FACTORS AFFECTING INVESTMENT DECISION MAKING OF URBAN INDIVIDUAL INVESTORS IN INDIA

THESIS

Submitted in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

By

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D E C L A R A T I O N

I hereby declare that the Research Thesis entitled, **'Factors Affecting Investment Decision Making of Urban Individual Investors in India'** which is being submitted to the **National Institute of Technology Karnataka, Surathkal,** in partial fulfillment of the requirements for the award of the Degree of **Doctor of Philosophy** in **Humanities, Social Sciences and Management** is a **bonafide report of the research work carried out by me.** The material contained in this Research Thesis has not been submitted to any University or Institution for the award of any degree.

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CERTIFICATE

This is to certify that the Research Thesis entitled, **'Factors Affecting Investment Decision Making of Urban Individual Investors in India'** submitted by **Sukanya Shetty** (Register Number: **090720 HM09F01**) as the record of the research work carried out by her, is accepted as the Research Thesis submission in partial fulfillment of the requirements for the award of the degree of **Doctor of Philosophy.**

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ABSTRACT

For the sake of financial security individuals must save and invest. Due to the changes in the socio-economic environment, not only have individuals become increasingly responsible for their well-being but the landscape of financial markets has changed radically. These changes have been characterized by an increase in the complexity of financial products. Investment decision making (IDM) in such an environment has become extremely difficult.

Although modern portfolio theory assumes that investors are rational, in reality it is not so. The literature review provides ample evidence to show that individuals are not rational and markets are not efficient. Further, it provides the theoretical framework to identify the various factors that influence IDM among urban individuals. Although the financial innovations are important and relevant, they ignore the essence of the financial products; of whether it is suitable to those whom it is designed and marketed. For this reason, it is important to understand individuals from a holistic point of view rather than from a single viewpoint.

The purpose of the study is to describe the factors that influence IDM of urban individuals in the current scenario. The factors that affect the IDM considered in this study are (a) demographics (b) personality (c) social environment (d) experience (e) choice criteria (f) contextual factors and (g) biases based on information processing errors. The data is substantiated by an in-depth interview of intermediaries who facilitate IDM among individual investors.

Data was collected primarily through a survey in the form of a self-administered questionnaire from 1146 urban individual investors as well as from interviewing 40 financial intermediaries. The secondary sources of information were gathered from books, journals, newspapers, working papers, study reports and websites. The validity of the instrument was obtained with the help of experts and pilot tested for a small group of respondents and the reliability was tested using Cronbach's alpha. The population

considered for the study was urban middle class individuals with a minimum disposable income of Rs. two lakhs per annum. Since the data collected is very personal and highly confidential, snowball sampling is used for the purpose of the study. Data is analyzed using Kruskal Wallis test, Pearson's correlation, Principal Component Analysis and Regression Analysis using SPSS version 17.

The results of the study indicate that demographics, personality traits, and experience influence the IDM of individuals. The intermediaries' opinion agrees with the results of demographic factors and experience. Among the social environment factors, family and non-commercial sources are found to influence the IDM of individuals. As per the intermediaries' opinion, non-commercial sources and informal sources influence individuals to a larger extent. Among the choice criteria factors, convenience and risk factors influence the IDM of individuals. But, as per the intermediaries' opinion, return affects IDM to a large extent. Among the contextual factors, task complexity and information processing affects the IDM of individuals. As per the intermediaries' opinion, task complexity and time constraint affect individual investors. Among the biases, representativeness, framing, availability and loss aversion affect the IDM of individuals. The regression results show that the biases of representativeness, framing, anchoring and loss aversion could be explained using the explanatory variables of personality, social environment, choice criteria and contextual factors. The intermediaries further mention that individuals are affected by emotion while investing.

An individual would be able to make better investment decisions by being aware of his/her own biases. By understanding the individual investor, the financial intermediaries could customize financial plans and products to suit the needs of their clients. The policy makers could design policies so as to encourage a positive investment environment that is in favor of individual investors.

Key words: Investment decision making**,** individual investor, risk averse, moderately risk seeking and highly risk seeking.

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ABBREVIATIONS

ANOVA	Analysis of Variance
BBA	Bachelor of Business Administration
BBM	Bachelor of Business Management
B.Com.	Bachelor of Commerce
CA	Chartered Accountant
CAD	Current Account Deficit
CAIIB	Certified Associate of Indian Institute of Bankers
CFP	Certified Financial Planner
Corp.	Corporate
d.f.	degree of freedom
EPF	Employees' Provident Fund
FII	Foreign Institutional Investor
GDP	Gross Domestic Product
Govt.	Government
HNI	High Net Worth Individual
HRS	Highly Risk Seeking
ICWA	Institute of Cost and Works Accountants of India
IDM	Investment Decision Making
IIP	Index of Industrial Production

IRDA	Insurance Regulatory and Development Authority
KMO	Kaiser-Meyer-Olkin
LIC	Life Insurance Corporation
MBA	Master of Business Administration
MF	Mutual Fund
MRS	Moderately Risk Seeking
MSA	Measure of Sampling Adequacy
NBER	National Bureau of Economic Research
NBFC	Non Banking Finance Company
NCAER	National Council of Applied Economic Research
PAN	Permanent Account Number
PCA	Principal Component Analysis
PF	Provident Fund
PO	Post Office
PPF	Public Provident Fund
PUC	Pre-University Course
RA	Risk Averse
RBI	Reserve Bank of India
REIT	Real Estate Investment Trust

SEBI	Securities and Exchange Board of India
SIP	Systematic Investment Plan
SPSS	Statistical Package for Social Sciences
SSLC	Secondary School Leaving Certificate
TRP	Television Rating Points
UK	United Kingdom
ULIP	Unit Linked Plan
USA	United States of America

CHAPTER ONE

INTRODUCTION

1.1 Chapter Overview

This chapter provides an introduction to the entire thesis. Section 1.2 provides the background to the research. Section 1.3 explains the rationale for the study. Section 1.4 lists out the research questions. Section 1.5 spells out the research objectives. Section 1.6 discusses the significance of the study. Section 1.7 outlines the overall structure of the thesis.

1.2 Background to the Research

Financial security depends on the ability to accumulate adequate wealth (Wolff, 1998). In order to accumulate wealth, individuals need to save and invest. Due to the changing socio-economic situation individuals are forced to make complex decisions like saving and investing for their own future. Investment refers to the commitment of current resources for future returns. Although the opportunities for investment are abundant, financial instruments have become increasingly complex and more and more complicated instruments are being introduced. Despite the technological and financial innovations that have taken place in the recent past, the decision to save and invest has become enormously difficult (Statman, 2003). The exponential growth in opportunities for investment and the ample choice available has led to a strain on the time and attention of the individual. With such an overload of information, decisions about how much to save and invest to accumulate the required amount of wealth depends on diverse factors.

Decision making is a human cognitive process which involves choosing from among a set of alternatives. In the case of investments, decision making was thought to be rational (Markowitz, 1959, Fama, 1965). As per the standard finance theory, the investment process involves determining the goals of investment, understanding the environment and the various avenues of investment, choosing the best among the alternatives and reviewing and revising the investments regularly. Traditional finance theory claims that

investors are rational and markets are efficient (Fama, 1965). Using the mean variance model, Markowitz (1952) showed how to optimally choose assets and create a portfolio and Sharpe (1964) developed the equilibrium model of Capital Asset Pricing Model (CAPM) for pricing assets. One drawback of traditional finance theory is that it is devoid of 'people' and considers all individuals to be risk averse expected utility maximizers (De Bondt & Thaler, 1994). In reality it has been found that individuals manage their investments in ways which may not specifically be rational. Individuals fail to use Markowitz's model to construct portfolios, fail to apply capital asset pricing model (CAPM) and do not pay attention to arbitrage opportunities(Statman, 1995). They are affected by cognitive errors, are emotional while choosing assets for investment, are reluctant to realize losses and do not maximize utility. Individual investors are also found to be diverse with different personalities, dissimilar risk attitudes, mixed demographics and varied experiences and are subject to different biases. Behavioral finance integrates findings from sociology and psychology into economics in order to explain individual investor behavior as well as aggregate market behaviour (Barberis & Thaler, 2003, Glaser et. al., 2003).

Although behavioural finance does not provide a unified theory unlike expected utility theory, it is based on how people actually behave based on widespread experimental evidence (Subrahmanyam, 2007). The focus of behavioral finance is to provide a positive description of human behavior under risk and uncertainty rather than on a normative analysis of human behavior (Stracca, 2002, Rodriguez, 2003).

Reflecting on the theory of bounded rationality, Herbert Simon (1955) supposed that human rationality has limitations under conditions of considerable risk and uncertainty. Instead of maximizing returns and minimizing risk, an investor would make a sub-optimal choice depending on imperfect information and emotional reasoning. In other words an investor would *satisfice* one's financial utility rather than maximize it. Bounded rationality (Simon, 1955) says that while making decisions individuals are constrained by cognitive limitations of the mind, lack of computational abilities, amount of information

known and the amount of time available. Unlike the mathematical theory of decision making which considers individuals as rational optimizers, bounded rationality says that individuals simplify the choices available to them using heuristics and arrive at a satisfactory solution rather than an optimal one.

Prospect Theory (Kahneman & Tversky, 1979) elucidates that investors are risk seeking with reference to losses and risk averse with reference to gains. It describes actual human behaviour and says that it systematically deviates from the normative rules of utility maximization. Presenting empirical evidence, the theory describes how individuals evaluate potential losses and gains in risky choices. When faced with a risky choice, people use heuristics or rules of thumb to make choices. Initially they fix a reference point subjectively and consider smaller outcomes as losses and larger outcomes as gains. The value function is shown as an S-shaped curve that passes through the reference point. The curve is flatter and concave in the area of gains and steeper and convex in the area of losses indicating greater loss aversion. Moreover it shows that individuals are risk seeking in losses and risk averse in gains.

value

losses

concave
sector

gains/
losses

point of reference

gains

convex
sector
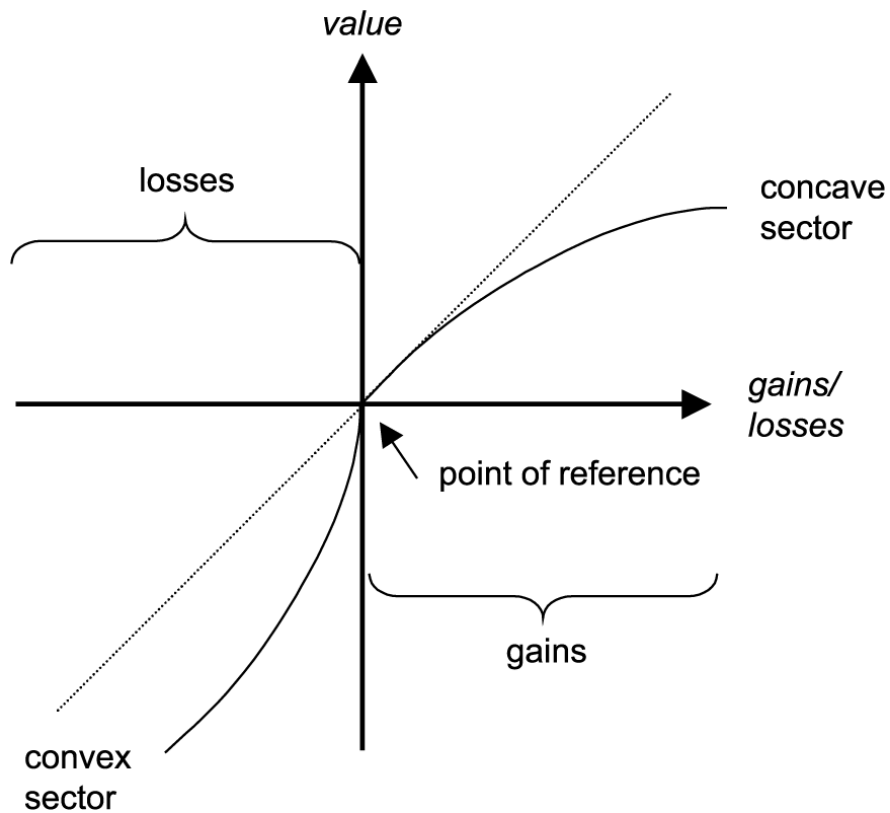
Fig. 1.1: Prospect Theory Value Function (*source: Kahneman & Tversky, 1979*)

Implication of the prospect theory led to the development of a new field of study called behavioural finance. Behavioural finance was used extensively to explain the inefficiency in the financial markets.

The concepts of bounded rationality (Simon, 1955) and prospect theory (Kahneman & Tversky, 1979) appear to have laid the groundwork for behavioral finance. The wide acceptance of behavioural finance could be attributed to the fact that it incorporates real world imperfections like asymmetric information on the one hand to the observed traits of individuals such as risk aversion on the other hand into finance models (Glaser et. al., 2003).

1.2.1 Indian Investment Scenario

Since liberalization in 1991 the Indian economy has grown in leaps and bounds. The GDP has grown by almost 352 percent in 20 years from 1991 to 2011. The per capita income at constant prices has grown by 257 percent from 1991 to 2011. Most importantly the household savings have grown by 1104 percent from 1991 to 2011. The following table shows the various parameters of growth over 20 year intervals since 1971.

Table 1.1: Measures of Development in India

	1971	1991	2011
GDP (Rs. lakh crore)	4.7	10.8	48.8
Per capita income (at constant prices)(Rs.)	8,091	11,535	41,129
Household savings (Rs. crore)	4,371	1,04,789	12,61,332
Gross domestic savings as % of GDP	16.43	22.49	29
Forex reserves ($ billions)	0.97	5.8	274
FDI reserves ($ billions)	-	0.13	30.3
Exports ($ billions)	2.1	18	245
Exchange rate (Rs./$)	7.5	17.9	45.6
Telephone subscribers (in millions)	-	0.5	862
Number of passenger cars	36,032	0.18million	2.9 million
Air passengers (in millions)	0.48	8.9	57
Cabinet secretary's monthly salary (Rs.)	4000	30,000	90,000

Source: The economic times, July 24th 2011

Due to the rise in GDP the gross domestic savings too have shown a steady rise along with the rise in income. But the lack of depth in the financial markets ensured that most of the savings were diverted to physical assets like gold and real estate (Tamrakar & Mani, 2007). Beyond the physical assets bank deposits were the next best alternative especially for urban investors (Tamrakar & Mani, 2007, SEBI NCAER survey 2011). During the late nineties the share of financial savings had increased from 51.6 percent to 66.7 percent while the share of physical savings reduced from 48.4 percent to 33.3 percent (Tamrakar & Mani, 2007). Among the financial savings, households are found to shy away from the securities markets and prefer government bonds and post office deposits. The SEBI NCAER survey also found that 56 percent of urban and 72 percent of rural households are not likely to make fresh investments in equity shares. Aversion to ambiguity leads to non participation (Weber, 1993). This lack of confidence in the risky securities is due to lack of knowledge among individuals and absence of dependable infrastructure and distribution network as also problems of locating the right intermediary, lack of guidance and advice. Since 2008 the trend in savings has also reversed. Gross domestic savings in physical assets have increased from 29.3 percent in 2008 to 46.4 percent in 2012. The share of financial assets has reduced from 52 percent of the personal savings in 2008 to 33 percent of the personal savings in 2012(Kant, 2013). Insurance and provident fund investments have increased during the last two decades due to the necessity of providing financial security for oneself.

Since liberalization, the Indian financial system has seen a remarkable change. The reforms encouraged the growth of private sector banks and entry of foreign multinational banks taking the total number of banks to 100. Moreover the banks have diversified in their services and have adopted the latest technology in trying to reach the customers. Apart from banking, the Indian capital markets too have seen a significant change during the last two decades since the scam of 1991. Securities Exchange Board of India was set up in 1992 to better regulate the capital markets. Many positive changes like accessibility, transparency, liquidity and a better regulatory framework have taken place. Unfortunately the number of individual investors have reduced from 21 million in 2000-

01 to 8 million in 2009 (D. Swarup Committee report, 2009, cited in Dalal, 2012) perhaps due to aversion towards risk. The mutual fund industry plays an important role in resource mobilization. They offer various schemes to suit different risk classes of investors. Yet, of late individual investors are retreating from this industry too. The insurance sector has undergone a major transformation since 2000 when private players were allowed to participate. Considering that there is a large population in India that is uninsured there is tremendous potential for the insurance industry. Of late the various economic factors of inflation, exchange rate, crude price and current account deficit (CAD) are affecting the financial markets. The economic slowdown since 2008 has driven many investors to move from the risky securities segment to the safer securities segment.

The SEBI-NCAER household survey (2011) has found that nearly 72 percent of all urban households treat commercial banks and insurance schemes as their primary choice of savings. Real estate is found to be the next best option of investment. The degree of risk aversion is extremely high in Indian households while education plays a significant role in influencing risk preferences. The degree of risk was highest among investors with more than 15 years of schooling. Participation in risky instruments is low due to inadequate information, lack of skills and the perceived non-safety of returns. Those with greater education and higher income opt for investments with longer duration. If there was a windfall gain, then households with lesser assets engaged in risky behaviour compared to those households with greater assets. Quality and source of information significantly influence the extent of participation in financial markets. A significant majority of the investors depend on the advice given by intermediaries and friends. Considering these findings of households, it isfound that it is also important to understand individuals because investment decision making (IDM) is not a joint decision in households. Individuals make independent decisions depending on whether they are earning members or enjoy greater bargaining power (Lyons et. al., 2008).

1.2.2 Individual Investors

Individual investors have a lot of information to process part of which may be relevant for decision making while part of it may not be. Perhaps instead of trying to obtain that information people simply follow their gut feeling or a fad and are thus 'behavioural' investors (Mardyla & Wada, 2008).

From a study of the individual investors who manage their own portfolios, DeBondt (1998) found that individuals are prone to biases; they are influenced by their social environment i.e. their peers, financial advisors, news in the media as also internet portals, forums and news groups; they do not diversify their portfolios and hold a larger percentage of fixed income securities and finally even professionals failed to adhere to discipline and consistency (Ritter, 2003) . It is found that individuals do not adhere to the tenets of rational decision making while making financial decisions and make suboptimal decisions (Agarwal & Mazumder, 2010). Rational decision making requires a high level of cognitive ability especially computational ability and also financial sophistication. The behavior of individual investors is found to be different due to the variation in the level of attributes across individuals (Dorn & Huberman, 2005).

Decision making involves trade-offs of various types. (Sobel, 2000) While making decisions, individuals focus on various features of the decision context. Different frames, contexts, and elicitation details emphasize different aspects of the options and bring forth different reactions and considerations that influence decision (Lovric et. al., 2008). In the face of complex tasks such as investment decisions, there could be a tendency to forget or postpone decisions (Bertrand et. al., 2005). It is found that there is considerable heterogeneity across individuals in terms of IDM. But little is known about the source of such heterogeneity (Barnea et. al., 2009).

1.3 Rationale for the Study

Not many systematic studies have been undertaken to study the factors that affect the IDM of individuals in the Indian context (Chandra & Kumar, 2011). Most research on portfolio choice and investment has investigated how investors save and allocate funds across capital market assets or risky investments. This study seeks to integrate the various factors affecting IDM of individuals across various riskless and risky investments. Insights from this study would help an individual recognize one's strengths and weaknesses in IDM while financial market intermediaries could design and market financial products and services that are suitable to investors. Insights from this study could also help policy makers design policies that would protect individual investors from being exploited.

1.4 Research Questions

1. What is the extent to which demographics affect individual IDM?
2. Do personality traits influence the IDM of individuals?
3. Do individuals heed the guidance of their social environment while making investment decisions?
4. Does the past experience of the individual shape IDM in the present?
5. Is the individual driven by choice criteria in IDM?
6. Do the contextual factors have a bearing on the individual IDM?
7. To what degree do heuristic biases stimulate IDM?

1.5 Research Objectives

1. To examine the effect of demographics on individual IDM.
2. To assess the influence of personality traits on individual IDM.
3. To observe whether individuals heed the guidance of their social environment while making investment decisions.
4. To detect whether past experience induces individual IDM at present.
5. To identify the choice criteria factors that affect individual IDM.

6. To determine the extent of influence of contextual factors on individual IDM.
7. To evaluate the extent of influence of heuristic biases on individual IDM.

1.6 Significance of the Study

It is obvious that the management of wealth and portfolio choice requires more sophisticated knowledge than it did two decades ago. Due to the changes in the socio-economic environment, not only have individuals become more and more responsible for their well-being but the landscape of financial markets has changed radically, and these changes have been characterized by an increase in the complexity of financial products.

The purpose of the study is to describe the factors that affect the IDM of urban individuals in the current scenario and identify the source of heterogeneity among individuals. The data is substantiated by an in-depth interview of intermediaries who facilitate IDM among individual investors.

The study has implications for individual investors, intermediaries and policy makers. Understanding oneself especially the biases one is subject to, would enable the individual make better investment decisions. By understanding the individual investor, the financial intermediaries could customize financial plans and products to suit the needs of their clients. The policy makers could design policies so as to encourage a positive investment environment that is in favor of individual investors.

1.7 Organization of the Thesis

Chapter one introduces the topic under research, provides the statement of the problem, the research questions, the research objectives and the significance of the study. *Chapter two* provides a review of the related literature that forms the theoretical framework of the study along with the conceptual framework. This chapter describes the variables that are included in the study. *Chapter three* deals with the research design that is used to

undertake the study, collect and analyze the data. *Chapter four* presents the analysis and interpretation of the data. *Chapter five* lists out the findings of the study, provides the conclusion and the direction of future research.

CHAPTER TWO

REVIEW OF LITERATURE

2.1 Chapter Overview

This chapter reviews the literature related to the factors that influence investment decision making (IDM) of urban individual investors. Section 2.2 briefly describes the background. Section 2.3 reviews the literature on demographic factors. Section 2.4 discusses personality factors. Sections 2.4.1 and 2.4.2 discuss Big Five factors of personality. Section 2.4.3 reviews Locus of Control factors. Section 2.4.4 specifies the research gap related to personality. Section 2.5 discusses the social environment while section 2.6 discusses experience. Section 2.7 elaborates on the choice criteria of convenience, attitude towards risk and return, liquidity and investment horizon. Section 2.8 specifies the various avenues of investment available to individual investors. Sections 2.9, 2.9.1, 2.9.2, 2.9.3 and 2.9.4 discuss the contextual factors. Sections 2.10, 2.10.1, 2.10.2, 2.10.3, 2.10.4, 2.10.5, 2.10.6 and 2.10.7 discuss biases. Section 2.11 briefly outlines the statement of the problem. Section 2.12 presents the conceptual model. Section 2.13 lists out the research questions. Section 2.14 lists out the research objectives. Section 2.15 lists out the research hypotheses. Section 2.16 summarizes the chapter.

2.2 Background

The individual investor has been perceived as an utterly rational utility maximizing agent who behaves according to standard finance models of optimization. But during the past two decades, behavioural scientists have discovered that individual investors do not behave as per rational finance models but are subject to various influences that affect their IDM leading them to make less than optimal decisions.

Most of the literature on IDM comes from the field of behavioral finance that is substantiated with empirical studies from how individuals invest in the stock market or contribute to their retirement savings. Although modern portfolio theory assumes that investors are rational, in reality it is not so. Research in the UK and USA shows that attitudes to investment risk depend on factors such as personality, context, educational

attainment, financial knowledge, experience, income, age, wealth, marital status and gender (Finke & Huston, 2003 and Collard, 2009). There are many such factors that influence the individual leading to his/her less than optimal decision making. This literature review focuses attention on the following areas that influence IDM by urban individual investors: (a) demographics (b) personality (c) social environment (d) experience (e) choice criteria (f) contextual factors and (g) biases based on information processing errors.

2.3 Demographic Factors and Related Research Gap

Demography refers to the vital and measurable statistics of a population (Schiffman & Kanuk, 2004). It is one of the most popular and accessible measures used to identify and analyze a target market. A number of studies have found that there is a relationship between demographics and IDM. Barber and Odean, (2001) show that male investors are more overconfident than female investors and trade more frequently thereby earning lesser returns. Gysler et. al., (2002) found that, in the context of financial decision making, competence and knowledge measures combined with gender produce opposite effects. Women become more risk prone with competence and knowledge while men become less risk prone. Davies et. al., (2002) found evidence of gender differences in economic thinking and attitudes across Australia, the US and the UK among 15 to 17 year old students. Westerholm and Ollila (2003) found that among Finnish investors, gender, age and language affect the investment decisions of investors.

In Australia, Livanas (2006) found that in the case of planned savings towards retirement, in the 'event' of offering a choice to investors, the aged and the highly educated investors moved to less risky investments and the young and highly educated investors moved to risky investments. In China, the holding and performance of investments across gender is similar although men hold slightly larger portfolios, make larger trades and trade more intensively (Feng & Seasholes, 2006). With respect to risky investments, social relations and relative wealth conditions affected the decisions of both men and women. Men were

found to be more selfish than women with regard to social sharing (Wang 2007). In Bahrain, with age, investors' risk tolerance declines as also with higher financial commitments (Al-Ajmi, 2008). Lyons et. al., (2008) found that gender and marital differences affect investment decisions. While income level is an important factor in influencing the saving patterns of Indian households, education level and occupation equally affect the saving behavior (Shukla, 2007).

Gachter et. al., (2007) found that women are more loss averse than men although insignificantly; older people are more loss averse than younger people; higher education decreases loss aversion while higher income and higher wealth are positively correlated with loss aversion. With age, investors gain more knowledge and experience and the general understanding is that older investors must earn higher returns. But this may not always be true especially of those investors who are less educated, have lower skill sets and belong to minority/ethnic groups. The cognitive effects of aging negate the positive effects of experience resulting in lower performance of their investments (Korniotis & Kumar, 2009). Yet Lusardi (2008) found that older persons are willing to accept investment risk. Horioka (2009) found that in Japan the retired aged dissave and that even the working aged dissave, at least at advanced ages. Moreover, there has been a sharp increase in the dissaving of the retired aged since 2000, especially due to reductions in social security benefits, increases in consumption expenditures, and increases in taxes and social insurance premiums. Borghans et. al., (2009) demonstrated the presence of gender difference in risk aversion and ambiguity aversion. Women are found to be more risk averse than men. Over the initial range women accept ambiguity without compensation but at higher levels of ambiguity, women are similar to men in their aversion for ambiguity. Christeansen et. al., (2009) found that women are as likely to participate in stock market as men and both men and women hold similar proportions of total wealth in stocks and bonds essentially suggesting that there is no gender difference in financial investments. But they noticed that marriage and divorce tend to influence men's investment decisions more than women's mainly because of the large changes in income and wealth.

Men and investors with higher education and higher income consider themselves more knowledgeable than women investors, investors with lower education and lower income (Al-Ajmi, 2008, Graham et. al., 2009). Since the decisions taken prior to retirement will have the most effect on investment returns, rather than decisions taken early or well after retirement, assessing the lifetime risk assumed by the investor and managing it would be a better approach to investment than lifecycle investing (Livanas, 2010). Young and less wealthy individuals held under-diversified portfolios indicating lack of knowledge and not willing to take risk (Goetzmann & Kumar, 2003).

Davar & Gill (2009) having studied households in Chandigarh, found that demographic factors like age, education, occupation and income have a significant influence on the IDM process. They noticed that the most affluent, educated and younger investors prefer equity shares and mutual funds. Among the younger generations age, gender, and income seem to influence their investing behavior in mutual funds with men conducting more information searches, being more involved in managing their wealth and demonstrating greater control in managing their wealth (Wang, 2011). Ramalingam and Tamilarasan (2012) confirm that gender, income, knowledge, and experience emerge as important personal and social influences on juvenile age group investing behaviors in mutual funds. Tseng & Yang (2011) found that income has dramatic effects on the choice of investments confirming that those with higher incomes seek riskier investments. Table 2.1 shows the major works that show the influence of demographic variables on savings and IDM.

Various studies have stressed on the importance of financial knowledge for financial investments. Hilgerth, Hogarth, and Beverly (2003, cited in Lusardi, 2008) find that there is a positive association between financial knowledge and financial behavior. Kimball and Shumway (2006) and Van Rooij, Lusardi and Alessie (2007) find that financially sophisticated households are more likely to participate in the stock market.

Table 2.1: Demographics and Investment Decision Making

Author/s	Contribution
Powell & Ansic, 1997	Gender contributes to difference in financial decision strategy arising from underlying differences in motivation
Masson et. al., 1998	Demographics are important determinants of private saving rates
Miles, 1999	Saving rate is highly dependent on age
Berube & Cote, 2000	Age affects savings rate
Barber & Odean, 2001	Gender, marital status and investment experience influence investment in stocks
Poterba & Samwick, 2001	Age affects asset allocation
Gysler et. al., 2002	Gender, annual income, knowledge affect financial decision making
Davies et. al., 2002	Economic attitudes and thinking differs between gender
Webster et. al., 2004	Gender significantly influences an analyst's assessment of the financial condition of the firm as well as expressed levels of self-confidence in the results of one's analysis
Agnew & Szykman, 2005	Financial knowledge reduces information overload in investment choice
Feng & Seasholes, 2006	There is no significant gender difference in trading intensity in China
Lyons et. al., 2008	Preference for risk tolerance differs between genders
Dolvin et. al., 2008	Financial education benefits participants enabling them to choose more efficient portfolios
Lusardi, 2008	Financial education improves saving behaviour and financial decision making

Table No.2.1 continued	
Davar & Gill, 2009	Age, education, occupation and annual income affect the IDM of households
Horioka, 2009	Age affects saving behaviour in Japan
Borghans et. al., 2009	Gender differences exist in risk aversion and not in ambiguity aversion
Christiansen et. al., 2009	There exist systematic gender differences in financial investment decisions
Lusardi et. al., 2009	There was a gap in the financial sophistication between gender and age. Women and those who were 55 years and above lacked financial sophistication.
Wang, 2011	Gender, income, knowledge and experience are important personal and social influences on younger generations' investing behaviour in mutual funds
Hastings & Mitchell, 2011	Financial literacy is correlated with wealth in Chile
Falahati & Paim, 2011	There are significant gender differences in financial well-being, financial socialization and financial knowledge among college students
Tseng & Yang, 2011	Income affects individual information searching on investment choices and subsequently income and information search have dramatic effects on investment preference variation
Ramalingam & Tamilarasan,. 2012	Gender, annual income, investment experience and knowledge emerge as important variables affecting juvenile age groups investing behaviour

Source: Literature review

Researchers have found that men are more risk seeking than women; older investors are found to be more risk averse; highly educated investors are risk seeking; single investors

are more risk seeking than married investors; and those with higher incomes are found to be more risk seeking. A few studies imply otherwise. In addition, most of the researchers have collected data either from brokerage houses, or from employees belonging to a specific organization or through lab experiments. Although a few studies have conducted field based experiments, they have restricted the study to a single city or a limited geographical location. This study focuses on whether the findings from the literature are applicable to a wider Indian audience (**Research gap 1**). On the basis of the literature on demographic factors the researcher has developed the following research objective and hypotheses.

Research objective 1: To examine the effect of demographics on individual IDM.

> **H1a**: Gender affects the IDM of individuals.
>
> **H1b**: Age affects the IDM of individuals.
>
> **H1c**: Education affects the IDM of individuals.
>
> **H1d**: Financial literacy affects the IDM of individuals.
>
> **H1e**: Marital status affects the IDM of individuals.
>
> **H1f**: Work experience affects the IDM of individuals.
>
> **H1g**: Occupation affects the IDM of individuals.
>
> **H1h**: Number of earners in a household affects the IDM of individuals.
>
> **H1i**: Annual income affects the IDM of individuals.
>
> **H1j**: Investments made together with spouse or separately affect the IDM of

individuals.

Table 2.2 shows the description of the various demographic factors used in the study.

Table 2.2: Description of the Demographic Variables

Demographic variables	Description
Gender	One if respondent is male and two if respondent is female
Age	Age of the respondent in years
Education	The level of education the respondent has received ranging from primary education to professional degree
Financial literacy	The level of financial literacy the respondent has received either in the form of degree or diploma (for e.g. B.Com., BBM, MBA, CA, ICWA and so on) or short term courses in managing personal finance
Annual income	The annual income of the respondent in rupees from legal sources
Marital status	Whether the respondent is unmarried and single, or widowed/divorced and single, or married
Investment experience	Number of years the respondent has been saving and investing
Occupation	The kind of occupation the respondent is engaged in for economic benefits; either salaried, self employed, retired, or not employed
Size of the family	The total number of people in the household
Number of dependents	The total number of dependents including spouse, children, parents and others
Work experience	Total number of years the respondent has been engaged in economically beneficial employment
Number of earners	The total number of earners in the family
Investing together with spouse or separately	Whether the respondent saves and invests in his/her own name, together with spouse or partially together and partially separately

2.4 Personality

Individuals differ in the way they make investment decisions with some individuals able to take risks while others are not. One of the factors that is found to contribute to differing investment decisions is personality. Allport defines personality as "the dynamic organization within the individual of those psychophysical systems that determine his characteristic behavior and thought" (Allport, 1937, cited in Friedman & Schustack, 2003). Personality psychologists have developed various measures to assess personality traits which are used by other researchers. The purpose of including personality in this study is to find the extent to which personality influences IDM among individuals in the Indian context. The most significant scale used for measuring personality is the "Big Five" personality scale. The justification for the use of the Big Five personality measure is given in table 2.3.

Table 2.3: Justification for the Application of Big Five Personality Measure

Author/s	Contribution
Digman 1990	Research over many years indicates that the dimensions of Neuroticism or Emotional Stability, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness provide an adequate taxonomy of personality traits.
Barrick and Mount, 1991	The personality taxonomy of the Big Five is generally considered the most comprehensive and accepted, particularly for applied research
Rammstedt et. al., 2010	From the beginning of the 1990s, the Big Five factors have developed into the most important model for describing the structure of personality traits

Source: Literature review

Personality traits are found to have an influence on the performance in decision tasks involving uncertainty (Durand et.al., 2006, Yang et.al., 2009). Studies on personality

difference in risk preference confirm that risk-taking in different decision domains is associated positively with extraversion and openness, and negatively with neuroticism, agreeableness and conscientiousness (Nicholson et. al., 2005). This has been reinforced by the findings of Li & Liu (2008) that the extrovert tends to be more risk seeking than the introvert. Having studied the relationship between personality and risk taking, Zuckerman & Kuhlman (2000) also found that generalized risk taking was related to impulsive sensation seeking, aggression and sociability but not to neuroticism. Highly risk seeking individuals were found to be highly extroverted and open to new ideas. Sensation seeking seemed to be the key factor among investors with high propensity for risk (Nicholson et.al., 2005).

2.4.1 Big Five Factors

Research over many years indicates that the dimensions of Extraversion, Neuroticism or Emotional Stability, Conscientiousness, Agreeableness, and Openness to Experience provide an adequate taxonomy of personality traits and are found to be robust with a variety of samples (Digman, 1990). The Five Factor Model (FFM) of personality specifies that these five traits (i.e., extraversion, agreeableness, conscientiousness, neuroticism, and openness) are fundamental and universal. The personality taxonomy of the Big Five is generally considered the most comprehensive and accepted, particularly for applied research (Barrick & Mount, 1991). Research has consistently shown that the "Big 5" traits are stable across adulthood (McCrae & Costa, 1990) and have an effect on a variety of attitudes and behaviors (Barrick & Mount, 1991) including themes ranging from leadership (Judge et.al., 2002), academic performance (Furnham, et al., 2003), general mental ability with career success (Judge et.al., (1999), job performance, (Barrick & Mount, 1991), adaptation to losses (Lee et.al., 2010), risk propensity (Nicholson et.al., 2005), and investing (Mayfield et.al., 2008). The major works on personality and its influence are shown in table 2.4.

2.4.2 Description of the Big Five Factors

The first dimension has been called Extraversion or Surgency (McCrae & Costa, 1985). Traits frequently associated with extraversion include being sociable, gregarious, assertive, talkative, active (Barrick & Mount, 1991), and sensitive to reward (McCrae & John, 1992).

The second dimension has been called neuroticism or emotional stability(McCrae & Costa, 1985). Common traits associated with this factor include being anxious, depressed, angry, embarrassed, emotional, worried, insecure (Barrick & Mount, 1991), self conscious and behavioural inhibition (McCrae & John, 1992). Individuals scoring high on neuroticism have intense emotions and strong responses to stress (Lee et. al., 2010). Mayfield et. al., (2008) maintain that *neuroticism* is one of the most pervasive traits across personality measures.

The third dimension has been interpreted as agreeableness or likability(McCrae & Costa, 1985). Traits associated with this dimension include being courteous, flexible, trusting, good-natured, cooperative, forgiving, soft-hearted, tolerant (Barrick & Mount, 1991) compliance (McCrae & John, 1992) and accepting of current situation(Lee et. al., 2010). The fourth dimension is conscientiousness(McCrae & Costa, 1985), conformity or dependability (Hogan, 1983). Traits associated with this dimension are being careful, thorough, responsible, organized, planful (Barrick & Mount, 1991), self-regulation, persistence, impulse control, achievement orientation and self discipline (McCrae & John, 1992).

The last dimension has been referred to as openness to experience (McCrae & Costa, 1985). Traits associated with this dimension include being imaginative, cultured, curious, original, broad minded, intelligent, artistically sensitive(Barrick & Mount, 1991), flexibility (McCrae & John, 1992) and likely to accept new financial situations (Lee et. al., 2010).

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Table 2.4: Major Works on Big Five Personality Measure and its Influence

Author/s	Contribution
Wong & Carducci, 1991	Persons with high level of sensation seeking showed greater risk-taking tendencies in everyday financial decisions.
Barrick and Mount, 1991	Big Five has an influence on job performance
Judge et. al., 1999	Big Five has an influence on general mental ability with career success
Zuckerman & Kuhlman, 2000	Generalized risk taking was related to impulsive sensation seeking, aggression and sociability but not to neuroticism.
Judge et. al., 2002	Big Five has an influence on leadership
Nicholson et. al., 2002	Big Five has an influence on risk propensity
Furnham, Chamorro-Premuzic and McDougall, 2003	Big Five has an influence on academic performance
Lo et. al., 2005	Traders do not specifically fit into a certain personality profile and sometimes engage in trading for the purpose of long term survival in the market. They achieve higher returns when their emotions are regulated
Nicholson et. al., 2005	Personality difference in risk preference confirms that risk-taking in different decision domains is associated positively with extraversion and openness, and negatively with neuroticism, agreeableness and conscientiousness.
Durand et. al., 2006	Personality traits are found to have an influence on the performance in decision tasks involving uncertainty
Deck et. al., 2008	Demonstrate how personality measures can be used to predict economic behavior by showing its impact specifically on risk aversion.
Li & Liu, 2008	Extravert tends to be more risk seeking than the Introvert.

Table No.2.4 continued	
Mayfield et. al., 2008	Big Five has an influence on investing
Heineck & Anger 2008	personality has an influence on the wage earnings of individuals
Yang et. al., 2009	Personality traits are found to have an influence on the performance in decision tasks involving uncertainty
Lee et.al., 2010	Big Five has an influence on adaptation to losses

Source: Literature review

2.4.3 Locus of Control

Yet another prominent scale used in this study is the Locus of Control. Locus of Control refers to the extent to which individuals believe that they can control events that affect them. Individuals with high internal Locus of Control believe that they have a higher control over their own lives while those with a high external Locus of Control believe that external factors like luck, fate, environment or others have a greater control over their lives. Rotter (1966) said that behaviors that result in reinforcement serve to strengthen the perception of control. On the other hand, when there is no reinforcement, the generalized expectancy will be reduced or extinguished. Overtime, expectancies for a given situation result from the individual's reinforcement experience of similar situations or from other reinforcement experiences.

Locus of Control has been found to be related to a variety of choices people make in their lives including vocational and career decisions (Maddux, 1991). Individuals who have an internal Locus of Control generally are more active in trying to pursue their goals and improve their lives (Rotter, 1966) despite limited opportunities and constraints (Bandura, 1990). On the other hand, individuals who believe that they have no control over the outcome of situations are less likely to pursue and achieve their goals in spite of many opportunities (Bandura, 1990).

Table 2.5: Major Works on Locus of Control and its Influence

Author/s	Contribution
Coleman, 1966	Locus of Control was highly related to academic performance and was a more important determinant of achievement than any other factor in a student's background or school.
Andrisani, 1977, 1981	Locus of Control was strongly related to average hourly earnings, total earnings, occupational attainment and growth of these variables
Rotter,1966, Bandura,1990	Individuals who have an internal Locus of Control generally are more active in trying to pursue their goals and improve their lives despite limited opportunities and constraints. Those who believe that they have no control over the outcome of situations are less likely to pursue and achieve their goals in spite of many opportunities
Maddux, 1991	Locus of Control has been found to be related to a variety of choices people make in their lives including vocational and career decisions
Coleman & DeLeirre, 2000	Locus of Control is found to influence a teenager's decision to graduate from high school since such a teenager believes that he could in all likelihood receive higher wages
Heineck & Anger, 2008	Internal Locus of Control has an influence on the wage earnings of individuals

Source: Literature review

2.4.4 Research Gap Two

The review of literature shows that different people approach certain tasks and decision situations in different ways. Boone et. al., (2002), claim that personality can serve as a guide in explaining behavior when the environment is uncertain and ambiguous. The influence of personality on risky investments, mainly stock market related investments, is established. Yet there is a paucity of literature that studies the influence of personality on actual investments across securities ranging from riskless to risky (**Research gap 2**). This study looks at the entire spectrum of investments ranging from riskless to risky, and perceives the risk profile from the actual investments of urban individual investors. Based

on review of published literature on personality, the researcher has developed the following research objective and research hypotheses.

Research objective 2: To assess the influence of personality traits on individual IDM.

H2a: Locus of Control has an influence on the IDM of individuals.
H2b: Big Five personality factors influence the IDM of individuals.

2.5 Social Environment and Related Research Gap

Individuals tend to create a variety of social circles, and act as members of each social circle (Toshino & Suto, 2004). IDM is a complex task due to the uncertain environment (Fernandez et. al., 2011), limited and imperfect information available (Alevy et. al., 2007), complexity of financial instruments and lack of financial capability among individuals. For this reason investing in assets is not done in isolation. Individuals either observe others' actions or accumulate information through conversation with family members or social circles and through various media (Ivkovich & Weisbenner, 2007, Hirshleifer & Teoh, 2008, Konig, 2010). Hence, the social environment in which they live influences individuals. The social environment could include family members, informal sources like friends, neighbours, brokers, members of social groups and non-commercial sources like newspapers, magazines, television channels and internet sites. Hirshleifer & Teoh, (2008) concur that most people are influenced by others' actions and opinions in their IDM and this has an impact on the beliefs and behavior of individuals.

Individuals are influenced by others because they assume that others have better information than them (Welch, 1992) or they want to conform with others (Hirshleifer & Teoh, 2008). Social psychologists report that people imitate the actions of those who appear to have expertise (Bikhchandani et. al., 1998). Moreover, individuals imitate those with greater reputation or higher prestige on the assumption that they have more detailed information and hence would be better decision makers (Bandura, 1977, Welch,

1992, Graham 1999). Individuals who have stronger social relations either due to professional contact, social networking or due to geographical proximity learn from each other and invest in similar portfolio choices (Massa & Simonov, 2005). When faced with a risky decision situation, human beings are bound by social relations (Wang, 2007). One of the main benefits of imitation is the exploitation of useful information possessed by others(Hirshleifer & Teoh, 2008).

Conversation or word-of-mouth communication is an important mode of communication that helps exchange of ideas about financial markets and instruments especially with family members(Agarwal & Mazumder, 2010), peers, neighbours and members of social networks (Bikhchandani et. al., 1998, Hirshleifer, 2001, Ivkovich & Weisbenner, 2007, Tseng & Yang, 2011). Through word-of-mouth, individuals may learn from each other (Shiller, 1995, Bikhchandani et. al., 1998). Social interaction (Barnea et. al., 2010) in the neighbourhood (Ivkovich & Weisbenner, 2007) and among the extended community (Hong, Kubik & Stein, 2004, Ivkovich & Weisbenner, 2007) is found to influence a household's choice of investments and stock market participation (Shive, 2008). The family environment is found to have an effect on the investment decisions of young individuals, although this effect is not found to be long-lasting(Barnea et. al., 2010). At the workplace, employees are influenced by the co-workers' choice of investments in different employer-sponsored retirement plans (Madrian and Shea, 2001, Duflo &Saez, 2002).

Many a times when faced with a risky decision situation and complexity of financial instruments, people seek the advice of professionals (Tseng & Yang, 2011). With higher levels of education and income, individuals are found to spend money on financial periodicals, investment research services and professional counseling (Lewellen et.al., 1977, Peress, 2004). In most European countries and in the USA, a good number of people seek financial advice (Georgarakos & Inderst, 2010). Seeking advice enables an

individual to gain from the expertise of the professional financial advisor(Daniel et. al., 2002). In India, professional financial advice is far from pervasive.

Apart from social interaction, media too influences individuals in a variety of decision making scenarios including investments.(Watts & Dodds, 2007). Through media, a few individuals with high social ranks like media commentators and experts can have a large impact on the majority of society (Bikhchandani et. al., 1998, Watts & Dodds, 2007). Moreover some famous but incompetent analysts like stock market 'gurus' could also influence investors. Bearing in mind that there are a number of business newspapers, business news channels on television and a number of business related internet sites and blogs, a lot of information is being conveyed to investors. This information plays a critical role in encouraging individuals in risky IDM behavior (Tseng & Yang, 2011).

Currently there is scant evidence of influence of social environment on individual investors (**Research gap 3**). Moreover most of the authors have observed such behavior in experiments conducted among specific groups of people. This study makes an attempt to observe the influence of social environment on the IDM of individual investors.

Table 2.6: Operational Definitions of the Social Environment Factors

Variables	Operational Definition	Source
Family	Two or more persons related by blood, marriage or adoption who reside together.	Schiffman & Kanuk 2004
Informal sources	Informal sources are those that are usually unstructured and lack specific authority levels.	Schiffman & Kanuk 2004
Non-commercial sources	Sources that do not have a direct commercial benefit by providing such information	Schiffman & Kanuk 2004

Source: Literature review

On the basis of the research gap, the following research objective and hypotheses are developed.

Research objective 3: To observe whether individuals heed the guidance of their social environment while making investment decisions.

      H3a: Family influences the IDM of individuals.

      H3b: Non-commercial sources of information influence the IDM of individuals.

      H3c: Informal sources of information influence the IDM of individuals.

2.6 Experience and Related Research Gap

Under expected utility theory, the utility maximization is always carried out in a forward looking manner where past experience and risks taken do not matter. But behavioural finance provides evidence of the fact that individuals' preferences and decisions are based on past experience and risks taken (Stracca, 2002). Experience is associated with memory and emotions (Burgess & Lund, 2000). Experience is the link between pieces of information, ideas and knowledge (Amminilari & Pakath ,2005). When individuals have positive experience they tend to behave positively and vice-versa. The behavior of individuals depends on their experiences (Massa & Simonov, 2002, Nicolosi et.al., 2004), especially more recent personal experiences (Malmendier & Nagel, 2011). Moreover learning from experience is varied across different categories of investors (Nicolosi et.al., 2004). Those who experience higher returns in the stock market invest in stocks and those who experience higher returns in bond markets invest in bonds (Malmendier & Nagel, 2011). Those with less experience are found to hold less diversified portfolios (Dorn & Huberman, 2005). While investment experience is found to increase the risk tolerance of individuals, (Grable, 2000), age is found to reverse the effect with older individuals turning risk averse (Hallahan, Faff & McKenzie, 2003).

Nicolosi et.al., (2004) found that individual investors rationally learn from their own experience and adjust their stock purchases accordingly. Sobel (2000) says that learning from past experience may lose its relevance when circumstances change. Korniotis & Kumar (2011) found that the benefits of experience are offset by the problems of cognitive aging with older investors exhibiting worse stock selection abilities and poorer diversification skills. But Chen et. al.,(2007) found that although the Chinese experienced investors earned better returns they are not always better investors. Feng & Seasholes (2005) found that sophisticated and experienced investors do not hesitate to realize losses but their propensity to realize gains is reduced.

Considering that literature suggests that personal experiences exert an influence on investment decisions, experience has been included in this study in order to understand whether it is true among individual investors in the Indian context (**Research gap 4**). On the basis of this research gap the following research objective and hypothesis have been developed.

Research objective 4: To detect whether past experience induces individual IDM at present.

       H4a: Experience in investing affects the IDM of individuals.

2.7 Choice Criteria and Research Gap

Standard theories suggest that investment decisions are mainly affected by income and wealth of individuals. Beyond income and wealth, expenditures like housing, consumer durables and sometimes capital for setting up small businesses (Athukorala & Sen, 2002) also affect investments. Yet another factor that affects investment is the need for liquidity to meet the exigencies of life and the perceived risk of loss of labour income (Amromin, 2005). Since precautionary funds need to be liquid, they are often held in the form of non –productive assets like cash, jewellery and precious metals. In the event the contingencies do not occur, the money saved thus are bequeathed (Dynan, Skinner & Zeldes, 2002).

Individuals use various criteria while making investment decisions. The SEBI-NCAER survey (2011) found that the two main choice criteria are safety and liquidity. As per the survey, a large percentage of urban individuals (72 percent), invest their savings in insurance schemes and banks. In view of four choice criteria of convenience, risk protection, return and liquidity, Kasilingam & Jayabal (2010) segment the investors into three categories namely, rational, normal and irrational and find that rational investors analyze investments using all four criteria while irrational investors do not use any. Radha (1995) found that return in the form of capital appreciation was the most important objective for investors. Nagy and Obenberger(1994) while examining factors influencing investor behavior, found that individuals employ diverse criteria when choosing stocks. Many individual investors are found to discount the benefits of valuation models when evaluating stocks. On the basis of the literature reviewed, the following criteria are considered: risk, return, liquidity, investment horizon and convenience for the purpose of understanding the IDM of individuals (**Research gap 5**).

Convenience

Convenience is the state of being able to do something with little effort or difficulty. Convenience increases the accessibility of investment products and services to the individuals. They help in reducing the contextual constraints of time and effort.

Risk

Individuals often take risk while investing. The variability in the return associated with a certain investment is called risk. The term 'risk preference' means to describe patterns of observed choice in such decision situations (Hsee & Weber, 1999). It is the amount of risk an individual is willing to bear in order to achieve a desired outcome.

Return

The yield on an investment is called return. Return could be in the form of interest, dividends and capital appreciation. Return on fixed income securities like bonds and

fixed deposits of banks are called interest. Returns on shares and mutual fund units are called dividends. Positive difference between the sale price and purchase price results in capital appreciation.

Liquidity

The degree to which an asset or security can be bought or sold in the market without affecting its price is called liquidity. Securities that can be easily bought or sold are known as highly liquid securities. Dragota & Serbanescu (2010) find that liquidity was the prime reason for investing in stocks.

Investment Horizon

The length of time that an individual wants to hold a security is called investment horizon.   Length of the investment horizon has an influence on investment levels. (Fellner & Sutter, 2009).

This researcher has developed the following objective and hypotheses for the study.
Research objective 5: To identify the choice criteria factors that affect individual IDM.

       H5a: Convenience factor affects the IDM of individuals.

       H5b: Attitude towards risk affects the IDM of individuals.

       H5c: Attitude towards return affects the IDM of individuals.

       H5d: Desire for liquidity affects the IDM of individuals.

       H5e: Investment horizon affects the IDM of individuals.

2.8 Avenues of Investment

There are many avenues of investment for individuals in India. Some of them are riskless while some are risky. They can be broadly classified as real assets and financial assets.

Real assets are

- gold
- real estate.

Financial assets are

- Corporate securities like shares and corporate bonds
- Mutual fund schemes (MF schemes)
- Government bonds (Govt. bonds)
- Bank deposits
- Post office deposits (PO deposits)
- Deposits with non-banking finance companies (NBFCs)
- Provident funds like Employees provident fund (EPF) and public provident fund (PPF)
- Life insurance policies

Gold

Gold is seen as a precious commodity in India and is used for three purposes i.e. jewellery, retail investment and industrial use. But the primary demand for gold comes from demand for jewellery. Gold has always been looked upon as a store of value and a measure of wealth (Clark, 2012). Gold is traditionally considered as an effective hedge against inflation and other forms of uncertainty (Mani & Vuyyuri, 2003). Demand for gold is found to be price inelastic (Gurumurthy, The Hindu business line, Oct 4th, 2013).

Real estate

Investing in real estate is done in order to earn revenue through rental income or price appreciation, beyond the purpose of primary residence. It has limited liquidity, requires extensive due diligence and is highly capital intensive. Yet it could be very profitable in the long run because the compounded annual growth rate has always been positive in urban India.

Shares

By investing in shares, individuals buy the ownership rights to the company. When the company earns profits, they could distribute part of the profits as dividends to the shareholders. In addition if the company's performance is good, and the future expectation from the company is high, the price of the company's share could go up in the market. By selling the shares at a higher price, the shareholders could earn capital gains. At the same time, if the share price goes down due to bad performance of the company, the shareholders could lose capital invested in the shares. Investing in shares is extremely risky.

Corporate bonds

These are long term debt instruments issued by companies in order to raise capital. There are many types of corporate bonds issued to suit investors with different time horizons. Compared to bank deposits, corporate bonds usually offer a higher rate of interest due to the higher risk associated with such bonds. Most of these bonds are credit rated to indicate the levels of safety of these instruments.

Mutual funds

SEBI (MF) regulations, 1993 defines mutual funds as" "A fund established in the form of a trust by a sponsor to raise money by the trustees through the sale of units to the public under one or more schemes for investing in securities in accordance with these regulations." Mutual funds offer the advantage of professional management of money, diversification of risk, portfolio diversification, reduced transaction cost and liquidity.

Government bonds

Government and semi-government bodies such as government undertakings borrow money from the public through the issue of government bonds or public sector bonds. These are almost riskless because of the credibility of the government and government undertakings. Investing in such securities also helps in tax saving sometimes.

Bank deposits

These deposits are one of the safest forms of investment and preserve capital. They usually offer fixed rates of interest depending on the tenure of the deposit. Interest is payable quarterly, half-yearly or annually. The principal and accumulated interest is paid on maturity of the deposit. Bank deposits are popular among urban individual investors due to the safety, liquidity and convenience of maintaining such deposits.

Post office deposits

Post office deposits are popular because they are usually riskless and enjoy tax concessions. They are similar to bank deposits in terms of preserving capital and paying fixed rate of interest.

NBFC deposits

Non-banking finance companies include companies like leasing companies, hire purchase companies, investment companies, chit funds, gold loan companies and so on. Deposits offered by NBFC's usually carry a higher rate of interest because of the risk associated with such deposits.

Employees' provident fund/Public provident fund (EPF/PPF)

Employees' provident fund schemes are deposit schemes applicable to employees in the government, public and private sectors. Usually the employers contribute a certain sum of money along with the employees every month. The contribution to provident fund is tax deductible and the amount withdrawn is also not taxed. Interest rate is fixed and compounded. Public provident fund is a deposit scheme offered to any member of the public and has similar features as the employees' provident fund. One disadvantage of provident fund scheme is the lack of liquidity.

Insurance

Life insurance policies are financial products that offer two main services: income replacement for premature death and a long term savings instrument. Since life insurance policies are a combination of savings and insurance products, the premiums paid could be treated as investment. Life insurance policies could be treated as one of several assets from which investors can choose. Demand for life insurance is attributed to a person's desire to bequeath funds to dependents and provide income for retirement (Beck & Webb, 2003).

2.9 Contextual Factors

The contextual factors of IDM are changing fast and becoming extremely competitive with abundant options. Making optimal decisions in such an environment requires high levels of cognitive abilities (Agarwal & Mazumder, 2010). The contextual factors affecting IDM are task complexity, information processing and time constraint (Lan Xia, 1999).

2.9.1 Task Complexity

Tasks could be either simple or complex. Simple tasks are those that are easy to perform, do not challenge the cognitive capacity of the decision maker (Baron, 1986) and the decision maker may have to choose from just two alternatives (Bystrom & Jarvelin, 1996). A task is complex when there are more than two alternatives to choose from(Bystrom & Jarvelin, 1996), require more inputs to make a decision (Bonner, 1994), require more time and information processing than simple tasks (Wood, 1986) and there is uncertainty regarding the inputs, process and outcome (Van de Ven & Ferry, 1980). Task complexity leads individuals to trade off decision accuracy against the time required to make the decision (Johnson & Payne, 1985, Speier et. al., 2003).

In the case of IDM, each individual would have a different goal to achieve. Depending on the goal to be achieved as well as the abilities of the individual(March & Simon, 1958, Campbell, 1988), each individual will perceive a different level of complexity of the task of IDM. In an experiment conducted by Payne (1976) individuals were found to eliminate some of the available alternatives as quickly as possible on the basis of the limited amount of information search and evaluation. When individuals find that a decision situation is complex then they would prefer to use heuristics to reduce cognitive strain on their ability to process information.

While people are offered too many options to choose from, they could be overwhelmed by it (Iyengar & Lepper, 2000). Choice overload could cause task complexity especially when the cost of making the wrong choice is high. Hence when there are too many choices, participation is reduced.

2.9.2 Information Processing

Drucker (1988) explains that information is data that has been organized for a particular purpose. Information processing is defined as the way in which people process and organize information and arrive at judgments or conclusions based on their observations (Hunt et.al., 1989).   Although a lot of information is available regarding investments, an individual may have to spend time, money and effort searching for the appropriate information. Information plays a critical role in individual risk-taking in risky investment decision-making behavior (Tseng & Yang, 2011). It is found that individuals invest in stocks that are familiar and information flows are greater (Grinblatt & Keloharju, 2001b, Frieder & Subramanyam, 2005). The quality of decision making task depends on the amount of information available (Tuttle & Burton, 1999) and the way it is processed. Individuals are required to process information under various contextual factors like time constraint(Snowball, 1980, Tuttle & Burton, 1999) and incentives (Awasthi & Pratt, 1990, Tuttle & Burton, 1999). Individuals are found to use more information while making decisions, if it costs less time and/or money to acquire and to evaluate (Agnew &

Szykman, 2005). Hence depending on the incentive to learn new information, individuals choose to have different information sets (Nieuwerburgh & Veldkamp, 2009). When the amount of information exceeds the individual's capacity to process it, the decision accuracy is reduced (Tuttle & Burton, 1999). Too much information makes the task complex for the individual. Since wealthier individuals seek risky investments, they are willing to seek and acquire costly information because there are increasing returns to information (Peress, 2004). Lusardi (2008) finds that there is a positive relationship between planning and wealth. Those with greater financial knowledge are found to seek more relevant information for decision making (Lusardi, 2008). Instead of trying to analyze information individuals with lesser knowledge may simply follow their gut feeling or a fad. It is important to examine how individuals understand, organize and act on the information that is available in the real world (Raghubir & Das,1999, Weber et. al., 2005).

2.9.3 Time Constraint

Human beings are very busy and have to continuously make many kinds of decisions. As a result, they cannot afford to take a lot of time and try to make an optimal decision for every judgment. Decision making under time constraint may result in errors due to not taking a decision, making decisions too soon or anticipating regret and procrastinating (Payne et.al., 1996, Choi et. al., 2003). Procrastinating and deferring the decision for too long may result in lost opportunities. The decision strategies of individuals may alter as a function of increased time pressure. When time is a constraint, the individual tries to balance effort required to make the decision with the accuracy of the decision. (Payne et.al., 1996). When decisions become more complex consumers tend to reduce the amount of effort they expend (Payne, et. al., 1988, Agnew & Szykman, 2005). Information load is defined in terms of information per unit of time (Sonwball, 1980).

2.9.4 Research Gap

Individuals suffer information overload due to the number of investment options, similarity of the options, wide array of choices among the options, the way the choices are presented, and lack of financial knowledge (Agnew & Szykman, 2005, Lusardi, 2008). When individuals lack financial knowledge, the task of choosing the best investment alternative would become overwhelming and that would either lead to reluctance to take decisions(Duflo & Saez, 2003, Agnew & Szykman, 2005) or follow the path of least resistance (Choi et.al., 2003) or seek advice from friends and family (Lusardi, 2008) or employ heuristics(Tseng & Yang, 2011). In the area of IDM where there is a lot of information available, individuals may not be able to process more information because there is a cognitive limit to the amount of information that can be processed per unit of time (Tuttle & Burton, 1999) and they may not possess the knowledge and skill to process it (Agnew & Szykman, 2005).

One of the aims in this study is to find out whether the contextual factors affect IDM of urban individual investors (**Research gap 6**). The following research objective and hypotheses have been developed.

Research objective 6: To determine the extent of influence of contextual factors on individual IDM.

> **H6a**: Task complexity affects the IDM of individuals.
> **H6b**: Information processing affects the IDM of individuals.
> **H6c**: Time constraint affects the IDM of individuals.

2.10 Biases

Systematic errors of judgment are called biases (Tversky & Kahneman, 1974). The list of biases affecting decision making have grown over the years with various authors

classifying them into diverse and broad categories. Although these classifications are not very consistent and incontrovertible, they do provide us with foundation for further research. Hirshleifer (2001) has classified the behavioral biases into four groups. They are (i) heuristic simplification or information processing errors, (ii) self-deception errors or limits to learning, (iii) emotion related and (iv) errors due to societal influence. Listed here are a few of the biases that arise due to inaccurate processing of information or the heuristic biases.

2.10.1 Heuristics (Information Processing Errors)

Human judgment, such as selection among several alternatives, is generally made based on past memory and newly collected information. Simon (1955) suggested that human behavior could be subject to biases at any of three stages in the decision-making process; recalling memories, selecting information, and making judgments (Toshino & Suto, 2004). Being human, it may not be possible to optimize decisions, applying probabilities and weighing the costs and benefits at all times. Individuals may consider a few pieces of information to make instant judgments regarding the issue at hand. When time is scarce and cognitive resources like memory and attention are limited, people tend to use heuristics or 'rules of thumb' in making financial decisions (Tversky & Kahneman, 1974, Hirshleifer, 2001). Heuristic came to mean a useful shortcut, an approximation or a rule of thumb for guiding search (Gigerenzer & Todd, 1999). But they can sometimes lead to systematically biased decisions, especially when things change. These can lead to suboptimal investment decisions (Ritter, 2003). Experience holds the key to the use of heuristics in decision making. The heuristics that people use depend on the complexity of the situation and making financial investments is a complex decision for most people. Hence people use heuristics in planning financial investments. When people use heuristics to process information, they do not identify the strong and weak messages but pay more attention to inconsequential signals like the attractiveness of the message source. In general, decision heuristics may be influenced by factors such as representativeness, framing, anchoring, availability and loss aversion.

2.10.2 Representativeness

Representativeness is the tendency of individuals to classify things into discrete groups based on similar characteristics (Chan et. al., 2002). Such classification simplifies our thinking and helps us to process information effortlessly. When faced with a new situation, subjects fit the new situation into a category existing in their minds instead of objectively assessing the same. In the case of investments, individuals tend to believe that the recent events will continue and seek to buy 'hot' stocks and avoid stocks that have performed poorly in the recent past (Thomaidis, 2004). According the Tversky and Kahneman (1974) representativeness could arise because of: i) neglecting base rates, ii) neglecting to incorporate sample size or the precision of qualitative information in their classifications and predictions and iii) failing to realize that extreme observations are unlikely to be repeated (Chan et. al., 2002).

Financial firms are known to present positive information in a salient manner and negative information in a non-salient manner to manipulate the investors (Klibanoff et. al., 1999, cited in Stracca, 2002). Examining the relation between past trends and sequences in financial performance and future returns, Chan et. al., (2002) find that representativeness bias does not affect stock prices in the long run. Benartzi (2010) finds that employees contribute retirement savings into the stock of their own company based on how well it has done over the last 10 years. Owing to limited attention of investors, markets under-react to earnings surprises but over-react to operating accruals component of earnings (Hirshleifer, 2001). Using the choices of mutual funds from retirement accounts of the Swedish population, Karlsson & Massa (2010) find that investors choose the category to invest in on the basis of the number of funds available in that category. More the funds in a category, greater is the investment. They define this phenomenon as 'menu exposure'. Menu exposure is greater among investors who have limited information. Jorgensen (2006) finds empirical evidence of the existence of representativeness bias (law of small numbers) among Danish Lotto players along with the evidence that biased players gamble more than others. Shwartzstein (2010) shows

how selective attention may lead the individual to persistently fail to recognize important empirical regularities, make biased forecasts and hold incorrect beliefs about the statistical relationship between variables. The model sheds light on the formation and persistence of systematically incorrect stereotypes and beliefs and examples indicate that the model can be fruitfully applied to study a range of economic problems in discrimination and other areas.

2.10.3 Framing

Framing refers to the way in which a problem is presented to the decision maker (Thomaidis, 2004). When identical problems are framed in different words, people's preferences differ (Kuhberger et. al., 1999). Framing refers to the judgmental heuristic used when people evaluate outcomes as deviations from reference points or levels of aspiration, thereby "framing" them as losses or gains (Kahneman & Tversky, 1979). Using a reference point and analyzing a problem also economizes on thinking (Kahneman & Reipe, 1998). Irrespective of the level of competency and experience, framing induces people to make choices that they would have not made otherwise. In order to study the impact of framing, it is essential to present a problem or situation to respondents in positive and/or negative frames.

Although rationally it is better to adopt broader frames, adopting narrow frames is much more common (Kahneman & Reipe, 1998). Bertrand et. al., (2005) found that using of frames and cues in promotional letter motivated experienced customers too, to take up loans at higher rates of interest than usual. Druckman (2001) evaluates framing effects by way of an experiment and finds that framing bias does affect decision making. Moreover Druckman (2001) found that women were more vulnerable to framing effects than men. Presenting the available information in positive and negative frames as well as the events associated with successful launching of the venture in similar positive and negative frames, Barbosa & Fayolle (2007) find that positive framing of the information and events tends to decrease risk perception and stimulate entrepreneurship, whereas negative

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framing tends to increase risk perception and inhibit entrepreneurship. In addition, anchoring and availability had opposite effects on risk perception.

Cheng & Chiou (2008) found that the framing effects of group decision making were stronger than those in individual decision making due to easy availability of reference point and the desire to be 'better' than the other members in the group. Benartzi & Thaler (2007) assigned university employees to either a mix-it-yourself portfolio or a pre-mixed portfolio in retirement saving plans. Although both should have resulted in similar choices, in reality, under the mix-it-yourself condition most investors chose the fifty-fifty allocation but in the pre-mixed portfolio, the investors selected the most aggressive portfolio of 100 percent stocks. A small variation in framing of the problem resulted in significantly different portfolio choices.

The effects of framing may possibly be used constructively. Positive framing of information could guide thinking in appropriate directions, be it entrepreneurship, investments or group decision making. Framing information on investment options positively could lead to better response from the investors.

2.10.4 Anchoring

People are influenced by anchoring bias while making decisions under conditions of uncertainty. They tend to anchor on things as they have normally been (Chan et. al., 2002). When the value of an item as well as the preference of the buyer or seller, are uncertain and ambiguous, then subjective value of the item derived on the basis of framing of choices could serve as an anchor. Anchoring occurs when people make estimates by starting from an initial value or default value called 'anchor' and adjust the value up or down to yield a final answer, adjustments being insufficient to compensate estimates' bias toward the initial values (Tversky & Kahneman, 1974). The anchor is usually arbitrary and uninformative, like a number generated by a wheel of fortune or the

most recent experience of the individual, but the person believes that the anchor is relevant. Anchoring might result in either ignoring or underweighting new information leading to probable forecast errors.

Bokhari and Geltner (2010) found that the asking price serves as an anchor used by the buyer to assess the value of the property in real estate market. In order to identify whether entrepreneurs are affected by biases, using an experiment, Barbosa & Fayolle (2007) found that anchoring bias affected the decision making of the participants. Campbell & Sharpe (2009) found that the experts' consensus forecasts of monthly economic releases are anchored on the value of the previous months' releases resulting in considerable predictable forecast errors. In addition, since the anchoring bias in forecasting monthly economic releases is predictable, it was found not to result in any serious negative outcome. Chang & Ren (2008) recognize the occurrence of anchoring effect in the Chinese IPO market when the same shares are sequentially listed in semi-liberalized and tightly controlled Chinese markets as well as the liberalized and globally integrated Hong Kong securities markets due to the difference in expected rates of return.

2.10.5 Availability

When faced with a decision situation, people search their memories for relevant information. Although this procedure is normal and sensible, it could lead to biases because all information in memory is not equally retrievable or available. More recent events or most memorable events will weigh heavily rather than the history of experiences and could distort the outcome of the decision situation. Availability is the judgmental heuristic used when people assess the frequency of a class or the probability of an event by the ease with which instances or occurrences can be recalled (Tversky & Kahneman, 1974). Items that are easier to recall and are easily available are judged to be more common. When a viewpoint is widely disseminated and highlighted as important, it makes people believe that it is probably true (Daniel et. al., 2002). Imitative adoption of

actions or judgments could be intensified by over-application of the availability heuristic by preference for the familiar and avoid expressing viewpoints contrary to the prevailing one (Daniel et. al., 2002).

In the investment arena, since a large amount of information is available, instead of performing an objective assessment of the avenues of investment, individuals prefer to follow the actions of their family members or co-workers or listen to a media personality or give undue weightage to a company with a charismatic leader (e.g. Narayana Murthy of Infosys). Massa & Simonov (2003) suggest that an individual's choice of stocks is mostly driven by availability of information. While studying the cognitive biases of Japanese Institutional investors, Toshino & Suto (2004) found evidence of availability heuristics among them, in forecasting market returns especially in Japanese markets as it is easier to recall events in domestic markets and for longer forecasting time horizons. Exposing oneself to global information, that too when information is easily and economically available, could enable these investors in prevailing over the availability heuristics. Barbosa & Fayolle (2007) find that availability bias affects the risk perception in entrepreneurial decision making. Availability also aggravates the impact of experienced events since such events are familiar and easier to recall resulting in biased judgments.

2.10.6 Loss Aversion

Loss aversion is a bias which says that people generally weigh their losses twice as much as their gains irrespective of however small the loss is (Kahneman & Tversky, 1979, Kanheman and Reipe, 1998) relative to a reference point (Berkelaar et. al., 2004, Giorgi & Post, 2011). Loss aversion could be described as: (i) a constant 2 - as in losses having twice the impact of gains, (ii) a systematic individual difference or trait - with some individuals more or less loss averse, (iii) a characteristic of the attribute, or (iv) a property of the different processes used to construct selling and buying prices (Johnson et. al.,

2006). Loss aversion to be an influential force requires not only aversion to loss but also a narrow focus or 'decision isolation' i.e. viewing each decision individually even if they form part of the decision portfolio (Camerer, 2005). Loss aversion could be measured using a reference point (Berkelaar et. al., 2004, Giorgi & Post, 2011) which could be the current wealth of the individual.

Loss aversion prevails in mutual fund investments (Ivkovich & Weisbenner, 2008) in risky and riskless choices (Gachter et. al., 2007), among institutional investors (Toshino & Suto, 2004) and among investors in commercial real estate (Bokhari & Geltner, 2010). Loss aversion is also observable among individuals (Johnson et. al., 2006, Gachter et. al., 2007, Rengifo & Trifan, 2007), from aggregate stock market data (Berkelaar et. al., 2004) and also in policy determination (Tovar-Rodriguez, 2005). Although conventionally loss aversion is identified in the context of monetary payoffs, it could also be identified in the context of non-monetary payoffs which could have implications for decision theories like expected utility theory and rank dependent utility theory (Blavatskyy, 2008). Two individuals with the same utility function in the domain of gains could have different utility functions in the domain of losses with the utility function of the more loss averse individual lying below the utility function of the less loss averse person (Blavatskyy, 2008).

While Berkelaar et. al., (2004) discover that loss aversion and risk aversion are inter-related, Kobberling & Wakker (2004) endorse that risk aversion is caused by loss aversion and split the risk attitude into three distinct components: basic utility, probability weighting and loss aversion. From empirical evidence it is established that age (Johnson et. al., 2006, Gachter et. al., 2007), income and wealth (Gachter et. al., 2007) increase loss aversion whereas education (Gachter, et. al., 2007) and attribute knowledge (Johnson et. al., 2006) decrease loss aversion. Under expected utility and non expected utility settings loss aversion coefficients are very close and also close to the loss-neutral value of 1 which is less than the prospect theory value (Rengifo & Trifan, 2007).

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While observing the prevalence of loss aversion in the US commercial real estate pricing among individuals and institutions, Bokhari & Geltner (2010) found that the loss aversion behavior in asking prices was greater among the more experienced investors and institutions like real estate investment trusts (REITs) and funds. Tovar-Rodriguez (2005) discovers that loss aversion leads to higher protection to profitability declining industries, greater lobby formation among loss making firms and anti-trade bias in trade policy.

Table 2.7 shows the operational definitions of the heuristic biases used in the study.

Table 2.7: Operational Definitions of the Heuristic Biases used in the Study

Variables	Operational Definition	Source
Representativeness	Classifying things into discrete groups based on similar characteristics.	Tversky & Kahneman, 1974, Chan et. al., 2002
Framing	Judgmental heuristic used when people evaluate outcomes as deviations from reference points or levels of aspiration.	Kahneman & Tversky, 1979
Anchoring	Making estimates on the basis of initial values called 'anchor', set by recent experience, adjusting the value up or down to yield a final answer	Tversky & Kahneman, 1974
Availability	Making choice of investments on the basis of the ease with which instances or occurrences can be recalled.	Tversky & Kahneman, 1974
Loss aversion	Weighing losses twice as much as gains irrespective of however small the loss is.	Kahneman & Tversky, 1979

Source: Literature review

2.10.7 Research Gap

From the literature review it is found that most of the experiments or studies on biases have been performed on university campuses usually with student participants in

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hypothetical situations. Other studies have considered data from brokerage houses where investments are made in merely risky financial securities. Few studies have undertaken the study of biases in the real world context of IDM across riskless and risky securities (**Research gap 7**). Considering that there is an overload of information and people are found to use heuristics while making decisions, the following research objective and hypotheses have been developed.

Research objective 7: To evaluate the extent of influence of heuristic biases on individual IDM.

H7a: Representativeness bias affects the IDM of individuals.
H7b: Framing bias affects the IDM of individuals.
H7c: Anchoring bias affects the IDM of individuals.
H7d: Availability bias affects the IDM of individuals.
H7e: Loss aversion bias affects the IDM of individuals.

2.11 Statement of the Problem

Based on the literature review and research gaps identified in the previous paragraphs it is seen that IDM is influenced by many factors such as demographics, personality, social environment, choice criteria, contextual factors and biases. Very few studies in the Indian context have probed these issues and their influence on IDM of individuals. Again most research on portfolio choice and investment has investigated how investors save and allocate funds across capital market assets or risky investments. Very few studies have focused on other avenues of investment especially the fixed income securities. The present study seeks to analyze the influence of seven factors of Demographics, Personality, Social environment, Experience, Choice criteria, Contextual factors and Biases affecting IDM among urban individuals from across the country.

2.12 Conceptual Model

From the literature review it is found that IDM is affected by several factors among which this study focuses on six factors of Demographics, Personality, Social environment, Experience, Choice criteria, Contextual factors and Biases as independent variables. All these variables are considered to have an impact on the IDM of the individual which is considered to be the dependent variable. The conceptual model tries to establish whether any relationship exists between IDM and the above mentioned factors. The conceptual model also tries to ascertain whether the factors of Demographics, Personality, Social environment, Experience, Choice Criteria and Contextual Factors have an effect on the Biases. Research questions are based on the research gaps identified and listed after the conceptual model.

Demographics

- Age
- Education
- Income
- Location
- Gender
- Marital status
- No. of dependents

Personality

a. Big Five

   i. Openness
  ii. Conscientiousness
 iii. Extraversion
 iv. Agreeableness
  v. Neuroticism

b. Rotter's I-E Scale

  I. Internals
 II. Externals

Social Environment

- Family
- Informal sources – Friends, neighbours, brokers, social circles, experts
- Non Commercial Sources - Newspapers, magazines, TV channels, blogs, internet sites

- Experience

Choice Criteria

- Risk
- Return
- Liquidity
- Investment Horizon
- Convenience

Contextual factors

- Task complexity
- Information processing
- Time constraint

Investment Decision Making

a. Risk averse investors
b. Moderately risk seeking investors
c. Highly risk seeking investors

Biases

Heuristic Simplification (Information processing errors)

a. Representativeness
b. Framing
c. Anchoring
d. Availability
e. Loss aversion

Fig. 2.1: Conceptual Model of the Research

2.13   Research Questions

1. What is the extent to which demographics affect individual IDM?
2. Do personality traits influence the IDM of individuals?
3. Do individuals heed the guidance of their social environment in IDM?
4. Does the past experience of the individual shape IDM in the present?
5. Is the individual driven by choice criteria in IDM?
6. Do the contextual factors have a bearing on the individual IDM?
7. To what degree do heuristic biases stimulate IDM?

2.14 Research Objectives

1. To examine the effect of demographics on individual IDM.
2. To assess the influence of personality traits on individual IDM.
3. To observe whether individuals heed the guidance of their social environment while making investment decisions.
4. To detect whether past experience induces individual IDM at present.
5. To identify the choice criteria factors that affect individual IDM.
6. To determine the extent of influence of contextual factors on individual IDM.
7. To evaluate the extent of influence of heuristic biases on individual IDM.

2.15 Research Hypotheses

H1a: Gender affects the IDM of individuals.

H1b: Age affects the IDM of individuals.

H1c: Education affects the IDM of individuals.

 H1d: Financial literacy affects the IDM of individuals.

H1e: Marital status affects the IDM of individuals.

H1f: Work experience affects the IDM of individuals.

H1g: Occupation affects the IDM of individuals.

H1h: No. of earners in a household affects the IDM of individuals.

H1i: Annual income affects the IDM of individuals.

H1j: Investments made together with spouse or separately affects the IDM of individuals.

H2a: Locus of Control has an influence on the IDM of individuals.

H2b: Big Five personality factors influence the IDM of individuals.

H3a: Family influences the IDM of individuals.

H3b: Non commercial sources of information influence the IDM of individuals.

H3c: Informal sources of information influence the IDM of individuals.

H4a: Experience in investing affects the IDM of individuals.

H5a: Convenience factor affects the IDM of individuals.

H5b: Attitude towards risk affects the IDM of individuals.

H5c: Attitude towards return affects the IDM of individuals.

H5d: Desire for liquidity affects the IDM of individuals.

H5e: Investment horizon affects the IDM of individuals.

H6a: Task complexity affects the IDM of individuals.

H6b: Information processing affects the IDM of individuals.

H6c: Time constraint affects the IDM of individuals.

H7a: Representativeness bias affects the IDM of individuals.

H7b: Framing bias affects the IDM of individuals.

H7c: Anchoring bias affects the IDM of individuals.

H7d: Availability bias affects the IDM of individuals.

H7e: Loss aversion bias affects the IDM of individuals.

2.16 Summary

The literature review has revealed that it is high time researchers moved away from the standard finance models of rational investor and efficient markets. In general there is compelling evidence to show that individuals do not adhere to the tenets of 'homo economicus' but are subject to various pressures that lead to sub-optimal decision making. The literature review provides the theoretical framework to identify the various factors that influence IDM among urban individuals. Bearing in mind that reformation of financial markets in India began in 1991 and various types of financial instruments and services are available, SEBI NCAER survey shows that 72 percent of the urban investors seek safe investments in banks and insurance. Although the financial innovations are important and relevant, they leave out the central question of the design and the marketing of financial products (Shefrin & Statman 1993) and whether it is suitable to those to whom it is marketed. It is important to understand individuals from a holistic point of view rather than from a single viewpoint. Success would depend on to what extent one knows their customers.

CHAPTER THREE

RESEARCH DESIGN

3.1 Chapter Overview

This chapter describes the research design used to test the relationship between influencing factors and investment decision making (IDM) established in chapter two, using a mixed approach. It is divided into 7 sections. Section 3.2 deals with the research design. Section 3.2.1 discusses the general approach. Section 3.2.2 describes the inductive and deductive approaches. Section 3.2.3 discusses the choice of quantitative and qualitative methods. Section 3.2.4 discusses the development of research questions. Section 3.3 describes the data collection procedure. Section 3.3.1 discusses primary data. Section 3.3.2 describes the research instrument. Section 3.3.3 specifies the scale development. Section 3.3.4 discusses the secondary data. Section 3.3.5 lists out the criticisms of the data sources. Section 3.4 discusses the validity and reliability of the research instrument. Section 3.5 discusses population and sampling. Section 3.6 gives a glimpse of how the survey was conducted. Section 3.7 explains the tools used to analyze data. Section 3.7.1 explains   Chi-Square test and Fisher's Exact test. Section 3.7.2 explains the Kruskal-Wallis test. Section 3.7.3 refers to Pearson's correlation.   Section 3.7.4 elucidates Garrett's ranking technique. Section 3.7.5 explains Principal Component Analysis. Section 3.7.6 discusses Regression Analysis. Lastly Section 3.8 summarizes the chapter.

3.2 Research Design

Research design constitutes the blueprint for the collection, measurement and analysis of data (Cooper & Schindler, 2007). It refers to the logical structure of the inquiry and must be consistent with the reality that is being researched. Research methods, being distinct from research design, specify the mode of data collection while research methodology provides the theoretical foundation for using a particular research method (Wahyuni, 2012). A pragmatic approach to developing a research design would be to begin with a

research purpose and research questions (Saunders, et. al., 2009). A good research design would contribute to a better understanding of the subject matter being researched.

On the basis of objectives, research can be classified as exploratory, descriptive or causal. Exploratory research refers to a situation where the goal of research is to discover ideas and insights. It is conducted in order to increase one's understanding of a situation that is unfamiliar, i.e. what is happening and why it is happening. The goal of descriptive research is to describe the population with respect to important variables. It involves describing characteristics of certain groups, determining proportions of people who behave in a certain way, and verifying relationships between variables. Descriptive studies could be cross-sectional or longitudinal. Causal research is used to establish cause-and-effect relationships between variables.

In this study the development of the conceptual model based on literature review and identification of variables like personality that influences IDM could be considered exploratory. The results of the cross-sectional survey could be termed as descriptive.

3.2.1 The Approach

The general approach of a study is affected by the researcher's frame of reference, which refers to one's overall knowledge, norms and values (Eriksson & Wiedersheim-Paul, 1997). The approach of the current study is based upon the researcher's frame of reference, which in turn is essentially based on the review of literature. Although it is important for the researcher to maintain an objective approach towards the research, such an approach could be difficult to achieve because a large part of the literature and scientific articles themselves contain subjective interpretations and opinions that might possibly influence the researcher. As pragmatist approach believes, objectivist and subjectivist perspectives are not mutually exclusive (Wahyuni, 2012). Hence the emphasis must be on using a scientific approach that works best to deal with the research problem at hand.

3.2.2 Inductive and Deductive Approaches

According to Eriksson and Wiedersheim-Paul (1997) the scientific approach of a study can be described by two fundamental perspectives: rationalism and empiricism. The rationalistic perspective refers to a deductive method which begins with a theory, creates a hypothesis and then tests the hypothesis through empirical observations. On the other hand, the empirical perspective refers to an inductive method which begins with empirical observations leading to creating a hypothesis and then developing a theory based on empirical data.

In view of the fact that research related to Indian individual investors is limited, to the best of the knowledge of the researcher, this research will involve using both inductive and deductive approaches. The conceptual model is deduced on the basis of the review of literature on behavioural finance. To empirically test the conceptual model, a questionnaire survey is conducted among the urban individual investors and financial intermediaries in India. This forms the inductive framework of the study. The study is descriptive as well as exploratory.
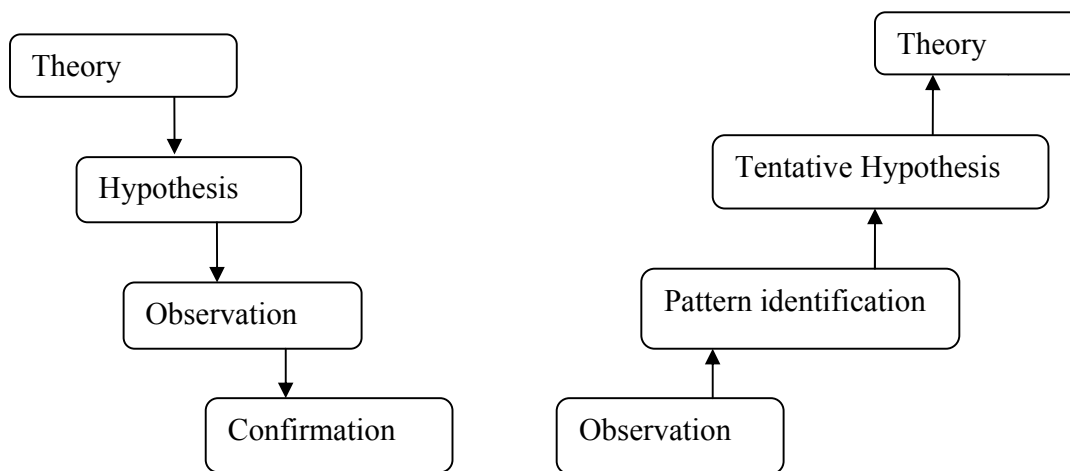
Fig 3.1: Conceptualization of Deductive Method (Top-down approach) (left) and Inductive Method (Bottom-up approach) (right)

3.2.3 Qualitative and Quantitative Methods

A method can be either quantitative or qualitative. A quantitative method consists of collecting numerical data and aims at generalizing a phenomenon through formal analysis of the data using statistical tools. Quantitative data could be sourced from surveys, structured interviews, observations or secondary data sources like annual reports of companies.

Qualitative data is non-numerical in nature and aims at testing if the information is valid. Qualitative data could be sourced from in-depth interviews, focus group discussions, open ended questionnaires, field observations and other sources. When qualitative methods are used, depth of information collected is more important than the size of sample. Of late, use of a mixed method by combining both quantitative and qualitative methods has become prevalent in order to gain both broad purposes of breadth and depth of understanding and corroboration (Johnson et. al., 2007).

In order to achieve the purpose of the study, it was decided to apply quantitative as well as qualitative methods. The quantitative method refers to the survey that is to be implemented in the form of a questionnaire, which is directed at urban individual investors. Through the survey the researcher strives to determine how well the practical decision making framework and behavior of investors in reality are consistent with the existing literature of behavioural finance. A qualitative method is implemented through an attempt to describe the reasons for the behavior of investors with the help of extant literature and on interviewing a few financial market intermediaries.

3.2.4 Research Questions

Defining research questions represents one of the most important steps to be undertaken in any empirical study (Benbasat et. al., 1987). A thorough literature review was

undertaken to formulate research questions about the research problem. Seven research questions are framed to study the influence of factors like demographics, personality, social environment, experience, choice criteria, contextual factors and heuristic biases on IDM of urban individual investors. Review of the literature and research questions provides the basis for formulation of hypotheses in this study.

3.3 Data Collection

Data is collected primarily through a survey in the form of a questionnaire as well as interviewing financial planners and wealth managers. The researcher has examined the data to find linkages between the research objectives and outcomes with reference to the research questions. Moreover information is collected from existing literature on demographics, personality, social environment, and behavioural finance. The closed end questionnaire is designed and prepared with the objective of capturing data from urban individual investors. The Validity of the instrument is obtained from experts such as financial planners and pilot tested for a small group of respondents and the Reliability is tested using Cronbach's alpha. Kruskal Wallis test, Garrett's ranking technique, Pearson's Correlation, Principal component analysis and regression analysis was performed using SPSS (Statistical Package for Social Sciences) version 17.0.

3.3.1 Primary Data

The study is based on primary data collected with the help of a structured questionnaire distributed to individual investors. The questionnaire included questions on various constructs given in table 3.1 below. A five point Likert scale is used with a scoring of 1 for strongly disagree, 2 for disagree, 3 for neutral, 4 for agree, and 5 for strongly agree for most of the questions. The questionnaire is validated through a review of the literature and with the help of experts. Internal consistency of the questions is established by

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calculating Cronbach's alpha as shown in table 3.3. Primary data is also collected from financial intermediaries through an unstructured interview.

Table 3.1: Constructs and their Sources

Constructs	Sources
Big Five factor measures	Goldberg (1999)
Locus of Control	Heineck & Anger, (2008), Piatek & Pinger, (2009)
Demographic factors	Dorn & Huberman (2005), Coleman (2007)
Social environment	Wood & Zaichkowsky (2004), Funfgeld & Wang (2009), Kasilingam & Jayabal (2010)
Choice criteria	Grable (2000), Wood & Zaichkowsky (2004), Kasilingam & Jayabal (2010), Jadlow & Mowen (2010)
Contextual factors	Joo (1998), Wood & Zaichkowsky (2004), Toshino & Suto (2004), Agnew & Szykman(2004), Funfgeld & Wang (2009), Jadlow & Mowen (2010)
Anchoring	Tversky & Kahneman (1974), Simonson & Drolet (2003)
Availability	Wood & Zaichkowsky (2004), Funfgeld & Wang (2009), Kasilingam & Jayabal (2010)
Representativeness	Tversky & Kahneman (1974), Pompian (2006)
Loss aversion	Kahneman & Tversky (1979), Pompian (2006)
Framing	Kahneman & Tversky, (1984), Pompian (2006)

Source: Literature review

3.3.2 Research Instrument

The final survey instrument consists of a 5-page questionnaire. It was prepared in English as well as regional languages since all respondents did not possess the required proficiency in English to understand and respond. The questions relevant to this research are found in 8 sections.

The first section is designed to collect the information on respondents' personality using the Big Five factor scale and the Locus of Control (Rotter's I-E) scale (refer appendix 3). The Big Five factors are measured using the International Personality Item Pool (Goldberg, 1999). Since the researcher would be unable to make an extensive personality study, it was decided to adapt this measure to capture each of the Big Five traits with three statements totaling to fifteen questions. A five point Likert scale is used with a scoring of 1 for strongly disagree, 2 for disagree, 3 for neutral, 4 for agree, and 5 for strongly agree. The Locus of Control is measured by a 7-item questionnaire[1] of which one question measures internal Locus of Control[1] and the remaining 6 measure external Locus of Control. Again each question is answered on a 5 point Likert scale ranging from strongly disagree, disagree, be neutral, agree, or strongly agree.

The second section is designed to collect information on the respondents' choice criteria. The third section sources information on the social environment factors that influence the respondents' IDM. This section is also used as proxy for availability bias considering that the sources which are easily available to the respondents are most familiar and hence have a greater influence on them. The fourth section is designed to collect information on the actual investments made by the respondents. The respondents are required to choose the various avenues of investments they had actually invested in, like gold, real estate, shares, mutual funds, government bonds, corporate bonds, bank deposits, post office deposits, provident fund, insurance and non-banking finance company (NBFC) deposits. Since this section reflects the real decisions made by the respondents, based on this section the respondents are classified into risk averse, moderately risk seeking and highly risk seeking, depending on the kind of securities that they have actually invested in. The respondents are considered to be risk averse if they have invested only in fixed-income securities, highly risk seeking if they have invested only in risky securities and moderately risk seeking if they have invested in a combination of fixed-income and risky securities. The fifth section is designed to collect information on the contextual factors

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[1] Sourced from Heineck & Anger, (2008), Piatek & Pinger, (2009)

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that influence the respondents. The sixth and seventh sections pose questions to derive the respondents' biases. The last section was designed to collect the demographic information of the respondents for a more meaningful interpretation of the results. This covered city of residence, gender, age, education, marital status, size of the household, number of dependents, work experience, occupation, number of earners in the household, income, whether investments are made together with spouse and number of years of investing. This section is intentionally designed to be the last section of the questionnaire. This is to reduce unnecessary resistance on the part of respondents to complete the whole questionnaire since demographic and personal details (especially income) are considered to be very private and most people are defensive in revealing it (Ghazali & Othman, 2001). A preliminary pilot test involving fifteen respondents was conducted before the actual survey. The questions are developed from the sources mentioned in table 3.1. In case of Locus of Control measure, a significant modification was done. At the beginning, nine statements were considered, but later reduced to seven statements due to the difficulty faced by the respondents in understanding two of the statements. Some of the questions are modified and developed by the researcher following opinion of experts and the opinion of the respondents of the pilot study.

3.3.3 Scale Development

In research, to measure subjective variables (attitudes, feelings, personal opinions, or word usage), a scale is used. The Likert scale is by far the most popular attitude scale used in questionnaires to obtain the participant's preferences or degree of agreement with a set of statements (Babbie, 1983). A statement is followed by several levels of agreement: strongly disagree, disagree, neutral, agree, and strongly agree. This five point scale is commonly used, but other scales, from four to ten points, can be used as well (Mueller, 1986). The Likert-type scale is also used to capture qualitative data that is either difficult to measure or addresses a sensitive topic, to which a respondent would probably not respond, or would respond falsely, if asked directly. The scales used in this

thesis have been developed from a review of relevant literature, and results of the pilot study. Most of the scales used are pre-tested and used in previous studies. A total of 75 scale items are used to measure the constructs in the research framework as discussed in Chapter Two. All of the scale items except three, used in the questionnaire designed for respondents are based on a five point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) and are modified to suit the context of measuring individual investors' attitude towards the entire spectrum of investments ranging from riskless to risky. The responses to a Likert scale can be analyzed separately or summed with other related items to create a score for a group of statements. For this reason Likert scales are called summative scales.

Table 3.2: Scale Items Used in the Thesis

Construct	Attribute/Variables	Number of Items	Sources
Personality Rotter's Internal-External Scale	Internal	1	Heineck & Anger, (2008), Piatek & Pinger, (2009)
	External	6	
Personality Big Five factors	Extraversion	3	Goldberg (1999)
	Agreeableness	3	
	Conscientiousness	3	
	Neuroticism	3	
	Openness	3	
Choice criteria	Risk	3	Grable (2000), Wood & Zaichkowsky (2004), Kasilingam & Jayabal (2010), Jadlow & Mowen (2010)
	Return	2	
	Liquidity	2	
	Investment horizon	2	
	Convenience	4	

Table 3.2 continued			
Social environment & availability bias	Family	2	Wood & Zaichkowsky (2004), Kasilingam & Jayabal (2010)
	Informal sources	5	
	Non-commercial sources	7	
Contextual factors	Task complexity	5	Joo (1998), Wood & Zaichkowsky (2004), Toshino & Suto (2004), Agnew & Szykman(2004), Jadlow & Mowen (2010)
	Information organisation	3	
	Time constraint	2	
	Experience	1	Joo (1998)
Heuritistic simplification biases	Representativeness	3	Tversky & Kahneman (1974), Pompian (2006)
	Framing	5	Kahneman & Tversky, (1984), Pompian (2006)
	Anchoring	3	Tversky & Kahneman (1974), Simonson & Drolet (2003)
	Loss aversion	3	Kahneman & Tversky (1979), Pompian (2006)

Source: Literature review

3.3.4 Secondary Sources

Secondary sources refer to information that are collected and made available by a primary source. Secondary sources of information are often collected for a specific purpose, either from a theoretical study or empirical study, but can also be used to address questions in other fields of research (Boslaugh, 2007). Heaton (2004) defines secondary data analysis as 'a research strategy which makes use of pre-existing quantitative data or pre-existing qualitative data for the purposes of investigating new

questions or verifying previous studies'. This information originates from sources such as databases, literature, journals, and internet. The secondary sources of information used in this research refer to the existing theories in behavioural finance, demographics, personality, social environment, experience, choice criteria, contextual factors and biases. The emphasis was on finding material on the relatively new area of behavioural finance. For the current study secondary sources of information are gathered from books, journals, newspapers, working papers, study reports and websites. Most of the literature and articles are found through the Indest network of NITK library. A few articles are sourced through EBSCOhost.

3.3.5 Criticism of the Sources

Both primary and secondary sources of data may contain factors influencing the quality of the research. The survey conducted in the form of a questionnaire, enabled us to collect unique and contemporary primary data. However, the questionnaire is susceptible to the subjective opinions of the respondents and the accuracy of their responses. The theories and literature written on the various topics are new and evolving and are subject to many interpretations. The researcher has endeavored to take an objective perspective of the various theories while describing and utilizing the existing theories in explaining the findings of the study.

3.4 Sampling Frame

The criterion for deciding on the population for the study is that they must be the urban middle class with a minimum disposable income of Rs. two lakhs per annum. Although it is very difficult to specify the size of the population, the size is assumed to be about 50 million as per the McKinsey quarterly (Beinhocker et. al., 2007). For this population, the sample size required would be 1067 respondents with a confidence level of 95 percent and confidence interval of 3 σ (sigma). Respondents of the questionnaire are chosen from

14 select cities across India using snowball sampling and a sample of 1146 individual investors is fairly reasonable and representative.

3.4.1 Sample Size

During the initial phase of the study, when the researcher requested probable respondents to participate in the survey, they declined citing various reasons. Their unwillingness to participate in the survey could be attributed to (a) financial illiteracy, (b) investing one's entire wealth in one's own business and neglecting all other avenues of investments, (c) being sensitive and skeptical about revealing one's investment related matters, considered to be confidential, to a third party. When information to be acquired is sensitive and may not be easily revealed then informal links must be chosen to refer respondents (Wahyuni, 2012). This practice of obtaining respondents through informal links is called snowball sampling. Since the data collected is very personal and highly confidential, snowball sampling is used for the purpose of the study. Since snowball sampling has been used, a selection bias might affect the results of the study (Dorn & Huberman, 2005). In order to account for non responses and chances of questionnaire not being returned by respondents, over-sampling was done. A total of 4500 questionnaires were distributed across 14 cities in India representing the north, south, east and west regions during the period January 2012 to September 2012.

3.5 Conducting the Survey

For the purpose of the survey a self administered questionnaire was used since it is a better method when the sample size is large. Survey research is appropriate for a large sample i.e. a sample of more than 200 respondents (Hair et. al., 2005). A self administered questionnaire survey is practical because it is quick, inexpensive, efficient and can be administered to a large sample (Zikmund, 2003). Systematic response distortion was addressed by ensuring that the questionnaire was designed in a way that it would be easy for the respondents to understand and would be free of response bias. Moreover the questionnaire was translated into regional languages apart from English, to

minimize the errors arising due to linguistic barriers. The survey was conducted in cities across India to achieve a wider geographical distribution. A heterogeneous community based sample was collected to cover a variety of demographic groups. The questionnaires were distributed personally or mailed to the respondents with a pre-paid return envelope.

An unstructured interview of financial intermediaries was done in order to provide an insight regarding any unforeseen findings that may arise. Intermediaries were also selected using snowball sampling technique. A total of 42 intermediaries were interviewed but 40 were considered for the purpose of the study. Two intermediaries were not considered due to their non-response to some of the questions asked during the interview.

3.6 Validity and Reliability

Validity refers to how well the data collection and data analysis of the research captures the reality being studied. Validity can be divided into three subgroups: construct validity, internal validity and external validity (Cooper &Schindler, 2007).

Construct validity refers to "the degree to which a test measures what it claims, or purports, to be measuring" (Brown, 1996). Constructs are abstractions that are deliberately created by researchers in order to conceptualize a latent variable. The construct validity refers to the data collection procedure, i.e. establishing correct operational measures for the concepts being studied. This study concentrates on IDM of individual investors and the various factors that influence them. As the primary data collection was directed at individual investors and the intermediaries like wealth managers and financial planners, the research is said to have high construct validity.

Internal validity refers to the process of establishing a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships (Yin, 1994, Ruane, 2005). It also refers to the link between theory and the empirical research (Svenning, 1997). In this research an attempt is made to discover the

various factors that influence the IDM of individuals. It is found that the variables identified from various literatures on behavioral finance are appropriate in explaining to some extent the empirical findings of this study. Although the researcher has tried to be comprehensive, there may be other factors contributing to the IDM of individuals which are beyond the scope of this study.

External validity establishes the domain to which a study's findings can be generalized (Ruane, 2005). It tests whether a study's findings can be generalized from a chosen sample to a more common theory. In the current situation, external validity refers to the possibility of generalizing the findings from urban individual investors to a more broadly defined population. The sample is considered to describe relatively well the IDM behavior among the chosen individual investors. Respondents of the questionnaire are chosen from 14 select cities across India using snowball sampling and a sample of 1146 individual investors is fairly reasonable and representative.

Reliability demonstrates that the operations of a study such as the data collection procedure can be repeated with the same outcome. The objective is to ensure that if a later researcher follows exactly the same procedure as described by an earlier researcher and conducts the same study all over again, the latter researcher should arrive at the same findings and conclusions. In this study, the researcher has utilized a quantitative method in the form of a questionnaire directed toward urban individual investors. It is considered that the same procedure is easily applicable to another similar sample of individual investors and should render the same results as if directed toward the same sample group. Therefore the researcher believes that the study fulfils the reliability criteria. However the answers of the respondents are exposed to subjectivity and the prevailing general market climate during January 2012 to September 2012.

The rationale for internal consistency is that the individual items of the scale should all be measuring the same construct and thus be highly inter-correlated (Nunnally, 1978). Cronbach's alpha is a popular measure to determine the degree of consistency amongst the multiple measurements of each factor. It measures the inter-item reliability of a scale

generated from a number of statements. It indicates the degree to which the items are answered in a similar manner by respondents and alpha values range from 0 to 1, with higher values indicating higher levels of internal consistency. The generally agreed upon lower limit for Cronbach's alpha is 0.70, although it may decrease to 0.50 in exploratory research (Hair et. al., 1995). The internal reliability was calculated for the 5 sections in the questionnaire using the Cronbach's alpha. They are as follows:

Table 3.3: Cronbach's Alpha

Measures	Cronbach's Alpha
Personality	0.552
Social Environment	0.737
Choice criteria	0.684
Contextual factors	0.728
Biases	0.674

Source: survey data

These reliabilities are acceptable but not as high as in many such instruments. Social environment scale is found to be most homogeneous with a score of 0.737, while the personality scale shows a low score at 0.552. This may reflect an inherent multidimensional nature of the various factors (Corter & Chen, 2006) that have an influence on the IDM of individuals.

Content validity is established through a review of the literature and with the help of experts. It subjectively assesses the correspondence between the individual items and the concepts through ratings by experts, pre tests with multiple sub populations or other means (Hair et. al., 1995). In order to accomplish content validity, the researcher followed the recommendations of Cooper and Schindler (2001) through extracting the existing scales from the literature and with help from a panel of experts (including practitioners from the industry), asking them to give comments on the instrument. The content validity of the questionnaire was verified by discussions with six experts, two financial planners, one stock broker, one chartered accountant, two professionals from the

finance industry (Devellis, 1991). Accordingly the researcher made changes in terms of eliminating, adding, or rewording some of the items included in the questionnaire.

3.7 Tools Used to Analyze Data

Using mixed methods approach helps the researcher to base the knowledge claims on pragmatic grounds (Creswell, 1994). It enables the researcher to look for similar findings and enhance the value of the study. The data has been analyzed to find linkages between the objectives and the outcomes with reference to the research questions. The researcher categorized, tabulated, and recombined the data to address the purpose of this study, and cross-checked the data to avoid discrepancies. Data is analyzed using Kruskal Wallis test, Pearson's correlation, principal component analysis and regression analysis using SPSS version 17.

3.7.1 Chi Square Test and Fisher's Exact Test

Chi-square test is used for analyzing two nominal variables. It requires a relatively large sample size and/or a relatively even split of the subjects among the levels because the expected counts in 80 percent of the cells should be greater than 5. But when the number of observations obtained for analysis is small, the chi-square test may produce misleading results. A more appropriate form of analysis, when presented with a 2x2 contingency table is to use R.A. Fisher's exact test. Fisher's exact test considers all the possible cell combinations that would result in marginal frequencies being highlighted. The test is exact because it uses the exact hypergeometric distribution rather than the appropriate chi-square distribution to compute the p-value. The chi-square test is basically an approximation of the results from the exact test, so erroneous results could potentially be obtained from the few observations.

Chi-square and the Fisher's exact test provide similar information about relationships among variables; however they only tell us whether the relationship is statistically significant but do not tell the strength of the relationship.

3.7.2 Kruskal-Wallis Test (KW Test)

The KW test is the nonparametric test equivalent to the one way ANOVA (analysis of variance) to allow the comparison of more than two independent groups. It is used when we wish to compare three or more sets of scores that come from different groups. The KW test can tell us that at least two groups are different without specifying exactly which groups are significantly different from each other. The KW test evaluates whether the population medians on a dependent variable are the same across all the levels of a factor. The independent or grouping variable divides individuals into two or more groups, and the dependent variable assesses individuals on at least an ordinal scale.

This test is appropriate for use under the following circumstances:

(a) We have three or more conditions that we want to compare;

(b) Each condition is performed by a different group of participants; i.e. we have an independent-measures design with three or more conditions.

(c) The data do not meet the requirements for a parametric test. (i.e. use it if the data are not normally distributed; if the variances for the different conditions are markedly different; or if the data are measured on an ordinal scale).

KW test has been used to ascertain the differences between RA, MRS and HRS individuals across measures of demographics, personality, social environment, experience, choice criteria, contextual factors and heuristic biases. The KW test only gives us an indicative answer, and not a conclusive one. For this reason we need other tools to perform further analysis.

3.7.3 Pearson's Correlation

Pearson's correlation measures the strength of association between two variables. Positive correlation indicates that both the variables increase or decrease together, whereas negative correlation indicates that when one variable increases the other decreases and vice-versa.

3.7.4 Garrett's Ranking Technique

Garrett's Ranking Technique is a scoring procedure suggested by Henry Garrett in 1969 for converting ranks into scores when the number of items ranked differed from respondent to respondent. The method is as follows:

The order of merit given by the respondents for each criterion was converted into ranks by using the following formula.

$$\text{Per cent position} = \frac{100(R_{ij}-0.5)}{N_j}$$

Where,

R_{ij}= Rank for i^{th} item by j^{th} individual and

N_j= Number of items ranked by j^{th} individual.

The percent position of each rank is converted into scores by referring to table values given by Garrett and Woodsworth (1969) (given in appendix 4). Then for each criterion, scores of individual respondents are added together and divided by the total number of respondents for whom scores are added. The mean scores for all the criteria are ranked by arranging in descending order

$$\text{Mean Score} = \frac{\text{Total Garret Score}}{\text{Number of Respondents}}$$

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3.7.5 Principal Component Analysis (PCA)

Apart from univariate approach, multivariate techniques are applied to analyze the survey data. The multivariate analysis assists in finding those variables that have the greatest influence on the urban individual investor. To achieve the multivariate analysis, the study uses PCA and Regression analysis. The PCA method allows to search for underlying dimensions in the various sets of variables considered in the questionnaire. The choice of the PCA method was based on its appropriateness for such studies, as suggested by Capon et. al., (1994) and Zoghlami and Matoussi, (2009).

Principal component analysis (PCA) involves a variable reduction procedure that transforms a number of correlated variables into a smaller number of uncorrelated variables called principal components. The principal components so found, account for most of the variance in the observed variables.

In order to determine the suitability of the data for principal component analysis, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (MSA) and the Bartlett's Test of Sphericity were applied. A KMO value of 0.5 or more is considered suitable (Hair et. al., 1995). The significance level of the Bartlett's Test of Sphericity is considered to be 5 percent. A p value of < 0.05 is considered suitable. In order to choose the number of factors to be derived the most popular method of 'eigen value one' criterion is used. The component matrix so formed is rotated orthogonally using Varimax rotation algorithm which is the standard rotation method (Kaiser, 1958).

3.7.6 Regression Analysis

The objective of this study is to identify whether there exists some relationship between the independent and dependent variables, which is usually done by a study of correlation between the variables (Hair et. al., 1995). The regression analysis was applied to

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investigate the relationships between dependent variables (i.e. biases) and independent variables (i.e. Locus of Control, Big Five factors, social environment, demographics, experience, choice criteria and contextual factors). Linear regressions estimate the coefficients of the linear equation, involving one or more independent variables that best explain the value of the dependent variable. The variance of the distribution of the dependent variable should be constant for all the values of independent variable. The relationship between the dependent variable and each independent variable should be linear, and all observation should be independent. The direction of the relationship between dependent and independent variables can be determined by 'the regression coefficient' (β) beta, associated with the independent variables (Bryman & Cramer, 1996). If the regression coefficient, beta, is positive then there is positive relationship between these variables, otherwise they are negatively related. Standardized beta coefficients give a measure of the contribution of each variable to the model. A large value indicates that a unit's change in explanatory variables cause a large change in the dependent variable. The t-test of the beta coefficient and the corresponding p-value or significance level, tells us the extent of the impact of the explanatory variable on the dependent variable. Thus the various heuristic biases are found to be influenced by different independent variables.

3.8 Summary

Research design briefly describes the blueprint that the researcher has used for the collection, measurement and analysis of data in order to better understand the topic of IDM by urban individual investors. In view of the fact that research related to Indian individual investors is limited, to the best of the researcher's knowledge, this research will involve using both inductive and deductive approaches. The conceptual model has been deduced on the basis of the review of literature on behavioural finance. To empirically test the conceptual model, a questionnaire survey has been conducted among the urban individual investors. This forms the inductive framework of the study. The

research is partially exploratory in terms of developing the conceptual model and the verification of the conceptual model through a cross-sectional study could be termed as descriptive in nature. In order to achieve the purpose of this study, quantitative as well as qualitative methods have been applied. Data was collected primarily through a survey from 1146 individual investors in the form of a self-administered questionnaire as well as interviewing 40 financial intermediaries. The survey instrument consisted of a 5-page questionnaire. A total of 75 scale items are used to measure the constructs in the research. All of the scale items except three, used in the questionnaire are based on a five point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) and were modified to suit the context of measuring individual investors' attitude towards the entire spectrum of investments ranging from riskless to risky. The secondary sources of information were gathered from books, journals, newspapers, working papers, study reports and websites. Most of the literature and articles were found through the Indest network of NITK library. A few articles were sourced through EBSCOhost. The validity of the instrument was obtained with the help of experts and pilot tested for a small group of respondents and the reliability was tested using Cronbach's alpha. The criterion for deciding on the population for the study is that they must be the urban middle class with a minimum disposable income of Rs. two lakhs per annum. Since the data collected is very personal and highly confidential, snowball sampling is used for the purpose of the study. Data collected is analyzed using Kruskal-Wallis test, Chi-Square test, Fisher Exact test, Pearson's correlation, PCA and Regression analysis using SPSS version 17.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Chapter Overview

This chapter analyses the data collected from the urban individual investors and intermediaries and aims to interpret the data in relation to the research problem. It begins with analyzing data collected from individuals on the factors that influence investment decision making (IDM) using Chi-Square test, Fisher Exact test, Kruskal-Wallis test (KW test), Principal Component Analysis (PCA) and Regression Analysis followed by qualitative analysis of the data collected from intermediaries.

4.2. Data Editing, Coding and Screening

Following the data collection, the questionnaires were initially screened for completeness and consistency. Only completed questionnaires were considered for the purpose of the study. Then the data was coded to assign numbers to each answer and allow the transference of data from questionnaires to SPSS. The coding procedure was performed by creating the data file in SPSS, and all questions were pre-coded. Data editing procedures were undertaken to detect any errors in data entry. Screening of the data in SPSS indicated that no variable had any missing data.

4.3 Data Analysis

The study is conducted across India to achieve a realistic geographical spread. Most of the respondents are educated and they have a minimum disposable income of Rs. two lakhs. All of them have invested a portion of the wealth either in riskless assets, risky assets or a combination of both. The questionnaire records whether individuals invest in riskless and risky assets, but not the amount invested (Georgarakos & Inderst, 2010).

The total number of questionnaires distributed is 4500 of which 1453 were received. Of those, 1146 were completely filled and considered for the purpose of the study. An essential part of research is to envisage the risk profile of an investor by analyzing his/her

portfolio choices (Nosic & Weber, 2007). For the purpose of classifying the investors, the individual's choice of investments is taken into consideration and not the amount invested. A risk averse investor is one who is not willing to take risks and invests in instruments that give a fixed rate of return. A risk seeking investor invests in those securities that are risky. A moderate risk seeker is one who invests in both fixed income and risky investments.

Risk free investments include bank deposits, post office deposits, government bonds and provident funds. Gold and insurance are also included among risk free investments because in India, gold is considered to be a store of value and a measure of wealth (Clark, 2012) and not a speculative investment. Although insurance is offered as an investment product by the vendors, from the investors' perspective insurance is chiefly purchased for reasons of security and for income tax deduction and not for the sake of returns. Investments in shares, mutual funds, corporate bonds, real estate and non banking finance companies' deposits are considered to be risky investments. Table 4.1 shows the demographic characteristics of the respondents.

4.4. Demographic Profile of the Respondents

Of the 1146 respondents 13.2 percent are found to be risk averse (RA), 58 percent are found to be moderately risk seeking (MRS) and 28.8 percent are found to be highly risk seeking (HRS). This shows that a larger percentage of the individuals are reasonably balanced in their approach towards investments by investing in both riskless and risky avenues of investment.

Table 4.1: Demographic Characteristics of the Respondents

Demographic factor	No. of respondents	%	Demographic factor	No. of respondents	%
Gender			**Marital Status**		
Male	842	73.5	Married	836	72.9
Female	304	26.5	Not married	290	25.3
Total	1146	100.0	Widowed/ separated	20	1.7
Age in years			Total	1146	100.0
21-30	251	21.9	**Occupation**		
31-40	349	30.5	Govt. sector	73	6.4
41-50	219	19.1	Pvt. Sector	612	53.4
51-60	165	14.4	Public sector	144	12.6
61-70	126	11.0	Self employed	212	18.5
>70	36	3.1	Housewife	24	2.1
Total	1146	100.0	Retired	79	6.9
Education			Student	2	0.2
Upto 10th std.	13	1.1	Total	1146	100.0
Upto 12th std.	19	1.7	**Annual income**		
Graduate	295	25.7	<=3 lakhs	147	12.8
Post-graduate	420	36.6	>3-6 lakhs	388	33.9
Professional	386	33.7	>6-9 lakhs	285	24.9
Diploma	12	1.0	>9-12 lakhs	135	11.8
Any other	1	0.1	>12-15 lakhs	40	3.5
Total	1146	100.0	>15-18 lakhs	23	2.0
			>18 lakhs	128	11.2
			Total	1146	100.0

Source : survey data

The table shows that almost three-fourth of the respondents are men and more than 50 percent of the respondents are less than 40 years of age. Most of the respondents are well educated with post-graduates forming the largest group followed by professionals. One-fourth of the respondents are unmarried while more than 50 percent are employed in the private sector and about 45 percent are earning more than 6 lakhs per annum. Further, an

attempt is made to study whether each of the demographic factors influences the investors' choice of investments.

4.4.1 Gender-wise Classification of Investors

Gender is an important demographic variable that distinguishes IDM.
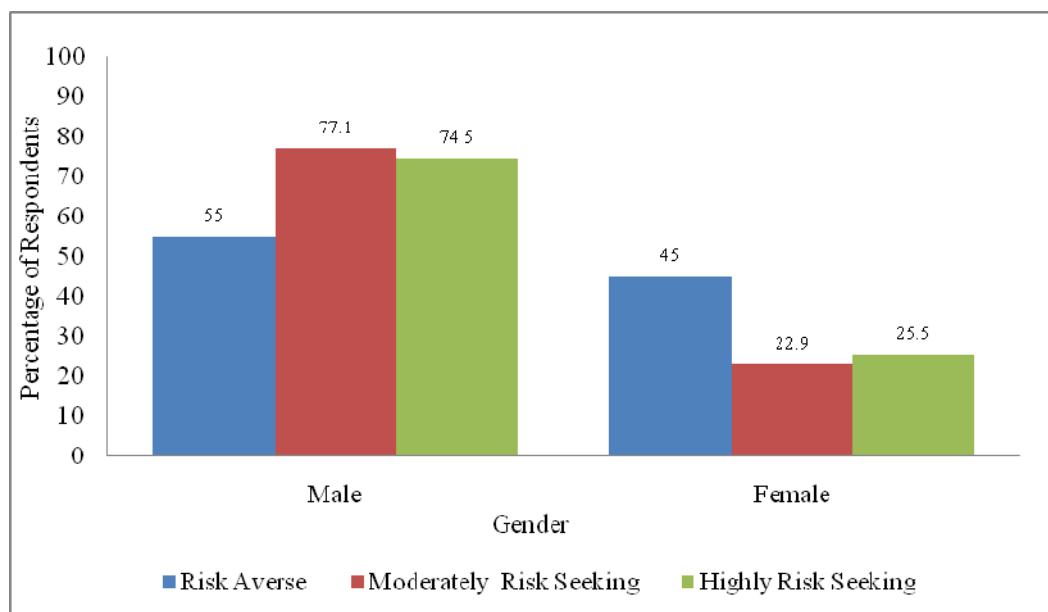
Fig. 4.1: Classification of Investors Based on Gender

$$\chi^2 = 31.323, \text{ p=0.000, highly significant, d.f.=2}$$

Of the total 1146 respondents, 73.5 percent are men and the remaining are women. Among the risk averse individuals, 55 percent are men and 45 percent are women. Among the moderately risk seeking individuals, 77.1 percent are men and 22.9 percent are women. Among the highly risk seeking individuals, 74.5 percent are men and 25.5 percent are women. The chi-square test shows that there is a highly significant difference between the two genders in IDM.

From this it can be deduced that male respondents are more risk seeking than female respondents. This could be attributed to the fact that traditionally in the Indian context women are not empowered to make investment decisions; male investors are overconfident compared to female investors; male investors believe that they are more knowledgeable than female investors and female investors are found to be more risk averse than male investors.

4.4.2 Age-wise Classification of Investors

Age is an important factor that affects the choice of investments. The following Fig. 4.2 classifies the investors based on age.
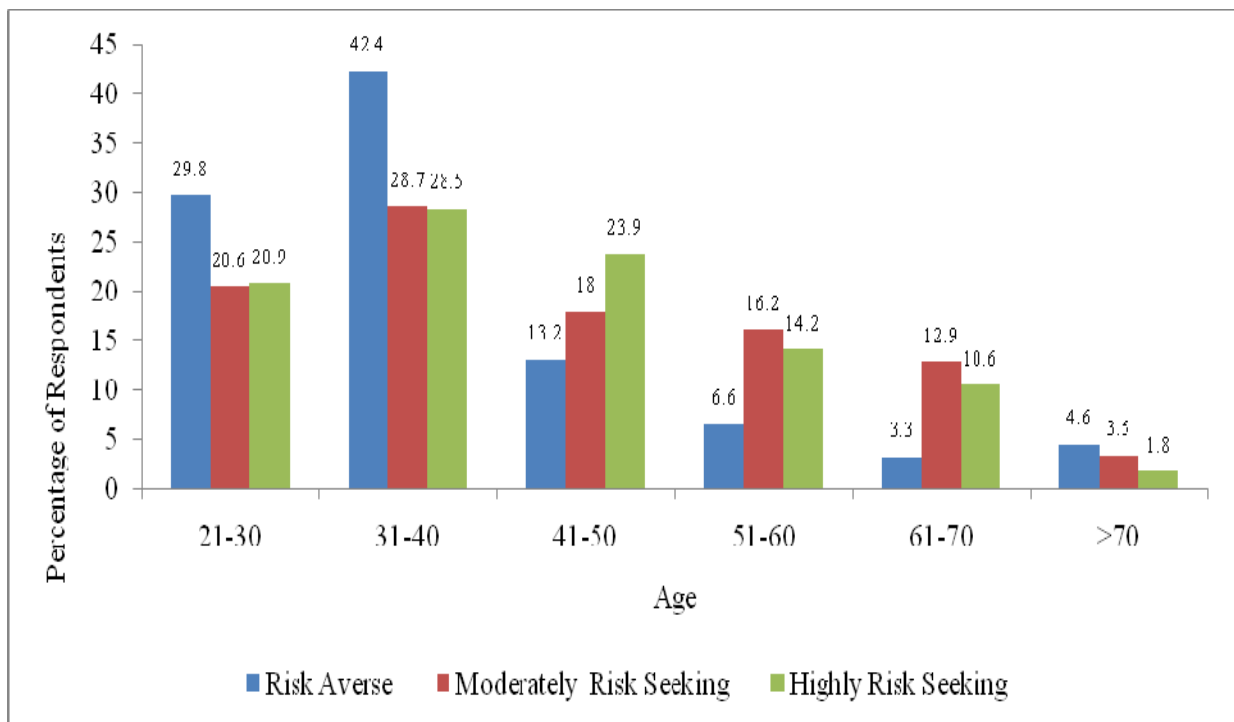
Source: survey data

Fig. 4.2: Classification of Investors Based on Age

$\chi^2 = 41.701$, p=0.000, highly significant, d.f.=10

Of the 1146 respondents, the largest number of respondents are from the age group of 31-40 years (30.5 percent) followed by 21-30 years (21.9 percent), further followed by 41-50 years (19.1 percent) respectively. A closer look at the investor profile shows that the age cohorts 21-30 and 31-40, are more risk averse at 29.8 percent and 42.4 percent respectively. The 41-50 age cohort has a larger percentage of highly risk seeking respondents at 23.9 percent followed by moderately risk seeking respondents at 18 percent . The 51-60 and 61-70 age cohorts have larger percentage of respondents (16.2 percent and 12.9 percent respectively) being moderate risk seekers and a lower percentage of respondents (14.2 percent and 10.6 percent respectively) being high risk seekers. The risk averse investors are much lower at 6.6 percent and 3.3 percent respectively among these two age cohorts. The 70 and above age cohort shows a larger percentage of respondents in the risk averse category as compared to MRS and HRS categories. Among the age cohorts, the 41-50, 51-60 and 61-70 are found to be more risk seeking than the 21-30, 31-40 and over 70 age cohorts. This study confirms the findings of Vanjeko (2010) that the middle aged investors are more risk seeking compared to the other age groups. The chi-square test reveals that age has a highly significant effect on the IDM of individuals.

4.4.3 Education-wise Classification of Investors

While investing individuals could make good decisions or bad decisions. Education enables individuals to objectively assess the various options available and make the best decision. Respondents are grouped based on education level and the data is shown in Fig. 4.3. Educated people tend to make fewer investment mistakes.
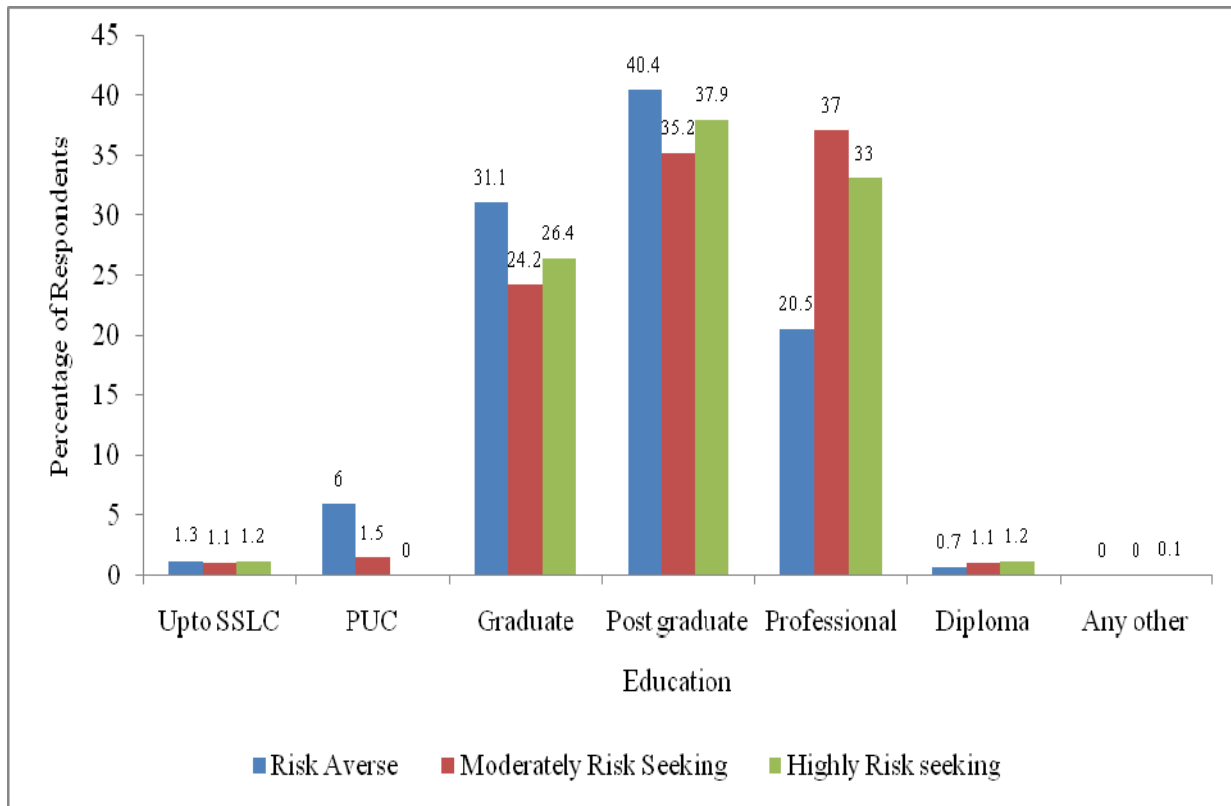
Fig. 4.3: Classification of Investors Based on Education

Fisher's Exact test, p= 0.000, highly significant

From Fig. 4.3 it is observed that graduates, post-graduates and professionals form the largest group of respondents totaling to 96.1 percent revealing that most of the respondents are highly educated. Among the graduates, 31.1 percent are risk averse, 26.4 percent are highly risk seeking and 24.2 percent are moderately risk seeking. Among the post-graduates 40.4 percent are risk averse, 37.9 percent are highly risk seeking and 35.2 percent are moderately risk seeking. Among the professionals, a greater percentage of respondents i.e. 37 percent are moderately risk seeking, 33 percent highly risk seeking and 20.5 percent are risk averse. Among these three segments, RA investors are the least among professionals. Among the diploma holders and other category of education a larger percentage are highly risk seeking while those with lesser education, i.e. SSLC (10th std.) and PUC (12th std.) are found to be highly risk averse. This could be attributed

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to the higher levels of income, greater access to information as well as superior advisory services that professionals enjoy. As per the Fisher exact test, there is a highly significant difference between education and IDM of individuals.

4.4.4 Classification of Investors Based on Marital Status

Marriage affects the IDM of both men and women. Fig. 4.4 shows the classification of investors based on marital status.
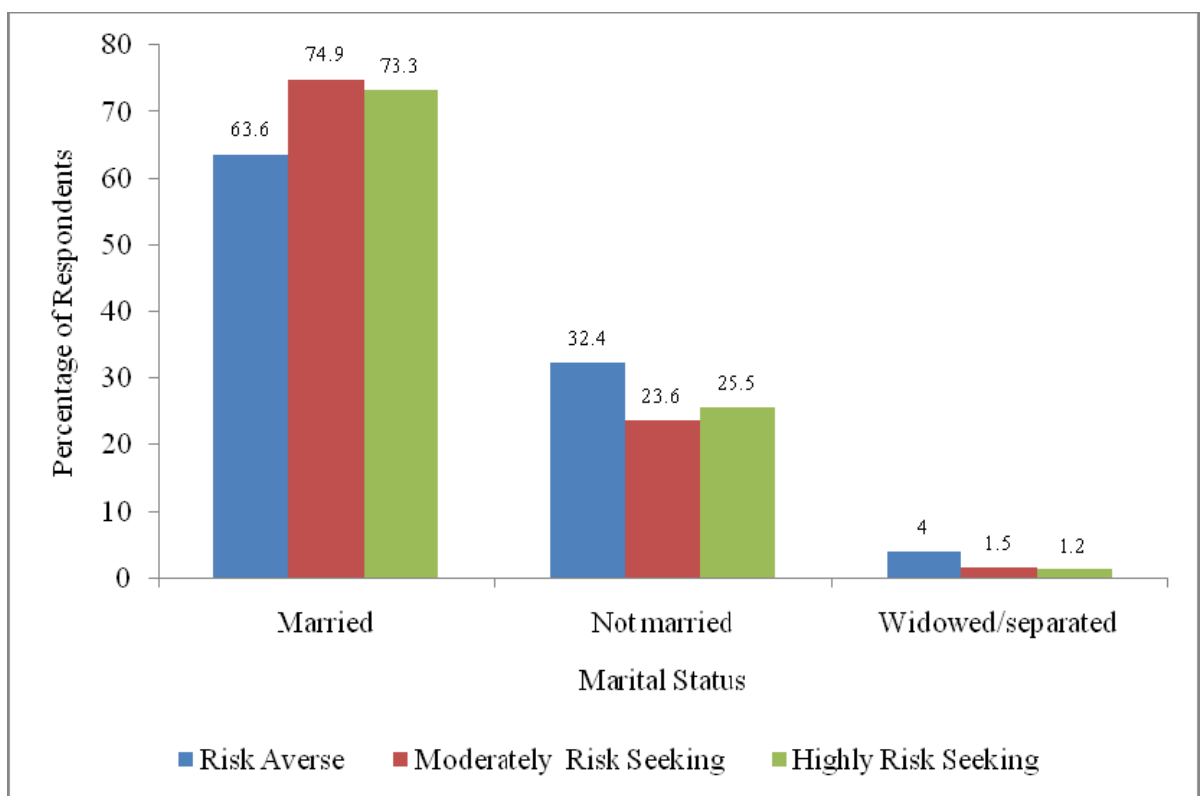
Fig. 4.4: Classification of Investors Based on Marital Status

$$\chi^2 = 11.029, \ p=0.026, \ \text{significant}, \ \text{d.f.}=4$$

Data reveals that 72.9 percent of the respondents are married, 25.3 percent are not married and a small percentage of 1.7 percent are either widowed or separated. Among the married investors, 74.9 percent are moderately risk seeking while 73.3 percent are

highly risk seeking. Compared to the unmarried and widowed/separated segments, married investors are more risk seeking. Among the unmarried 32.4 percent are risk averse, 25.5 percent are highly risk seeking and 23.6 percent are moderately risk seeking. The chi-square test proves that marital status has a significant influence on the IDM of individuals.

4.4.5 Classification of Investors Based on Occupation

Occupation is found to affect the savings behavior of individuals. Fig. 4.5 gives the classification of investors based on occupation.
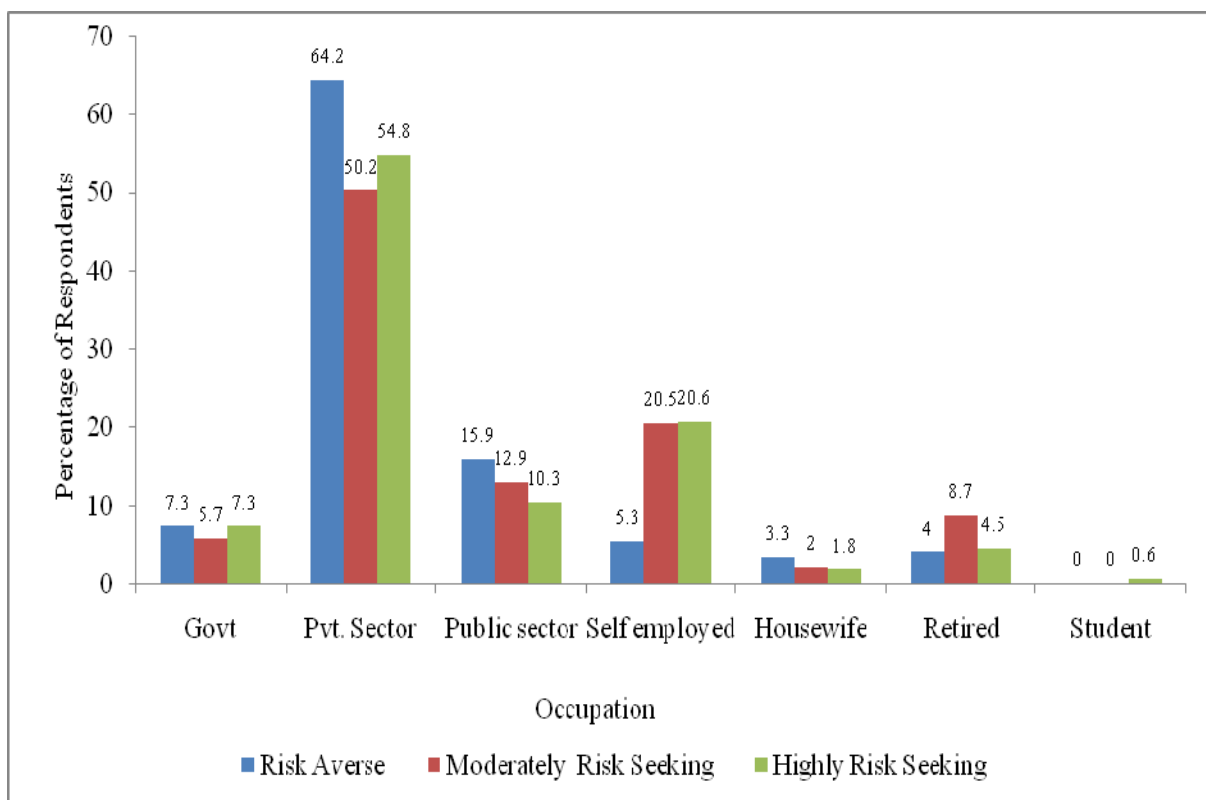
Source: survey data

Fig. 4.5: Classification of Investors Based on Occupation

χ^2 =38.835, p=0.000, highly significant, d.f.=12

From Fig.4.5 it is clear that those who are self employed are found to be relatively highly risk seeking at 20.6 percent followed by moderately risk seeking at 20.5 percent. The self employed are considered to be entrepreneurial and better able to manage risks. Hence they are found to be highly risk seeking compared to the other occupations. Those employed by the government sector are equally divided between highly risk seeking and risk averse at 7.3 percent. Among those who are employed in private sector 64.2 percent are risk averse. Among those who are employed in public sector 15.9 percent are risk averse. Housewives are found to be largely risk averse but the retired are found to be largely moderately risk seeking. The respondents in the student category are found to be highly risk seeking. The chi-square test shows that there is highly significant difference in occupation and IDM of individuals. This confirms the findings of the Max New York Life-NCAER study (2008) which says that occupation affects the savings behaviour of individuals.

4.4.6 Annual Income

Income is one of the most important factors that affect IDM. On the basis of annual income, investors are classified as follows:
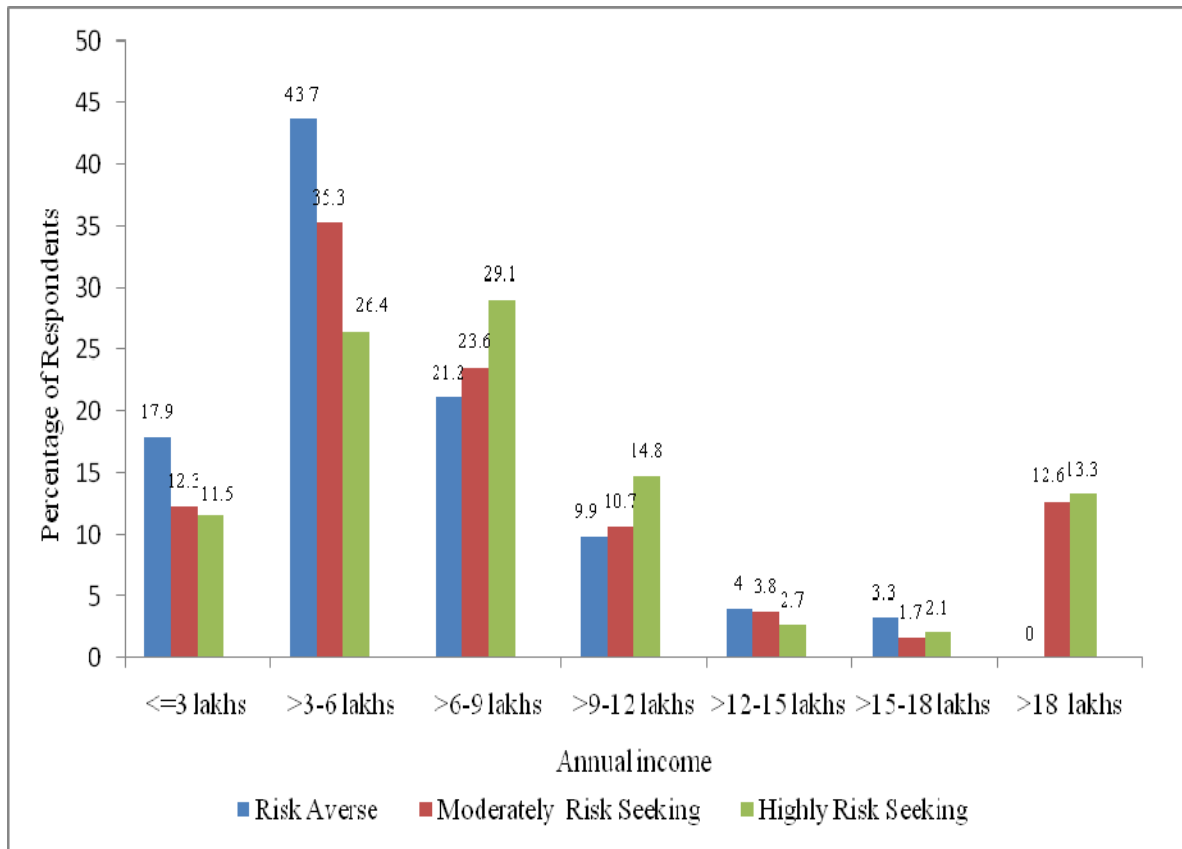
Fig. 4.6: Classification of Investors Based on Annual Income

$$\chi^2 = 43.208, \ p=0.000, \ \text{highly significant, d.f.}=12$$

From Fig. 4.6 it is found that those in the first two income bands of <=3 lakhs and >3-6 lakhs, are largely risk averse at 17.9 percent and 43.7 percent. Those in the >6-9 lakhs and >9-12 lakhs income groups are largely highly risk seeking. Further at income levels of >12-15 lakhs and >15-18 lakhs investors are found to be relatively more risk averse. Annual income of over 18 lakhs surely would leave a large surplus in the hands of the individual. Individuals earning such large incomes would necessarily be competent, knowledgeable and more risk tolerant. Hence this group is found to be more highly risk seeking. The findings of this study agree with the findings of Cohn et. al., (1975), that as wealth increases a higher proportion is allocated to risky assets. The chi-square test

shows that there is a highly significant difference in annual income and IDM of individuals.

4.4.7 Classification of Investors on the Basis of Financial Literacy

In order to make the right investments according to one's need, financial knowledge is absolutely important.
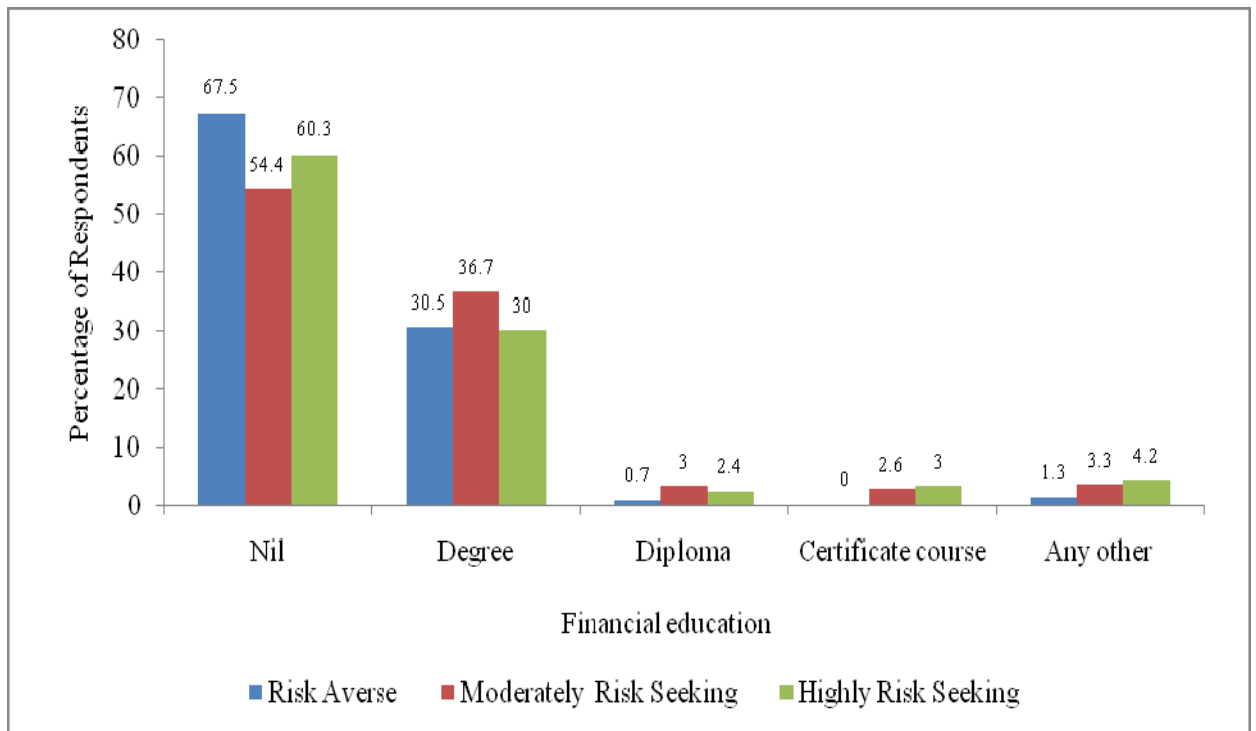
Fig. 4.7: Classification of Investors Based on Financial Literacy

$$\chi^2 = 17.791, \ p=0.023, \ significant, \ d.f.=8$$

From Fig. 4.7 it is observed that of the total 1146 respondents, 57.9 percent do not have any formal training or education in finance. Among them it is observed that a larger percentage i.e. 67.5 percent are risk averse and 60.3 percent are highly risk seeking. 33.9 percent of the total respondents have a formal degree either in the form of B.Com., BBA,

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BBM, MBA, CAIIB, CA, ICWA and so on. Among them it is noted that a larger percentage i.e. 36.7 percent are moderately risk seeking. With a formal finance education, investors may be better able to understand the various avenues of investment and for this reason, it could have an effect on their decision making. As per the chi-square test, financial literacy has a significant effect on the IDM of individuals.

4.4.8 Classification of Investors Based on Size of the Household

Size of the household could contribute to the amount of disposable income available in the hands of the individual for investments.
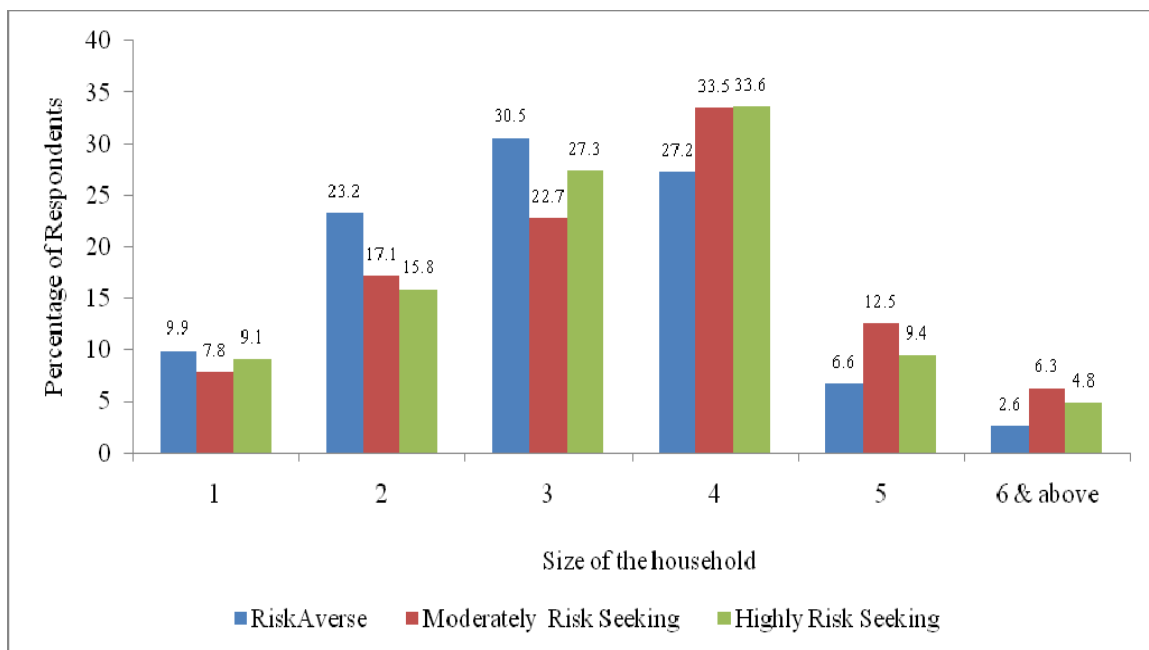
Fig. 4.8: Classification of Investors Based on Size of the Household

$$\chi^2 = 18.050, \ p=0.054, \ \text{not significant, d.f.=4,}$$

From Fig. 4.8 it is observed that in smaller households where the size is 1, 2 or 3, respondents are largely risk averse at 9.9 percent, 23.2 percent and 30.5 percent respectively. Respondents who belong to households with 4 members, are equally

divided between highly risk seeking and moderately risk seeking at 33.6 percent and 33.5 percent respectively. Respondents, who belong to households with 5 members, 6 members and more, show a greater percentage of moderate risk seekers at 12.5 percent and 6.3 percent respectively. The chi-square test reveals that the size of the household does not significantly affect the IDM of individuals.

4.4.9 Classification of Investors Based on Number of Dependents

Number of dependents could contribute to the amount of disposable income available in the hands of the individual for investments.
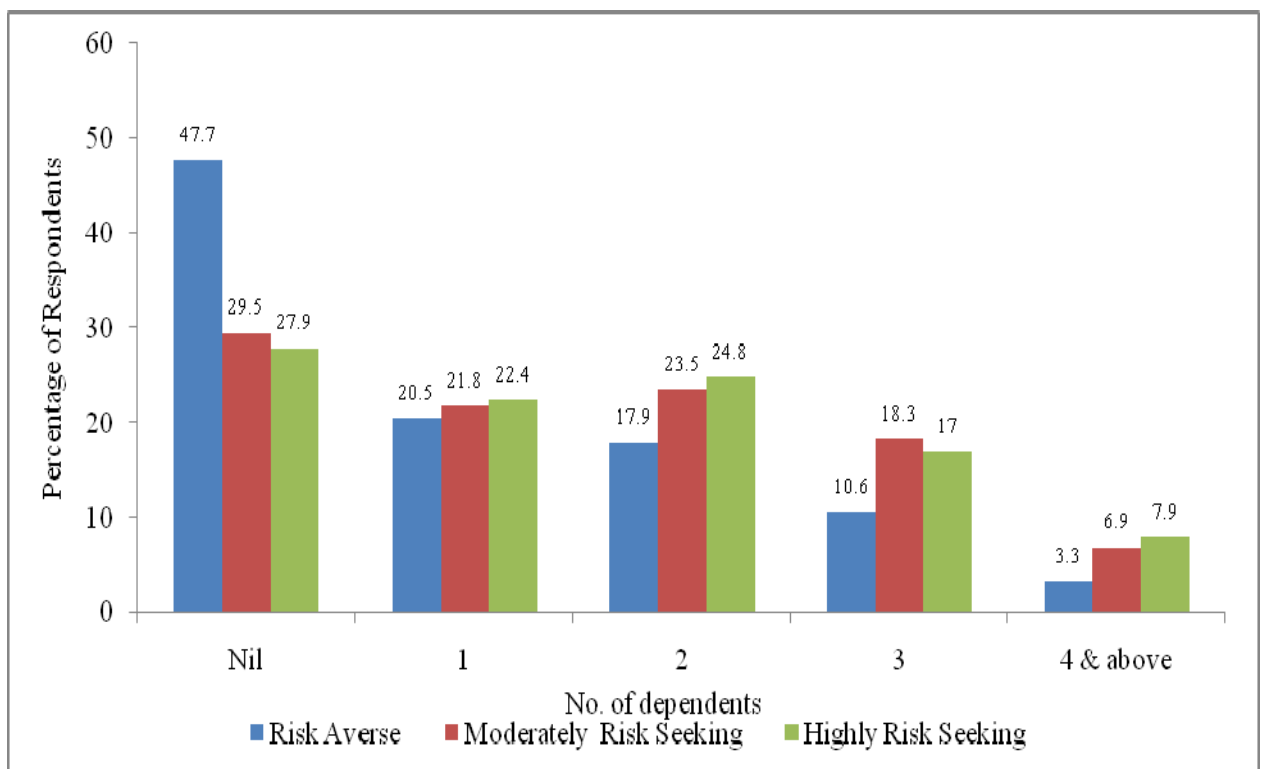
Source: survey data

Fig. 4.9: Classification of Investors Based on Number of Dependents

$\chi^2 = 25.076$, p=0.002, highly significant, d.f.=8

From Fig. 4.9 it is found that among those with no dependents, a larger percentage at 47.7 percent , are risk averse. Among those who have dependents, a larger percentage of respondents are either moderately risk seeking or highly risk seeking. Among those who have 1 dependent, 21.8 percent are moderately risk seeking and 22.4 percent are highly risk seeking. Among those who have 2 dependents, 23.5 percent are moderately risk seeking and 24.8 percent are highly risk seeking. Among those who have 3 dependents, 18.3 percent are moderately risk seeking and 17 percent are highly risk seeking. Among those who have 4 or more dependents, 6.9 percent are moderately risk seeking and 7.9 percent are highly risk seeking. Percentage of individuals who are risk averse decreases with the increase in number of dependents. Among those who have one, two and four or more dependents are found to be highly risk seeking. From the chi-square test it is noticed that the number of dependents very significantly affects the IDM of individuals.

4.4.10 Classification of Investors Based on Having Dependent Children

Having dependent children affects the IDM of individuals since the amount of disposable income available for investment will varies. Those with dependent children may perhaps have to meet the children's requirements in terms of education, health and other expenses from their income.

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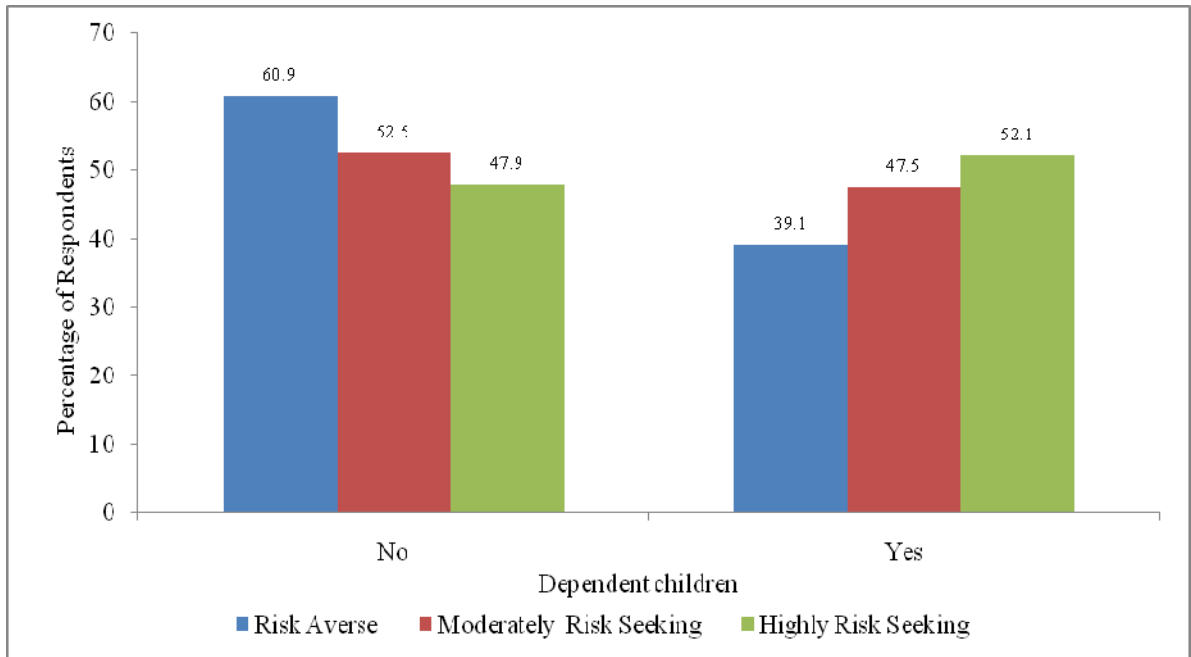
Fig. 4.10: Classification of Investors Based on Having Dependent Children

$$\chi^2 = 7.099, \ p = 0.029, \ \text{significant}, \ d.f. = 2$$

From Fig. 4.10, it is observed that among those without dependent children, a larger percentage of respondents i.e. 60.9 percent are risk averse, 52.5 percent are moderately risk seeking and 47.9 percent are highly risk seeking. Among those with dependent children, a lesser percentage at 39.1 percent are risk averse while 47.5 percent are moderately risk seeking and 52.1 percent are highly risk seeking. Among those with dependent children a larger percentage are highly risk seeking compared to those without dependent children. The chi-square test shows that having dependent children significantly affects the IDM of individuals.

4.4.11 Classification of Investors Based on Work Experience

Work experience is an important factor that affects the IDM of individuals since greater work experience would represent higher levels of income.
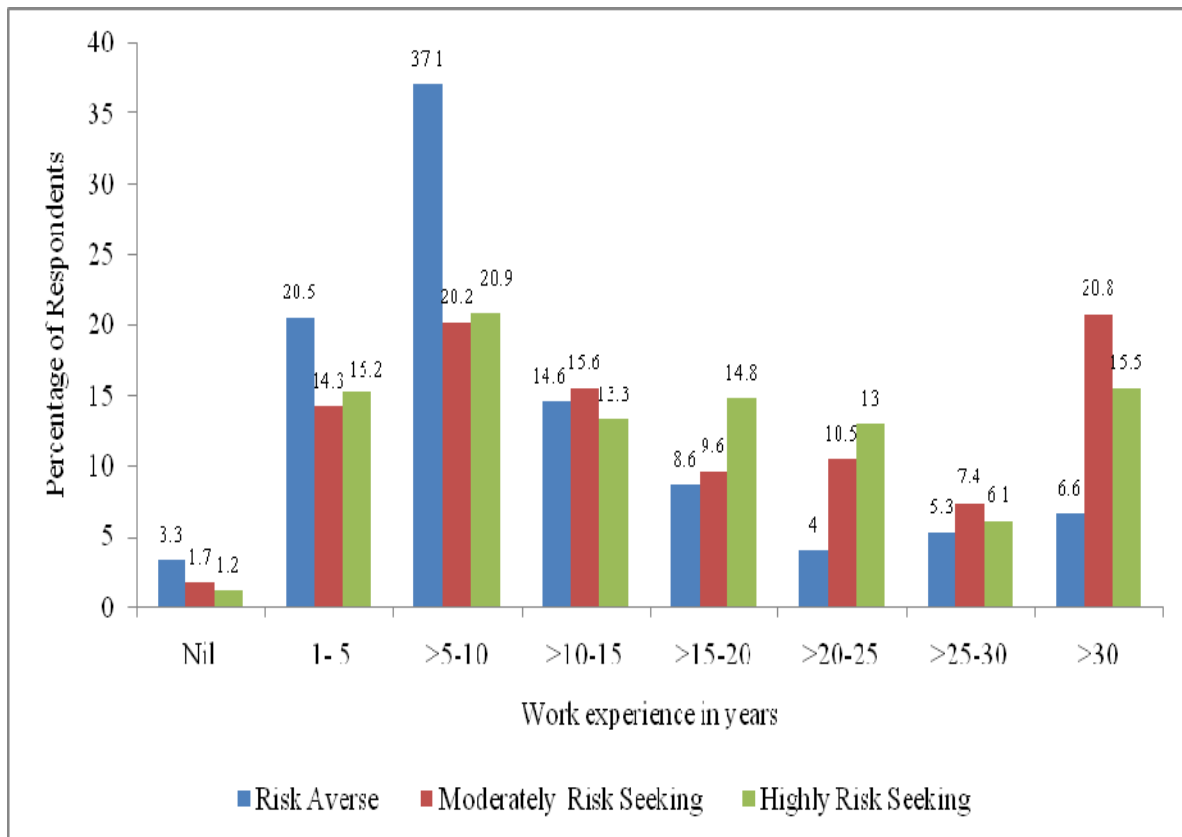
Fig. 4.11: Classification of Investors Based on Work Experience

$\chi^2 = 54.742$, p=0.000, highly significant, d.f.=14

From Fig. 4.11, it is observed that among those with work experience of 10 years or lesser are highly risk averse. Among those with no work experience (mostly housewives) 3.3 percent are risk averse; among those with 1-5 years of work experience, 20.5 percent are risk averse and among those with 5-10 years of work experience, 37.1 percent are risk averse. The percentage of risk takers gradually increases with work experience upto 25 years. Among those with 10-15 years of work experience 15.6 percent are moderately risk seeking and 13.3 percent are highly risk seeking; among those with 15-20 years of work experience, 9.6 percent are moderately risk seeking and 14.8 percent are highly risk seeking; among those with 20-25 years of work experience, 10.5 percent are moderately risk seeking and 13 percent are highly risk seeking. Among those with more than 25

years of work experience, the percentage of moderately risk seeking individuals increases. Among those with 25-30 years of work experience, 7.4 percent are moderately risk seeking and 6.1 percent are highly risk seeking. Among those with greater than 30 years of work experience 20.8 percent are moderately risk seeking and 15.5 percent are highly risk seeking. The chi-square test shows that work experience significantly affects IDM of individuals.

4.4.12 Classification of Investors Based on Number of Earners in a Household

Number of earners in a household is an important factor that affects the IDM of individuals because when there are two earners in a household, they could influence each other in IDM compared to a single earner household.
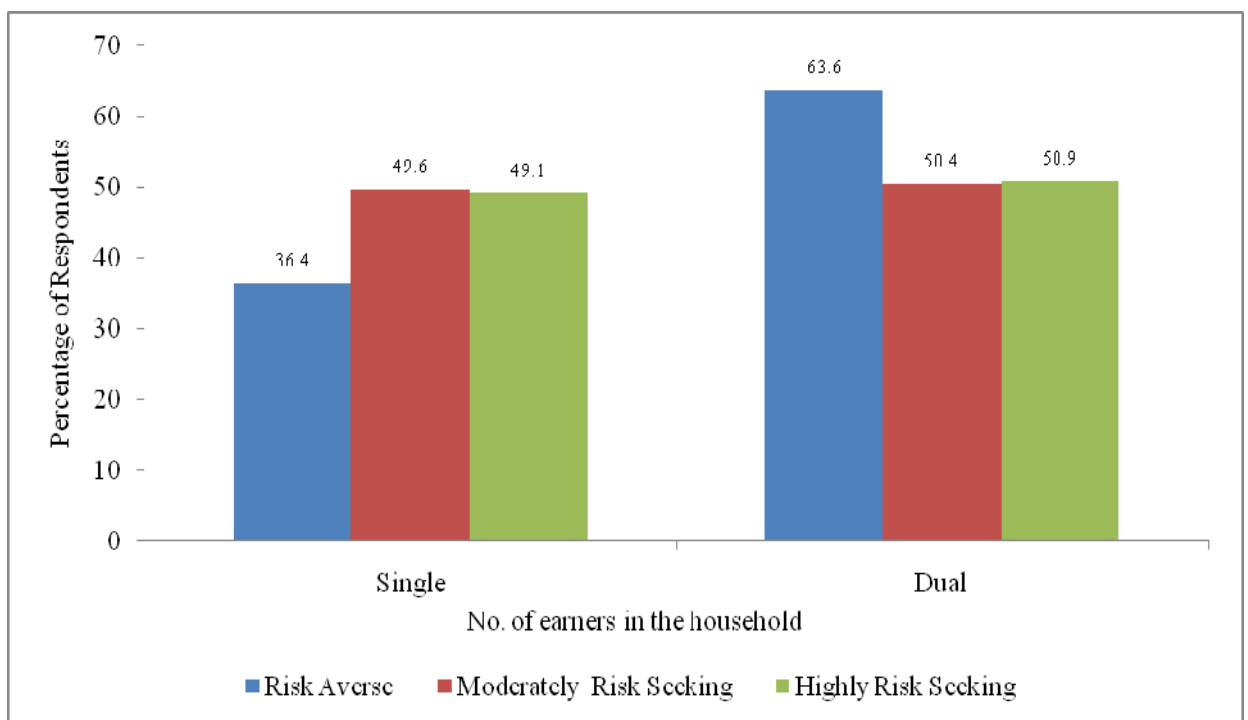
Source: survey data

Fig. 4.12: Classification of Investors Based on Number of Earners in a Household

χ^2 =8.938, p=0.011, significant, d.f.=2

Fig. 4.12 shows that risk averse individuals are lesser in a single earner household at 36.4 percent and greater in a dual earner household at 63.6 percent. The risk seeking individuals are almost the same, in single earner and in dual earner households. The chi-square test shows that number of earners in a household significantly affects IDM of individuals.

4.4.13 Classification of Investors Based on Investments Made Together With Spouse or Separately

The choice of investments could be influenced by whether individuals invest separately or partially together with spouse or completely together with spouse.
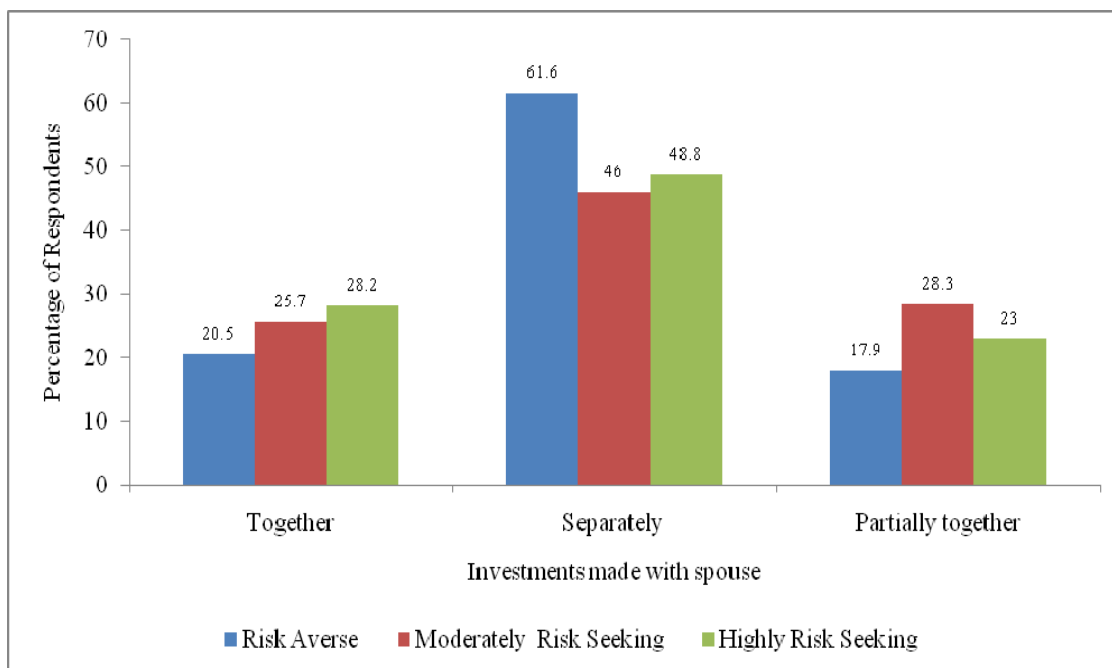
Source: survey data

Fig. 4.13: Classification of Investors Based on Investments Made With Spouse or Separately

χ^2 =14.716, p=0.005, highly significant, d.f.=4

From Fig.4.13, it is observed that there is a larger percentage of highly risk seeking individuals at 28.2 percent when investments are made together with spouse. When investments are made partially together, it is seen that there is a larger percentage of moderately risk seeking individuals at 28.3 percent. When investments are made separately there are a larger percentage of individuals at 61.6 percent who are risk averse. Depending on whether the investments are made together with spouse or separately, the chi-square test shows that there is a highly significant difference in the IDM of individuals.

4.4.14 Classification of Investors Based on Years of Investing Experience

IDM is best learnt by experience. Those with greater experience would probably be better investors.
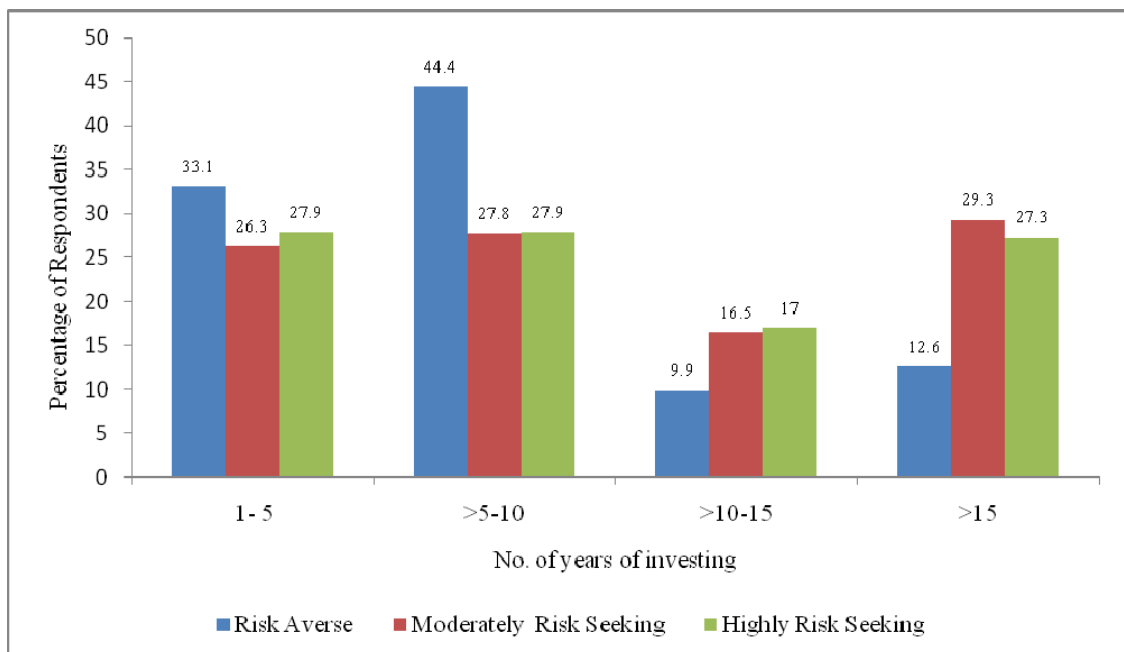
Fig. 4.14: Classification of Investors Based on Years of Investing Experience

$\chi^2 = 30.905$, p=0.000, highly significant, d.f.=6

From Fig. 4.14, it is observed that among those with less than 10 years of investing experience, a larger percentage of individuals are risk averse. 33.1 percent are risk averse among those with less than 5 years of experience and 44.4 percent are risk averse among those with >5-10 years of experience. Those with >10-15 years of experience show a greater percentage of risk seeking individuals with 16.5 percent being moderately risk seeking and 17 percent being highly risk seeking. Those with greater than 15 years of investing experience show 29.3 percent moderate risk seekers and 27.3 percent high risk seekers. The chi-square test shows that investing experience in years affects the IDM of individuals significantly.

4.4.15 Testing of Hypotheses Relating to Demographic Factors

The hypotheses relating to demographic factors are as follows:

H1a: Gender affects the IDM of individuals.

H1b: Age affects the IDM of individuals.

H1c: Education affects the IDM of individuals.

 H1d: Financial literacy affects the IDM of individuals.

H1e: Marital status affects the IDM of individuals.

H1f: Work experience affects the IDM of individuals.

H1g: Occupation affects the IDM of individuals.

H1h: Number of earners in a household affects the IDM of individuals.

H1i: Annual income affects the IDM of individuals.

H1j: Investments made together with spouse or separately affects the IDM of individuals.

Since all of the above variables are categorical variables, chi square test has been used except in the case of *education*, where Fisher's exact test is used. Table 4.2 shows a summary of all the demographic factors that significantly influence IDM. It is observed that except for the size of the household, all the other factors significantly influence IDM.

Table 4.2 Demographic Factors Affecting IDM of Individuals

Factor & Hypothesis	χ^2	'p'	Conclusion	Factor & Hypothesis	χ^2	'p'	Conclusion
Gender **H1a**	31.323	0.000	H. Sig.	Dependent children	7.099	0.029	Sig.
Age **H1b**	41.701	0.000	H. Sig.	Work experience **H1f**	54.742	0.000	H. Sig.
Education **H1c**	Fisher exact test	0.000	H. Sig.	Occupation **H1g**	38.835	0.000	H. Sig.
Financial literacy **H1d**	17.791	0.023	Sig.	Single earner/ dual earner household **H1h**	8.938	0.011	Sig.
Marital status **H1e**	11.209	0.026	Sig.	Annual income **H1i**	43.208	0.000	H. Sig.
Size of household	18.050	0.054	N. Sig.	Invest together with spouse/ separately **H1j**	14.716	0.005	H. Sig.
No. of dependents	25.076	0.002	H. Sig.	No. of years of investing	30.905	0.000	H. Sig.

Source: survey data. H. Sig. –Highly Significant, Sig. – Significant, N. Sig.- Not Significant

4.5 Ranking of Investments

In the study, in order to understand the IDM of individuals, respondents have been given a choice of investments ranging from gold, real estate, shares, mutual funds, government bonds, corporate bonds, bank deposits, post office deposits, provident fund, insurance and non banking finance company deposits and they have been asked to rank these avenues on various choice criteria. The criteria given for ranking are long term appreciation, safety, liquidity, high risk, prestige and convenience. The respondents have ranked each of the avenues differently based on their choice. In order to analyze such ranking, Garrett's Ranking Technique has been used.

Table 4.3 shows the ranking of gold as a mode of investment by individual investors.

Table 4.3: Ranking of Gold

Choice Criteria	Garrett's Mean Score	Rank
Long term appreciation	62.82	1
Safety	58.41	2
Prestige	50.28	3
Liquidity	47.87	4
Convenience	47.44	5
High Risk	32.42	6

Source: survey data

While gold is considered to be a speculative asset by finance professionals, due to the volatility in its price, the ranking by individual investors asserts the opposite. Gold is ranked highest for long-term appreciation and second for safety. Individual investors do not perceive gold to be a risky asset and hence have given rank 6 to the criteria of high risk.

Table 4.4 shows the ranking of real estate by the individual investors.

Table 4.4: Ranking of Real Estate

Choice Criteria	Garrett's Mean Score	Rank
Long term appreciation	69.41	1
Safety	53.07	2
Prestige	50.46	3
Convenience	44.85	4
High Risk	42.68	5
Liquidity	38.90	6

Source: survey data

Despite the fact that real estate is considered to be a speculative asset due to the volatility in its price, the ranking claims the opposite. Real estate is ranked highest for long-term appreciation and second for safety. In terms of risk, it scores 5th rank. This could be an indication that when individuals invest in real estate it is for the long term and not for speculation, hence they do not perceive this asset as risky.

Table 4.5 shows the ranking of equity shares by the individual investors.

Table 4.5: Ranking of Equity Shares

Choice Criteria	Garrett's Mean Score	Rank
Liquidity	61.09	1
Long term appreciation	58.02	2
High Risk	54.82	3
Convenience	50.47	4
Safety	41.05	5
Prestige	34.54	6

Source: survey data

On the basis of the investor ranking, the foremost reason for investing in equity shares is observed to be liquidity and the next best motive is long term appreciation. High risk scores a 3rd rank revealing that respondents are aware of the risk associated with shares.

Table 4.6 shows the ranking of mutual funds by the individual investors.

Table 4.6: Ranking of Mutual Funds

Choice Criteria	Garrett's Mean Score	Rank
Long term appreciation	58.78	1
Liquidity	58.28	2
Convenience	53.20	3
Safety	50.02	4
High Risk	46.39	5
Prestige	33.64	6

Source: survey data

Observing the first and second ranks and the respective Garrett's mean score, it is seen that the primary reasons for investing in mutual funds are long term appreciation and liquidity. The ranking does show that investing in mutual funds reduces risk compared to investing directly in equity shares since investors have given 5th rank to high risk.

Table 4.7 shows the ranking of government bonds by the individual investors.

Table 4.7: Ranking of Government Bonds

Choice Criteria	Garrett's Mean Score	Rank
Safety	70.22	1
Long term appreciation	55.58	2
Convenience	53.44	3
Liquidity	50.41	4
Prestige	37.18	5
High Risk	34.47	6

Source: survey data

The chief reason for investing in government bonds is found to be safety indicating that government bonds protect capital investment. The next best motive is long term appreciation and the third motive is found to be convenience.

Table 4.8 shows the ranking of corporate bonds by the individual investors.

Table 4.8: Ranking of Corporate Bonds

Choice Criteria	Garrett's Mean Score	Rank
Safety	56.80	1
Long term appreciation	53.15	2
Liquidity	52.36	3
Convenience	50.85	4
High Risk	45.08	5
Prestige	39.87	6

Source: survey data

From the ranking given by the respondents, it is observed that the criteria for investing in corporate bonds are safety, long-term appreciation and liquidity respectively. Risk is perceived to be low and scores a 5th rank.

Table 4.9 shows the ranking of bank deposits by the individual investors.

Table 4.9: Ranking of Bank Deposits

Choice Criteria	Garrett's Mean Score	Rank
Safety	70.63	1
Liquidity	56.50	2
Convenience	54.86	3
Long term appreciation	47.96	4
Prestige	37.34	5
High Risk	32.42	6

Source: survey data

Safety of funds is the prime reason for depositing money in banks while liquidity and convenience are next best reasons being ranked 2nd and 3rd respectively. Since the risk associated with bank deposits is very low, it scores a 6th rank.

Table 4.10 shows the ranking of post office deposits by the individual investors.

Table 4.10: Ranking of Post Office Deposits

Choice Criteria	Garrett's Mean Score	Rank
Safety	70.41	1
Long term appreciation	53.20	2
Convenience	52.92	3
Liquidity	52.37	4
Prestige	35.93	5
High Risk	33.85	6

Source: survey data

Similar to bank deposits, post office deposits too rank 1st in terms of safety of investment. The next best motive for post office deposits is long term appreciation followed by convenience. This signifies that banks and post office savings are considered to be one of the safest forms of investment by the respondents.

Table 4.11 shows the ranking of provident fund (PF) by the individual investors.

Table 4.11: Ranking of Provident Funds

Choice Criteria	Garrett's Mean Score	Rank
Safety	69.88	1
Long term appreciation	57.97	2
Convenience	55.17	3
Liquidity	47.04	4
Prestige	35.94	5
High Risk	34.16	6

Source: survey data

Provident fund investments too are considered to be extremely safe and hence are ranked 1st by the respondents. Moreover investment in PF is also found to appreciate in the long-term possibly because of the lock-in period and compounding of interest. Convenience scores a third rank for PF investments.

Table 4.12 shows the ranking of insurance by the individual investors.

Table 4.12: Ranking of Insurance

Choice Criteria	Garrett's Mean Score	Rank
Safety	69.54	1
Convenience	53.78	2
Long term appreciation	53.76	3
Liquidity	45.65	4
Prestige	39.24	5
High Risk	38.12	6

Source: survey data

The principal reason for purchasing insurance is found to be safety subsequently followed by convenience and long term appreciation. Most respondents believe that insurance as an investment avenue is relatively risk free and hence the low score for high risk criterion.

Table 4.13 shows the ranking of NBFC deposits by the individual investors.

Table 4.13: Ranking of NBFC Deposits

Choice Criteria	Garrett's Mean Score	Rank
Liquidity	54.20	1
Long term appreciation	52.55	2
High Risk	52.43	3
Convenience	51.15	4
Safety	50.68	5
Prestige	37.54	6

Source: survey data

The most important reason for investing in NBFC deposits is found to be liquidity with long term appreciation scoring a 2nd rank. High risk scores a very close 3rd rank demonstrating that respondents are well aware of the risk associated with NBFC deposits.

4.5.1 Summary of the Ranking of Investments

Table 4.14 shows the summary of the ranking of investments. It is observed that government bonds, corporate bonds, bank deposits, post office deposits, provident fund and insurance are considered to be safe from the individual investors' viewpoint. Gold and real estate score a 2nd rank on the safety criterion. Under the long-term criterion, gold, real estate and mutual funds score the highest rank while shares, government bonds, corporate bonds, post office deposits, provident fund and NBFC deposits score 2nd rank. Under the convenience criterion, none of the investment score highest, although insurance scores a 2nd rank while mutual funds, government bonds, bank deposits, post office deposits and provident fund score a 3rd rank. Under the liquidity criterion, shares and NBFC deposits are considered to be most liquid scoring 1st rank while mutual funds and bank deposits score a 2nd rank. Corporate bonds are given 3rd rank in terms of liquidity. None of the investments are ranked 1st and 2nd in terms of prestige and high risk criteria. Gold and real estate are ranked 3rd under the prestige criterion and shares and NBFC deposits are ranked 3rd under the high risk criterion.

Table 4.14: Summary of the Ranking of Investments

Rank	Safety	Long term appreciation	Convenience	Liquidity	Prestige	High Risk
1	Govt. bonds, Corp. bonds, Bank deposits, PO deposits, PFs, Insurance	Gold, Real Estate, MFs		Shares, NBFC deposits		
2	Gold, Real Estate	Shares, Govt. bonds, Corp bonds, PO deposits, PFs, NBFC deposits	Insurance	MFs, Bank deposits		
3		Insurance	MFs, Govt. bonds, Bank deposits, PO deposits, PFs	Corp. bonds	Gold, Real Estate	Shares, NBFC deposits
4	MFs	Bank deposits	NBFC deposits, Corp. bonds, Shares, Real estate	Insurance, PFs, PO deposits, Govt. bonds, Gold		
5	NBFC deposits, Shares		Gold		Insurance, PFs, PO deposits, Bank deposits, Govt. bonds,	Corp. Bonds, MFs, Real Estate
6				Real Estate	NBFC deposits, Corp. bonds, MFs, Shares	Insurance, PFs, PO deposits, Bank deposits, Govt. bonds, Gold

4.6 Measures of Personality

Two well-known measures are used to measure personality – the Big Five factors and the Locus of Control. Summarizing the Big Five personality scores, table 4.15 shows the results for RA, MRS and HRS individuals.

Table 4.15: Classification of Investors on the Basis of Big Five Factors

Big Five factors	Profile	N	Mean	SD	Median	Mean %	KW Test χ^2 value	d.f.	'p'	Conclusion
Extraversion	RA	151	3.32	0.82	3.33	66.45	7.340	2	0.025	Sig.
	MRS	665	3.53	0.72	3.67	70.63				
	HRS	330	3.48	0.81	3.67	69.54				
	Total	1146	3.49	0.76	3.67	69.76				
Agreeableness	RA	151	3.79	0.61	3.67	75.81	16.384	2	0.000	H. sig.
	MRS	665	3.95	0.56	4.00	78.97				
	HRS	330	3.84	0.51	4.00	76.77				
	Total	1146	3.90	0.54	4.00	77.92				
Conscientiousness	RA	151	3.73	0.71	3.67	74.57	4.812	2	0.090	N. sig.
	MRS	665	3.85	0.65	4.00	77.01				
	HRS	330	3.89	0.64	4.00	77.78				
	Total	1146	3.85	0.66	4.00	76.91				
Neuroticism	RA	151	2.82	0.97	2.67	56.38	0.975	2	0.614	N. sig.
	MRS	665	2.84	0.84	2.67	56.84				
	HRS	330	2.88	0.86	3.00	57.70				
	Total	1146	2.85	0.86	2.67	57.03				
Openness	RA	151	3.58	0.59	3.67	71.61	5.200	2	0.074	N. sig.
	MRS	665	3.72	0.61	3.67	74.33				
	HRS	330	3.69	0.59	3.67	73.78				
	Total	1146	3.69	0.60	3.67	73.81				
Overall Big Five	RA	151	3.45	0.41	3.47	68.96	13.462	2	0.001	H. sig.
	MRS	665	3.58	0.37	3.60	71.55				
	HRS	330	3.56	0.36	3.53	71.11				
	Total	1146	3.55	0.37	3.53	71.09				

Source: survey data. H sig. –highly significant, Sig. – significant, N sig. - not significant

Observing the mean values of each of the Big Five factors in table 4.15, it is seen that MRS individuals show highest mean value for the factors of *extraversion*, *agreeableness* and *openness* while HRS individuals show the highest mean value for the factors of

conscientiousness and *neuroticism*.   Among the three segments of investors, it is observed that RA investors and MRS investors show highest mean value for the factor of *agreeableness*, while HRS investors show highest mean value for the factor of *conscientiousness*.

Further, it is noticed that most means are above 3 except the sample means of *neuroticism* where they are less than 3 indicating that the respondents score slightly low on *neuroticism*. Low score on *neuroticism* indicates that the respondents are emotionally stable and resilient as articulated by Nicholson et. al., (2005).

In addition, to determine whether there is a significant difference between the Big Five factors and IDM, Kruskal Wallis test is used. Among the *Big Five*, two factors, *extraversion* (χ^2 = 7.340, d.f. =2, p=0.025) and *agreeableness* (χ^2 = 16.384, d.f. =2, p=0.000) emerge as the factors that greatly influence IDM while the other three factors of *conscientiousness, neuroticism* and *openness* do not influence the IDM separately. But collectively the *Big Five Factors* (χ^2 = 13.462, d.f. =2, p=0.001) significantly affect the IDM of investors.

Table 4.16: Classification of Investors on the Basis of Locus of Control

Locus of Control statements	Profile	N	Mean	S.D.	Median	Mean %	KW test χ² value	d.f.	'p'	Conclusion
Have to work hard to succeed	RA	151	4.31	1.11	5.00	86.23	0.373	2	0.830	N. sig.
	MRS	665	4.35	0.96	5.00	87.07				
	HRS	330	4.42	0.85	5.00	88.42				
	Total	1146	4.37	0.95	5.00	87.35				
Against difficulty doubt my own ability	RA	151	2.78	1.28	3.00	55.63	0.452	2	0.798	N. sig.
	MRS	665	2.77	1.21	3.00	55.40				
	HRS	330	2.83	1.19	3.00	55.55				
	Total	1146	2.79	1.21	3.00	55.76				
Compared to others have not achieved	RA	151	2.79	1.28	3.00	55.89	3.316	2	0.191	N. sig.
	MRS	665	2.58	1.17	2.00	51.70				
	HRS	330	2.58	1.20	2.00	51.58				
	Total	1146	2.61	1.19	2.00	52.22				
What one achieves is due to fate	RA	151	2.40	1.18	2.00	47.95	4.055	2	0.132	N. sig.
	MRS	665	2.58	1.13	2.00	51.58				
	HRS	330	2.51	1.05	2.00	50.12				
	Total	1146	2.53	1.12	2.00	50.68				
Other people control my life	RA	151	2.15	1.09	2.00	42.91	0.347	2	0.841	N. sig.
	MRS	665	2.17	1.09	2.00	43.31				
	HRS	330	2.10	1.01	2.00	42.06				
	Total	1146	2.14	1.06	2.00	42.90				
Opportunities in life are determined by environment	RA	151	3.29	1.25	4.00	65.83	4.864	2	0.088	N. sig.
	MRS	665	3.26	1.13	4.00	65.11				
	HRS	330	3.12	1.04	3.00	62.48				
	Total	1146	3.22	1.12	3.00	64.45				
Inborn abilities more important than efforts	RA	151	2.56	1.35	2.00	51.13	0.582	2	0.747	N. sig.
	MRS	665	2.60	1.19	2.00	51.91				
	HRS	330	2.56	1.15	2.00	51.21				
	Total	1146	2.58	1.20	2.00	51.61				
Overall Locus of Control	RA	151	2.90	0.61	2.86	57.94	0.415	2	0.812	N. sig.
	MRS	665	2.90	0.55	2.86	58.01				
	HRS	330	2.87	0.52	2.86	57.49				
	Total	1146	2.89	0.55	2.86	57.85				

Source: survey data. N. sig. - not significant

On examining the sample means in table 4.16, it is found that the first statement '*one has to work hard in order to succeed*' shows mean values greater than 4. This implies that most respondents agree with this statement and to that extent have an internal Locus of

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Control. The second statement '*If I run up against difficulties in life, I often doubt my own abilities*', the third statement '*Compared to other people, I have not achieved what I deserve*', the fourth statement 'What *a person achieves in life is due to fate or luck*', the fifth statement, '*I feel that other people control my life*', the seventh statement, '*Inborn abilities are more important than any efforts one can make*' show mean values lesser than 3. This indicates that most respondents have internal Locus of Control. The sixth statement, '*The opportunities that I have in life are determined by the environment*', show mean values greater than 3. This is one statement that shows external Locus of Control of the respondents. Overall, Locus of Control mean values are a little less than 3 implying that the investors have a slightly greater internal Locus of Control. Further, the Kruskal Wallis test shows that overall *Locus of Control* (χ^2= 0.415, p=0.812) measure does not significantly affect the IDM of investors.

4.6.1 Correlation and Principal Component Analysis

To substantiate the impact of both the *Big Five factors* and *Locus of Control* further, correlation analysis has been applied on the data. Following the correlation analysis, the PCA is applied in order to identify the components that are meaningful and worthy of being retained.

4.6.2 Total Sample

The following results are obtained by calculating correlation for the total sample of 1146 respondents. Table 4.17 shows the correlation matrix of *Locus of Control* and *Big Five factors*.

Table 4.17: Correlation Matrix of Locus of Control and Big Five Factors (N=1146)

Personality Measures	Locus of Control	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness	Overall Big Five Factors
Locus of Control	1	-0.108(**) (0.000)	-0.012 (0.681)	-0.062(*) (0.034)	0.289(**) (0.000)	-0.048 (0.105)	0.048 (0.107)
Extraversion		1	0.420(**) (0.000)	0.260(**) (0.000)	-0.140(**) (0.000)	0.176(**) (0.000)	0.614(**) (0.000)
Agreeableness			1	0.335(**) (0.000)	-0.074(*) (0.012)	0.241(**) (0.000)	0.623(**) (0.000)
Conscientiousness				1	-0.024 (0.418)	0.318(**) (0.000)	0.647(**) (0.000)
Neuroticism					1	-0.055 (0.061)	0.355(**) (0.000)
Openness						1	0.550(**) (0.000)
Overall Big Five							1

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
The significance values (p values) are in parentheses

When correlation values for the entire sample are calculated as shown in table 4.17, it is seen that *Locus of Control* is negatively correlated with *extraversion*(r=-0.108, p=0.000), and with *conscientiousness* (r=-0.062,p=0.034) and positively correlated with *neuroticism* (r=0.289, p=0.000).

Among the Big Five factors, *extraversion* is positively correlated with *agreeableness* (r=0.420, p=0.000) showing highest correlation, is positively correlated with *conscientiousness* (r=0.260, p=0.000) and with *openness* (r=0.176, p=0.000) and is negatively correlated with *neuroticism* (r=-0.140, p=0.000).

Along with being strongly associated with *conscientiousness*(r=0.335, p=0.000) and *openness*(r=0.241, p=0.000), agreeableness is negatively correlated with *neuroticism* (r=-0.074, p=0.012). *Conscientiousness* and *openness*(r=0.318, p=0.000) are also found to be positively correlated.

The correlation of all *Big Five factors* and *neuroticism* (emotional stability) is less than 0.5 indicating low correlations while those of *extraversion, agreeableness, conscientiousness* and *openness* are 0.5 or above.

4.6.3 Principal Component Analysis of Big Five Factors

In order to identify the Big Five factors that influence investors, we proceed with the application of PCA on the relevant data.

Table 4.18: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.670
Bartlett's Test of Sphericity	Approx. χ^2	555.509
	d.f.	10
	Significance	0.0000

Since the KMO measure of sampling adequacy is greater than 0.5 (0.670) and the Bartlett's Test of Sphericity is significant (p=0.000), PCA could be used to analyze the data.

Table 4.19: Total Variance Explained

Component	Initial Eigen values			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	1.907	38.133	38.133	1.907	38.133	38.133	1.835	36.704	36.704
2	1.012	20.235	58.368	1.012	20.235	58.368	1.083	21.664	58.368
3	0.862	17.238	75.606						
4	0.655	13.104	88.710						
5	0.564	11.290	100.00						

Extraction method: Principal Component Analysis

Conducting PCA and calculating eigen values of the correlation matrix, 2 eigen values are greater than 1 and they account for 58.36 percent of the total variance as shown in table 4.19.

Table 4.20: Rotated Component Matrix

Big Five factors	Component	
	1	2
Extraversion	0.599	
Agreeableness	0.717	
Conscientiousness	0.742	
Neuroticism		0.921
Openness	0.640	

Extraction method: Principal Component Analysis
Rotation method: Varimax with Kaiser Normalization
Rotation converged in 3 iterations

The rotated component matrix shows 2 factors as shown in table 4.20. The primary factor includes 4 items of *extraversion, agreeableness, conscientiousness* and *openness*. The secondary factor includes 1 item of *neuroticism*. The primary factor accounts for 38.13 percent of total variance. After rotation this factor accounts for 36.70 percent of total variance. Among the variables under this factor, it is found that *conscientiousness* has the highest factor loading (0.742). Conscientiousness is interpreted as a desire for achievement under conditions of conformity and control as expressed by Nicholson et. al.,(2005). The secondary factor accounts for 20.23 percent of total variance. After rotation this factor accounts for 21.66 percent of total variance. The only variable under this factor is *neuroticism* with a loading of 0.921. From these results it could be inferred that on an overall basis individuals are meticulous and to some extent resilient considering that *neuroticism* is a secondary factor.

4.6.4 Principal Component Analysis of Locus of Control Factors

In order to identify the *Locus of Control* factors that influence investors, PCA has been applied on the relevant data.

Table 4.21: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.667
Bartlett's Test of Sphericity	Approx. χ^2	571.523
	d.f.	21
	Significance	0.0000

Since the KMO measure of sampling adequacy is greater than 0.5 (0.667) and the Bartlett's Test of Sphericity is significant (p=0.000), PCA could be used to analyze the data.

Table 4.22: Total Variance Explained

Component	Initial Eigen values			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	1.936	27.656	27.656	1.936	27.656	27.656	1.797	25.665	25.665
2	1.166	16.655	44.311	1.166	16.655	44.311	1.305	18.646	44.311
3	0.965	13.787	58.098						
4	0.880	12.566	70.664						
5	0.775	11.076	81.741						
6	0.658	9.399	91.140						
7	0.620	8.860	100.00						

Extraction method: Principal Component Analysis

Conducting PCA and calculating eigen values of the correlation matrix, 2 eigen values are greater than 1 and they account for 44.31 percent of the total variance as shown in table 4.22.

Table 4.23: Rotated Component Matrix

Locus of Control statements	Component	
	1	2
One has to work hard in order to succeed		-0.644
If I run up against difficulties in life, I often doubt my own abilities	0.718	
Compared to other people, I have not achieved what I deserve	0.714	
What a person achieves in life is due to fate or luck	0.580	
I feel that other people control my life		0.522
The opportunities that I have in life are determined by the environment		0.624
Inborn abilities are more important than any efforts one can make	0.528	

Extraction method: Principal Component Analysis
Rotation method: Varimax with Kaiser Normalization
Rotation converged in 3 iterations

The rotated component matrix shows 2 factors as shown in table 4.23. The primary factor includes 4 items, 2 related to self, 1 related to environment and 1 to inborn ability. The secondary factor includes 3 items, 1 related to working hard to succeed (negative) and 2 related to environment.

The first factor accounts for 27.65 percent of total variance. After rotation this factor accounts for 25.66 percent of total variance. Among the variables under this factor, it is found that the variable '*If I run up against difficulties in life, I often doubt my own abilities*' has the highest factor loading (0.718). The second factor accounts for 16.65 percent of total variance. After rotation this factor accounts for 18.64 percent of total variance. Among the variables under this factor, it is observed that the variable '*One has to work hard in order to succeed*' has the highest factor loading though negative (-0.644). Although the first factor indicates an external Locus of Control, the second factor clearly indicates an internal Locus of Control. On an overall basis it could be concluded that individuals have a mixed Locus of Control.

In order to ascertain whether the Big Five factors and Locus of Control factors affect the different classes of investors and to find out whether they have different traits, correlation analysis and PCA have been performed separately on the different classes of investors.

4.6.5 Risk Averse Investors

Risk averse investors are those who invest in fixed income securities like bank deposits, post office deposits, government bonds and provident fund. Table 4.24 shows the correlation matrix of *Locus of Control* and *Big Five* factors.

Table 4.24: Correlation Matrix of Locus of Control and Big Five Factors (N=151)

Personality Measures	Locus of Control	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness	Overall Big Five Factors
Locus of Control	1	0.020 (0.810)	0.230(**) (0.004)	0.088 (0.284)	0.208(*) (0.010)	-0.091 (0.268)	0.177(*) (0.030)
Extraversion		1	0.407(**) (0.000)	0.167(*) (0.041)	-0.156 (0.056)	0.297(**) (0.000)	0.589(**) (0.000)
Agreeableness			1	0.385(**) (0.000)	-0.044 (0.594)	0.279(**) (0.001)	0.648(**) (0.000)
Conscientiousness				1	0.051 (0.535)	0.333(**) (0.000)	0.643(**) (0.000)
Neuroticism					1	-0.041 (0.621)	0.399(**) (0.000)
Openness						1	0.582(**) (0.000)
Overall Big Five Factors							1

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
The significance values (p values) are in parentheses

From table 4.24 it is found that among RA investors, *Locus of Control* is significantly positively correlated with *agreeableness* and *neuroticism* as well as with overall *Big Five factors*.

Among the Big Five factors, the personality trait of *extraversion* exhibits a positive correlation with *agreeableness, conscientiousness*, and *openness* displaying the highest correlation with *agreeableness* (r=0.407, p=0.000). While there is a strong association between *agreeableness* and *conscientiousness, openness* too is positively associated with these two factors. *Neuroticism* is not correlated with any of the *Big Five factors* although it shows a correlation (r=0.399, p=0.000) with the overall *Big Five factors*.

4.6.6 Principal Component Analysis of Big Five Factors

In order to identify the Big Five factors that influence RA investors, PCA has been applied on the relevant data.

Table 4.25: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.640
Bartlett's Test of Sphericity	Approx. χ^2	83.749
	d.f.	10
	Significance	0.000

As seen in table 4.25, since the KMO measure of sampling adequacy is greater than 0.5 (0.640) and the Bartlett's Test of Sphericity is significant (p=0.000), PCA could be used to analyze the data.

Table 4.26: Total Variance Explained

Component	Initial Eigen values			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	1.948	38.965	38.965	1.948	38.965	38.965	1.909	38.183	38.183
2	1.079	21.572	60.537	1.079	21.572	60.537	1.118	22.355	60.537
3	0.766	15.313	75.850						
4	0.714	14.287	90.138						
5	0.493	9.862	100.00						

Extraction method: Principal Component Analysis

Conducting PCA and calculating eigen values of the correlation matrix, 2 eigen values are greater than 1 and they account for 60.53 percent of the total variance as shown in table 4.26.

Tale 4.27: Rotated Component Matrix

Big Five factors	Component	
	1	2
Extraversion	0.588	
Agreeableness	0.754	
Conscientiousness	0.730	
Neuroticism		0.894
Openness	0.678	

Extraction method: Principal Component Analysis
Rotation method: Varimax with Kaiser Normalization
Rotation converged in 3 iterations

The rotated component matrix shows 2 factors as shown in table 4.27. The primary factor includes 4 items of *extraversion, agreeableness, conscientiousness* and *openness*. The secondary factor includes 1 item of *neuroticism.* The primary factor accounts for 38.96 percent of total variance. After rotation this factor accounts for 38.18 percent of total variance. Among the variables under this factor, it is found that *agreeableness* has the highest factor loading (0.754). This would indicate that the respondents are passive, soft-hearted and not keen on risk taking. The secondary factor accounts for 21.57 percent of total variance. After rotation this factor accounts for 22.35 percent of total variance. The only variable under this factor is *neuroticism* with a loading of 0.894. From these results it could be inferred that RA individuals are tender-hearted and not too anxious about earning high returns considering that neuroticism is a secondary factor.

4.6.7 Principal Component Analysis of Locus of Control Factors

In order to identify the *Locus of Control* factors that influence RA investors, PCA has been applied on the relevant data.

Table 4.28: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.546
Bartlett's Test of Sphericity	Approx. χ^2	158.034
	d.f.	21
	Significance	0.000

Since the KMO measure of sampling adequacy is greater than 0.5 (0.546) and the Bartlett's Test of Sphericity is significant (p=0.000), PCA could be used to analyze the data.

Table 4.29: Total Variance Explained

Component	Initial Eigen values			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	2.113	30.179	30.179	2.113	30.179	30.179	1.703	24.322	24.322
2	1.317	18.810	48.990	1.317	18.810	48.990	1.606	22.936	47.258
3	1.226	17.520	66.509	1.225	17.520	66.509	1.348	19.251	66.509
4	0.762	10.881	77.390						
5	0.688	9.835	87.226						
6	0.544	7.769	94.995						
7	0.350	5.005	100.00						

Extraction method: Principal Component Analysis

Conducting PCA and calculating eigen values of the correlation matrix, it is found that 3 eigen values are greater than 1 and they account for 66.5 percent of the total variance as shown in table 4.29.

Table 4.30: Rotated Component Matrix

Locus of Control statements	Component		
	1	2	3
One has to work hard in order to succeed	0.399		
If I run up against difficulties in life, I often doubt my own abilities	0.797		
Compared to other people, I have not achieved what I deserve	0.835		
What a person achieves in life is due to fate or luck		0.630	
I feel that other people control my life		0.721	
The opportunities that I have in life are determined by the environment		0.726	
Inborn abilities are more important than any efforts one can make			0.792

Extraction method: Principal Component Analysis
Rotation method: Varimax with Kaiser Normalization
Rotation converged in 11 iterations

The rotated component matrix shows 3 factors as shown in table 4.30. The primary factor includes 3 items related to the self. The secondary factor includes 3 items related to external environment and the tertiary factor includes 1 item related inborn abilities.

The primary factor accounts for 30.17 percent of total variance. After rotation this factor accounts for 24.32 percent of total variance. Among the variables under this factor, it is found that the variable '*Compared to other people, I have not achieved what I deserve'* has the highest factor loading (0.835). The secondary factor accounts for 18.81 percent of total variance. After rotation this factor accounts for 22.93 percent of total variance. Among the variables under this factor, it is seen that the variable '*The opportunities that I have in life are determined by the environment'* has the highest factor loading (0.726). The tertiary factor accounts for 17.52 percent of total variance. After rotation this factor accounts for 19.25 percent of total variance. The only variable under this factor '*Inborn abilities are more important than any efforts one can make'* has a factor loading of 0.792. All these factors indicate that the RA individual investors have a greater external Locus of Control.

4.6.8 Moderately Risk Seeking Investors

MRS investors are those who have invested in fixed income securities as well as risky securities like shares, mutual funds, real estate and so on. Table 4.31 shows the correlation matrix of Locus of Control and Big Five factors.

Table 4.31: Correlation Matrix of Locus of Control and Big Five Factors (N=665)

Personality Measures	Locus of Control	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness	Overall Big Five Factors
Locus of Control	1	-0.155(**) (0.000)	-0.067 (0.085)	-0.073 (0.061)	0.303(**) (0.000)	-0.041 (0.286)	0.019 (0.633)
Extraversion		1	0.432(**) (0.000)	0.270(**) (0.000)	-0.133(**) (0.001)	0.207(**) (0.000)	0.615(**) (0.000)
Agreeableness			1	0.329(**) (0.000)	-0.076 (0.051)	0.274(**) (0.000)	0.619(**) (0.000)
Conscientiousness				1	-0.022 (0.579)	0.387(**) (0.000)	0.668(**) (0.000)
Neuroticism					1	-0.077(*) (0.048)	0.347(**) (0.000)
Openness						1	0.588(**) (0.000)
Overall Big Five Factors							1

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
The significance values (p values) are in parentheses

From table 4.31, it is observed that *Locus of Control* of MRS investors, shows a negative correlation with *extraversion*, positive correlation with *neuroticism* and is not correlated with the overall *Big Five* factors.

Among the Big Five factors, while *extraversion* is positively correlated with *agreeableness*, *conscientiousness*, and *openness* it is negatively correlated with *neuroticism*. *Extraversion* shows the highest positive correlation with *agreeableness* (r=0.432, p=0.000). There is a strong association between *agreeableness* and *conscientiousness* as well as *openness*. Among the MRS investors, *neuroticism* shows negative correlation with *extraversion* and *openness*. *Conscientiousness* and *openness* too show a strong association.

4.6.9 Principal Component Analysis of Big Five Factors

In order to identify the *Big Five* factors that influence MRS investors, PCA has been applied on the relevant data.

Table 4.32: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.675
Bartlett's Test of Sphericity	Approx. χ2	370.640
	d.f.	10
	Significance	0.000

Since the KMO measure of sampling adequacy is greater than 0.5 (0.675) and the Bartlett's Test of Sphericity is significant (p=0.000), PCA could be used to analyze the data.

Table 4.33: Total Variance Explained

Component	Initial Eigen values			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	1.977	39.530	39.530						
2	1.006	20.120	59.650	1.977	39.530	39.530	1.923	38.455	38.455
3	0.863	17.257	76.908	1.006	20.120	59.650	1.060	21.195	59.650
4	0.599	11.974	88.882						
5	0.556	11.118	100.00						

Extraction method: Principal Component Analysis

Conducting PCA and calculating eigen values of the correlation matrix, 2 eigen values are greater than 1 and they account for 59.6 percent   of the total variance as shown in table 4.33.

Table 4.34: Rotated Component Matrix

Big Five factors	Component	
	1	2
Extraversion	0.620	
Agreeableness	0.715	
Conscientiousness	0.752	
Neuroticism		0.935
Openness	0.679	

Extraction method: Principal Component Analysis
Rotation method: Varimax with Kaiser Normalization
Rotation converged in 3 iterations

The rotated component matrix shows 2 factors as shown in table 4.34. The primary factor includes 4 items of *extraversion, agreeableness, conscientiousness* and *openness.* The secondary factor includes 1 item of *neuroticism.* The first factor accounts for 39.53 percent of total variance. After rotation this factor accounts for 38.45 percent of total variance. Among the variables under this factor, it is observed that *conscientiousness* has the highest factor loading (0.752). Highly conscientiousness individuals are found to have a desire for achievement under conditions of conformity and control as asserted by Nicholson, et. al., (2005). The second factor accounts for 20.12 percent of total variance. After rotation this factor accounts for 21.19 percent of total variance. The only variable under this factor is *neuroticism* with a loading of 0.935 indicating a higher level of resilience. From these results it could be inferred that MRS individuals are a healthy blend of thoroughness and tough mindedness while making their investment decisions.

4.6.10 Principal Component Analysis of Locus of Control Factors

In order to identify the *Locus of Control* factors that influence MRS investors, PCA has been applied on the relevant data.

Table 4.35: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.673
Bartlett's Test of Sphericity	Approx. χ2	302.396
	d.f.	21
	Significance	0.000

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Since the KMO measure of sampling adequacy is greater than 0.5 (0.673) and the Bartlett's Test of Sphericity is significant (p=0.000), PCA could be used to analyze the data.

Table 4.36: Total Variance Explained

Component	Initial Eigen values			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	1.904	27.198	27.198	1.904	27.198	27.198	1.773	25.384	25.384
2	1.154	16.487	43.685	1.154	16.487	43.685	1.285	18.361	43.645
3	0.949	13.564	57.249						
4	0.894	12.772	70.021						
5	0.774	11.064	81.084						
6	0.677	9.668	90.753						
7	0.647	9.247	100.00						

Extraction method: Principal Component Analysis

Conducting PCA and calculating eigen values of the correlation matrix, it is found that 2 eigen values are greater than 1 and they account for 43.68 percent of the total variance as shown in table 4.36.

Table 4.37: Rotated Component Matrix

Locus of Control statements	Component	
	1	2
One has to work hard in order to succeed		-0.683
If I run up against difficulties in life, I often doubt my own abilities	0.692	
Compared to other people, I have not achieved what I deserve	0.686	
What a person achieves in life is due to fate or luck	0.584	
I feel that other people control my life	0.472	
The opportunities that I have in life are determined by the environment		0.570
Inborn abilities are more important than any efforts one can make	0.504	

Extraction method: Principal Component Analysis
Rotation method: Varimax with Kaiser Normalization
Rotation converged in 3 iterations

The rotated component matrix shows 2 factors as shown in table 4.37. The primary factor includes 5 items related to self and environment and the secondary factor includes 2 items. The primary factor accounts for 27.19 percent of total variance. After rotation this

factor accounts for 25.38 percent of total variance. Among the variables under this factor, it is found that the variable '*If I run up against difficulties in life, I often doubt my own abilities*' has the highest factor loading (0.692). The secondary factor accounts for 16.48 percent of total variance. After rotation this factor accounts for 18.36 percent of total variance. Among the variables under this factor, it is found that the variable '*One has to work hard in order to succeed*' has the highest factor loading though negative (-0.683). The negative sign is because this is the only statement ranging from external to internal scale while all other statements are ranging from internal to external scale. Although the primary factor indicates an external Locus of Control, the secondary factor indicates that MRS individuals believe in working hard to succeed. On the whole it could be deduced that they have a mixed Locus of Control.

4.6.11 Highly Risk Seeking Investors

HRS investors are those who have invested in risky securities only like shares, mutual funds, real estate, corporate bonds and NBFC deposits. Table 4.38 shows the correlation matrix of Locus of Control and Big Five factors.

Table 4.38: Correlation Matrix of Locus of Control and Big Five Factors (N=330)

Personality Measures	Locus of Control	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness	Overall Big Five Factors
Locus of Control	1	-0.093 (0.092)	-0.052 (0.344)	-0.127(*) (0.021)	0.310(**) (0.000)	-0.041 (0.459)	0.032 (0.567)
Extraversion		1	0.391(**) (0.000)	0.280(**) (0.000)	-0.150(**) (0.006)	0.046 (0.403)	0.617(**) (0.000)
Agreeableness			1	0.319(**) (0.000)	-0.087 (0.114)	0.145(**) (0.008)	0.612(**) (0.000)
Conscientiousness				1	-0.077 (0.163)	0.156(**) (0.005)	0.600(**) (0.000)
Neuroticism					1	-0.022 (0.686)	0.351(**) (0.000)
Openness						1	0.439(**) (0.000)
Overall Big Five Factors							1

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed)
The significance values (p values) are in parentheses

From table 4.38, it is observed that *Locus of Control* among HRS investors is negatively correlated with *conscientiousness* and positively correlated with *neuroticism*. *Locus of Control* is not correlated with the overall *Big Five* factors. Among the *Big Five*, *extraversion* is strongly associated with *agreeableness* exhibiting highest correlation(r=0.319, p=0.000), and is strongly associated with *conscientiousness*. Moreover it is negatively associated with *neuroticism*. *Agreeableness*, *conscientiousness* and *openness* are strongly associated with each other.

4.6.12 Principal Component Analysis of Big Five Factors

In order to identify the *Big Five* factors that influence HRS investors, PCA has been applied on the relevant data.

Table 4.39: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.645
Bartlett's Test of Sphericity	Approx. χ2	119.549
	d.f.	10
	Significance	0.000

Since the KMO measure of sampling adequacy is greater than 0.5 (0.645) and the Bartlett's Test of Sphericity is significant (p=0.000), PCA could be used to analyze the data.

Table 4.40: Total Variance Explained

Component	Initial Eigen values			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	1.761	35.213	35.213	1.761	35.213	35.213	1.760	35.204	35.204
2	1.009	20.174	55.387	1.009	20.174	55.387	1.009	20.183	55.387
3	0.927	18.534	73.921						
4	0.713	14.266	88.187						
5	0.591	11.813	100.00						

Extraction method: Principal Component Analysis

Conducting PCA and calculating eigen values of the correlation matrix, 2 eigen values are greater than 1 and they account for 55.38 percent of the total variance as shown in table 4.40.

Table 4.41: Rotated Component Matrix

Big Five factors	Component	
	1	2
Extraversion	0.720	
Agreeableness	0.755	
Conscientiousness	0.682	
Neuroticism		0.651
Openness		0.701

Extraction method: Principal Component Analysis
Rotation method: Varimax with Kaiser Normalization
Rotation converged in 3 iterations

The rotated component matrix shows 2 factors as shown in table 4.41. The primary factor includes 3 items of *extraversion, agreeableness* and *conscientiousness*. The secondary factor includes 2 items of *neuroticism* and *openness*. The primary factor accounts for 35.21 percent of total variance. After rotation this factor accounts for 35.20 percent of total variance. Among the variables under this factor, it is seen that *agreeableness* has the highest factor loading (0.755). A high score on *agreeableness* for risk takers is an indication of being flexible and tolerant. The secondary factor accounts for 20.17 percent of total variance. After rotation this factor accounts for 20.18 percent of total variance. Among the two variables under this factor, it is observed that the variable *openness* has the highest factor loading (0.701). This confirms the findings of Zuckerman & Kuhlman (2000) who said that *openness* is a personality trait found in high risk seekers. *Openness* to experience is an indication of tolerance of uncertainty, change and innovation as ascertained by McCrae & Costa (1997). From these results it could be construed that HRS individuals are flexible, tolerant towards uncertainty and probably not concerned about the negative consequences of their risk-taking on others as pointed out by Nicholson et. al., (2005).

4.6.13 Principal Component Analysis of Locus of Control Factors

In order to identify the Locus of Control factors that influence HRS investors, PCA has been applied on the relevant data.

Table 4.42: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.653
Bartlett's Test of Sphericity	Approx. χ2	173.302
	d.f.	21
	Significance	0.000

Since the KMO measure of sampling adequacy is greater than 0.5 (0.653) and the Bartlett's Test of Sphericity is significant (p=0.000), PCA could be used to analyze the data.

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Table 4.43: Total Variance Explained

Component	Initial Eigen values			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	1.953	27.896	27.896	1.953	27.896	27.896	1.822	26.027	26.027
2	1.172	16.745	44.641	1.172	16.745	44.641	1.303	18.614	44.641
3	0.986	14.088	58.729						
4	0.838	11.970	70.699						
5	0.802	11.454	82.153						
6	0.677	9.674	91.827						
7	0.572	8.173	100.00						

Extraction method: Principal Component Analysis

Conducting PCA and calculating eigen values of the correlation matrix, 2 eigen values are greater than 1 and they account for 44.64 percent of the total variance as shown in table 4.43.

Table 4.44: Rotated Component Matrix

Locus of Control statements	Component	
	1	2
One has to work hard in order to succeed		-0.649
If I run up against difficulties in life, I often doubt my own abilities	0.716	
Compared to other people, I have not achieved what I deserve	0.663	
What a person achieves in life is due to fate or luck	0.645	
I feel that other people control my life		0.629
The opportunities that I have in life are determined by the environment		0.660
Inborn abilities are more important than any efforts one can make	0.624	

Extraction method: Principal Component Analysis
Rotation method: Varimax with Kaiser Normalization
Rotation converged in 3 iterations

The rotated component matrix exhibits 2 factors as shown in table 4.44. The primary factor includes 4 items, 2 related to self, 1 related to environment and 1 to inborn ability. The secondary factor includes 3 items, 1 related to working hard to succeed (negative) and 2 related to environment. The primary factor accounts for 27.89 percent of total variance. After rotation this factor accounts for 26.02 percent of total variance. Among the variables under this factor, it is noted that the variable '*If I run up against difficulties in life, I often doubt my own abilities*' has the highest factor loading (0.716). The second

factor accounts for 16.74 percent of total variance. After rotation this factor accounts for 18.61 percent of total variance. Among the variables under this factor, it is seen that the variable '*The opportunities that I have in life are determined by the environment*' has the highest factor loading (0.660). Both these factors indicate that HRS individuals have a greater external Locus of Control.

4.6.14 Testing of Hypotheses of the Influence of Personality Factors on IDM

The hypotheses relating to personality factors are as follows:

      H2a: Locus of Control has an influence on the IDM of individuals.

      H2b: Big Five personality factors influence the IDM of individuals.

The Kruskal Wallis test shows that the *Big Five factors* significantly affect the IDM of investors. Moreover, two factors among the Big Five i.e. *extraversion* and *agreeableness* greatly influence IDM. The Kruskal Wallis test shows that *Locus of Control* measure does not significantly affect the IDM of investors. But, further investigation conducted using PCA shows that both *Big Five factors* and *Locus of Control* influence the IDM of individuals. Hence both hypotheses H2a and H2b are met.

4.7 Measures of Social Environment

Measures of social environment include sources within a family such as one's spouse, parents, children and so on; non-commercial sources such as newspapers, magazines, television channels, experts' blogs and internet sites; informal sources such as friends, neighbours, brokers, social circles, and experts. Table 4.45 shows the classification of investors on the basis of social environment factors.

Table 4.45: Classification of Investors on the Basis of Social Environment Factors

Social environment factors	Profile	N	Mean	S.D.	Median	Mean Percent	KW test χ^2 value	d.f.	'p'	Conclusion
Family	RA	151	2.78	0.92	3.00	55.63	12.908	2	0.002	H. Sig.
	MRS	665	2.57	0.92	2.50	51.44				
	HRS	330	2.50	1.00	2.50	49.91				
	Total	1146	2.58	0.94	2.50	51.55				
Non-commercial sources	RA	151	2.28	0.79	2.29	45.60	74.068	2	0.000	H. Sig.
	MRS	665	2.92	0.74	3.00	58.49				
	HRS	330	2.77	0.76	2.86	55.41				
	Total	1146	2.80	0.78	2.86	55.90				
Informal Sources	RA	151	2.47	0.85	2.40	49.32	5.465	2	0.065	N. Sig.
	MRS	665	2.59	0.65	2.60	51.72				
	HRS	330	2.50	0.67	2.50	50.06				
	Total	1146	2.55	0.69	2.60	50.93				

Source: survey data. H. sig. –highly significant, N. sig.- not significant

Observing the mean values for *family* factor, it is noted the RA investors show the highest value at 2.78 while HRS investors show the least value at 2.50. This could indicate the RA investors consult their *family* to a larger extent than the other segments of investors while making investment decisions. Observing the mean values for *non-commercial sources* factor, it is found that RA investors score the least at 2.28 while MRS investors score the highest at 2.92. This could indicate that MRS individuals consult *non-commercial sources* of information to a greater extent compared to the other two segments of investors. Similarly, from the mean values for *informal sources* factor it is seen that the mean value for MRS investors is the highest at 2.59 indicating that they consult *informal sources* of information to a greater extent than the other two segments of investors.

Among the three segments of investors, RA investors show the highest mean value for *family* factor indicating that amongst the various social environment factors, they consult family the most. Among MRS and HRS investors, the highest mean value is for *non-*

commercial sources factor indicating that these two segments of investors consult *non-commercial sources* the most among the various social environment factors.

Overall, considering that the mean values of the *social environment* factors are below 3, it indicates that individuals consult such sources to a limited extent only. The Kruskal Wallis test shows that *family* ($\chi2$= 12.908, p=0.002) and *non-commercial sources* which includes newspapers, magazines, television channels, experts' blogs and internet sites, (χ^2 =12.908, p=0.000) significantly affect the IDM of individuals while *informal sources* which includes friends, neighbours, brokers, social circles, experts, (χ^2 =5.465, p=0.065) does not affect the IDM of individuals.

4.7.1 Principal Component Analysis

Among the measures of *social environment, non-commercial sources* are found to be eligible for the application of PCA.

Table 4.46: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.746
Bartlett's Test of Sphericity	Approx. χ2	2346.815
	d.f.	21
	Significance	0.0000

Since the KMO measure of sampling adequacy is greater than 0.5 (0.746) and the Bartlett's Test of Sphericity is highly significant (p=0.000), PCA could be used to analyze the data.

Table 4.47: Total Variance Explained

Component	Initial Eigen values			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	3.048	43.545	43.545	3.048	43.545	43.545	2.448	34.968	34.968
2	1.240	17.714	61.258	1.240	17.714	61.258	1.840	26.290	61.258
3	0.844	12.063	73.321						
4	0.617	8.810	82.132						
5	0.567	8.095	90.226						
6	0.389	5.557	95.783						
7	0.295	4.217	100.000						

Extraction method: Principal Component Analysis

Conducting PCA and calculating eigen values of the correlation matrix, 2 eigen values are greater than 1 and they account for 61.25 percent of the total variance as shown in table 4.47.

Table 4.48: Rotated Component Matrix

Big Five factors	Component	
	1	2
Fin_newspaper	0.735	
Biz_TV_channels	0.864	
Experts_TV	0.794	
Good_magazines	0.666	
Internet sites		0.795
Expert's_blogs		0.817
Radio_channels		0.618

Extraction method: Principal Component Analysis
Rotation method: Varimax with Kaiser Normalization
Rotation converged in 3 iterations

The rotated component matrix shows 2 factors as shown in table 4.48. The primary factor includes 4 items, *financial newspaper, business TV channels, experts' on TV* and *good magazines*. This factor could be called *'passive media'*. The secondary factor includes 3 items of *internet sites, experts' blogs* and *radio channels*. This factor could be called *'active media'*. The *'passive media'* factor accounts for 43.54 percent of total variance. After rotation this factor accounts for 34.96 percent of total variance. Among the *passive media*, it is found that the variable *'business TV channels'* has the highest factor loading

(0.864) indicating that individual investors are influenced by *business TV channels* to a large extent. The *'active media'* factor accounts for 17.71 percent of total variance. After rotation this factor accounts for 26.29 percent of total variance. Among the active media, it is seen that the variable 'e*xperts' blogs*' has the highest factor loading (0.817) indicating that individual investors are influenced by experts' blogs to a great extent.

4.7.2 Testing of Hypotheses of the Influence of Social Environment Factors on IDM

The hypotheses relating to social environment factors are as follows:

H3a: Family influences the IDM of individuals.

H3b: Non-commercial sources of information influence the IDM of individuals.

H3c: Informal sources of information influence the IDM of individuals

The Kruskal Wallis test shows that *family* significantly affects the IDM of individual investors. The Kruskal Wallis test as well as PCA shows that *non-commercial sources of information* influence the IDM of individuals. Thus it could be concluded that two hypotheses H3a and H3b are accepted while H3c is rejected.

4.8 Experience

It is found that IDM is best learnt from *experience. Experience* is measured using 1 statement, included under contextual factors in section V in the questionnaire, and is answered on a 5 point Likert scale ranging from strongly disagree, disagree, be neutral, agree, or strongly agree.

Table 4.49: Classification of Investors on the Basis of Experience

	Profile	N	Mean	S.D.	Median	Mean %	KW test χ^2 value	d.f.	'p'	Conclusion
Experience	RA	151	3.28	1.008	3.00	65.56				
	MRS	665	3.63	0.87	4.00	72.54	15.582	2	0.000	H. sig.
	HRS	330	3.55	0.96	4.00	71.09				
	Total	1146	3.56	0.92	4.00	71.20				

Source: survey data. H. sig. –highly significant

Observing the mean values for *experience* factor, it is found that RA investors show the least value at 3.28 while MRS investors show the highest value at 3.63. This could indicate that MRS individuals learn more from their experience compared to RA individuals. The Kruskal Wallis test shows that *experience* ($\chi2$= 15.582, p=0.000) significantly affects the IDM of individuals.

4.8.1 Testing of Hypothesis of the Influence of Experience on IDM

The hypotheses relating to experience is as follows:

H4a: Experience in investing influences the IDM of individuals.

The Kruskal Wallis test shows that *experience* in investing significantly affects the IDM of individual investors. Thus it could be concluded that hypotheses H4a is accepted.

4.9 Choice Criteria

Standard finance theory assumes that investors choose investment on the basis of various choice criteria. For the purpose of the study, the choice criteria considered are *attitude towards risk, attitude towards return, preference for liquidity, length of investment horizon* and *preference for convenience*. All these criteria are measured using a total of 13 statements. *Attitude to risk* is measured using 3 statements, *attitude to return* is measured using 2 statements, *preference for liquidity* is measured using 2 statements, *length of investment horizon* is measured using 2 statements and *preference for*

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convenience is measured using 4 statements. Each question is answered on a 5 point Likert scale ranging from strongly disagree, disagree, be neutral, agree, or strongly agree.

Table 4.50: Classification of Investors on the Basis of Choice Criteria

Choice Criteria	Profile	N	Mean	S.D.	Median	Mean %	K W test χ^2value	d.f.	'p'	Conclusion
Risk	RA	151	2.53	0.85	2.40	50.73	13.018	2	0.001	H.Sig.
	MRS	665	2.68	0.60	2.60	53.71				
	HRS	330	2.68	0.64	2.60	53.72				
	Total	1146	2.66	0.65	2.60	53.32				
Return	RA	151	3.74	0.76	4.00	74.77	3.981	2	0.137	N. Sig.
	MRS	665	3.68	0.61	4.00	73.55				
	HRS	330	3.63	0.73	3.50	72.52				
	Total	1146	3.67	0.67	4.00	73.41				
Liquidity	RA	151	3.15	1.19	3.00	62.91	1.548	2	0.461	N. Sig.
	MRS	665	3.27	0.93	3.50	65.47				
	HRS	330	3.29	0.94	3.50	65.82				
	Total	1146	3.26	0.97	3.50	65.24				
Investment Horizon	RA	151	3.49	0.91	3.50	69.93	0.587	2	0.746	N. Sig.
	MRS	665	3.53	0.93	3.50	70.62				
	HRS	330	3.54	0.92	3.50	70.85				
	Total	1146	3.52	0.92	3.50	70.59				
Convenience	RA	151	3.44	0.74	3.50	68.74	11.612	2	0.003	H. Sig.
	MRS	665	3.66	0.60	3.75	73.13				
	HRS	330	3.62	0.61	3.75	72.36				
	Total	1146	3.62	0.63	3.75	72.33				

Source: survey data. H. sig. –highly significant, N. sig.- not significant

Observing the mean values of each of the choice criteria factors in table 4.50, it is seen that under *risk* factor, MRS and HRS individuals show a mean value that is equal and higher than RA individuals. Under *return* factor, it is found that RA individuals show greater mean value compared to the other two segments, indicating that consistency of return is important to them. HRS individuals show highest mean value for *liquidity* factor indicating their need for greater *liquidity*. HRS individuals show highest mean value for *investment horizon* indicating that time period of investments is an important factor for them. MRS individuals show highest mean value for *convenience* factor.

Among the three segments of investors, it is observed that all the three segments of investors show highest mean value for the *return* factor indicating that all of them give high priority to return on investment.

Further, it is noticed that most means are above 3 except the sample means of *risk* factor, where they are less than 3 indicating that most of the respondents are cautious and do not take excessive risks.

The Kruskal Wallis test shows that *risk* ($\chi2= 13.018$, p=0.001) and *convenience* ($\chi^2 =11.612$, p=0.003) significantly affect the IDM of individuals while the other factors of *return* ($\chi2= 3.981$, p=0.137), *liquidity* ($\chi2= 1.548$, p=0.461) and *investment horizon* ($\chi2= 0.587$, p=0.746) do not affect IDM of individuals.

4.9.1 Testing of Hypotheses of the Influence of Choice Criteria on IDM

The hypotheses relating to choice criteria are as follows:

H5a: Convenience affects the IDM of individuals.

H5b: Attitude towards risk affects the IDM of individuals.

H5c: Attitude towards return affects the IDM of individuals.

H5d: Desire for liquidity affects the IDM of individuals.

H5e: Investment horizon affects the IDM of individuals.

The Kruskal Wallis test shows that *risk* and *convenience* significantly affect the IDM of individuals while the other factors of *return, liquidity* and *investment horizon* do not affect IDM of individuals. Thus it could concluded that two hypotheses H5a and H5b are accepted while H5c, H5d and H5e are rejected.

4.10 Contextual Factors

For the purpose of the study, the *contextual factors* considered are *task complexity, information processing* and *time constraint.* All these criteria are measured using a total of 10 statements. *Task complexity* is measured using 5 statements, *information processing* is measured using 3 statements and *time constraint* is measured using 2 statements. Each question is answered on a 5 point Likert scale ranging from strongly disagree, disagree, be neutral, agree, or strongly agree.

Table 4.51: Classification of Investors on the Basis of Contextual Factors

	Profile	N	Mean	S.D.	Median	Mean %	KW test χ^2value	d.f.	'p'	Conclusion
Task Complexity	RA	151	3.10	0.72	3.25	62.05	18.175	2	0.000	H. Sig.
	MRS	665	3.41	0.55	3.50	68.18				
	HRS	330	3.38	0.54	3.50	67.62				
	Total	1146	3.38	0.58	3.50	67.21				
Information processing	RA	151	3.46	0.61	3.57	69.35	14.708	2	0.001	H. Sig.
	MRS	665	3.29	0.55	3.42	65.92				
	HRS	330	3.29	0.59	3.42	65.91				
	Total	1146	3.31	0.57	3.42	66.37				
Time constraint	RA	151	2.52	0.96	2.50	50.46	0.755	2	0.685	N. Sig.
	MRS	665	2.49	0.91	2.50	49.85				
	HRS	330	2.47	0.96	2.50	49.36				
	Total	1146	2.49	0.93	2.50	49.79				

Source: survey data. H. sig. –highly significant, N. sig. - not significant

Observing the mean values of each of the *contextual factors* in table 4.51, it is noted that under *task complexity* factor, MRS individuals show the highest mean value indicating that they do find the task of investing rather complex. Under *information processing* factor, it is seen that RA individuals show greater mean value compared to the other two segments. This could indicate that since they invest in safe and secure investments, it is easier for them to plan and organize investment information. RA individuals show highest mean value for *time constraint* indicating that they may not have sufficient time review investments. This could be one of the reasons that they choose safe and riskless investments.

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Among the three segments of investors, it is observed that RA individuals show highest mean value for *information processing* while MRS and HRS individuals show highest mean value for *task complexity*. Investing in risky securities is probably the reason for MRS and HRS individuals finding the task of investment complex. The mean values of *time constraint* are less than 3 indicating that the respondents do not face a severe time constraint to attend to their investments.

The Kruskal Wallis test shows that *task complexity* ($\chi2=$ 18.175, p=0.000) and *information processing* (χ^2 =14.708, p=0.001) significantly affect the IDM of individuals while *time constraint* ($\chi2$=0.755, p=0.685) does not affect IDM of individuals.

4.10.1 Testing of Hypotheses of the Influence of Contextual Factors on IDM

The hypotheses relating to contextual factors are as follows:

H6a: Task complexity affects the IDM of individuals.

H6b: Information processing affects the IDM of individuals.

H6c: Time constraint affects the IDM of individuals.

The Kruskal Wallis test shows that *task complexity* and *information processing* factors significantly affect the IDM of individuals while *time constraint* does not affect IDM of individuals. Thus it could be concluded that two hypotheses H6a and H6b are accepted while H6c is rejected.

4.11 Biases

For the purpose of the study, the *heuristic simplification biases* considered are *representativeness, framing, anchoring, availability* and *loss aversion*. All these biases are measured using a total of 28 statements. *Representativeness* is measured using 3 statements, *framing* is measured using 5 statements, *anchoring* is measured using 3

statements, *availability* is measured using 14 statements and is used as a proxy for *social environment*, since sources of information are considered as sources available, and *loss aversion* is measured using 3 statements. Except for three, all the statements are answered on a 5 point Likert scale ranging from strongly disagree, disagree, neutral, agree, or strongly agree. Those three statements are posed as dichotomous statements.

Table 4.52: Classification of Investors on the Basis of Biases

Biases	Profile	N	Mean	S.D.	Median	Mean %	K W test χ^2 value	d.f.	p value	Conclusion
Representativeness	RA	151	3.11	0.74	3.00	62.16	6.110	2	0.047	Sig.
	MRS	665	3.22	0.61	3.33	64.37				
	HRS	330	3.18	0.58	3.17	63.62				
	Total	1146	3.19	0.62	3.33	63.86				
Framing	RA	151	1.63	0.59	1.60	32.68	22.855	2	0.000	H. Sig.
	MRS	665	1.76	0.46	1.80	35.39				
	HRS	330	1.81	0.49	1.80	36.33				
	Total	1146	1.76	0.49	1.75	35.30				
Anchoring	RA	151	3.44	0.53	3.40	68.93	5.446	2	0.066	N. Sig.
	MRS	665	3.40	0.46	3.40	68.14				
	HRS	330	3.46	0.44	3.40	69.36				
	Total	1146	3.42	0.47	3.40	68.60				
Availability	RA	151	2.51	0.64	2.49	50.18	13.037	2	0.001	H. Sig.
	MRS	665	2.69	0.53	2.70	53.88				
	HRS	330	2.59	0.52	2.60	51.79				
	Total	1146	2.64	0.55	2.64	52.80				
Loss aversion	RA	151	1.95	0.32	2.00	39.02	8.243	2	0.016	Sig.
	MRS	665	1.87	0.32	1.80	37.33				
	HRS	330	1.89	0.31	1.80	37.71				
	Total	1146	1.88	0.32	1.80	37.66				

Source: survey data. H. sig. –highly significant, Sig. – significant, N. sig. - not significant

Observing the mean values of each of the biases in table 4.52, it is found that as regards *representativeness* bias, MRS individuals show the highest mean value at 3.22 indicating that they are influenced by representativeness bias to a greater extent. HRS individuals show highest mean value, at 1.81 as regards *framing* bias, and at 3.46 regarding *anchoring bias*, indicating that they are influenced by *framing* and *anchoring* to a larger extent. In relation to *availability* bias, it is seen that MRS individuals show greater mean

value at 2.69 indicating that they are most influenced by *availability* bias. RA individuals show highest mean value in relation to *loss aversion* bias indicating that they are *loss averse* along with being risk averse. This could be one of the reasons for choosing safe and riskless investments. All the three segments of individuals, show highest mean value as regards *anchoring* bias and least mean value as regards *framing* bias.

As per the Kruskal Wallis test, *framing* ($\chi2$= 22.855, p=0.000) and *availability* ($\chi2$= 13.037, p=0.001) affect IDM of individuals highly significantly while *representativeness* ($\chi2$= 6.110, p=0.047) and *loss aversion* (χ^2 =8.243, p=0.016) significantly affect the IDM. *Anchoring* bias ($\chi2$= 0.755, p=0.685) does not affect IDM of individuals.

4.11.1 Testing of Hypotheses of the Influence of Biases on IDM

The hypotheses relating to heuristic simplification biases are as follows:

H7a: Representativeness bias affects the IDM of individuals.

H7b: Framing bias affects the IDM of individuals.

H7c: Anchoring bias affects the IDM of individuals.

H7d: Availability bias affects the IDM of individuals.

H7e: Loss aversion bias affects the IDM of individuals.

The Kruskal Wallis test shows that *representativeness, framing, availability* and *loss aversion* significantly affect the IDM of individuals. *Anchoring* bias is found not to affect IDM of individuals. Thus it could be concluded that the hypotheses H7a, H7b, H7d and H7e are accepted and H7c is rejected.

4.11.2 Regression Analysis

The regression analysis was applied to investigate the relationships between dependent variables (i.e. biases) and independent variables (i.e. *Locus of Control, Big Five factors, social environment, demographics, experience, choice criteria* and *contextual factors*). Since availability bias is taken to be proxy of social environment factors, regression is not applied to availability bias.

4.11.2.1 Regression - Representativeness (Total Sample)

Table 4.53: Model Summary- Representativeness (Total Sample)

Model	R	R Square	Std Error	F	df1	df2	Sig.
1	0.371	0.137	0.5825	9.935	18	1128	0.000

Table 4.54: ANOVA- Representativeness (Total Sample)

Model	Sum of squares	df	Mean square	F	Sig.
1 Regression	60.675	18	3.371	9.935	0.000
Residual	381.039	1128	0.339		
Total	441.714	1146			

4.11.2.2 Regression - Representativeness (Segmented Sample)

Table 4.55: Model Summary- Representativeness (Segmented Sample)

Risk profile	Model	R	R Square	Std Error	F	df1	df2	Sig.
RA	1	0.636	0.404	0.6063	4.974	18	133	0.000
MRS	1	0.372	0.138	0.5781	5.726	18	647	0.000
HRS	1	0.415	0.172	0.5400	3.588	18	312	0.000

Table 4.56: ANOVA- Representativeness (Segmented Sample)

Risk profile	Model	Sum of squares	df	Mean square	F	Sig.
RA	1 Regression	32.921	18	1.829	4.974	0.000
	Residual	48.535	133	0.368		
	Total	81.455	151			
MRS	1 Regression	34.451	18	1.914	5.726	0.000
	Residual	214.598	647	0.334		
	Total	249.049	665			
HRS	1 Regression	18.835	18	1.046	3.588	0.000
	Residual	90.710	312	0.292		
	Total	109.545	330			

Representativeness = a + b_1*Locus of Control + b_2*extraversion + b_3*agreeableness + b_4*conscientiousness + b_5*neuroticism + b_6*openness + b_7*risk + b_8* return + b_9*investment horizon + b_{10}*liquidity + b_{11}*convenience + b_{12}*task complexity + b_{13}*information processing + b_{14}*time constraint + b_{15}*family + b_{16}*non commercial sources + b_{17}*informal sources + b_{18}*experience

Dependent variable = Representativeness
Method: Enter Method

Table 4.57: Coefficients (Representativeness)

	Total sample	RA	MRS	HRS
Model	Standardised coefficients	Standardised coefficients	Standardised coefficients	Standardised coefficients
	Beta	Beta	Beta	Beta
Locus of Control	-0.032	0.303	-0.057	-0.191
	(-1.039)	(3.943)**	(-1.390)	(-3.193)**
Extraversion	-0.016	-0.120	0.007	-0.027
	(-0.514)	(-1.453)	(0.168)	(-0.471)
Agreeableness	0.023	0.161	-0.079	0.106
	(0.704)	(1.742)	(-1.836)	(1.739)
Conscientiousness	-0.022	-0.132	-0.029	0.021
	(-0.703)	(-1.621)	(-0.680)	(0.364)
Neuroticism	0.094	0.156	0.088	0.098
	(3.186)**	(1.979)*	(2.246)*	(1.714)
Openness	0.049	0.045	0.101	-0.001
	(1.609)	(0.556)	(2.438)*	(-0.017)
Risk	-0.018	-0.051	-0.040	0.019
	(-0.579)	(-0.674)	(-0.967)	(0.308)
Return	-0.007	-0.001	-0.010	-0.038
	(-0.233)	(-0.006)	(-0.230)	(-0.629)
Investment horizon	-0.108	-0.085	-0.109	-0.130
	(-3.648)**	(-1.077)	(-2.805)**	(-2.166)*
Liquidity	0.003	0.194	-0.006	-0.076
	(0.109)	(2.256)*	(-0.146)	(-1.313)
Convenience	0.056	0.007	0.089	0.031
	(1.858)	(0.081)	(2.219)*	(0.525)
Task complexity	0.094	0.061	0.108	0.123
	(3.165)**	(0.727)	(2.736)**	(2.123)*
Information processing	0.125	0.056	0.137	0.155
Time constraint	(4.050)**	(0.654)	(3.325)**	(2.609)**
	0.026	0.044	-0.019	0.118
Family	(0.835)	(0.537)	(-0.465)	(1.939)
	-0.053	-0.215	-0.001	-0.100
Non commercial sources	(-1.739)	(-2.609)**	(-0.024)	(-1.713)
Informal sources	0.181	0.183	0.177	0.156
	(5.909)**	(2.108)*	(4.325)**	(2.658)**
Experience	0.145	0.259	0.139	0.087
	(4.723)**	(3.014)**	(3.474)**	(1.494)
	0.001	0.238	-0.019	-0.021
	(0.028)	(2.723)**	(-0.462)	(-0.340)

** Significant at <.01 level
*Significant at < .05 level

Regression analysis is performed to evaluate the effect of explanatory variables such as *Locus of Control, Big Five factors, social environment, experience, choice criteria* and *contextual factors* on *representativeness.* The strength of the association (R) between the

independent variables and dependent variable, *representativeness* is 0.371. The proportion of variance in *representativeness* is explained to the extent of 13.7 percent (R^2 =0.137) by the explanatory variables. The F value, $F(18,1128) = 9.935$ (p=0.000), shows that the overall model applied can statistically significantly explain the outcome variable of *representativeness*. The coefficients table shows the beta coefficients of the explanatory variables. The 't' test values are given in parentheses and the significance level is indicated using '*' symbol.

From the beta coefficients of *representativeness* (total sample), it is found that the explanatory variables causing changes in *representativeness* are found to be *non-commercial sources* (β=0.181, t=5.909, p=0.000), *informal sources* (β=0.145, t=4.723, p=0.000), *information processing* (β=0.125, t=4.050, p=0.000), *investment horizon* (β=-0.108, t=-3.648, p=0.000), *neuroticism* (β=0.094, t=3.186, p=0.001) and *task complexity* (β=0.094, t=3.165, p=0.002). Among them *investment horizon* has a negative influence on *representativeness.*

Segment-wise regression shows that for RA investors the strength of the association between the independent and dependent variable is 0.636. The proportion of variance in *representativeness* is explained to the extent of 40.4 percent (R^2 =0.404) by the explanatory variables. The F value, $F(18,133) = 4.974$(p=0.000), shows that the overall model applied can statistically significantly explain the outcome variable of *representativeness*. From the beta coefficients (RA), it is found that the explanatory variables causing changes in *representativeness* are found to be *Locus of Control* (β=0.303, t=3.943, p=0.000), *informal sources* (β=0.259, t=3.014, p=0.003), *experience* (β=0.238, t=2.723, p=0.007), *family* (β=-0.215, t=-2.609, p=0.010), *liquidity* (β=0.194, t=2.256, p=0.026), *non commercial sources*(β=0.183, t=2.108, p=0.037) and *neuroticism* (β=0.156, t=1.979, p=0.050). Among them *family* seems to have a negative influence on *representativeness.*

For MRS investors, the strength of the association between the independent and dependent variable is 0.372. The proportion of variance in *representativeness* is explained to the extent of 13.8 percent (R^2 =0.138) by the explanatory variables. The F value, $F(18,647) = 5.726$ (p=0.000), shows that the overall model applied can statistically significantly explain the outcome variable of *representativeness*. From the beta coefficients, it is found that the explanatory variables causing changes in the dependent variable are found to be *non commercial sources*(β=0.177, t=4.325, p=0.000), *informal sources* (β=0.139, t=3.474, p=0.001), *information processing* (β=0.137, t=3.325, p=0.001), *investment horizon* (β=-0.109, t=-2.805, p=0.005), *task complexity* (β=0.108, t=2.736, p=0.006), *openness* (β=0.101, t=2.438, p=0.015), *neuroticism* (β=0.088, t=2.246, p=0.025), and *convenience* (β=0.089, t=2.219, p=0.027). Among them investment horizon seems to have a negative influence on *representativeness*.

For HRS investors the strength of the association between the independent and dependent variable is 0.415. The proportion of variance in *representativeness* is explained to the extent of 17.2 percent (R^2 =0.172) by the explanatory variables. The F value, $F(18,312) = 3.588$ (p=0.000), shows that the overall model applied can statistically significantly explain the outcome variable of *representativeness*. From the beta coefficients it is found that the explanatory variables causing changes in the dependent variable are found to be *Locus of Control* (β=-0.191, t=-3.193, p=0.002), *non commercial sources*(β=0.156, t=2.658, p=0.008), *information processing* (β=0.155, t=2.609, p=0.010), *investment horizon* (β=-0.130, t=-2.166, p=0.031), and *task complexity* (β=0.123, t=2.123, p=0.035). Among them *Locus of Control* and *investment horizon* seem to have a negative influence on *representativeness*.

Among the variables explaining *representativeness*, *non-commercial sources* are found to be common across all the three segments of investors.

A graphical representation of the effect of explanatory variables on *representativeness* is given below.

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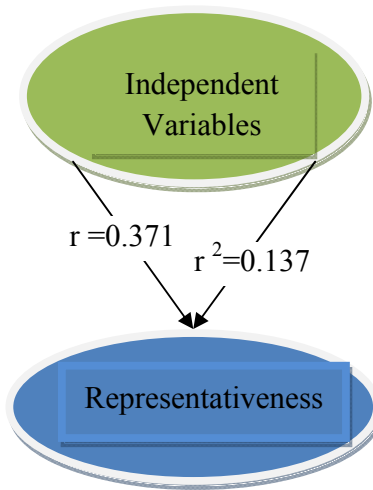
Note: r =Strength, r ^{2}=Proportionate of variance explained
Source: Survey Results

Fig. 4.15: Strength and Proportion of Variance Explained - Representativeness
(Total Sample)
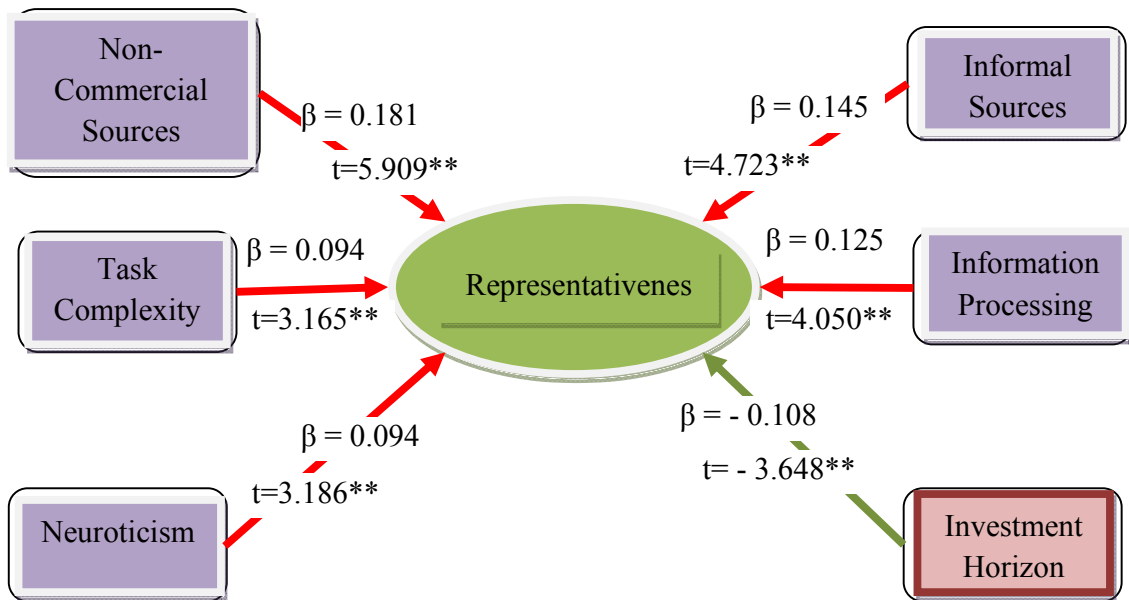
Source: Survey Results

Fig. 4.16: Explanatory Variables for Dependent Variable of Representativeness
(Total Sample)
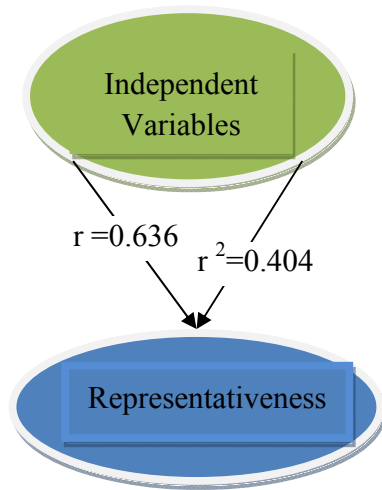
Note: r =Strength, r^2=Proportionate of variance explained
Source: Survey Results

Fig. 4.17: Strength and Proportion of Variance Explained - Representativeness (RA)
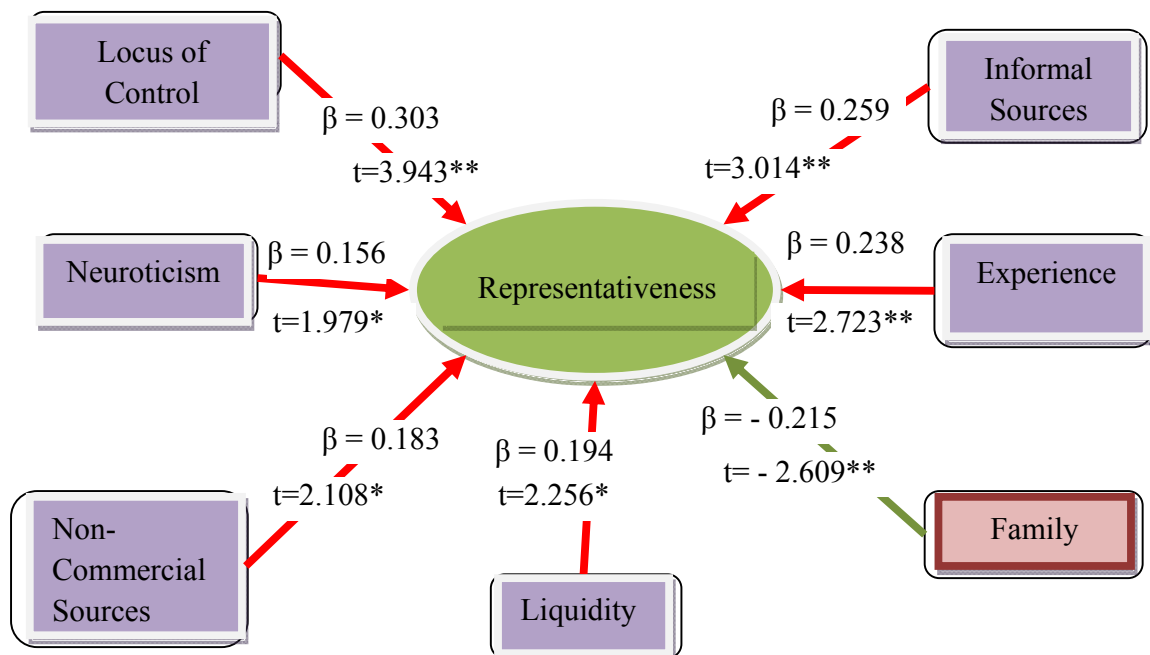
Source: Survey Results

Fig. 4.18: Explanatory Variables for Dependent Variable of Representativeness (RA)
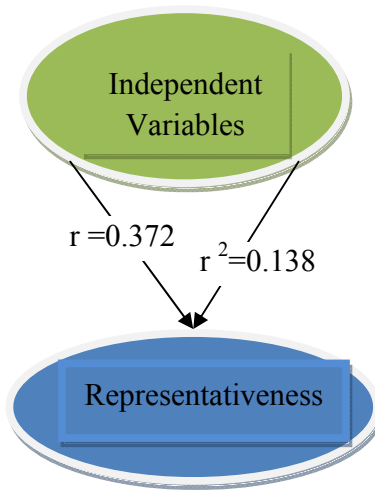
Note: r =Strength, r ^{2}=Proportionate of variance explained
Source: Survey Results
Fig. 4.19: Strength and Proportion of Variance Explained - Representativeness (MRS)
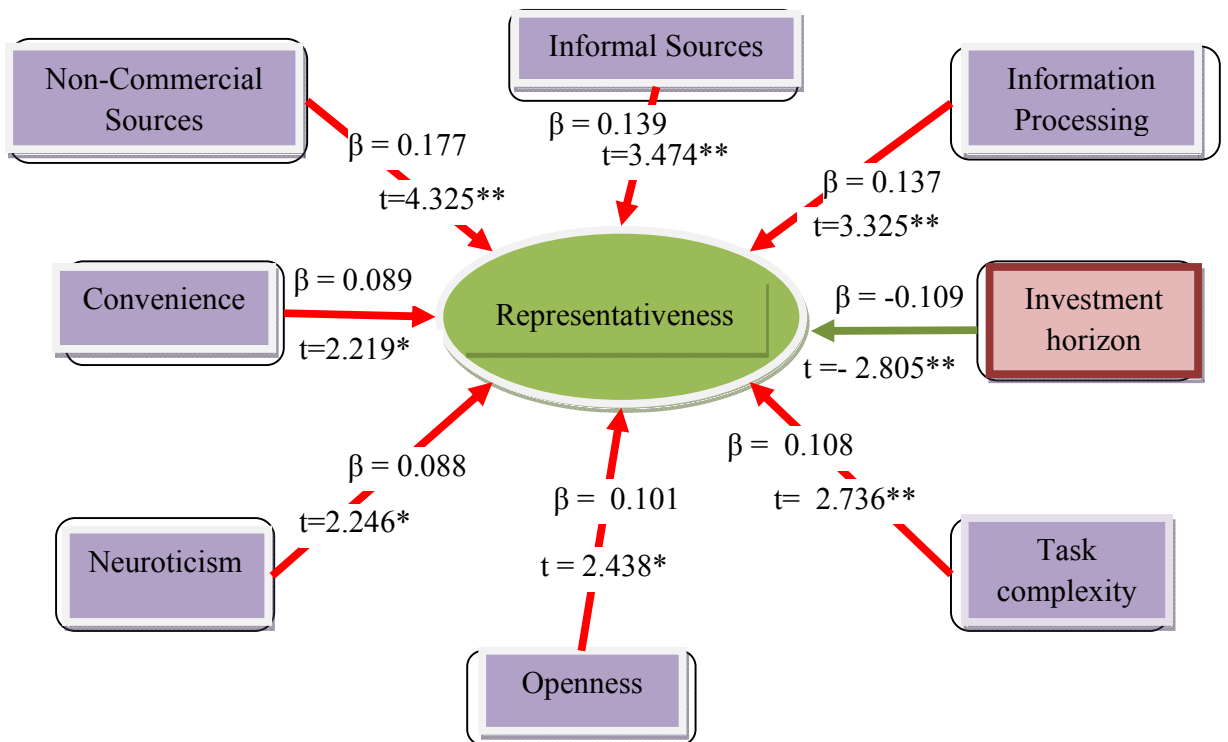
Source: Survey Results
Fig. 4.20: Explanatory Variables for Dependent Variable of Representativeness (MRS)
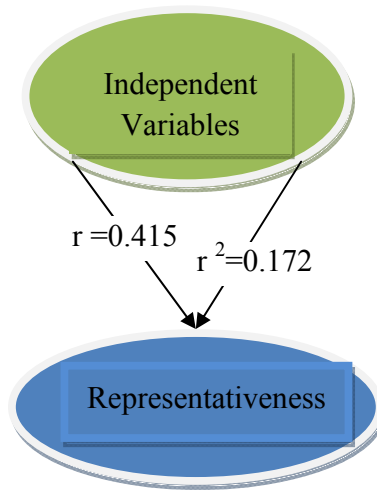
Note: r =Strength, r² =Proportionate of variance explained

Source: Survey Results

Fig. 4.21: Strength and Proportion of Variance Explained – Representativeness (HRS)
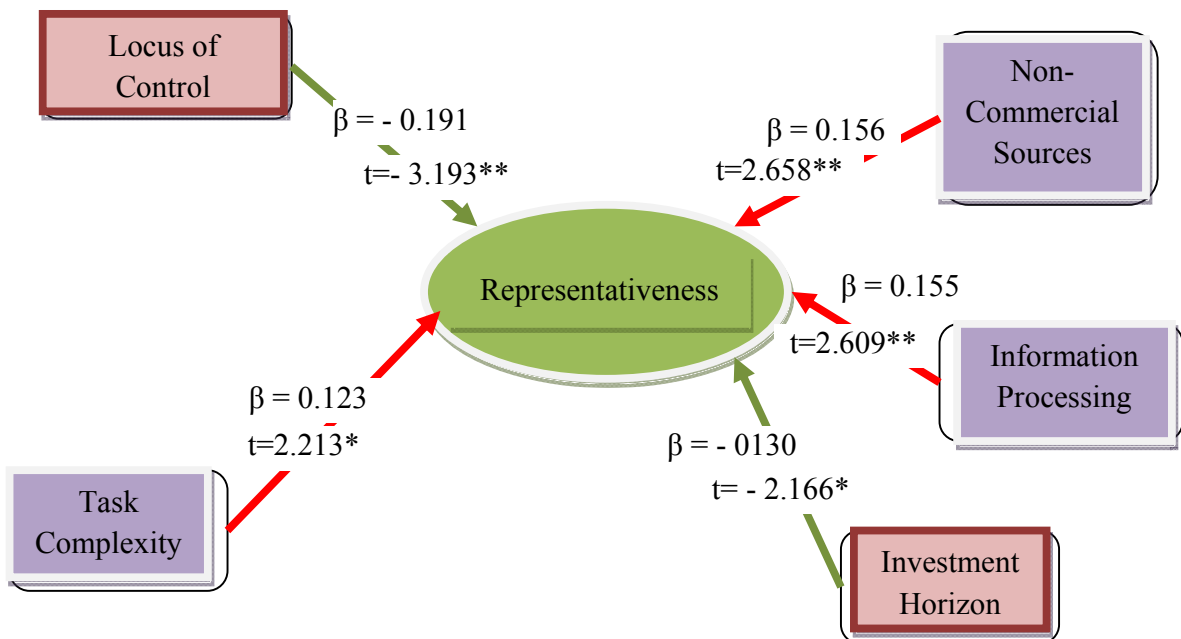
Source: Survey Results

Fig. 4.22 Explanatory Variables for Dependent Variable of Representativeness (HRS)

4.11.2.3 Regression - Framing (Total Sample)

Table 4.58: Model Summary - Framing (Total Sample)

Model	R	R Square	Std Error	F	df1	df2	Sig.
1	0.386	0.149	0.46046	10.907	18	1128	0.000

Table 4.59: ANOVA - Framing (Total Sample)

Model	Sum of squares	df	Mean square	F	Sig.
1 Regression	41.625	18	2.313	10.907	0.000
Residual	238.103	1128	0.212		
Total	279.729	1146			

4.11.2.4 Regression - Framing (Segmented Sample)

Table 4.60: Model Summary - Framing (Segmented Sample)

Risk profile	Model	R	R Square	Std Error	F	df1	df2	Sig.
RA	1	0.625	0.391	0.49688	4.705	18	133	0.000
MRS	1	0.416	0.173	0.42627	7.475	18	647	0.000
HRS	1	0.431	0.186	0.46229	3.942	18	312	0.000

Table 4.61: ANOVA - Framing (Segmented Sample)

| Risk profile	Model	Sum of squares	df	Mean square	F	Sig.
RA	1 Regression	20.908	18	1.162	4.705	0.000
	Residual	32.589	133	0.247		
	Total	53.498	151			
MRS	1 Regression	24.447	18	1.358	7.475	0.000
	Residual	116.654	647	0.182		
	Total	141.101	665			
HRS	1 Regression	15.166	18	0.843	3.942	0.000
	Residual	66.466	312	0.214		
	Total	81.632	330			

Framing $= a + b_1$*Locus of Control $+ b_2$*extraversion $+ b_3$*agreeableness $+ b_4$*conscientiousness $+ b_5$*neuroticism $+ b_6$*openness $+ b_7$*risk $+ b_8$* return $+ b_9$*investment horizon $+ b_{10}$*liquidity $+ b_{11}$*convenience $+ b_{12}$*task complexity $+ b_{13}$*information processing $+ b_{14}$*time constraint $+ b_{15}$*family $+ b_{16}$*non commercial sources $+ b_{17}$*informal sources $+ b_{18}$*experience

Dependent variable = Framing
Method: Enter Method

Table 4.62: Coefficients - Framing

	Total sample	RA	MRS	HRS
Model	Standardised coefficients	Standardised coefficients	Standardised coefficients	Standardised coefficients
	Beta	Beta	Beta	Beta
Locus of Control	0.001	-0.080	0.050	0.002
	(0.046)	(-1.030)	(1.230)	(0.035)
Extraversion	0.061	-0.039	0.048	0.124
	(1.947)	(-0.470)	(1.147)	(2.134)*
Agreeableness	-0.077	-0.039	-0.048	-0.091
	(-2.392)*	(-0.418)	(-1.130)	(-1.519)
Conscientiousness	0.001	-0.128	-0.001	-0.011
	(0.042)	(-1.552)	(-0.013)	(-0.183)
Neuroticism	0.117	0.259	0.047	0.145
	(3.980)**	(3.251)**	(1.233)	(2.566)*
Openness	0.032	0.126	0.043	-0.036
	(1.069)	(1.554)	(1.056)	(-0.645)
Risk	0.103	-0.024	0.177	0.077
	(3.384)**	(-0.306)	(4.319)**	(1.274)
Return	-0.086	-0.280	0.003	-0.053
	(-2.771)**	(-3.170)**	(0.084)	(-0.894)
Investment horizon	-0.064	-0.095	-0.052	-0.022
	(-2.170)*	(-1.188)	(-1.354)	(-0.394)
Liquidity	0.010	-0.044	0.004	0.069
	(0.331)	(-0.507)	(0.095)	(1.196)
Convenience	0.062	0.013	0.071	0.125
	(2.054)*	(0.144)	(1.803)	(2.147)*
Task complexity	-0.112	-0.295	-0.046	-0.019
	(-3.795)**	(-3.495)**	(-1.196)	(-0.334)
Information processing	-0.025	0.116	-0.022	-0.099
Time constraint	(-0.800)	(1.346)	(-0.540)	(-1.675)
	0.211	0.091	0.235	0.238
Family	(6.891)**	(1.093)	(5.933)**	(3.947)**
	0.027	-0.202	0.095	0.042
Non commercial sources	(0.896)	(-2.432)*	(2.394)*	(0.718)
Informal sources	0.173	0.017	0.141	0.236
	(5.661)**	(0.191)	(3.521)**	(4.064)**
Experience	0.004	0.100	0.042	-0.057
	(0.117)	(1.147)	(1.057)	(-0.980)
	-0.007	-0.011	0.018	-0.065
	(-0.214)	(-0.122)	(0.433)	(-1.057)

** Significant at <.01 level
*Significant at < .05 level

Regression analysis proves that the strength of the association between the explanatory variables and *framing* is 0.386. The proportion of variance in *framing* is explained to the

extent of 14.9 percent (R^2=0.149) by the explanatory variables. The F value, $F(18,1128)$ = 10.907 (p=0.000) shows that the overall model applied can statistically significantly explain the outcome variable of *framing*. The coefficients table shows the beta coefficients of the explanatory variables. The 't' test values are given in parentheses and the significance level is indicated using '*' symbol.

From the beta coefficients, it is found that the explanatory variables causing changes in the dependent variable *framing* are found to be *time constraint* (β=0.211, t=6.891, p=0.000), *non commercial sources*(β=0.173, t=5.661, p=0.000), *neuroticism* (β=0.117, t=3.980, p=0.000), *task complexity* (β=-0.112, t=-3.795, p=0.000), *risk* (β=0.103, t=3.384, p=0.001), *return* (β=-0.086, t=-2.771, p=0.006), *agreeableness* (β=-0.077, t=-2.392, p=0.017), *investment horizon* (β=-0.064, t=-2.170, p=0.030), and *convenience* (β=0.062, t=2.054, p=0.040). Among them *task complexity*, *return*, *agreeableness* and *investment horizon* seem to have a negative influence on *framing*.

Segment-wise regression shows that for RA investors the strength of the association between the independent variables and *framing* is 0.625. The proportion of variance in *framing* is explained to the extent of 39.1 percent (R^2 = 0.391) by the explanatory variables. The F value, $F(18,133)$ = 4.705(p=0.000) shows that the overall model applied can statistically significantly explain the outcome variable of *framing*. From the beta coefficients, it is found that he explanatory variables causing changes in the *framing* are found to be *task complexity* (β=-0.295, t=-3.495, p=0.001), *neuroticism* (β=0.259, t=3.251, p=0.001), *return* (β=-0.280, t=-3.170, p=0.002), and *family* (β=-0.202, t=-2.432, p=0.016). Among them *task complexity, return* and *family* have a negative influence on *framing*.

For MRS investors the strength of the association between the explanatory variables and *framing* is 0.416. The proportion of variance in *framing* is explained to the extent of 17.3 percent (R^2 =0.173) by the explanatory variables. The F value, $F(18,647)$ = 7.475 (p=0.000) shows that the overall model applied can statistically significantly explain the

outcome variable of *framing*. From the beta coefficients, it is found that the explanatory variables causing changes in the *framing* are found to be *time constraint* (β=0.235, t=5.933, p=0.000), *risk* (β=0.177, t=4.319, p=0.000), *non-commercial sources*(β=0.141, t=3.521, p=0.000) and *family* (β=0.095, t=2.394, p=0.017).

For HRS investors the strength of the association between the explanatory variables and *framing* is 0.431. The proportion of variance in *framing* is explained to the extent of 18.6 percent (R^2 =0.186) by the explanatory variables. The F value, F(18,312) = 3.942 (p=0.000) shows that the overall model applied can statistically significantly explain the outcome variable of *framing*. From the beta coefficients, it is found that the explanatory variables causing changes in the *framing* are found to be *non-commercial sources*(β=0.236, t=4.064, p=0.000), *time constraint* (β=0.238, t=3.947, p=0.000), *neuroticism* (β=0.145, t=-2.566, p=0.011), *convenience* (β=0.125, t=2.147, p=0.033), and *extraversion* (β=0.124, t=2.134, p=0.034). None of them seem to have a negative influence on *framing*.

A graphical representation of the effect of explanatory variables on *framing* is given below.
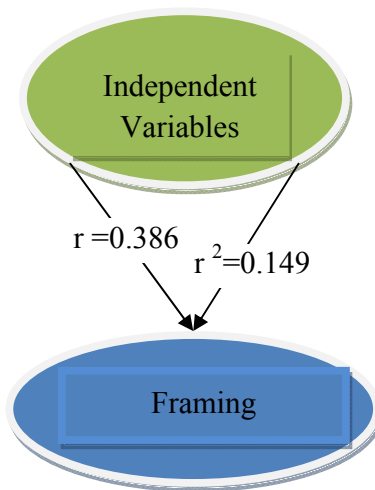
Note: r =Strength, r ^{2}=Proportionate of variance explained
Source: Survey Results

Fig. 4.23: Strength and Proportion of Variance Explained –Framing (Total Sample)
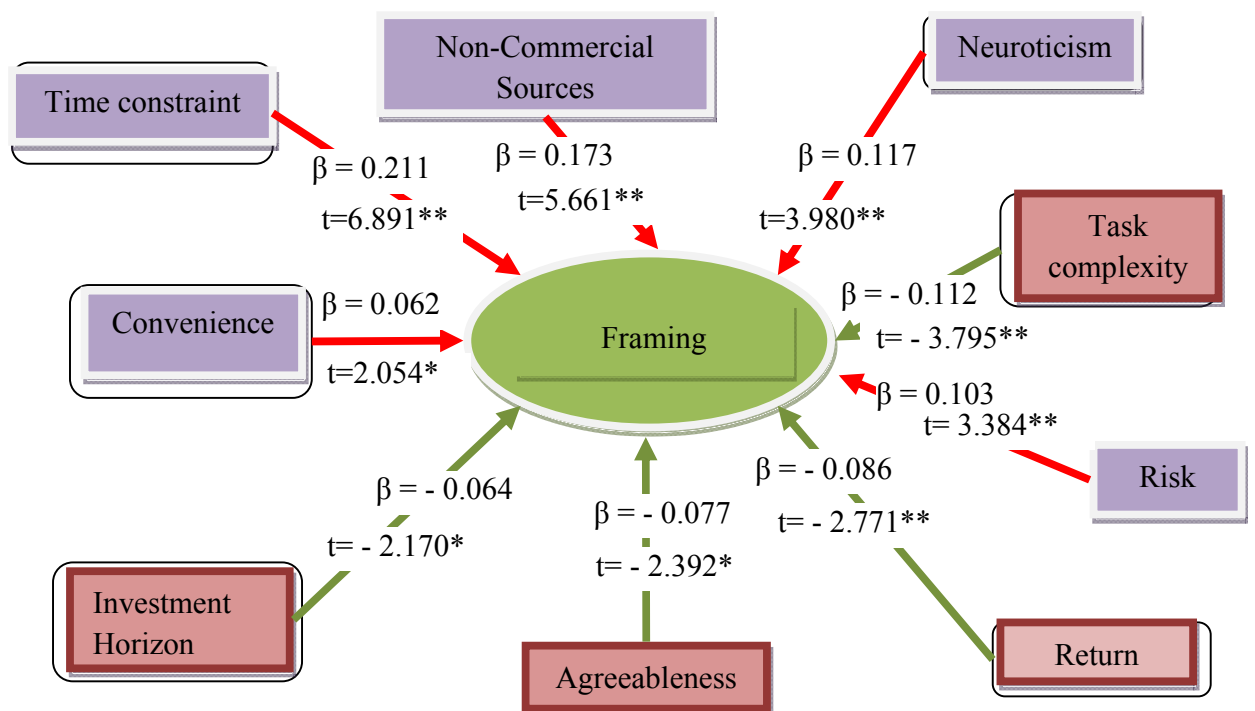
Source: Survey Results

Fig. 4.24: Explanatory Variables for Dependent Variable of Framing (Total Sample)

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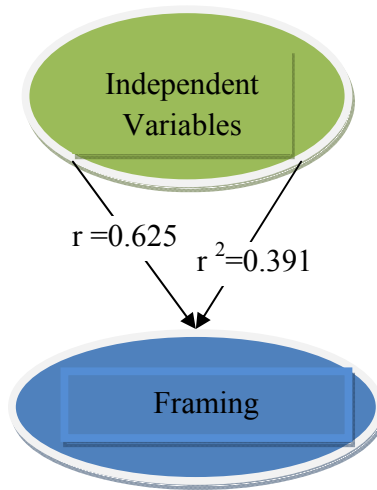
Note: r =Strength, r ^{2}=Proportionate of variance explained
Source: Survey Results
Fig. 4.25: Strength and Proportion of Variance Explained – Framing (RA)
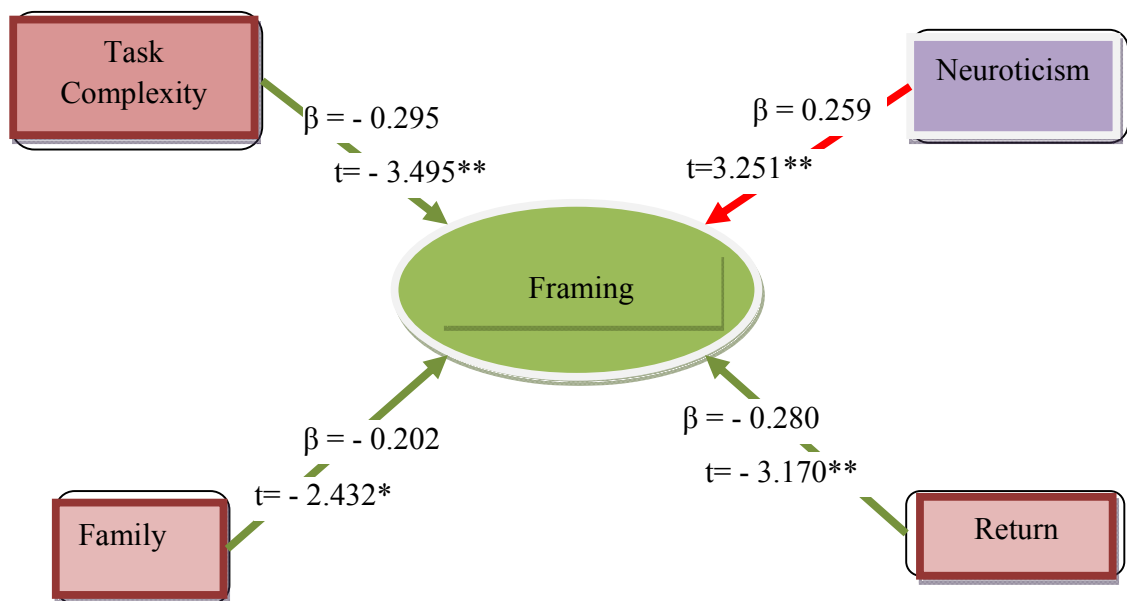
Source: Survey Results

Fig. 4.26: Explanatory Variables for Dependent Variable of Framing (RA)
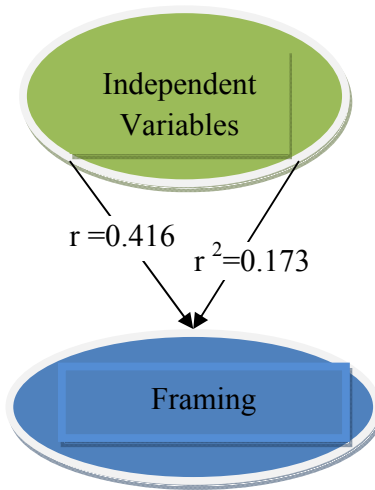
Note: r =Strength, r²=Proportionate of variance explained
Source: Survey Results

Fig. 4.27: Strength and Proportion of Variance Explained –Framing (MRS)
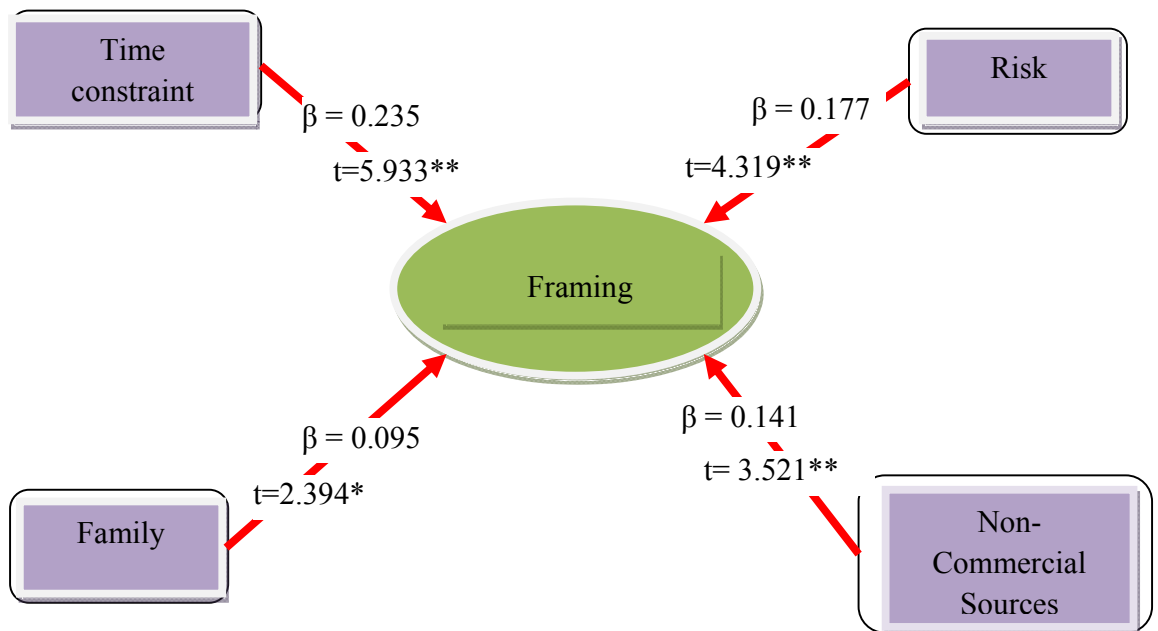
Source: Survey Results

Fig. 4.28: Explanatory Variables for Dependent Variable of Framing (MRS)
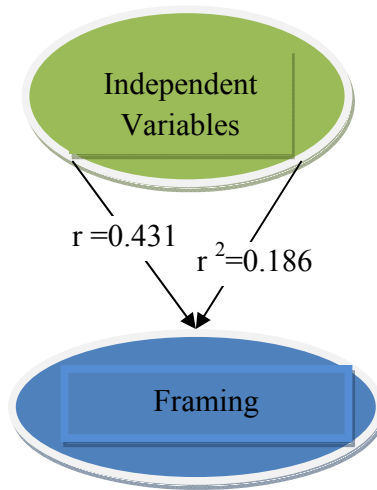
Note: r =Strength, r^2=Proportionate of variance explained

Source: Survey Results

Fig. 4.29: Strength and Proportion of Variance Explained –Framing (HRS)
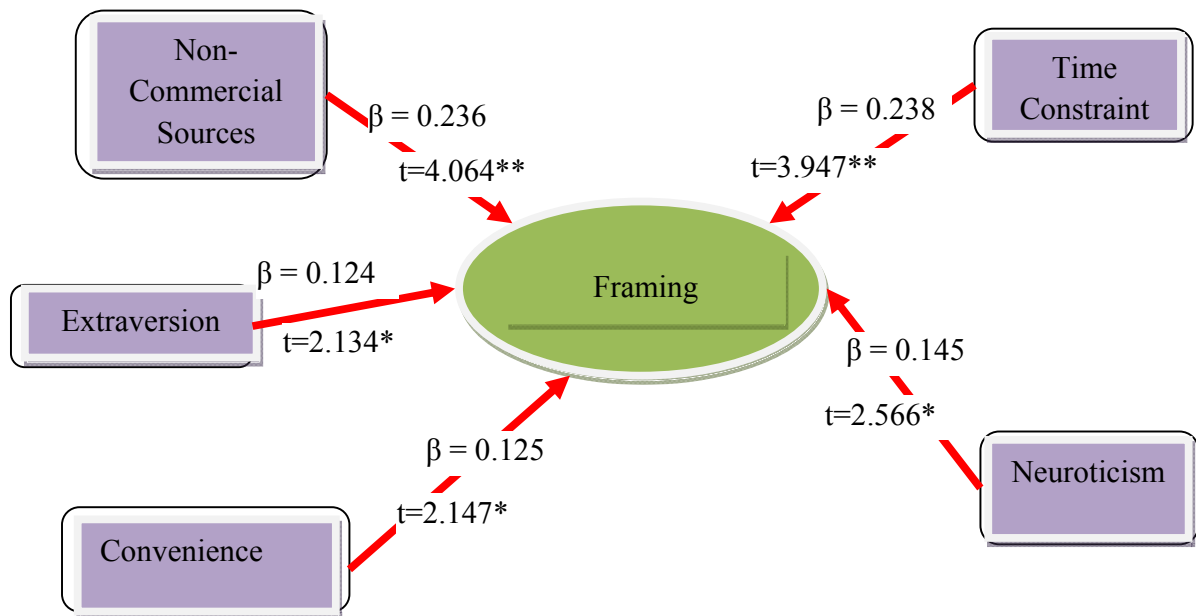
Source: Survey Results

Fig. 4.30: Explanatory Variables for Dependent Variable of Framing (HRS)

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4.11.2.5 Regression - Anchoring (Total Sample)

Table 4.63: Model Summary - Anchoring (Total Sample)

Model	R	R Square	Std Error	F	df1	df2	Sig.
1	0.199	0.040	0.46651	2.573	18	1128	0.000

Table 4.64: ANOVA - Anchoring (Total Sample)

Model	Sum of squares	Df	Mean square	F	Sig.
1 Regression	10.079	18	0.560	2.573	0.000
Residual	244.404	1128	0.218		
Total	254.484	1146			

4.11.2.6 Regression - Anchoring (Segmented Sample)

Table 4.65: Model Summary - Anchoring (Segmented Sample)

Risk profile	Model	R	R Square	Std Error	F	df1	df2	Sig.
RA	1	0.643	0.413	0.44078	5.167	18	133	0.000
MRS	1	0.237	0.056	0.46226	2.126	18	647	0.004
HRS	1	0.293	0.086	0.43560	1.624	18	312	0.053

Table 4.66: ANOVA- Anchoring (Segmented Sample)

Risk profile	Model	Sum of squares	df	Mean square	F	Sig.
RA	1 Regression	18.069	18	1.004	5.167	0.000
	Residual	25.646	133	0.194		
	Total	43.715	151			
MRS	1 Regression	8.176	18	0.454	2.126	0.004
	Residual	137.187	647	0.214		
	Total	145.362	665			
HRS	1 Regression	5.548	18	0.308	1.624	0.053
	Residual	59.012	312	0.190		
	Total	64.560	330			

Anchoring = a + b_1*Locus of Control + b_2*extraversion + b_3*agreeableness + b_4*conscientiousness + b_5*neuroticism + b_6*openness + b_7*risk + b_8* return + b_9*investment horizon + b_{10}*liquidity + b_{11}*convenience + b_{12}*task complexity + b_{13}*information processing + b_{14}*time constraint + b_{15}*family + b_{16}*non commercial sources + b_{17}*informal sources + b_{18}*experience

Dependent variable = Anchoring
Method: Enter Method

Table 4.67: Coefficients (Anchoring)

	Total sample	RA	MRS	HRS
Model	Standardised coefficients	Standardised coefficients	Standardised coefficients	Standardised coefficients
	Beta	Beta	Beta	Beta
Locus of Control	-0.071	-0.254	-0.024	-0.007
	(-2.177)*	(-3.330)**	(-0.561)	(-0.113)
Extraversion	0.074	-0.094	0.108	0.105
	(2.212)*	(-1.141)	(2.428)*	(1.706)
Agreeableness	-0.080	-0.002	-0.058	-0.110
	(-2.342)*	(-0.026)	(-1.290)	(-1.729)
Conscientiousness	0.040	-0.225	0.026	0.091
	(1.220)	(-2.779)**	(0.576)	(1.483)
Neuroticism	0.042	0.153	0.002	0.034
	(1.338)	(1.954)	(0.037)	(0.560)
Openness	0.023	0.169	0.046	-0.132
	(0.709)	(2.126)*	(1.061)	(-2.209)*
Risk	0.038	0.004	0.046	0.089
	(1.180)	(0.052)	(1.059)	(1.390)
Return	-0.003	-0.233	0.064	0.094
	(-0.082)	(-2.691)**	(1.480)	(1.480)
Investment horizon	0.002	0.008	0.032	-0.093
	(0.059)	(0.098)	(0.790)	(-1.470)
Liquidity	0.045	-0.002	0.055	0.051
	(1.414)	(-0.025)	(1.300)	(0.831)
Convenience	-0.014	-0.167	0.060	-0.071
	(-0.451)	(-1.858)	(1.427)	(-1.151)
Task complexity	-0.037	-0.221	0.052	0.001
	(-1.163)	(-2.665)**	(1.267)	(0.016)
Information processing	0.064	0.237	0.062	-0.017
	(1.968)*	(2.815)**	(1.426)	(-0.271)
Time constraint	-0.087	-0.159	-0.042	-0.163
	(-2.681)**	(-1.948)	(-0.982)	(-2.545)*
Family	0.068	0.207	0.026	0.089
	(2.120)*	(2.534)*	(0.618)	(1.447)
Non commercial sources	-0.059	-0.276	0.002	-0.113
	(-1.828)	(-3.201)**	(0.045)	(-1.841)
Informal sources	0.082	0.352	0.074	0.011
	(2.519)*	(4.124)**	(1.760)	(0.177)
Experience	0.028	0.093	-0.021	0.095
	(0.835)	(1.068)	(-0.478)	(1.461)

** Significant at <.01 level
*Significant at < .05 level

Regression analysis shows that the strength of the association between the explanatory variables and *anchoring* is 0.199. The proportion of variance in *anchoring* is explained to the extent of 4 percent (R^2 =0.040) by the explanatory variables. The F value, $F(18,1128) = 2.573$ (p=0.000) shows that the overall model applied can statistically significantly explain the outcome variable of *anchoring*. The coefficients table shows the beta coefficients of the explanatory variables. The 't' test values are given in parentheses and the significance level is indicated using '*' symbol.

From the beta coefficients, it is found that the explanatory variables causing changes in the *anchoring* are found to be *time constraint* (β=-0.087, t=-2.681, p=0.007), *informal sources* (β=0.082, t=2.519, p=0.012), *agreeableness* (β=-0.080, t=-2.342, p=0.019), *extraversion* (β=0.074, t=2.212, p=0.027), *Locus of Control* (β=-0.071, t=-2.177, p=0.030), *family* (β=0.068, t=-2.120, p=0.034) and *information processing* (β=0.064, t=1.968, p=0.049). Among them, *time constraint, agreeableness* and *Locus of Control* have a negative influence on *anchoring*.

Segment-wise regression shows that for RA investors the strength of the association between the predicator variables and *anchoring* is 0.643. The proportion of variance in *anchoring* is explained to the extent of 41.3 percent (R^2 =0.413) by the explanatory variables. The F value, $F(18,133) = 5.167$(p=0.000) shows that the overall model applied can statistically significantly explain the outcome variable of *anchoring*. From the beta coefficients, it is found that the explanatory variables causing changes in *anchoring* are found to be *informal sources* (β=0.352, t=4.124, p=0.000), *Locus of Control* (β=-0.254, t=-3.330, p=0.001), *non-commercial sources* (β=-0.276, t=-3.201, p=0.002), *information processing* (β=0.237, t=2.815, p=0.006), *conscientiousness* (β=-0.225, t=-2.779, p=0.006), *return* (β=-0.233, t=-2.691, p=0.008), *task complexity* (β=-0.221, t=-2.665 p=0.009), *family* (β=0.207, t=2.534, p=0.012) and *openness* (β=0.169, t=2.126, p=0.035). Among them *Locus of Control, non commercial sources, conscientiousness, return* and *task complexity* have a negative influence on *anchoring*.

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For MRS investors the strength of the association between the predicator variables and *anchoring* is 0.237. The proportion of variance in *anchoring* is explained to the extent of 5.6 percent (R^2 =0.056) by the explanatory variables. The F value, F(18,647) = 2.126 (p=0.004) shows that the overall model applied can statistically significantly explain the outcome variable of *anchoring*. From the beta coefficients, it is found that the explanatory variables causing changes in the *anchoring* are found to be only *extraversion* (β=0.108, t=2.428, p=0.015). It has a positive influence on *anchoring*.

For HRS investors the strength of the association between the predicator variables and *anchoring* is 0.293. The proportion of variance in *anchoring* is explained to the extent of 8.6 percent (R^2 =0.086) by the explanatory variables. The F value, F(18,312) = 1.624 (p=0.053) shows that the overall model applied cannot statistically significantly explain the outcome variable of *anchoring*.

A graphical representation of the effect of explanatory variables on *anchoring* is given below.
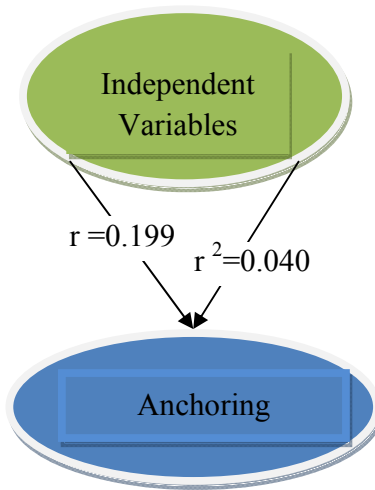
Note: *r =Strength, r^2=Proportionate of variance explained*
Source: Survey Results

Fig. 4.31: Strength and Proportion of Variance Explained - Anchoring (Total Sample)
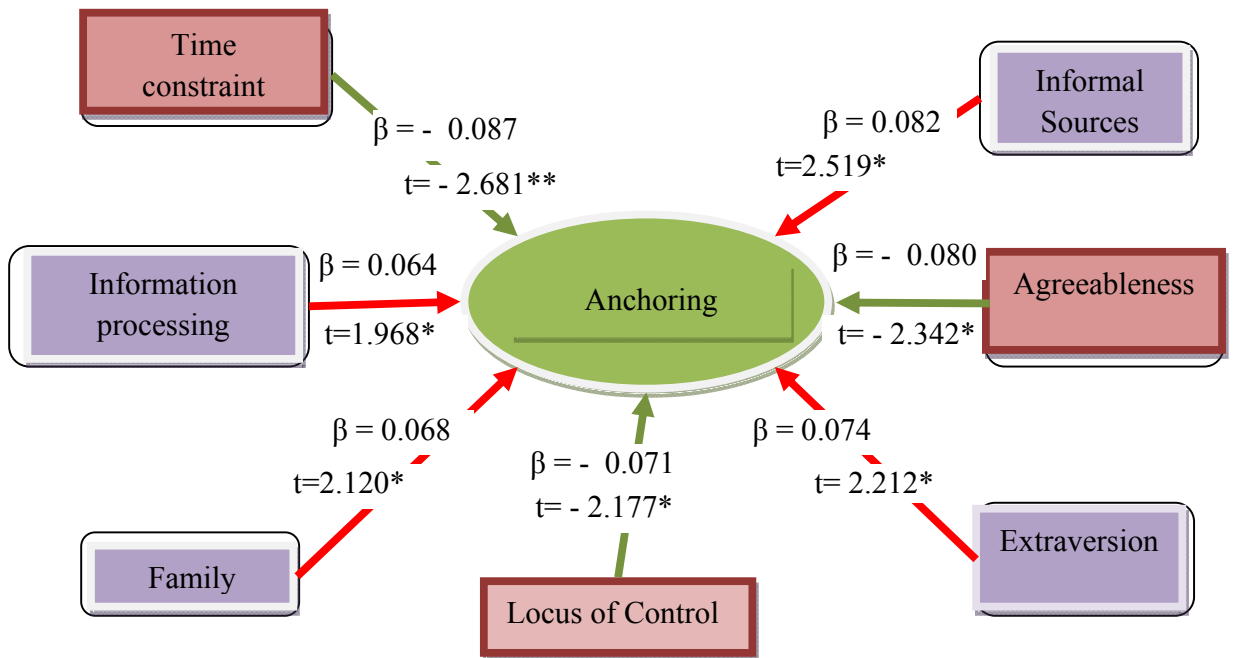
Source: Survey Results
Fig. 4.32: Explanatory Variables for Dependent Variable of Anchoring (Total Sample)

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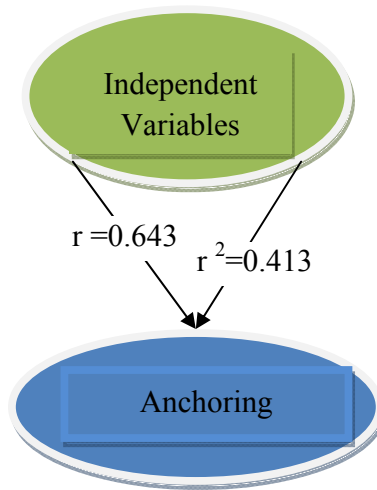
Note: r =Strength, r ²=Proportionate of variance explained
Source: Survey Results

Fig. 4.33: Strength and Proportion of Variance Explained – Anchoring (RA)
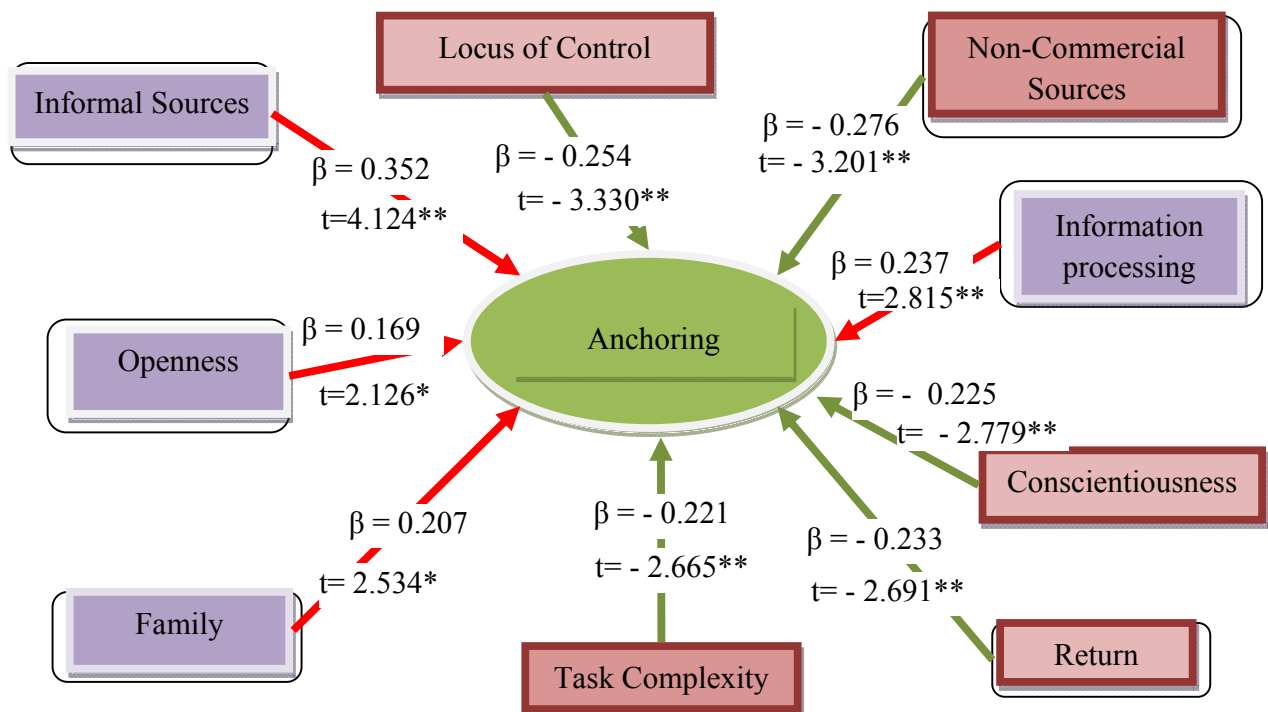
Source: Survey Results
Fig. 4.34: Explanatory Variables for Dependent Variable of Anchoring (RA)

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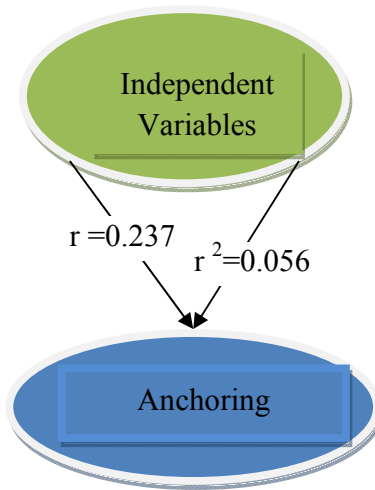
Note: *r =Strength, r²=Proportionate of variance explained. Source: Survey Results*
Fig. 4.35: Strength and Proportion of Variance Explained - Anchoring (MRS)
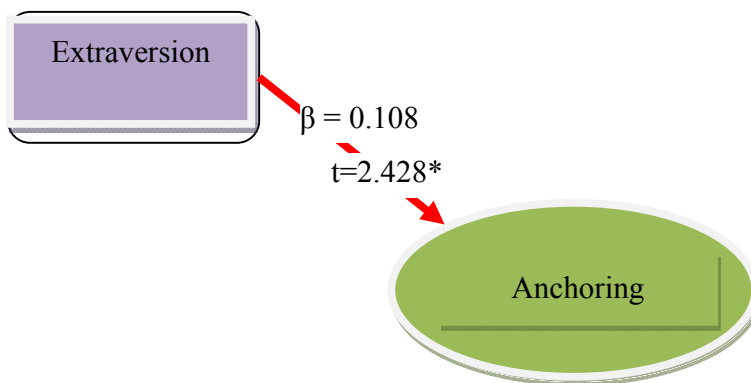
Source: Survey Results
Fig. 4.36: Explanatory Variables for Dependent Variable of Anchoring (MRS)

Independent
Variables

r =0.293

r^2=0.086
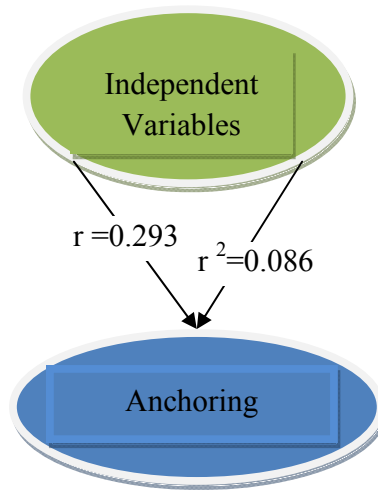
Anchoring

Note: r =Strength, r^2=Proportionate of variance explained
Source: Survey Results

Fig. 4.37: Strength and Proportion of Variance Explained – Anchoring (HRS)

None of the factors significantly explain the outcome variable of anchoring (HRS)

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4.11.2.7 Regression - Loss Aversion (Total Sample)

Table 4.68: Model Summary – Loss Aversion (Total Sample)

Model	R	R Square	Std Error	F	df1	df2	Sig.
1	0.318	0.101	0.305	7.014	18	1128	0.000

Table 4.69: ANOVA – Loss aversion (Total Sample)

Model	Sum of squares	df	Mean square	F	Sig.
1 Regression	11.770	18	0.654	7.014	0.000
Residual	104.687	1128	0.093		
Total	116.457	1146			

4.11.2.8 Regression - Loss Aversion (Segmented Sample)

Table 4.70: Model Summary - Loss Aversion (Segmented Sample)

Risk profile	Model	R	R Square	Std Error	F	df1	df2	Sig.
RA	1	0.420	0.176	0.310	1.571	18	133	0.077
MRS	1	0.359	0.129	0.304	5.293	18	647	0.000
HRS	1	0.410	0.168	0.293	3.495	18	312	0.000

Table 4.71: ANOVA - Loss Aversion (Segmented Sample)

Risk profile	Model	Sum of squares	df	Mean square	F	Sig.
RA	1 Regression	2.709	18	0.151	1.571	0.077
	Residual	12.648	133	0.096		
	Total	15.357	151			
MRS	1 Regression	8.812	18	0.490	5.293	0.000
	Residual	59.379	647	0.092		
	Total	68.191	665			
HRS	1 Regression	5.389	18	0.299	3.495	0.000
	Residual	26.642	312	0.086		
	Total	32.030	330			

Loss aversion = a + b_1*Locus of Control + b_2*extraversion + b_3*agreeableness + b_4*conscientiousness + b_5*neuroticism + b_6*openness + b_7*risk + b_8* return + b_9*investment horizon + b_{10}*liquidity + b_{11}*convenience + b_{12}*task complexity + b_{13}*information processing + b_{14}*time constraint + b_{15}*family + b_{16}*non commercial sources + b_{17}*informal sources + b_{18}*experience

Dependent variable = Loss Aversion
Method: Enter Method

Table 4.72: Coefficients (Loss Aversion)

Model	Total sample Standardised coefficients Beta	RA Standardised coefficients Beta	MRS Standardised coefficients Beta	HRS Standardised coefficients Beta
Locus of Control	0.120 (3.832)**	0.221 (2.446)*	0.141 (3.400)**	0.004 (0.067)
Extraversion	0.097 (3.016)**	0.019 (0.193)	0.079 (1.844)	0.196 (3.356)**
Agreeableness	-0.072 (-2.193)*	-0.007 (-0.068)	-0.017 (-0.392)	-0.184 (-3.030)**
Conscientiousness	-0.038 (-1.189)	0.130 (1.358)	-0.080 (-1.869)	-0.080 (-1.365)
Neuroticism	0.137 (4.556)**	0.096 (1.042)	0.148 (3.739)**	0.145 (2.524)*
Openness	0.057 (1.832)	0.146 (1.550)	0.082 (1.961)*	-0.045 (-0.784)
Risk	0.089 (2.836)**	0.123 (1.371)	0.070 (1.661)	0.123 (2.030)*
Return	0.030 (0.945)	-0.019 (-0.188)	0.095 (2.274)*	-0.051 (-0.852)
Investment horizon	-0.019 (-0.620)	0.131 (1.411)	0.003 (0.080)	-0.122 (-2.017)*
Liquidity	-0.042 (-1.353)	0.142 (1.408)	-0.041 (-1.022)	-0.119 (-2.043)*
Convenience	0.037 (1.182)	-0.018 (-0.174)	0.068 (1.691)	0.051 (0.869)
Task complexity	0.166 (5.448)**	0.069 (0.701)	0.175 (4.433)**	0.219 (3.767)**
Information processing	0.051 (1.606)	-0.015 (-0.152)	0.059 (1.410)	0.102 (1.719)
Time constraint	-0.031 (-0.985)	-0.070 (-0.719)	-0.015 (-0.358)	-0.029 (-0.478)
Family	-0.114 (-3.665)**	-0.030 (-0.312)	-0.157 (-3.837)**	-0.115 (-1.970)*
Non commercial sources	-0.056 (-1.800)	-0.068 (-0.662)	-0.061 (-1.485)	0.036 (0.621)
Informal sources	-0.020 (-0.626)	-0.269 (-2.666)**	0.026 (0.634)	0.026 (0.439)
Experience	-0.018 (-0.550)	-0.035 (-0.341)	-0.034 (-0.812)	0.042 (0.684)

** Significant at <.01 level
*Significant at < .05 level

Regression analysis is performed to evaluate the effect of explanatory variables on *loss aversion*. The strength of the association between the predicator variables and *loss aversion* is 0.318. The proportion of variance in *loss aversion* is explained to the extent of 10.1 percent (R^2 =0.101) by the explanatory variables. The F value, $F(18,1128) = 7.014$ (p=0.000) shows that the overall model applied can statistically significantly explain the outcome variable of *loss aversion*. The coefficients table shows the beta coefficients of the explanatory variables. The 't' test values are given in parentheses and the significance level is indicated using '*' symbol.

From the beta coefficients it is found that the explanatory variables causing changes in *loss aversion* are found to be *task complexity* (β=0.166, t=5.448, p=0.000), *neuroticism* (β=0.137, t=4.556, p=0.000), *Locus of Control* (β=0.120, t=3.832, p=0.000), *family* (β=-0.114, t=-3.665, p=0.000), *extraversion* (β=0.097, t=3.016, p=0.003), *risk* (β=0.089, t=2.836, p=0.005) and *agreeableness* (β=-0.072, t=-2.193, p=0.029). Among them *family* and *agreeableness* have a negative influence on *loss aversion*.

Segment-wise regression shows that for RA investors the strength of the association between the predicator variables and *loss aversion* is 0.420. The proportion of variance in *loss aversion* is explained to the extent of 17.6 percent (R^2 =0.176) by the explanatory variables. The F value, $F(18,133) = 1.571$ (p=0.077) shows that the overall model applied cannot statistically significantly explain the outcome variable of *loss aversion*.

For MRS investors the strength of the association between the predicator variables and *loss aversion* is 0.359. The proportion of variance in *loss aversion* is explained to the extent of 12.9 percent (R^2 =0.129) by the explanatory variables. The F value, $F(18,647) = 5.293$ (p=0.000) shows that the overall model applied can statistically significantly explain the outcome variable of *loss aversion*. From the beta coefficients, it is found that the explanatory variables causing changes in the *loss aversion* are found to be *task complexity* (β=0.175, t=4.433, p=0.000), *family* (β=-0.157, t=-3.837, p=0.000), *neuroticism* (β=0.148, t=3.739, p=0.000), *Locus of Control* (β=0.141, t=3.400, p=0.001),

return (β=0.095, t=2.274, p=0.023) and *openness* (β=0.082, t=1.961, p=0.050). Among them *family* seems to have a negative influence on *loss aversion.*

For HRS investors the strength of the association between the predicator variables and *loss aversion* is 0.410. The proportion of variance in *loss aversion* is explained to the extent of 16.8 percent (R^2=0.168) by the explanatory variables. The F value, F(18,312) = 3.495 (p=0.000) shows that the overall model applied can statistically significantly explain the outcome variable of *loss aversion*. From the beta coefficients, it is found that the explanatory variables causing changes in the *loss aversion* are found to be *task complexity* (β=0.219, t=3.767, p=0.000), *extraversion* (β=0.196, t=3.356, p=0.001), *agreeableness* (β=-0.184, t=-3.030, p=0.003), *neuroticism* (β=0.145, t=2.524, p=0.012), *liquidity* (β=-0.119, t=-2.043, p=0.042), *risk* (β=0.123, t=2.030, p=0.043), *investment horizon* (β=-0.122, t=-2.017, p=0.045) and *family* (β=-0.115, t=-1.970, p=0.05). Among them *agreeableness, liquidity, investment horizon* and *family* have a negative influence on *loss aversion*.

A graphical representation of the effect of explanatory variables on *loss aversion* is given below.
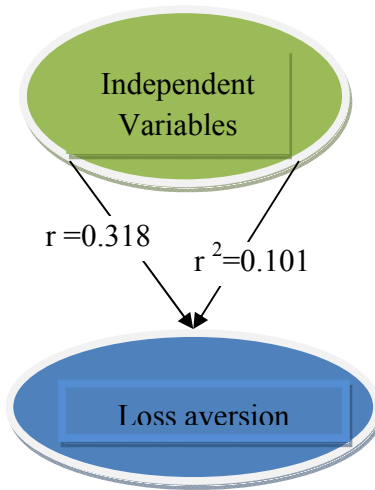
Fig. 4.38: Strength and Proportion of Variance Explained – Loss Aversion (Total Sample)
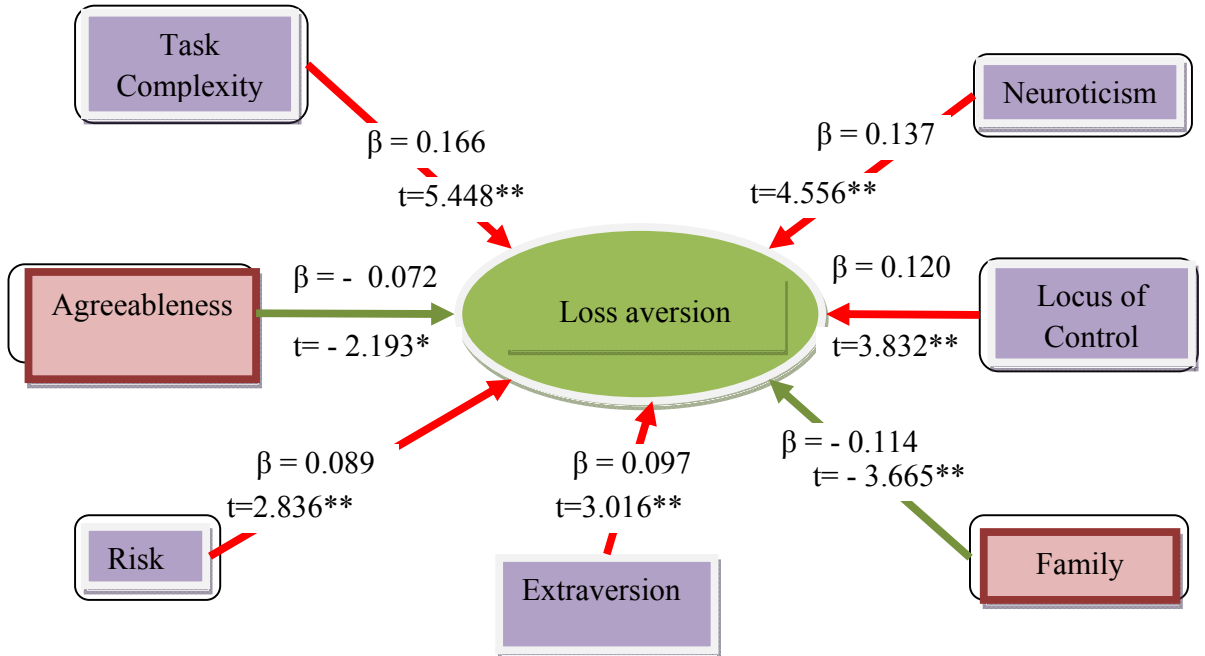
Fig. 4.39: Explanatory Variables for Dependent Variable of Loss aversion (Total Sample)
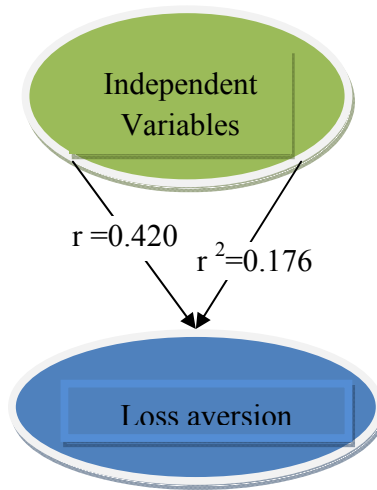
   Fig. 4.40: Strength and Proportion of Variance Explained – Loss Aversion (RA)

None of the factors significantly explain the outcome variable of Loss aversion (RA)
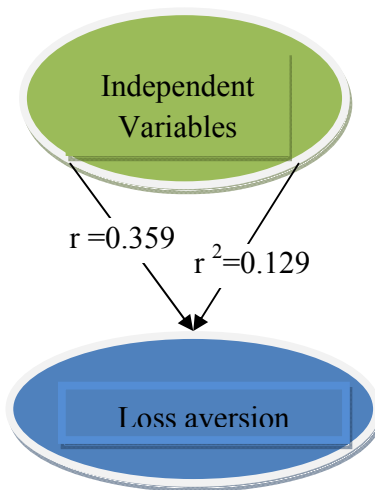
Note: r =Strength, r ^{2}=Proportionate of variance explained
Source: Survey Results

Fig. 4.41: Strength and Proportion of Variance Explained – Loss Aversion (MRS)
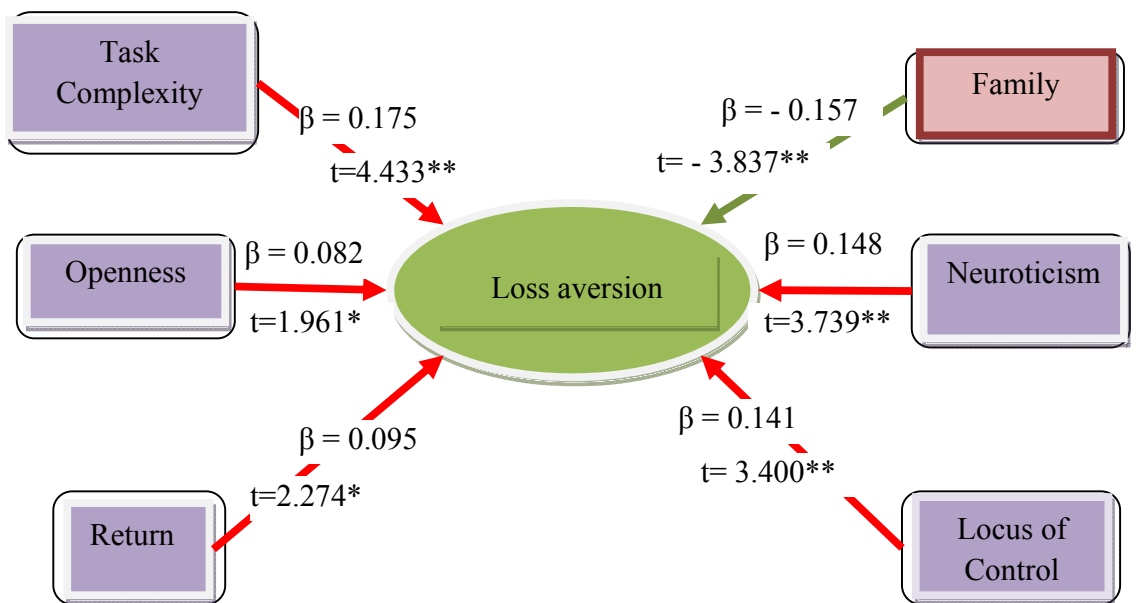
Source: Survey Results

Fig. 4.42: Explanatory Variables for Dependent Variable of Loss Aversion (MRS)

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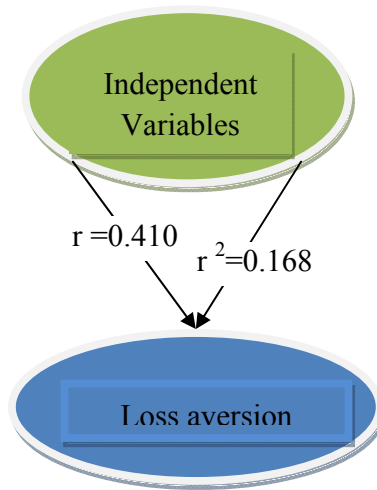
Note: r =Strength, r 2=Proportionate of variance explained

Source: Survey Results

Fig. 4.43: Strength and Proportion of Variance Explained – Loss Aversion (HRS)
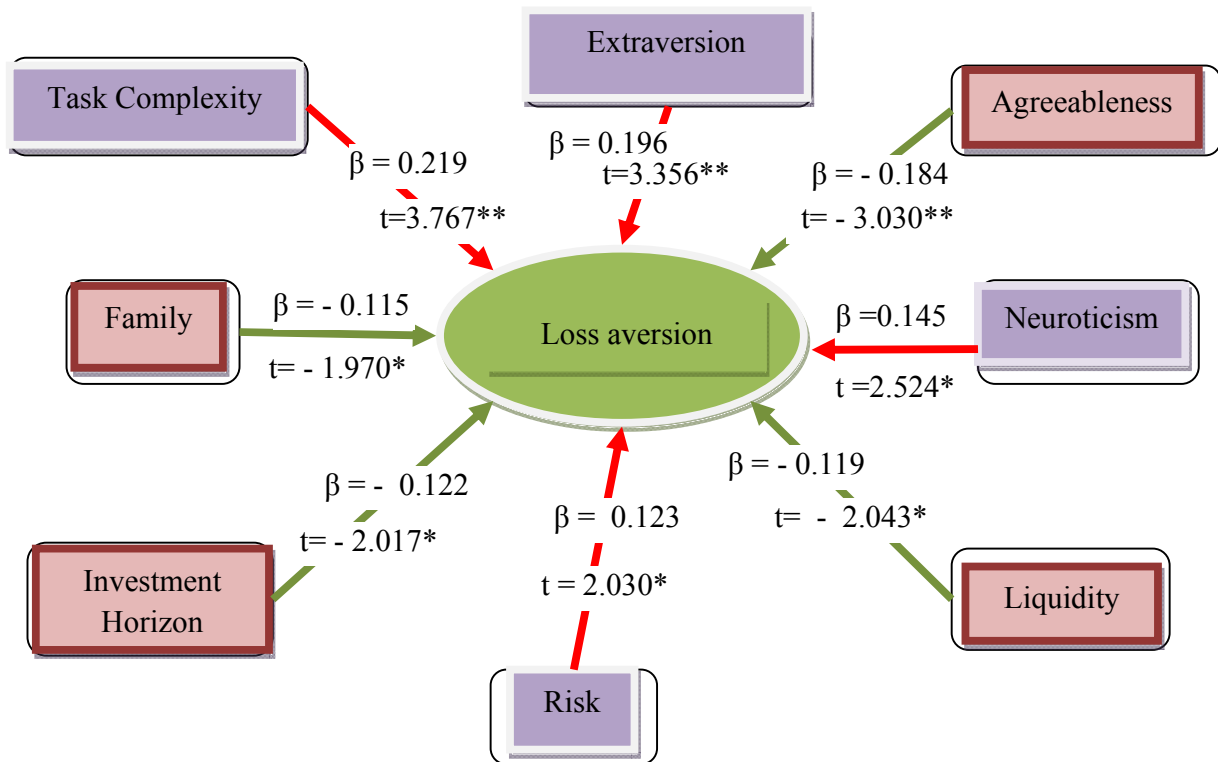
Source: Survey Results

Fig. 4.44: Explanatory Variables for Dependent Variable of Loss Aversion (HRS)

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4.12 Analysis of Intermediaries' Opinion

The financial services industry is fluid and evolving. The consumers are free to choose a service provider be it a bank, a brokerage firm or a financial planner. To a large extent most Indian individual investors do not seek the advice of finance professionals. Beyond the insurance segment, advisory service in the financial sector is still in its nascent stage. With the advent of the mutual fund and insurance industries some brokerage firms began marketing mutual funds and insurance products. Slowly banks began cross-selling mutual funds and insurance along with traditional financial products. Yet financial planning for the entire life-cycle of the individual is almost unheard of. With the growth of the high net worth individuals (HNIs) in India, multinational banks and large brokerage firms began offering wealth management services. Further, considering that the HNI segment is poised to grow, there are more institutions and individuals hoping to tap this segment with wealth management and financial planning services. Today there are certification programs for individuals to become certified financial planners (CFP) and offer financial planning services to consumers who are willing to avail of such services. Since this study is based on IDM of urban individual investors who are customers of financial intermediaries, it was decided to do an in depth survey of a few of such intermediaries in order to better understand the factors that influence the IDM of individual investors. The main objective of these interviews is to obtain further insight into the decision making behavior of urban individual investors. The data is analyzed using percentages and thereafter using specific themes.

The researcher sought to obtain views from a cross-section of the intermediaries across type of business, location and age. The intermediaries are chosen using referral method or snowball sampling. The researcher personally interviewed all the respondents either face-to-face or through telephone with prior appointment. The researcher initially sought answers to a list of questions and then allowed the respondents to speak about topics which they perceived as important.

Table 4.73 given below shows the profile of the intermediaries. Among the intermediaries 55 percent are running their own firms being independent financial planners or stock brokers. 60 percent of them are over the age of 40 years. All of them are educated with 35 percent holding a management degree.

Table 4.73: Intermediaries' Profile

Type of intermediary	No. of intermediaries	%	Location	No. of intermediaries	%
Independent financial planners	14	35.0	Mumbai	6	15.0
Independent stock brokers	8	20.0	Delhi	3	7.5
Wealth managers in banks	5	12.5	Ahmedabad	5	12.5
Executive in multi-branch stock broking firm	7	17.5	Baroda	5	12.5
Executive in exclusive wealth management firm	6	15.0	Mangalore	4	10.0
Total	40	100.0	Chennai	3	7.5
Age			Bangalore	5	12.5
21-30	2	5.0	Kochi	5	12.5
31-40	14	35.0	Kolkata	4	10.0
41-50	17	42.5	Total	40	100.0
51-60	7	17.5	**Education**		
Total	40	100.0	Graduate	21	52.5
Gender			MBA	10	25.0
Male	37	92.5	Engineer with MBA	4	10.0
Female	3	7.5	Chartered accountant	5	12.5
Total	40	100.0	Total	40	100.0

Source: survey data

In order to identify the extent to which the intermediaries' opinion confirmed the findings of the survey data, certain questions regarding the profile of individual clients were posed to them. The following are the responses of the intermediaries to the questions posed to them.

Table 4.74: Responses of Intermediaries' to Questions Regarding the Profile of Individual Clients

	Questions posed		Yes	No	Don't know	Total
1	Does financial risk tolerance differ between individuals and affect their IDM?	No. of respondents	24	14	2	40
		Percentage	60	35	5	100
2	Does location of the individual affect IDM?	No. of respondents	32	7	1	40
		Percentage	80	17.5	2.5	100
3	Does gender affect IDM?	No. of respondents	36	4	0	40
		Percentage	90	10	0	100
4	Does age affect IDM?	No. of respondents	37	0	3*	40
		Percentage	92.5	7.5	0	100
5	Does education affect IDM?	No. of respondents	20	13	7*	40
		Percentage	50	32.5	17.5	100
6	Does financial literacy affect IDM?	No. of respondents	8	30	2	40
		Percentage	20	75	5	100
7	Does marital status affect IDM?	No. of respondents	16	6	18	40
		Percentage	40	15	45	100
8	Does family size affect IDM?	No. of respondents	11	13	16	40
		Percentage	27.5	32.5	40	100
9	Does having children affect IDM?	No. of respondents	13	12	15	40
		Percentage	32.5	30	37.5	100
10	Does work experience affect IDM?	No. of respondents	1	39	0	40
		Percentage	2.5	97.5	0	100
sometimes						

Table 4.74 continued						
11	Does occupation affect IDM?	No. of respondents	3	35	2	40
		Percentage	7.5	87.5	5	100
12	Does annual income affect IDM?	No. of respondents	40	0	0	40
		Percentage	100	0	0	100
13	Does number of years of investing affect IDM?	No. of respondents	37	2	1	40
		Percentage	92.5	5	2.5	100
14	Is family consulted while making investment decisions?	No. of respondents	5	18	17	40
		Percentage	12.5	45	42.5	100
15	Do investors read financial newspapers before making investment decisions?	No. of respondents	30	5	5	40
		Percentage	75	12.5	12.5	100
16	Are investors influenced by business TV channels before making investment decisions?	No. of respondents	35	3	2	40
		Percentage	87.5	7.5	5	100
17	Do investors read financial magazines before making investment decisions?	No. of respondents	30	7	3	40
		Percentage	75	17.5	7.5	100
18	Do investors consult intermediary before making investment decisions?	No. of respondents	39	0	1[*]	40
		Percentage	97.5	0	2.5	100
19	Do investors consult friends/peers/colleagues before making investment decisions?	No. of respondents	29	4	7	40
		Percentage	72.5	10	17.5	100
20	Do investors browse internet before making investment decisions?	No. of respondents	32	7	1	40
		Percentage	80	17.5	2.5	100
21	Does investors past experience affect IDM?	No. of respondents	37	2	1	40
		Percentage	92.5	5	2.5	100
* sometimes						

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Table 4.74 continued						
22	Do investors specifically seek risky/riskless investments?	No. of respondents	37	3	0	40
		Percentage	92.5	7.5	0	100
23	Do investors seek specific return on investments?	No. of respondents	38	1	1*	40
		Percentage	95	2.5	2.5	100
24	Do investors seek liquidity while investing?	No. of respondents	11	15	14*	40
		Percentage	27.5	37.5	35	100
25	Are investors particular about time period of investments?	No. of respondents	14	14	12*	40
		Percentage	35	35	30	100
26	Are investors particular about convenience while investing?	No. of respondents	15	14	11	40
		Percentage	37.5	35	27.5	100
27	Do investors find the task of IDM complex?	No. of respondents	33	5	2	40
		Percentage	82.5	12.5	2	100
28	Do the investors process the information about financial matters well?	No. of respondents	8	29	3	40
		Percentage	20	72.5	7.5	100
29	Do the investors experience time constraint?	No. of respondents	34	3	3	40
		Percentage	85	7.5	7.5	100
sometimes						

Source: survey data

In the light of the data obtained from an in depth interview of the intermediaries on the IDM of individual investors it was found that

- All intermediaries agreed that income influences IDM.
  - Exactly 95 percent of the intermediaries agreed that individual investors seek specific return on their investments (i.e. the minimum cut-off return).

- Precisely 92.5 percent of the intermediaries agreed that investors specify whether they want to invest in risky or riskless securities.

- Specifically 82.5 percent of the intermediaries agreed that individuals find the IDM task complex and 85 percent agreed that individuals face time constraint. 72.5 percent said that individuals do not organize financial information very well.

- Exactly 60 percent of the intermediaries agreed that financial risk tolerance differs between individuals and affects IDM.

- Closely 75 percent or more intermediaries agreed that location, gender, age, number of years of investing and past experience influence IDM.

- Approximately 75 percent or more intermediaries agreed that individuals read financial newspapers, watch TV channels, read financial magazines and browse the internet before making investment decisions.

- Precisely 97.5 percent of the intermediaries agreed that they are consulted before individuals make investment decisions while 72.5 percent agreed that individuals also consult their friends/peers/colleagues before making investment decisions. Only 12.5 percent of the intermediaries agreed to whether family is consulted before investing.

- Only 50 percent of the intermediaries agreed that education affects IDM while 75 percent say that financial literacy does not affect IDM.

4.13 Thematic Analysis of Interviews with Intermediaries

Apart from the information presented above, interviewees' responses have been coded by two independent coders. Major themes were identified and these are presented in the following paragraphs:

4.13.1 Location-wise Difference

According to the intermediaries, the middle class individual investors are different state-wise. In Mumbai, stock investing was previously the domain of the Parsis, Gujarathis and

Marwadis. They would be more risk seeking and invest a larger percentage of wealth in the stock market compared to others. Earlier industrialists approached their friends and family for financial support and floated companies. Technology has democratized entrepreneurship and present day entrepreneurs approach private equity investors and later bring out an IPO. Life cycle status does not really affect investment, availability of information does.

The Punjabis primarily invest in land and agriculture or agro-based industries. Their main investments are in gold and real estate. Women hardly make investment decisions even when they are earning. Unorganized investments like chit funds are popular. The salaried class seeks various types of investments offered by the organized sector. The youth in Punjab mostly move out of the state or go abroad seeking employment. Hence investment by the youth segment is very less.

In Kerala too, men make the investment decisions for themselves and for the women. A few women who are employed in sectors like software are earning large incomes and are investing independently. Such women are investing in risky securities like shares. The most popular investment avenues have been gold and real estate. The next most popular avenues are fixed deposits and recurring deposits of banks. For investments beyond gold, real estate and fixed deposits, investors seek advice from the advisor. Most women in Kerala prefer to buy gold. Though few women invest in risky securities, they are calmer and willing to wait during adverse conditions compared to the men.

In Gujarat the risk taking ability of the average individual is very high. Most of the individuals prefer to be entrepreneurs running their own businesses. There are a large proportion of people speculating on the stock market, who are beyond the scope of this study. The proportion of those who seek to invest in shares is low although many prefer taking the mutual fund route. The proportion of women investing independently is very small. Those who do, are capable of investing in risky securities and are able to make wise decisions.

4.13.2 Age

Age influences investment behaviour. Earlier the elders in the family made investment decisions. The older generation was more analytical, wise and patient.

The younger generation i.e. the (21-30) age cohort is not investing their money. Those who invest are those with higher income, better financial literacy and more freedom. Nevertheless when they invest, the investing surplus is lesser in proportion to their income. They have a lot of opportunities to spend and hence they are spending most part of their income. This age group is impatient, has very high expectations and wants to make a quick buck. To them investing is equivalent to speculation. They do not understand the concept of wealth creation. Hence this generation does not invest for the long-term. They are not aware of the concept of risk and hence recklessly take risks.

As they reach marriageable age and get married, they begin investing. The (31-40) age cohort invests mostly in safe securities like gold, fixed deposits of banks, and probably buys their own house with a loan. Among those in their 30s, the Indian investors are risk averse while NRIs are risk seeking probably due to larger income earned abroad.

The (41-50) age cohort invests in risky securities like shares. By this time, they are financially more stable with a house and with kids in school. So there is no requirement of large funds in the near future. This gives them the confidence to begin investing in risky securities. They take calculated risks. The (51-60) age cohort reduces investment in risky securities because they would need large funds for children's education and marriage. After sixty, health related expenses increase and hence there may not be much scope for investing in risky securities. Those in the age cohort of (40-60) are investing a larger percentage of their income. They look at various alternatives. The older (40-60) generation is experienced and patient and invests for the long term.

Age does not affect the high net worth individuals. To them investment is mostly to earn higher returns. They invest in risky securities irrespective of age. With age they gain more experience.

4.13.3 Gender

In the field of financial investments, women have been disinclined towards decision making probably because of the patriarchal society that we live in. Almost all the intermediaries mentioned that <=5 percent of the women take their own decisions regarding investments. Most women let their husbands or fathers manage their investments despite being economically employed. But the winds of change are blowing and women have begun to take investment decisions independently.

Women investors are limited to urban areas only. Since a larger number of women are getting into the workforce and are earning large incomes, they are taking their own decisions regarding investments. There is not much difference between the gender while making investment decisions when women are young and single. They are as risk-seeking as the men. Entrepreneurial women who are running their own businesses invest independently. They invest for the long-term and invest more in mutual funds and less in equities.

Women in general are more patient and long-term in their outlook as compared to men. Women investors are better because they are very methodical whereas men take reckless decisions. Managing homes and finances must be left to women because they are cautious and hence make wise decisions.

Women are oriented to fixed-income securities while men are oriented towards risky securities. Although women are more knowledgeable, they are cautious. They want to grow their wealth and hence trade less. They are better at investing especially in systematic investment plans (SIPs) of mutual funds. The older women prefer traditional investment avenues like fixed deposits and gold. Women investing in the stock market are few. But those who do are very smart. Though many are not highly qualified, they learn from the advisor and then begin researching on their own. Many are housewives and have time at their disposal for research. Moreover women are in touch with many products made by listed companies that are used at home and considering their superior

perception and observation skills, they are good investors. Those women who take risks are calmer during volatile conditions. Most women want capital protection and positive returns and hence are cautious.

Women want trustworthy advisors. Women, especially when single, require a lot of hand-holding. Initially, the advisor must spend some time understanding the clients psychologically and then advice them. The risk attitude of women investors depends on their employment status and their income. Those who are economically employed have a higher risk attitude than housewives.

4.13.4 Education

Formal education is not useful for IDM irrespective of the kind of degree one holds because it doesn't really teach one to apply their mind. Investment skills can improve only with experience.

The youth of today are educated, are exposed to unlimited information on media and are also distracted by too many electronic gadgets like mobile phones and computers. Investing requires a lot of mind space. But due to the youth's preoccupation with different gadgets, they are unable to give sufficient mind space to investing.

Whatever the education of the customers, advisors must first educate the customers regarding investments. Educated clients are difficult to convince because they examine a lot of available literature. They require assurance about their funds being safe. Hence the financial advisor must be patient and spend a lot of time with the clients.

Although investor education camps have attracted a lot of participants, the participants have not come to the market. This goes on to prove that learning about investments is not a two-day affair. It is a life-long process. Experience is the best teacher. Unfortunately many individuals do not learn from experience. Only five percent of the clients plan their finances by themselves.

Schools must incorporate investment education in their curriculum so that the youth is better trained to save and invest wisely. Otherwise learning will take place from the skewed information disseminated by the media only. Schools must incorporate financial literacy and also health education because as the old proverb goes 'health is wealth'.

4.13.5 Income

As income levels increase, more people would require help in investing. Since income levels have increased people's affluence has grown leading to growth in investments. Initially when individuals earn less, they take less risk. As their career progresses and their income levels increase, they take more risks. Risk tolerance increases with income.

4.13.6 Wealth

Wealthy individuals are generally homogeneous and rational in their desire for risk and return irrespective of their age, education and geographical difference. The small investors generally value the intermediary's judgment and prudently invest their money. Those who have created wealth by investing in the stock market continue to invest in the stock market. Those who have speculated and lost their wealth have left. This shows that stock market is used as a gambling destination and is also promoted by many stock brokers for gambling rather than long term investment.

4.13.7 Social Circles

Individuals are influenced by the social circles they keep. Sometimes the influence of the social circle members may not be positive because the individuals blindly believe them and takes action that may not be sensible. Investors must understand that no one has his own interest except himself.

4.13.8 Occupation

The salaried class and professionals listen to advice and permit the advisor to allocate assets. Businessmen clients discuss with social circles, keep abreast of latest news and then make investment decisions. Businessmen take more risks than salaried professionals.

4.13.9 Technology

Technology has become all pervasive and made life very convenient for the individual investor. Technology has created geographical democratization. One can sit within the comfort of his/her home and transact with the bank, mutual funds, stock market and so on. This has increased transparency, speed and convenience to a very large extent and reduced the use of paper. There is an increase in the volume of business in all sectors including the financial sector. Intermediaries are able to provide better services because of technology.

Technology also has its own dangers. Technology has brought in more information, timely updates, more excitement and more speculation. There could also be dangers of making unhealthy investment decisions like buying the wrong mutual fund or insurance.

4.13.10 Availability of Information on Media

About 20 years earlier not many people understood the concept of investing. But today due to availability of information, people are financially knowledgeable. Information on macro economic situation, fundamentals of companies, performance of the government, business organisations and on financial instruments and so on is received from the media. A part of the media has had a good impact on investors. They provide genuine and reliable information. Another section of the media has been canvassing for different companies and providing speculative information.   Yet the wisdom to invest wisely is lacking among the investing public. Moreover the attitude towards risk has changed with rising income levels.

The common man has no advantage by listening or reading information from the media. A large amount of news comes late. Hence the timing of information is not perfect. Moreover the investors and intermediaries face the major issue of information overload. This leads to confusion among the intermediaries as well as the investors.

During the last few years, there has been a change in the behaviour of investors due to availability of unlimited information on media although most of it is biased. There is a lot

of misrepresentation on media and hence there is a negative influence. Media accentuates whatever happens in the market. Again the media has to increase its TRP ratings. They keep repeating sensational news ad nauseam to cater to a section of the public who want exciting news every day. Sentiment is driven by the media whether positive or negative. There is hardly any regulation for the media.

Media promotes speculation by giving biased information. The media does not analyze the various investment opportunities. They mislead the public and encourage investors to take erratic decisions. The investor is a gullible audience to the hype they create. Sometimes, most sensible investors get carried away and change their minds after paying heed to the media. The listener or reader must be aware and must have the wisdom to know the difference between the truth, advertisement, advertorials and paid content.

Moreover popularity of technical analysis and short term investing advice on prime time television has enticed the younger generation into the stock market chiefly for gambling. This generation wants to earn large amount of money in the shortest possible time and many brokerage firms encourage short term trading. Such firms are not interested in the financial health of the individual but interested in earning large commissions only. Greed drives people into making costly financial mistakes. This kind of behaviour among intermediaries will result in wealth destruction and chase away genuine investors from the stock market. This is one of the main reasons for indifference towards equities as an asset class among the larger segments of the population.

One suggestion is that misleading reporting must be penalized heavily so that the media will disseminate only true information.

4.13.11 Influence of General Market Conditions

Political leaders must work for the greater good of the society. Unfortunately political uncertainty and corruption are the biggest problems for economic environment. The actions of the politicians influence the general economic conditions within the country. If they take healthy decisions from an economic perspective, the Indian economy could

definitely grow at a higher rate. But in India, the political scenario is sending negative vibes. High sovereign debt is due to bad fiscal management. Generally politics is above economics in our country. When economics is given higher status than politics, growth would take place.

The government must take action to improve the economy. Jobs have to be created or else there would be social unrest. Infrastructure must be developed for the economy to grow and for FDI to come to India. The government wants to exercise control on everything, reminiscent of the 'license raj' days. Ministries of environment, mining, telecom etc. have messed with the economy and hence the economy is not making progress. Again bureaucracy has been given immense authority without accountability. Perhaps good leadership is difficult because of coalition politics with different political parties having varied priorities.

Mercifully, due to technology and activism, things are changing for the better. There is more accountability today than before although we have a long way to go. In future economics must dictate politics. Good economics could be driven when a single party wins. Coalition politics will not be able to take good economic decisions.

India is infrastructure challenged. Infrastructure sector has potential for tremendous growth. Political scenario is affecting the infrastructure sector and hence there is inadequate growth. Power is one sector which requires enormous push. Real growth will take place when the infrastructure sector grows. When there is greater private participation, superior growth will take place. When we think of infrastructure we believe that there is only one way to develop infrastructure. This is not true. There are various options available. We need to look at alternative infrastructure facilities. Every nook and corner of the country must be accessible.

Again the government is focusing on industry alone and ignoring agriculture. Agriculture could be very profitable business but due to lack of infrastructure like roads and storage facilities, this sector is suffering. If agriculture is developed, economy could grow to a

very large extent. Growth in agriculture will create ripple effects in the economy because demand for goods and services will increase. Due to the large population of India, the country would be able to sustain itself despite the international economic downturn. When economy suffers, businesses suffer. Consequently individual investors will not invest in equities and mutual funds but will invest in gold and real estate.

Three most important factors that will affect the economy are interest rate, oil prices and budget deficit. Political situation, inflation, IIP and RBI policies are the other important factors that need to be looked into. Globally or locally, it is a case of survival of the fittest. Those who are fundamentally strong will survive. Government policy must contribute to growth. Handling of fiscal deficit, current account deficit and inflation has to improve. Moreover supply side must improve to reduce prices of essential goods and services. Since consumption will grow, there is lot of scope for economy to grow. Policy paralysis is a short term phenomenon. Fiscal deficit and rupee depreciation are a serious concern.

4.13.12 Financial Intermediaries

The intermediaries are also responsible for the individual investors' indifference to investment products. Earlier individuals invested money for the long-term. Today, marketers of financial products are pushing products forcing clients to buy unsuitable products which will affect the entire industry in the long-run. When banks began selling mutual funds and insurance, the trusting relationship with the banker was misused. The banker like the LIC agent was considered trustworthy. As long as the markets grew, mutual funds and ULIPs provided positive returns. When the recession made its way and returns on those mutual funds and ULIPs went down, investors suffered. This made the investors suspicious of bankers. Once the trust is lost, they don't do business with the same intermediaries. Many brokerage firms seek speculators and not long term investors. Due to such encouragement prospective investors are turning into speculators and hence there is no new generation of investors in the stock market. The youngsters with little patience want big money quickly. Losing money creates unhappy customers. Disgruntled

investors can create a ripple effect and affect the entire financial service industry. Intermediaries must be balanced and advice must be consistent and creative positive results for the investors.

Many financial advisors have left the business. Few large ones and those who are cost efficient will survive. Consolidation among intermediaries will take place. Advisors are unable to focus on servicing clients due to stiff regulation and low commissions. Fee based models will come into place.

A good advisor must understand the nature of his client in terms of risk profile and life cycle status and advise accordingly. Losing money is not acceptable to anyone whether they are big or small. Clients must be advised to save regularly. When the investors see their money grow, they get motivated to save further. Their commitment to their financial decisions increases.

4.13.13 Regulation

The volatility in the markets is here to stay. Risk would be constant for anyone. Regulations are either too little where required, or too much where it exists. Sometimes the regulator behaves in an erratic manner driving individual investors away from the market. For instance, making PAN (Permanent Account Number) number mandatory has driven a lot of investors out of the market. Furthermore, when two regulatory bodies disagree with each other publicly like SEBI (Securities and Exchange Board of India) and IRDA (Insurance Regulatory and Development Authority), it sends wrong signals to the public. Regulators must take a single stand.

In India the culture of paying for intangible services is still in its nascent stage. Moreover accessibility to the customer is a big challenge because there is a large population in India that is not accessible easily. Although individuals have the right to buy directly, they may not have sufficient knowledge to select the good mutual funds. With higher levels of income, information overload and constraints of time, individuals need advisors to help them choose good and suitable investments from a wide array of investments. Advisory

services are a must when there is a large spectrum of investments. There is tremendous growth opportunity for the advisory business but the current regulatory environment does not encourage good talent into the industry. With SEBI reducing commission on mutual funds for the intermediary, there is no motivation to sell mutual funds. In the long run the individual investor will suffer.

SEBI could impose regulation and create checks to identify and terminate the services of those who are unethical. But a blanket reduction of commission is affecting the advisory services. Only the HNIs would be catered to by the advisors and not the small investors. It is the small investor who needs advisory services the most. Regulation must improve and must regulate with a long-term perspective in mind for risky securities including mutual funds. Besides, regulatory environment must improve in order to bring in small investors into the stock market.

4.13.14 Influence of International Economic Forces

Due to advancement of technology, economies have become borderless and hence global volatility will affect the Indian economy. Due to presence of FIIs (Foreign Institutional Investors) investment, we are not decoupled from the international markets. Oil procurement could affect the Indian economy to a great extent. India will be affected by the international economies.

Chinese government is less transparent and the foundations of Chinese businesses are a matter of speculation. The stock market in China has performed badly during the three years from 2009 to 2011. Chinese threat persists in defense which would affect Indian economy.

Having knowledge of the global forces is beneficial for investing. Depending on the actions taken by the Federal Reserve of United States of America, the European Central Bank, and Central Banks of various countries, the impact of their actions is seen in India. Since India is a democracy, the nation must fare better in the future.

4.13.15 Behaviour of Individual Investors

Earlier individual investors used to invest in gold, fixed deposits of banks and post office and own house. The most important goal of investors was and still is children's education. Beyond that people want to save for retirement. Investing in risky securities was not considered at all because income levels were low. Once the liberalization took effect towards the latter part of the 1990's and opportunities for investments increased, personal income levels grew in leaps and bounds leading to greater disposable income resulting in greater investments. But the government is encouraging consumption and discouraging investment by the public. Hence individual lifestyles have changed.

Most small investors are loss averse. Moreover they do not have sufficient time and inclination to perform research on their own. Further individuals are inhibited to discuss financial matters. When an advisor approaches them, initially people say that they don't have sufficient money. Small investors require someone to approach them because they believe that to invest in financial products one needs large sums of money. Small investors mostly listen to advice from the financial planner though not all of them. The wealthier ones largely listen to their social circles. Larger investors primarily seek returns. When they invest, they invest in large amounts and churn their portfolios more often than the smaller investors, by and large with positive results. Losing money is not acceptable to anyone whether they are big or small. Investors must be advised to save regularly. When the investors see their money grow, they get motivated to save further. Their commitment to their financial decisions increases. Many individual investors begin taking risks when they are financially stable i.e. at a later stage in their careers. Lifecycle status affects investment.

Most individuals wish for financial advisors but they do not know whom to trust. Advisors must first build trust. Again, when suggesting risky securities, the investors will follow advice if the advisor is trustworthy. Hence risk taking depends on the personal relationship with the advisor. To build trust, advisors must educate the investors. Educating the individual investors is a continuous process because they constantly get

influenced by the media hype. Some of them become very knowledgeable and hence ask a lot of questions to the advisors. Therefore intermediaries must have patience to handle clients.

A good number of brokerage firms, cater to long term investors and short term traders. The long term investors have made good money. Previously there were no mobiles and hence no frequent updates on stock market. People invested and forgot until the time they needed money. Hence there was long term growth in wealth. The short term traders have occasionally made money, lost and then moved out of the market. Many individuals come to a stock broker in the hope of becoming investors but turn into traders. Individuals who have invested little by little and seen their wealth grow, have become seasoned investors. The new generation investors easily fall into the trap of becoming traders. Many retirees these days are turning into trading or gambling for entertainment. They keep aside a larger part of their wealth safe and use a small part for gambling. Since they are retired, they don't have much to do and hence they gamble on a very small scale.

By observing the behaviour of the risk taking wealthy individual investors, a broker can explain the market. When they begin selling their shares in large quantities, the stock market index takes a downward turn. Similarly when they begin buying in large quantities, the stock market index takes an upward turn. The smaller investors are generally clueless. They book losses at the last minute. They find it difficult to accept that they have made a mistake, hence lose larger amounts of money. During the bull market upto 2008 investors invested in equities, later moved to real estate and gold and fixed deposits. Incidentally investment in real estate and gold is irrespective of the market volatility. Investors seem to move with the latest fad. Post 2008 investors' risk appetite has reduced. Financial planning is lacking. Financial planning includes entire gamut of securities. Those individuals who have greater knowledge have more opportunities for investment. Active management of portfolio is imperative in volatile environments. If the government takes good policy decisions then economic conditions will improve leading

to better opportunities for investment. This will definitely change the investment scenario and more individual investors will participate in the equity markets.

4.13.16 Influence of Time and Emotion

Emotion is a powerful influence on IDM. Time and again, irrespective of whether one is a big investor or a small one, investment decisions are emotional. For instance, in real estate especially, the decision is not allocation specific. Someone from the social circle shows a property, the buyer buys it because he/she likes it. It is not evaluated on a rational basis. In the current market scenario (January 2012 to September 2012), time and emotion cycles are important. Since the economic situation of the country is not very positive, emotions are low and hence individual investors are seeking fixed income securities like government bonds, corporate bonds, bank and post office deposits and PPF (public provident fund). Although the best time to invest in risky assets is when the outlook is bleak and valuations are attractive, emotions don't allow it.

Emotion plays a big role in investment. Those who are bullish are equity oriented and those who are bearish are fixed income oriented. Most investors do not have a clear objective and a strategy for investment. One must have a clear-cut return objective and be aware of the yield on investment. People are greedy and want returns in the short term and hence speculate resulting in financial ruin. Sometimes when investors have made bad investments and are losing they still want to hold on to the same. They are unable to believe that they have made a wrong decision.

Systematic investment plans are ideal for those who want to save regularly and build their wealth over the long term. Good dividend paying stocks are ideal for those who want to grow their wealth in the long-run.   When investors lose money they develop a negative attitude towards that avenue of investment. For instance, investors who lost money investing in debt funds, have developed a negative attitude towards mutual funds itself or lost money in equities due to bad choice have stopped investing in this asset class.

Investors are fickle-minded. Greed and fear are the main emotions driving the market. The intermediaries are taking advantage of these emotions.

4.13.17 Other Findings

Most of the independent financial planners and independent stock brokers happened to have a better insight into their customers. Their aim is to build a long-term relationship of trust with their clients and grow along with the growth of their clients. They are more knowledgeable about the financial markets and the national and international economic conditions. They would try to understand the client as well as their attitude towards risk and their future plans. Depending on these criteria, advice was customized to suit the requirements of each of their clients. All of independent intermediaries were over forty years of age except two. They had many years of investing experience and also of handling people.

One of the financial planners mentioned that a client of his considers him, his most trusted confidante and confides in him all personal matters. Another financial planner mentioned that he helped a client obsessed with day trading; rebuild his career as a golf coach. Yet another lady financial planner mentioned that she insists that married couples plan their investments together for the long-term happiness of their marriage. Hence she consults couples together and has sufficient evidence to prove that investing together helps couples stay together. One more financial planner mentioned that most of his clients had become his good friends over the years. A long-term relationship with customers' especially in financial matters, which are very personal and confidential, does not stay within the narrow precincts of customer relationship; they become personal life-long friends developing an emotional relationship. This financial planner ends up advising them on all matters beyond finance and also mentoring their children. This could be unique to the Indian context and could be an area of future research. Another financial planner encourages his clients to answer the financial advisor's exam so that they are financially educated and appreciate his services better.

Among the executives in a stock broking firm, one candidly mentioned that their incentives and job security depend on the commissions that they earned for the firm. Hence some of them would advise clients to churn their portfolios often without regard to neither the earnings of the investor nor the long-term relationship with him/her. In banks and wealth management firms, the executives are asked to sell financial products that bring in higher revenues for them rather than higher returns to the investor. Yet some are unable to do so due to the firmness of their clients. The executives' emoluments depend on their immediate performance and not on the long-term relationship with investors. Yet some of them have taken the initiative to understand the clients and to build good relationships ensuring that their clients earn good returns.

Banks and wealth management firms have separate offices to handle their HNIs, where they do focus on relationship building and occasionally extend services beyond finance like sponsoring office space for ladies' club meetings and so on. So the focus of these firms is mostly on HNI segment, which many intermediaries are catering to and competing for a slice. It is the small investors who are left unattended but who greatly require the services of good financial advisors.

From the interaction with intermediaries, it is learnt that establishing a trustworthy relationship between intermediaries and clients in the financial services context is absolutely important. With the financial markets constantly changing, it is important to have an appropriate infrastructure in place to facilitate provision of financial services and a regulatory environment to ensure that individual investors are protected. By and large, individuals lack the required knowledge and inclination to make optimal investment decisions. Moreover traditionally women have not been involved in the task of investment decisions. It is imperative for the intermediaries and the government to understand, educate and involve individual investors in the context of IDM and evolve better infrastructure to provide financial services.

4.14 Summary

The results of the study indicate that personality traits, demographics and experience influence the IDM of individuals. The intermediaries' opinion agrees with the results of demographics and experience although only 50 percent agree that education influences IDM while 75 percent state that financial literacy does not influence. Among the social environment factors, family and non-commercial sources are found to influence the IDM of individuals. As per the intermediaries' opinion, non-commercial sources and informal sources influence individuals to a larger extent. Very few mentioned that family influences IDM. Among the choice criteria factors, convenience and risk factors influence the IDM of individuals. But, as per the intermediaries' opinion, return affects IDM to a large extent. Among the contextual factors, task complexity and information processing affect the IDM of individuals. As per the intermediaries' opinion, task complexity and time constraint affect individual investors. They also state that individuals do not organize investment information well. Among the biases, representativeness, framing, availability and loss aversion affect the IDM of individuals. The regression results show that the biases of representativeness, framing, anchoring and loss aversion could be explained using the explanatory variables of personality, social environment, choice criteria and contextual factors. The intermediaries further mention that individuals are affected by emotion while investing.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Chapter Overview

This chapter discusses the summary of findings based on the analysis and interpretation of the data collected, provides conclusions and recommendations and directions for future research.

5.2 Summary of Findings

This empirical research has been carried out to acknowledge the various factors that affect IDM of urban individual investors in India. The robustness of the study lies in the size of the sample of 1146 individual investors, 40 intermediaries interviewed, the number of factors influencing IDM and the spectrum of investments across riskless and risky securities considered for the study.

5.2.1. Demographic Factors

- Males are found to be more risk seeking than females.
- Investors in the age group of 40-70 are found to be more risk seeking than other age groups.
- Professionally qualified individuals are more risk seeking than other investors.
- Married individuals are found to be more risk seeking than single investors.
- Self employed individuals are considerably more risk seeking than individuals in other occupations.
- Individuals earning an annual income of Rs. 6 to Rs. 12 lakhs p.a. and those earning above Rs. 18 lakhs are found to be risk seeking compared to others.
- Among those who have formal financial education, a larger percentage are found to be moderately risk seeking.
- Size of the household does not influence IDM of individuals.

- Those with dependents are found to be more risk seeking than those who do not have dependents.

- Those with dependent children are found to be more risk seeking than those without dependent children.

- Those with ten or more years of work experience are more risk seeking than other individual investors.

- A larger percentage of investors are risk averse in dual earner households than in single earner households.

- A larger percentage of individuals are risk seeking when investing either together with spouse or partially together with spouse.

- Among those who have more than ten years of investing experience, a larger percentage of investors are risk seeking than those who have less than ten years of investing experience.

5.2.2 Ranking of Investments

On the basis of the various choice criteria, investors were required to rank the various avenues of investment.

- Gold, real estate and mutual funds scored highest on long term appreciation.

- Shares and NBFC deposits scored highest on liquidity.

- Bank deposits, PO deposits, government securities, corporate securities, provident fund and insurance are chosen most for safety reasons.

5.2.3 Personality

Big Five Personality Measure

- As per KW test, *extraversion* and *agreeableness* emerge as factors that greatly influence IDM of individuals.

On application of PCA,

- Among the total sample, the primary dominant factor is *conscientiousness* and secondary dominant factor is *neuroticism.*

- Among the risk averse (RA) investors, the primary dominant factor is *agreeableness* and secondary dominant factor is *neuroticism.*

- Among the moderately risk seeking (MRS) investors, the primary dominant factor is *conscientiousness* and secondary dominant factor is *neuroticism.*

- Among the highly risk seeking (HRS) investors, the primary dominant factor is *agreeableness* and secondary dominant factor is *openness.*

Locus of Control Personality Measure

- As per KW test, *Locus of Control* does not significantly affect IDM of individuals.

On application of PCA,

- Among the total sample, it is found that individuals have a mixed *Locus of Control.*

- Among the risk averse (RA) investors, it is noted that individuals have a greater external *Locus of Control.*

- Among the moderately risk seeking (MRS) investors, it is seen that individuals have a mixed *Locus of Control.*

- Among the highly risk seeking (HRS) investors, it is found that individuals have a greater external *Locus of Control.*

5.2.4 Social Environment

- As per the KW test, *family* and *non-commercial sources* of information very significantly affect the IDM of individuals.

- On application of PCA on *non-commercial factors*,

- Two factors emerge, passive media and active media.

- Among the passive media, *business TV channels* emerge as the most dominant factor.
- Among the active media, *experts' blogs* emerge as the most dominant factor.

5.2.5 Experience

- As per the KW test, *experience* very significantly affects the IDM of individuals.

5.2.6 Choice Criteria

- As per the KW test, *attitude towards risk* and *convenience* factors very significantly affect the IDM of individuals.

5.2.7 Contextual Factors

- As per the KW test, *task complexity* and *information processing* factors very significantly affect the IDM of individuals.

5.2.8 Biases

- Among the biases, as per KW test, it is noticed that r*epresentativeness*, *framing*, *availability* and *loss aversion* significantly affect the IDM of individuals.

- The regression results show that the biases of *representativeness*, *framing, anchoring* and *loss aversion* could be explained using the explanatory variables of personality, social environment, experience, choice criteria and contextual factors.

- Again the regression results show that the explanatory variables can explain the biases of *representativeness, anchoring* and *framing* to a much larger extent

(approx. 40 percent) for RA investors compared to MRS and HRS investors. Perhaps due to the presence of these biases and being unsure of the returns on risky investments, RA investors stay away from risky investments. Moreover being risk averse would also mean that they are loss averse. Hence the regression model cannot significantly explain the *loss aversion* bias for RA investors.

- In the case of MRS and HRS investors, the explanatory variables are able to explain the biases of *representativeness*, *framing* and *loss aversion* to a greater extent than *anchoring* bias. This could be because the *anchoring* bias is not found to significantly influence the IDM of individuals.

- For RA investors, Locus of Control has the highest influence on *representativeness*, informal sources on *anchoring* and task complexity (negatively) on *framing*. *Loss aversion* bias could not be explained for RA investors.

- For MRS investors, task complexity has the highest influence on *loss aversion*, non-commercial sources on *representativeness*, extraversion (only factor) on *anchoring* and time constraint on *framing*.

- For HRS investors, task complexity has the highest influence on *loss aversion*, Locus of Control on *representativeness* and non-commercial sources on *framing*. Anchoring bias could not be explained for HRS investors.

- Taking the total sample, task complexity has the highest influence on *loss aversion*, non-commercial sources on *representativeness*, time constraint (negative) on *anchoring* and time constraint (positive) on *framing*. Therefore it could be concluded that task complexity and time constraint among the contextual factors and non-commercial sources of information from the social environment factors influence biases to a larger extent compared to the other variables.

5.2.9 Findings from the Interview of Intermediaries

- Demographic factors like gender, age, location, number of years of investing and past experience affects IDM.

- Half of the intermediaries agreed that education affects IDM while three-fourths say that financial education does not affect IDM of individuals.

- Individuals specify whether they want riskless or risky securities indicating that individuals differ in their risk profile.

- Individuals mention the minimum required rate of return that they require from their investments.

- Individuals find the task of IDM complex and face time constraint. Moreover individuals did not process financial information very well.

- Individuals are also influenced by various media, consulted their friends/peers/colleagues and their financial intermediary before investing.

- Technology, national and international market conditions, regulation and emotions are other factors that influence individuals' IDM.

5.3 Conclusion

Although the savings rate in India is very high, Indians are found to be poor investors. Despite the abundant opportunities for investment, financial instruments have become increasingly complex and decision to save and invest has become extremely difficult. Though traditional finance theory claims that individuals are rational and maximize utility, in reality individuals are found to manage investments in ways that are not rational. Not many systematic studies have been undertaken to study the factors that affect IDM of individuals in the Indian context.

Based on the literature review of over hundred journal articles the researcher identified certain research gaps in the area of the factors that influence IDM of individual investors. Among the factors that influence IDM of individual investors, the researcher considered

Demographics, Personality, Social Environment, Experience, Choice Criteria, Contextual Factors and Heuristic Biases. Few studies in the Indian context have probed these issues and their influence on the IDM of individuals. Again this study has focused on various avenues of investment including riskless as well as risky securities unlike most studies which have investigated how investors allocate funds across risky securities only. It is important to understand individual investors from a holistic point of view rather than a single point of view.

In view of the fact that research related to Indian individual investors is limited to the best of the knowledge of the researcher, this research involved using both inductive and deductive approaches. Identification of the variables for the study could be termed exploratory research and conducting a cross-sectional study could be termed as descriptive research. For the study, it was decided to apply both quantitative as well as qualitative methods with greater emphasis on quantitative methods.

The robustness of this study comes from the sample size of 1146 individual investors and 40 financial intermediaries interviewed from across India. The survey instrument given to individual respondents consisted of a 5-page questionnaire with most statements being measured on a five point Likert scale. Snowball sampling was used for the study and data was analyzed using Chi-square test, Fisher exact test, Kruskal Wallis test, Pearson's correlation, Principal Component Analysis and Regression Analysis using SPSS.

The survey findings showed that demographic factors except *size of the household* influence IDM of individual investors. In the Indian context, it is found that married, older individuals (40-70 age groups) and those with dependents are found to be more risk seeking than others. Although intermediaries agreed that demographic factors influence IDM, they are equally divided on whether *education* influences IDM, and only 25 percent agree that *financial education* influences IDM.

With reference to Big Five factors of personality, it is found that application of PCA reveals that the RA, MRS and HRS segments of investors are found to have slightly different dominant factors. For RA and HRS investors, *agreeableness* is the primary dominant factor while MRS investors have *conscientiousness* as the primary dominant factor. For RA and MRS investors, *neuroticism* is the secondary dominant factor while HRS investors have *openness* as the secondary dominant factor. With reference to Locus of Control factors of personality, it is found that RA and HRS investors have a slightly greater external Locus of Control while MRS investors have a mixed Locus of Control. Such differences in personality factors would have a bearing on the IDM of individuals.

Among the Social Environment factors, *family* and *non-commercial sources* are found to significantly affect IDM of individual investors. The intermediaries' interview reveals that *informal sources* too affect the IDM of individuals. Among the *non-commercial sources, business TV channels* and *experts' blogs* are found to have a dominant influence on IDM.

Experience is found to influence IDM of individuals. Among the choice criteria, *attitude towards risk* and *convenience* affect IDM of individuals. The intermediaries' interview reveal that *attitude towards return* influence IDM of individuals. Among the contextual factors, the survey reveals that *task complexity* and *information processing* affect IDM of individuals. The intermediaries' interviews reveal that individuals are affected by *time constraint* along with *task complexity* and *information processing*.

Among the biases, r*epresentativeness*, *framing*, *availability* and *loss aversion* significantly affect the IDM of individuals. Taking biases as dependent variables and other variables as independent, regression analysis reveals that different factors affect biases across the different segments of investors. *Non-commercial sources* of information are the only factor that commonly explains *representativeness* bias across different segment of investors.

From this study it could be concluded that individual investors are a heterogeneous group with differing demographics, personalities, experiences and biases and differ in the way they process information. Considering that the task of investment is complex depending on the degree of uncertainty about the task inputs, process and outcome and time is in short supply individuals are found to make investment decisions subjectively.

Till now, marketers of financial products and services have been classifying individual investors on the basis of demographic factors like age, gender, income, and so on and marketing financial products on the assumption of the needs of such groups. Yet individual preferences may vary on the basis of various factors like personality, social environment, experience, choice criteria, contextual factors and biases. From an understanding of these factors the providers of financial products and services would gain by understanding their customers better and offering customized financial products and plans. This would be effective and help the investors as well as the financial service providers in the long run. This study offers new empirical evidence based on a survey of urban individual investors in India to add to the body of extant research.

5.4 Recommendations

Bearing in mind that the individuals have become increasingly responsible for their financial well being, it is imperative that individuals must first understand themselves in terms of their personal needs, risk tolerance levels and their personal dispositions. If risk tolerance levels are low, then individuals must stay away from risky securities.

Moreover it is found that individuals are influenced by *family*, *informal sources like friends and colleagues* (according to the intermediaries), *business TV channels* and *experts' blogs* among the *non-commercial sources* of information. Although individuals could listen to advice from various sources, they must use their discretion and use advice that is applicable to them rather than blindly following what is disseminated.

Considering that individuals find the task of IDM complex, find it difficult to *process information* and face *time constraint* (according to the intermediaries) it would be advisable for them to seek the help of a financial intermediary. At the same time, they must be careful while choosing a financial intermediary and must choose someone who is trustworthy and with good credentials.

Again it is observed that individuals are influenced by various biases. Being aware of the one's biases may help in improving IDM, but it may be difficult for individuals to know which biases influence them.

Intermediaries must create a dependable relationship with their clients. They must understand their customers not only in terms of demographics but also in terms of the various factors that affect their decision making. They must offer financial products and plans to suit the requirements of their customers and their risk tolerance rather than offering them products that bring the intermediaries greater income in terms of commissions.

Intermediaries must also educate their customers about what kind of investments is suitable to them. They must explain the choice of investments that they have made for them and its appropriateness to them. This would go a long way in building a trustworthy relationship with clients.

Policy makers must understand the needs of the individual investors while making policy decisions. As articulated by Georgarakos & Inderst (2009), decisions to hold risky assets depend on the perception of how well their rights as consumers of financial services are protected. Hence regulators need to frame effective regulations to protect the individual investors and ensure compliance.

Education programs spread over one or two days planned either by the regulators or intermediaries, targeted at investors to improve their financial sophistication may not really translate into behavioural changes. A deeper understanding of the individual investors is required to design education programs to suit them.

Policy makers need to frame policies that focus on restoring confidence in the economy, providing the right information and simplifying the process of IDM.

5.5 Limitations of the Research

1. The study is limited to urban individual investors. Hence the findings may not be generalizable to the entire population.

2. The study considers independent variables of demographics, personality, social environment, experience, choice criteria, contextual factors and heuristic biases. There could be other factors not considered in the study, which could influence IDM of individuals.

3. Since the sample is selected using snowball sampling method, a selection bias might result.

4. Although the researcher has done her best to make the questionnaire simple and easy to understand, yet it could be susceptible to the subjective opinions of the respondents and the accuracy of their responses.

5.6 Directions for Future Research

1. The current study is a cross sectional study. An examination of whether an individual changes over time as his/her demographics change, in terms of personality, social environment, experience, choice criteria and contextual factors, and, if so, to what extent could be an area for future research. A longitudinal study would help to provide insights into how IDM changes over time.

2. Emotions are an indispensable part of an individual. They could be beneficial or harmful to IDM. The extent to which various emotions affect IDM could be an area of future research.

3. Again a study of the same kind could be applied on financial intermediaries like stock analysts and stock brokers to understand the extent to which their personalities, social environment, experience, contextual factors and biases affect their IDM.

4. Satisfaction with one's choice of investments could be measured since it has an impact on future choice of investments.

5.7 Final Word

With the changing financial landscape coupled with changes in the socio-economic environment, individuals have become progressively more responsible for their own financial well-being. There has been an explosion in the number of financial products and services and also in their complexity in the recent past. Moreover, returns on such products and services are uncertain. In addition, returns on traditional avenues of investment like bank deposits and post office deposits are falling; risky avenues like shares and mutual funds are not giving good returns; the government is trying to boost investment in capital market and is discouraging investment in physical assets like gold which is considered to be the best hedge against inflation. Although the macro policies of the government may be objectively designed, implementation of such policies may not be easy. IDM by individuals in such an environment requires more sophisticated knowledge than it did about two decades ago.

The findings of this study are important especially in the current economic environment which has destroyed the confidence of individual investors in the government, the

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financial institutions and financial regulators. Individuals face a higher risk of being defrauded when they invest in the stock market. Protection of consumers of financial services is minimal and access to legal services is expensive and time consuming. Policy makers do not seem concerned yet about the consequences of such distrust individuals have towards the government and financial markets.

With the financial markets constantly changing, it is important to have an appropriate infrastructure in place to facilitate provision of financial services and a regulatory environment to ensure that individual investors are protected. By and large, individuals lack the required knowledge and inclination to make optimal investment decisions. Moreover traditionally women have not been involved in the task of investment decisions. It is imperative for the intermediaries and the government to understand, educate and involve individual investors, both men and women, in the context of IDM and evolve better infrastructure to provide financial services.

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APPENDICES

APPENDIX I

Questionnaire to Individual Investors

Dear Sir/Madam

Being interested in the field of of psychology and finance, I decided to pursue this subject for my Ph.D. program as I feel it will contribute to the body of knowledge.

As my study needs to be based on factual data, I am conducting a survey of the investment decision making of individual investors in select cities and I request you to be an esteemed respondent in my survey. The questionnaire will require only 25-30 minutes of your time and I request you to spare me this valuable time for the sake of my study.

While assuring you that the information provided by you will be kept confidential and used for academic purposes only, I also wish to impress upon you that the valuable data you share with me will be of great help to me in securing a Ph.D. degree from this reputed institution.

Please fill all the questions.

Thanking you in advance for your kindness in being of help to me,

Sukanya Shetty
Research Scholar
Dept. of HSM
NITK, Surathkal 575025.
Mob: 9845011132

I	For the following statements please mark **SD for strongly disagree, D for disagree, N for Neutral, A for agree and SA for strongly agree**					
I	**Personality**	**SD**	**D**	**N**	**A**	**SA**
	Rotter's Internal-External Scale					
1	One has to work hard in order to succeed					
2	If I run up against difficulties in life, I often doubt my own abilities					
3	Compared to other people, I have not achieved what I deserve					
4	What a person achieves in life is due to fate or luck					
5	I feel that other people control my life					
6	The opportunities that I have in life are determined by the environment					
7	Inborn abilities are more important than any efforts one can make					
	Big Five Factors	**SD**	**D**	**N**	**A**	**SA**
	Extraversion					
8	Normally I start conversations					
9	I feel comfortable around people					
10	I don't mind being the center of attention					
	Agreeableness					
11	I sympathize with others' feelings					
12	Most people know me well					
13	I love to help others					
	Conscientiousness					
14	I get work done right away					
15	I like order and regularity					
16	I am known for paying attention to tiny details					
	Neuroticism					
17	I get stressed out easily					
18	I get angry when things don't go as planned					
19	I panic easily					
	Openness					
20	I have a vivid imagination					
21	I am quick to understand things					
22	I probe deeply into a subject					

II	Choice Criteria	SD	D	N	A	SA
	Risk					
1	Safety of principal is my highest priority					
2	I invest in those avenues which give extremely high returns					
3	I invest only in those securities that have no risk					
	Return					
4	I get a good return on my investments					
5	Consistency of return is top priority to me					
	Liquidity					
6	I prefer those investments which I can convert to cash easily					
7	I do not like investments which have a lock in period					
	Investment horizon					
8	I prefer long term investments compared to short term ones					
9	Due to the uncertainty in the economy I prefer short term investments					
	Convenience					
10	The place of investment is conveniently located					
11	I am comfortable with the services provided by the agents like banker, broker, and so on					
12	I receive the returns like interest, dividend, very easily					
13	I receive the principle amount very easily					

III	Social environment and Availability bias	SD	D	N	A	SA
	Family					
1	I always consult my family before investing money					
2	I invest because my parents also invested in the same investment avenues					
	Informal sources					
3	I always consult my banker before I make any decision					
4	I always consult my broker/agent before I make any decision					
5	I listen to my friends and colleagues while investing					
6	I get good inputs on investing from my club members					
7	My best source of information is my neighbor					
	Non commercial sources	SD	D	N	A	SA
8	I read financial newspaper to seek information on investments					
9	I watch business news channels on TV regularly					
10	I listen to expert opinion on TV					
11	I read good magazines to seek information on investments					
12	I browse good investment sites on the internet					
13	I read blogs of expert investors					
14	Radio channels also offer good information for investment					

IV. Rank each of the investments **(only if you have invested and are aware, else ignore)** depending on the following 6 criteria. **1 – highest   and 6 – lowest** (example given below**).**

Criteria / Investment	Long term appreciation	Safety	Liquidity	High risk	Prestige value	Convenience
Gold	2	3	5	6	1	4

	Long term appreciation	Safety	Liquidity	High risk	Prestige value	Convenience
Gold						
Real Estate						
Shares						
Mutual funds						
Govt bonds						
Corporate bonds						
Bank deposits						
Post office deposits						
EPF/PPF						
Insurance						
NBFC deposits						

V	Contextual Factors	SD	D	N	A	SA
	Task complexity					
1	I enjoy investing					
2	There are more than sufficient avenues for investment					
3	I find managing money very difficult					
4	I feel completely confused at the various options available					
5	I take a long time to make an investment decision					

	Information processing	SD	D	N	A	SA
6	There is no difficulty in getting information about different avenues of investment					
7	I save to meet social obligations like children's education, marriage, pilgrimage					
8	I believe in making plans first and then investing in different securities according to plan					
	Time constraint					
9	I am unable to do a periodic review of investments					
10	Since I do not have much time I leave the investment decision making to my spouse/agent					
	Experience					
11	Over the years I have learnt to invest wisely					

VI	**Heuristic simplification biases**	SD	D	N	A	SA
	Representativeness					
1	Indian economy will be affected due to the recession in USA and Europe					
2	Since the growth story of India is intact, India will become a superpower					
3	I am attracted to investments when I see their advertisements					
	Framing	SD	D	N	A	SA
4	If I win a cash prize of Rs. 1,00,000, I will spend the whole amount immediately					
5	If I win a cash prize of Rs. 5,000, I will spend the whole amount immediately					
6	If I earn an additional income of Rs. 1,00,000 by working overtime, I will spend the whole amount immediately					
7	If I earn an additional income of Rs. 5,000 by working overtime, I will spend the whole amount immediately					

8	Assume you have been given Rs. 10,000 freely to keep. In addition, you are now asked to choose between:
	    a. A sure gain of Rs. 5,000
	    b. A 50% chance to gain Rs. 10,000 and a 50% chance to gain nothing					

VII	Heuristic simplification biases	SD	D	N	A	SA
	Anchoring					
1	Given the current price of gold, the price will rise higher					
2	Given the current price of fuel, their prices will increase greatly					
3	Given the current interest rates, the rates will rise further					
	Loss aversion					
4	I get very upset when I lose money					

5	Choose one of the following two outcomes
	   a. An assured gain of Rs. 500
	   b. A 25% chance of gaining Rs. 2,000 and a 75% chance of gaining nothing					

6	Choose one of the following two outcomes
	   a. An assured loss of Rs. 750
	   b. A 75% chance of losing Rs. 1,000 and a 25% chance of losing nothing					

VII. Personal Information

City, State						Gender		M__		F___

Age	21-30		31-40		41-50	51-60	61-70			>70

Education	Up to SSLC	PUC	Graduate	Post graduate		Professional		Diploma	Any other , specify	

Financial education	Degree(eg: BBM or MBA Finance)		Diploma	Certificate course in Investment mgt	Any other, specify

Marital status	Married	Not married	Widowed/separated

Size of the household: ___	No. of dependents:__	Dependent Children	Yes	No

Work experience (No. of years)	<5	6-10	11-15	16-20	21-25	26-30	>30

Occupation	Govt	Pvt Sector	Public Sector	Self employed	Housewife	Retired	Student	Others specify

Is yours a	Single earner household?		Dual earner household?

Annual Income(Rs. In lakhs)	< =3	4-6	7-9	10-12	13-15	16-18	>18

Investments are made	a. together with spouse	b. separately	c. partially together, partially separately

No. of years you have been investing :

APPENDIX II
Questions asked to Intermediaries during unstructured interview

Does financial risk tolerance differ between individuals and affect their investment decision making?
Does location of the individual affect investment decision making?
Does gender affect investment decision making?
Does age affect investment decision making?
Does education affect investment decision making?
Does financial literacy affect investment decision making?
Does marital status affect investment decision making?
Does family size affect investment decision making?
Does having children affect investment decision making?
Does work experience affect investment decision making?
Does occupation affect investment decision making?
Does annual income affect investment decision making?
Does the number of years of investing affect investment decision making?
Are family members consulted while making investment decisions?
Do investors read financial newspapers before making investment decisions?
Are investors influenced by business TV channels before making investment decisions?
Do investors read financial magazines before making investment decisions?
Do investors consult you (intermediary) before making investment decisions?
Do investors consult friends/peers/colleagues before making investment decisions?
Do investors browse internet before making investment decisions?
Does investor's past experience affect investment decision making?
Do investors specifically seek risky/riskless investments?
Do investors seek specific return on investments like say 10% or 20%?
Do investors seek liquidity while investing?
Are investors particular about time period of investments?
Are investors particular about convenience while investing?
Do investors find the task of investment decision making complex?
Do the investors process the information about financial matters well?
Do the investors experience time constraint?
Do the general market conditions influence investors?
Do the international economic forces influence investors?
Any other experience in handling individual investors.

APPENDIX III

PERSONALITY STATEMENTS USED IN THE STUDY

Locus of Control (7 questions) (Source: Heineck & Anger, 2008, Piatek & Pinger, 2009)	Personality trait
1. One has to work hard in order to succeed	Internal
2. If I run up against difficulties in life, I often doubt my own abilities	External
3. Compared to other people, I have not achieved what I deserve	External
4. What a person achieves in life is due to fate or luck	External
5. I feel that other people control my life	External
6. The opportunities that I have in life are determined by the environment	External
7.Inborn abilities are more important than any efforts one can make	External
Big Five Factor questions (15 questions) (Source: Goldberg, 1999)	**Personality trait**
1. Normally I start conversations	Extraversion
2.I feel comfortable around people	Extraversion
3. I don't mind being the center of attention	Extraversion
4. I sympathize with others' feelings	Agreeableness
5. Most people know me well	Agreeableness
6. I love to help others	Agreeableness
7. I get work done right away	Conscientiousness
8. I like order and regularity	Conscientiousness
9. I am known for paying attention to tiny details	Conscientiousness
10. I get stressed out easily	Neuroticism
11. I get angry when things don't go as planned	Neuroticism
12. I panic easily	Neuroticism
13. I have a vivid imagination	Openness
14. I am quick to understand things	Openness
15. I probe deeply into a subject	Openness

APPENDIX IV

GARRETT RANKING CONVERSION TABLE

The conversion of orders of merits into units of amount of "socres"

Percent	Score	Percent	Score	Percent	Score
0.09	99	22.32	65	83.31	31
0.20	98	23.88	64	84.56	30
0.32	97	25.48	63	85.75	29
0.45	96	27.15	62	86.89	28
0.61	95	28.86	61	87.96	27
0.78	94	30.61	60	88.97	26
0.97	93	32.42	59	89.94	25
1.18	92	34.25	58	90.83	24
1.42	91	36.15	57	91.67	23
1.68	90	38.06	56	92.45	22
1.96	89	40.01	55	93.19	21
2.28	88	41.97	54	93.86	20
2.69	87	43.97	53	94.49	19
3.01	86	45.97	52	95.08	18
3.43	85	47.98	51	95.62	17
3.89	84	50.00	50	96.11	16
4.38	83	52.02	49	96.57	15
4.92	82	54.03	48	96.99	14
5.51	81	56.03	47	97.37	13
6.14	80	58.03	46	97.72	12
6.81	79	59.99	45	98.04	11
7.55	78	61.94	44	98.32	10
8.33	77	63.85	43	98.58	9
9.17	76	65.75	42	98.82	8
10.06	75	67.48	41	99.03	7
11.03	74	69.39	40	99.22	6
12.04	73	71.14	39	99.39	5
13.11	72	72.85	38	99.55	4
14.25	71	74.52	37	99.68	3
15.44	70	76.12	36	99.80	2
16.69	69	77.68	35	99.91	1
18.01	68	79.17	34	100.00	0
19.39	67	80.61	33		
20.93	66	81.99	32		

APPENDIX V

Visiting cards of a few intermediaries who were interviewed

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Solid research Solid advice

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Research Publications

Research papers published in journals

Shetty S., Kiran, K.B., & Sridhar, S. (2013). Demographic factors and investment decision making of individuals, *International journal of marketing, financial services and management research*, *2*:1, 178-188.

Shetty S., Kiran, K.B., & Sridhar, S. (2013). Avenues of investment, choice criteria and its ranking by urban individual investors, *International journal of social sciences and interdisciplinary research* (Online journal) (Accepted).

Research papers published in conference proceedings

Shetty Sukanya, Kiran K.B. & S. Sridhar. (2013). Personality and investment decision making of individuals. *13th Consortium of Students in Management Research – COSMAR conference, Nov. 14th & 15th, 2013,* (CD-ROM), Dept. of Management Studies, Indian Institute of Science, Bangalore.

RESUME

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- Shetty S., Kiran, K.B., & Sridhar, S. (2013b). Personality and investment decision making of individuals,*13th Consortium of Students in Management*

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- Rao, S. (2006). Retail Strategies of Ladies' Tailoring cum Dress Material Shops in Mangalore City, paper presented at the *National Seminar on 'Marketing in the Digital Era'*, on September 15 and 16, 2006 and published in proceedings of the seminar organized by Sona School of Management, Salem.

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