00%	20.00%	50.00%	30.00%
ENFP	9	5	0	6	8	10	10	3

Contd.

	64.30%	35.70%	0.00%	42.90%	57.10%	7.10%	71.40%	21.40%
ENTJ	9	11	0	5	15	3	13	4
	45.00%	55.00%	0.00%	25.00%	75.00%	15.00%	65.00%	20.00%
ENTP	1	3	1	2	3	1	4	0
	20.00%	60.00%	20.00%	40.00%	60.00%	20.00%	80.00%	0.00%
ESFJ	0	7	0	4	3	2	5	0
	0.00%	100.00%	0.00%	57.10%	42.90%	28.60%	71.40%	0.00%
ESFP	4	6	0	4	6	1	8	1
	40.00%	60.00%	0.00%	40.00%	60.00%	10.00%	80.00%	10.00%
ESTJ	8	20	1	7	23	8	16	6
	27.60%	69.00%	3.40%	23.30%	76.70%	26.70%	53.30%	20.00%
ESTP	3	5	0	2	6	0	7	1
	37.50%	62.50%	0.00%	25.00%	75.00%	0.00%	87.50%	12.50%
INFJ	6	14	0	8	12	3	16	1
	30.00%	70.00%	0.00%	40.00%	60.00%	15.00%	80.00%	5.00%
INTJ	10	12	1	7	16	2	16	5
	43.50%	52.20%	4.30%	30.40%	69.60%	8.70%	69.60%	21.70%
INTP	1	0	0	0	1	0	0	1
	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%
ISFJ	5	5	0	4	5	2	7	0
	50.00%	50.00%	0.00%	44.40%	55.60%	22.20%	77.80%	0.00%
ISFP	6	1	0	2	5	1	6	0
	85.70%	14.30%	0.00%	28.60%	71.40%	14.30%	85.70%	0.00%
ISTJ	10	22	1	13	20	6	22	5
	30.30%	66.70%	3.00%	39.40%	60.60%	18.20%	66.70%	15.20%
ISTP	3	3	1	2	5	0	6	1
	42.90%	42.90%	14.30%	28.60%	71.40%	0.00%	85.70%	14.30%
Total	82	117	6	70	135	32	142	31
	40.00%	57.10%	2.90%	34.10%	65.90%	15.60%	69.30%	15.10%
Chi Square Test	37.913*			Chi Square Test	7.606		Chi Square Test	26.073

*shows significant results at 0.05 levels

Table 9 discusses relationship between MBTI personality type and risk taking behaviour. The chi square result is 37.913 which is highly significant (0.015) shows that risk taking behaviour of investors differs according to personality type. 69.00 per cent ESTJ investors are balanced.

70.00 per cent INFJ, 66.70 per cent ISTJ, 55.00 per cent ENTJ are balanced investors.

In the table, relationship between optimism bias of investors with their MBTI personality types shows that 76.70 per cent respondents with ESTJ personality are optimists. 60.60 per cent investors with ISTJ personality, 69.60 per cent investors having INTJ personality and ENTJ personality is carried out by 75.00 per cent respondents, are optimist. 39.40 per cent ISTJ personality are pessimists. The result of chi-square test of 7.606 is also not significant (0.939).

The relationship between MBTI personality types and over confidence bias observes that 87.50 per cent ESTP are balanced. 80.00 per cent ESFP, ENTP, INFJ and ISFJ are balanced investors. 30.00 per cent of ENFJ are found to be overconfident and 15.60 per cent ISTP are less confident investors. The chi sqaure result is 26.073 is non significant (0.476). It shows that personality type of respondents doesn't affect level of optimism and overconfidence level but risk taking ability is affected by personality type.

Two of the four MBTI dimensions, SN and JP, seem to be most related to risk preference (Li and Liu 2008). Thorne and Gough (1991) found a conceptual overlap between SN and JP and reasoned that both scales gauge stability versus change dimension. Meaning, the Sensor and Judger were seen as conservative, while the Intuitor and Perceiver were seen as changeable and nonconforming (Gardner and Martinko 1996). In this study, top three personalities that are balanced in investing when it comes to risk taking as an investment bias are INFJ (70.00 per cent), ESTJ (69 per cent) and ISTJ (66.70 per cent).

Since INFJs are rare personality types (making up less than one percent of total population), it is more important to understand the other two personality types that are balanced investors in risk taking bias: ESTJ and ISTJ. SJ (sensing–judging) is the Guardian temperament. Guardians are about 40-45% of the total population. Two out of four types of guardians' are- Inspector (ISTJ) and Supervisor (ESTJ).

- E-Extraversion (interacting with people)/ I- Introversion (thinking things through).
- S-Sensing (perceiving tangible facts) more than intuition (perceiving the unknown).
- T-Thinking (making decisions using objective logic) more than Feeling (making decisions using subjective values).
- J-Judgement (an organised lifestyle) more than Perception (a flex-

ible lifestyle).

Li and Liu (2008) examined the relationship between risk preference and cognitive style operationalized by the Myers-Briggs Type Indicator. They found that higher Sensing and Judging were more likely to be consistently risk-averse. The present study supports the idea as SJs were found to be most balanced investors in Indian context. A wealth manager would be more focussed on STJ part of the personality to design investment portfolio. Sensing people like to have only facts. They are not drawn to the conceptual big picture. They will prefer a portfolio that talks of today and not tomorrow. They will not be influenced to buy an investment instrument for unknown future; which may include accident, sudden retirement or even death. An instrument that gives them freedom to get the returns to maintain today's lifestyle will instantly be opted by them. Thinking people want concrete facts rather than feel good picture. A promise that some amount will be sufficient in near future, will not impress them. They want exact calculations of returns vis-à-vis all instruments in their portfolio and vis-à-vis all instruments/ competitors all across investment industry. Their immediate attention can be grabbed through numbers and comparisons rather than some quality that cannot be measured. Judging people are organizers of the first order. They will always opt for instruments that are planned and closed and not to be discussed any further. Instruments with flexible options in terms of investment or even returns will not strike the chord with them. They will always prefer investments that are fixed in nature.

CONCLUSION

The results of analysis show that 14.6 per cent respondents belong to ESTJ personality. 11.2 per cent belongs to INTJ personality type. 9.7 per cent respondents belong to both ENTJ and INFJ personality type. 57.10 per cent investors are balanced investors in terms of their risk taking behaviour. 40 per cent of Indian investors are conservative when it comes to taking risk in investment. Only 15.10 per cent of Indians were found to be affected by overconfident bias while investing. 65.90 per cent respondents are affected by optimism bias. It was found that overconfidence bias as investor's attitude is not affected by gender, age, workexperience, workplace activity and marital status of investors. There is no significant difference between optimist and pessimist investor's investment in securities market. It was seen that age, gender, work place activity, marital status are non

significant factors to shape up investor`s risk taking behaviour. It can be concluded that level of optimism of investors is affected by marital status. Nature of employment, work experience of investors, age, gender and work place activity has no relation with an individual's optimist or pessimist outlook towards their investments. 76.70 per cent respondents with ESTJ personality are optimists. 60.60 per cent investors with ISTJ personality, 69.60 per cent investors having INTJ personality and ENTJ personality is carried out by 75.00 per cent respondents, are optimist. 39.40 per cent ISTJ personality are pessimists. The relationship between MBTI personality types and over confidence bias observes that 87.50 per cent ESTP are balanced. 80.00 per cent ESFP, ENTP, INFJ and ISFJ are balanced investors. 30.00 per cent of ENFJ are found to be overconfident and 15.60 per cent ISTP are less confident investors. It can be concluded that personality type of respondents doesn't affect level of optimism and overconfidence level but risk taking ability is affected by personality type.

Investment advisors are urged to include personality type in assessing risk tolerance prior to executing an investment program. We suggest this four-step method: Step One: Take a personality type test of the client. Step Two: Evaluate responses to determine personality type. Step Three: Assess risk tolerance after understanding the personality. Step Four: Design investment portfolio accordingly. Investors who trust financial consulting will tend to follow investment guidance and thus are more likely to benefit from the long-term strategies devised by wealth management experts. The customized behavioural portfolios can be constructed so as to maximize the financial as well as psychological well being of the investors.

This is an emerging topic of research and can be studied in various directions. This study can be replicated to a different sample population region. The results can be tested and investment strategies can be designed for investors as per their personality type. BB&K model can be tested in Indian investors and investment strategies can be designed for them. Various other biases and its relationship with personality can be studied.

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