

MINIMIZING INFLUENCE OF BEHAVIORAL TRAITS IN INVESTMENT DECISIONS: ROLE OF RATIONAL INTELLIGENCE IN INVESTMENT DECISIONS

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Abstract

Behavioral bias is a psychological reflection that reflect in decision making of an individual and investment decisions are sensitive as it may affect the risk and return of it. The behavioral bias may be reflected in two ways, positive and negative. In positive, the over confidence, quick response, speculation or gambling approach. In negative, lagging decision, and fear influence investment. The behavioral bias effects can be reduced only through developing adequate knowledge on investments and investment behavior. After digital technology emerged as the platform for communication and business, smartphone users can easily access the information sources and can develop self-awareness. In this research there are 548 women investors participated, and results show that digital platform acted as a catalyst in improving their investment skill.

Keywords: Income, Investment, Employment and Unemployment, Risk and Return.

JEL Classification: G50, G53, G 59.

INTRODUCTION

Behavioral biasing is a distortion in investment due to the neglect or ignorance of information or asymmetry. Information asymmetry is a situation in which the information needed may be available fully or partially to have a clear understanding of the problem. The Digital platform includes platforms like, social media, websites, and mass communication channels.

The investment process starts with an advertisement to reach potential investors. Investors who feel the opportunity beneficial will initiate the information collection process and this is the point in which the behavior plays the role. There are three questions arise, whether the investor understands the investment, possible risk & return and the use of information for investment decisions.

Table 1: Behavioral Biases

Factor	Final items of the scale
Availability bias	Reliable information from friends & Relatives [1]
	More importance for recent performance
	Advertisements as main source of information [2]
	More importance for recent study
Herding bias	Refer vlogs/blogs of experts before doing an investment [3]
	When I understand the loss of others, I don't feel disappointed with my loss [3]
	I prefer to invest in those others invest [4]
	I avoid investing if there is a conflicting suggestion [1]
Risk tolerance	Regret of earlier losses generate fear [3]
	I avoid investments I had loss earlier [3]

	Retaining loss making assets while dispose profit making is a regret situation [3]
	Risk bearing in investment to earn profit [4]
	Risk aversion in high-risk situations [4]
	Regret in loosing opportunities [4]
Overconfidence	I take risks when there is a doubt in profit [5]
	My optimism gives me confidence in investment [3]
	I feel my investment analysis is better than others [3]
	I have a good knowledge on investment choices and selection methods [6]
Anchoring and adjustment bias	Avoid investment when there is no clarity [7]
	I accept higher returns in case of investments with higher levels of risk
	I prefer investments with secured return
Anchoring & adjustment bias	Experience is used in investment [3]
	Current price of the security helps me to forecast its future price [3]
	I fix a target price for buying and selling the security in advance [3]
	The purchase price of a security is not a big factor to be considered while selling it. [3]
Confirmation bias	I am not selective in collecting information about the investments made by me [8]
	I value positive information more than negative information regarding my investment choices [8]
	When an investment is not going well, I seek information that confirms I made the right decision [8]
	I ignore the information that does not match my thoughts regarding the future of my investment decision [8]
Self-control bias	It is very difficult for me to keep up my saving goals [9]
	I easily stick to difficult saving objectives once I decide [9]
	I lack the self-discipline required to fulfill my long-term saving objectives [9]
	I can achieve my saving and investment goals [9]
Loss-aversion bias	I do not avoid an investment when I fear the loss [10]
	Don't sell an asset at loss when the expectations are high [10]
	Loss of Rs 1,000 is more painful than happiness of Rs 1,000 profit[10]
	I avoid taking decisions with the fear of incurring losses [10]
Representativeness bias	All my investment decisions are based on trend analysis of some of my similar investments earlier [11]
	Before selecting an agent/broker, I do not analyze his/her track record [11]
	I make investment decisions based upon my assessment of performance of previous investments of similar kind [11]
Conservatism bias	I do not easily change my decisions about investments once they are made [12]
	I stick to old information as future is uncertain [12]
Self-attribution bias	I am not likely to have a better outcome by making my investment decision myself [13]
	Losses incurred in my investment were due to bad luck rather than my poor judgment [13]
Mental accounting bias	I do not consider returns from income and capital appreciation separately [14]
	I earmark the investments' purpose wisely and maintain them separately [14]
	I categorize my investments into various purposes such as leisure, children's education and so on [14]
Status quo bias	I like to sell or modify inherited investments. [15]
	I keep holding the investments because they are familiar to me
	think about changing my portfolio, but many times I do not change it [15]

Rational Intelligence

Rational Intelligence is often referred to as 'Rationality Quotient (RQ)' in psychology and it consists of sections that let individuals to think analytically to make decisions that may optimize utility, avoid cognitive biases, and align with reality. Rationality Quotient measures how well one uses their cognitive skills.

There are five components in Rationality Intelligence are, Instrumental rationality, Epistemic rationality, resistance to Belief Bias, Rational thinking dispositions, and Decision-making Skills. Instrumental rationality enables one to organize available resources to achieve goals and maximize expected utility.

In Epistemic rationality, personal beliefs conform to the general perceptions. Resistance to Belief Bias /Heuristics is the ability to avoid two types of biases, relying on intuition (Type 1), and logical reasoning (Type 2). Rational Thinking Dispositions is a real time thinking independent on superstition and based on open thinking and cognitive abilities. Decision making skills include ability to analyse the options based on track of performance to minimise error [16]

Rational Intelligence is a methodology based on extensive research to identify how the decision-making process passes through five components of rational intelligence. In Investment process, investors face different biases and these biases leads to wrong decisions. Artificial Intelligence helps to compare different parameters and take an appropriate decision [17].

Generative Artificial Intelligence helps to generate comprehensive results of both predictive and prescriptive analyses to reduce cost of decision making and time taken for decision making in the individual level, the toughest case is the lack of time or expertise to analyse complex financial results and to infer them to take appropriate decisions. Generative Ais is widely used in investment analyse to get results fast but at a higher accuracy level than in manual computation [18]

Availability bias is a cognitive trap in which the investor may be tempted to use the information available at thumb to take decisions than analysing the historical performance. This cause decision error. In many investment applications, Robo advisers are used to help the advisers to get accurate and clear information adequate for decision making.

This reduces the error due to availability bias [19]. Anchoring bias is a cognitive trap in which the investor anchor decision making process on a specific information than seeing the investment opportunity from different perceptions and analyse in a wholistic way. It is mainly due to the inexperience of the investor in using right information. Artificial Intelligence apps help to analyse what exactly the investor look for and generate results to support in decision making [20].

Risk and return are the two factors in investment decisions and risk is the measure of volatility in the return of the investment opportunity. The risk bearing level is the tolerance level in bearing loss and it varies with business. A calculated decision can reduce loss, and it depends on the calibre of decision. In the case of stock or foreign exchange or commodity, the volatility is high. Hence, the investors follow an individual who can guide the investors effectively.

This is the herding effect. It reduces the risk but depends on the investment guide. Awareness is the core competency needed in investment along with timeliness. The modern Fintech applications are good in providing information and support in investment decisions (Islam et al., 2024). Over confidence is another cognitive trap.

Effect of Digital platform on Investment awareness

After the evolution of digital platforms there are vast opportunities for self-learning and advance in life than the guided system in the traditional learning system. The new dimension involved in new era is in continuously added content in digital media, whether it is social media or dedicated learning platforms and interest of users by accessing these sources to learn them. This is evident from the drastic increase in investors in stock market in the last five years [21] It depends on emotional intelligence and personality traits. Emotional intelligence drives to learn and experiment new things and share their experience in media as it gives them revenue. Personality traits give the pattern how an investor use it

Statement of Problem

This research is an attempt to understand the digital information on investors. This include the information content shared by the promoters and how investors understand whether the information shared is correct. Second how does the behavioural bias affect the investment decisions

Investments

When it comes to the investment part of the family life cycle, three terms come to mind: Investing in family, investing for family, and investing of family. Investing in family means spending money on things that keep the family happy, like hobbies, trips, entertainment, parenting, health, and social well-being [22]. This is an investment that can't be seen. Investment for family is the money that parents put into their family to help it. In the beginning of family life, parents help their kids pay for the costs of setting up a home. Investing in family means that family members put money aside for their future financial requirements. The second and third are investments that can be seen [23].

Debt and income balance

Investments in early family life are complicated because they need more money than they make, and loans are used to meet long-term needs that are necessary for comfort, convenience, and transportation [24]. A vehicle loan, a house loan, or home appliances are all ways to get money now so you can pay for things you need right now. It makes life less liquid and limits everyday costs. But it turns future money into assets that support life and build skills. This helps you live comfortably and work well.

Saving and investing

The cost of living is the most important factor in deciding whether to save or invest. Life becomes less stable financially as costs go up. Not being able to make enough money and having addictions are two problems that make it hard to save and invest [25]. Personality, emotional intelligence, and personal skills all have a role in how likely you are to save and invest. Family investments are made together, and personality qualities are important for making decisions together and sharing risk in life. Being open is being willing to hear and accept what others have to say.

Conscientiousness is the ability of the pair to work together to understand, analyse, and draw conclusions about each notion before making any financial decision. Being agreeable is being open to other people's ideas, while being neurotic means being afraid of making the wrong choice.

This quality is important for making deliberate selections and not being too sure of yourself. Extraversion is a positive feature that motivates individuals to conduct further research, enhance clarity, and invest in optimal choices [26] When it comes to emotional intelligence, it's about how strong each family member is in that area.

Self-awareness among family members can elucidate the need of aligning with partners' perspectives while maintaining respect and affection, which constitutes the fundamental principle of unity in life and decision-making.

Self-regulation is the ability of partners to keep a line between their personal lives and each other's. It is also the ability to manage wants and expenses to deal with the financial uncertainties of life. Self-motivation is an important part of family life that helps people get through tough times and encourages them to help each other.

The main factors will be rapid growth, low risk, and stability.

Making plans for money

Higher growth, lower risk, and stability will be the main factors. After paying for the wellbeing of all family members, whether dependent and independent, saving a family is what is left over. Dependents are those who don't have their own income and rely on the income of others.

Making a Budget

The first step in financial planning is to make a budget. Planning for basic needs like food, rent, transportation, gas, clothes, and health is very important. The second most important thing is other costs, such as comfort, communication, convenience, leisure, and entertainment. The third focus will be the education of children and the job advancement of family partners, namely the husband or wife.

Theoretical Foundation

The theories employed include the Chen and Volpe Theory on financial literacy, Behavioural Finance Theory], Behavioural Portfolio Theory [27]. According to behavioural theories, family financial plans align more closely with Behavioural Portfolio theory, which assesses the impact of each investment on overall return and risk.

Fintech and social media also play a role. Influence on social media is high in many areas, and people who sell mutual funds, insurance plans, and many other types of investments utilise social media a lot to promote their products (Boa & Kanderová, 2017).

Fintech is also the key place to invest, check documents, and do everything else. Going to the bank or office to perform business takes less time. But it is important to tell the difference between fake transactions [28]

Objective

- To understand the influence of Digital Awareness among investors
- To investigate the impact of behavioral Bias on Investment decisions

Scope of the Study

The scope of this study covers of both employed and self-employed women who are differentiated based on consistency in income. They use different strategies to smoothen their saving pattern and to overcome inconsistencies in income of life. The study analyzed the family planning approaches and how it changes with the change in family size, commitment etc.

METHODOLOGY AND SAMPLING

Descriptive and Exploratory Research Methodology and a survey method was working women collecting both primary and secondary data. The primary data collected from the respondents and the data was collected using a structured questionnaire

a. Sampling:

Purposive sampling method is used in this research and the minimum requirement of a vast population for 95% confidence level and $Z= 1.96$ is 384. Hence, the sample size is taken 384. Sample considered for analysis id 538.

Analysis and Interpretation

Demographic Analysis

Demographic Analysis of respondents

Table 1: Analysis of respondent data based on demographic variables

Demographic Variables	Demographic Variable Scales				
		25-35	35-45	45-55	55+
Age	Frequency	280	153	53	52
	Percent	52.0%	28.4%	9.9%	9.7%
Fund Management	Self	with Support			
	321	217			
	59.7%	40.3%			
Income	<5L	5-10L	10-15L	15L+	
	282	153	52	51	
	52.0%	28.4%	9.9%	9.7%	
Marital Status	Single	family	Divorced	widow	
	80	342	56	60	
	15%	64%	10%	11%	
Occupation of spouse	Dependent	Employed	Self employed		
	45	432	61		
	8%	80%	11%		
EPF	Yes	No			
	362	176			
	67%	33%			
Area of Living	Urban	Rural	Semiurban		
	440	38	60		
	82%	7%	11%		
Family Size	2	3	4	5	5+
	127	186	134	59	32
	24%	35%	25%	11%	6%
Financial Planning	Yes	No			
	456	82			
	85%	15%			
Additional Income	Yes	No			
	449	89			
	83%	17%			

The age group has four components, 25-35 years, 35-45 years, 45-55 years and more than 55 years. 80.4% of the respondents are of 25-45 years where respondents are young.

The second category financial decision making and they are, 59.7% are of self-decision making and 40.3% are of with support. In the income group, there are four groups, less than Rs 5L, 5-10L, 10-15L and more than 15L. 54.6% of the respondents are of less than Rs 5L. A 64% of the respondents are of family and 15% are singles.

Eighty percent spouses of the respondents are of employed and 8% of the respondents are of dependents. Sixty-seven percent of the respondents have EPF and 82% are living in Urban. A 25% of the respondents are couples while 35% have a family size of 3 and 25% of the respondents are of four members. That is, 85% of the respondents are macrofamilies. Eighty-five percent of the respondents do financial planning and 83% of the respondents have additional income. The respondents are of medium income group.

Use of information sources

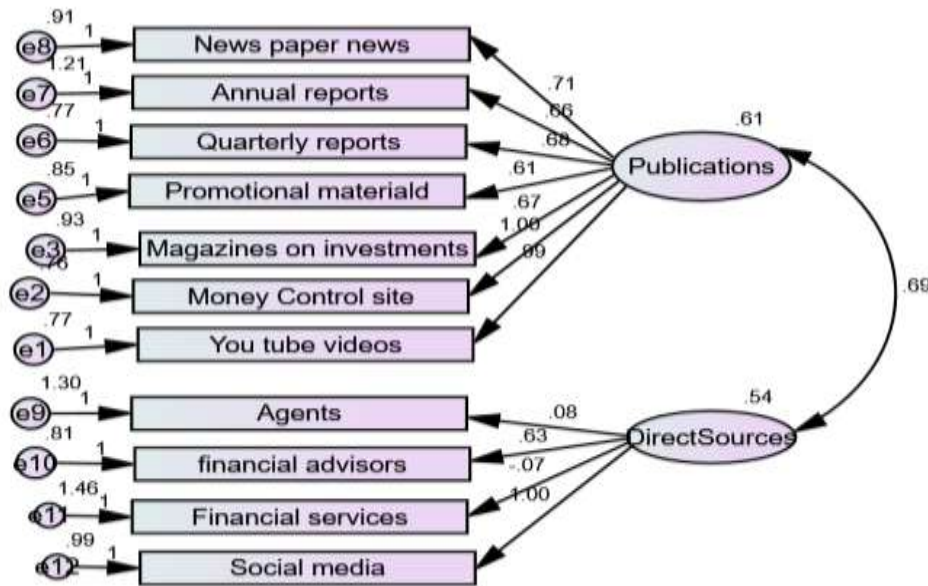


Figure 1

	Estimate	S.E.	C.R.	P
Financial services	-0.065	0.068	-0.966	0.334
Agents	0.082	0.064	1.278	0.201
Social media	1			
financial advisors	0.633	0.062	10.257	***
Newspaper news	0.707	0.07	10.035	***
Annual reports	0.664	0.077	8.651	***
Quarterly reports	0.68	0.066	10.346	***
Money Control site	1			
YouTube videos	0.993	0.078	12.75	***
Magazines on investments	0.673	0.07	9.639	***
Promotional materials	0.607	0.066	9.23	***

Firms use social media to promote investment opportunities. Social media, in this context, all media other YouTube is considered. It is taken as the reference. It is observed that the influence of financial institutions and agents has a low regression coefficient and they are not statistically significant. But the regression coefficient of financial advisors is significant. In the case of Direct influence in investors, financial advisors have more influence.

Newspaper news (0.707), Annual reports (0.664), Quarterly reports (0.68), Money Control site (1), You tube videos (0.993), Magazines on investments (0.673), and Promotional materials (0.607) are variable in publication. The regressions of all variables are statistically significant.

The results show that digital information is used as a supplement to decision making. Higher return persuades the investors to use information more.

Use of information in Decision making

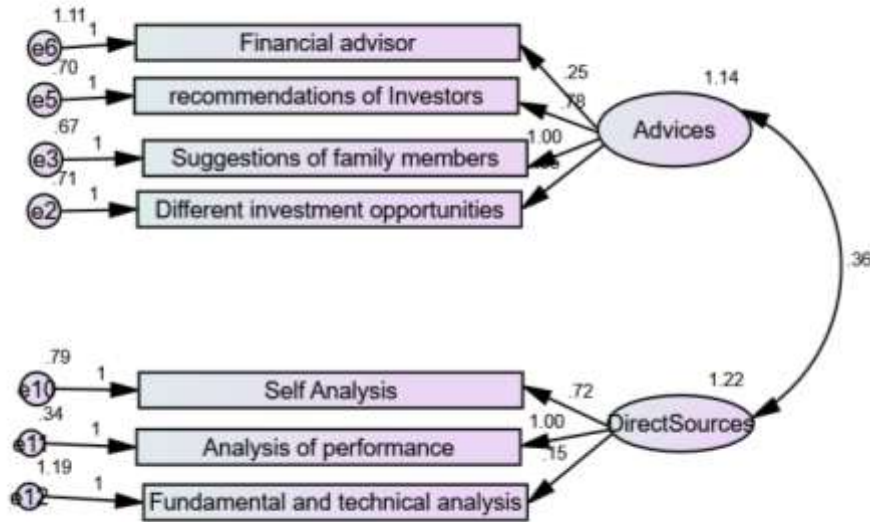


Figure 2: Analysis of Information sources

Table 3: Regression values

			Estimate	S.E.	C.R.	P
Financial advisor	<---	Advice	0.248	0.049	5.069	***
recommendations of Investors	<---	Advice	0.775	0.056	13.863	***
Suggestions of family members	<---	Advice	1			
Different investment opportunities	<---	Advice	0.854	0.06	14.124	***
Self-Analysis	<---	Direct Sources	0.723	0.124	5.808	***
Analysis of performance	<---	Direct Sources	1			
Fundamental and technical analysis	<---	Direct Sources	0.154	0.051	3.001	0.003

There are two components evolved in this analysis They are named as analysis and direct source of information. In advice, there are four variables, financial advisor (0.248), recommendations of Investors (0.775), Suggestions of family members (1), Different investment opportunities (0.854). The regression coefficient of financial advisors is .248 and it is significant.

This shows that is a common factor that all the investors accept the advice of financial advisors. In regression, the lower regression factor with $p < .05$ is a factor that causes low variance in the dependent variable. This will happen only if the effect is common among the respondents. Other two variables are also statistically significant, and the regression value is high.

Suggestions of family members are taken as reference. In confirmatory factor model, the highest regression variable in the unstandardised regression model is assigned '1' as the regression value to make the test standardized. In this case, the recommendations from family members are high and hence, it is assigned the value to make the model standardized.

This shows that influence of family members is high compared to other variables. In the direct source, analysis of performance is taken as the reference as every investor as it has the regression coefficient in the unstandardized regression model and hence, it is assigned 1 to standardized it. Fundamental and technical analysis has a low regression coefficient. Self-analysis has a regression coefficient of .723.

Effect of Digital information on Risk aversion

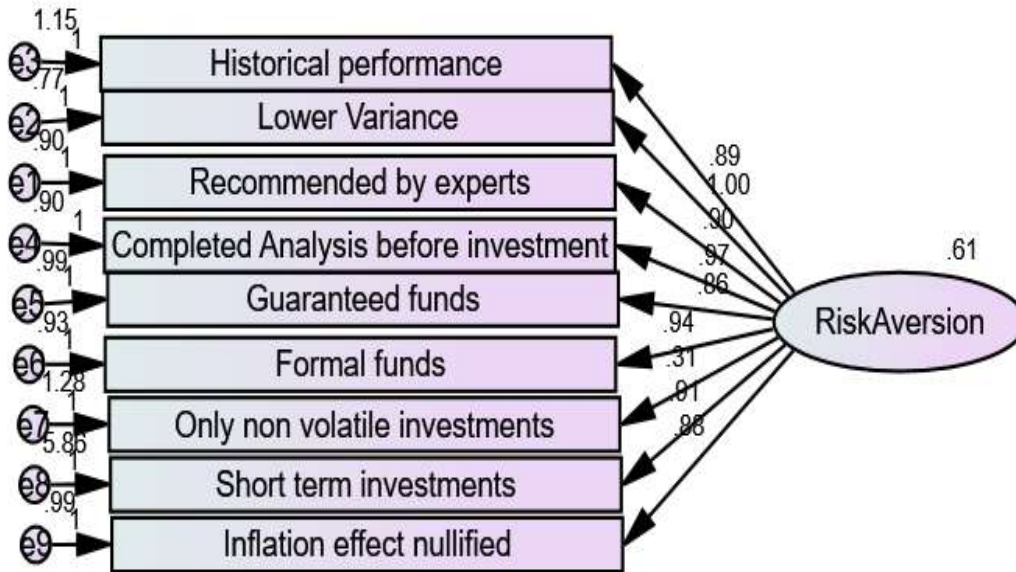


Figure 3: Risk parameters

			Estimate	S.E.	C.R.	P
Only nonvolatile investments	<---	Risk Aversion	0.307	0.073	4.235	***
Historical performance	<---	Risk Aversion	0.895	0.086	10.461	***
Lower Variance	<---	Risk Aversion	1			
Recommended by experts	<---	Risk Aversion	0.895	0.08	11.194	***
Completed Analysis before investment	<---	Risk Aversion	0.97	0.083	11.663	***
Short term investments	<---	Risk Aversion	0.907	0.16	5.684	***
Inflation effect nullified	<---	Risk Aversion	0.876	0.081	10.795	***
Guaranteed funds	<---	Risk Aversion	0.86	0.081	10.685	***
Formal funds	<---	Risk Aversion	0.943	0.083	11.4	***

Only nonvolatile investments (0.307), Historical performance (0.895), Lower Variance (1), Recommended by experts (0.895), Completed Analysis before investment (0.97), Short-term investments (0.907), Inflation effect nullified (0.876), Guaranteed funds (0.86), Formal funds (0.943) are the regression coefficients and they are statistically significant. The model parameters are CMI/DF is low and the goodness of fit parameters are more than 0.9. The results show that investment in non-volatile investments is low while all other regression coefficients are high. The lower regression shows the lower variation and the respondents prefer non-volatile investments.

Objective 2: Effect of Behavioral Bias on Investment decisions

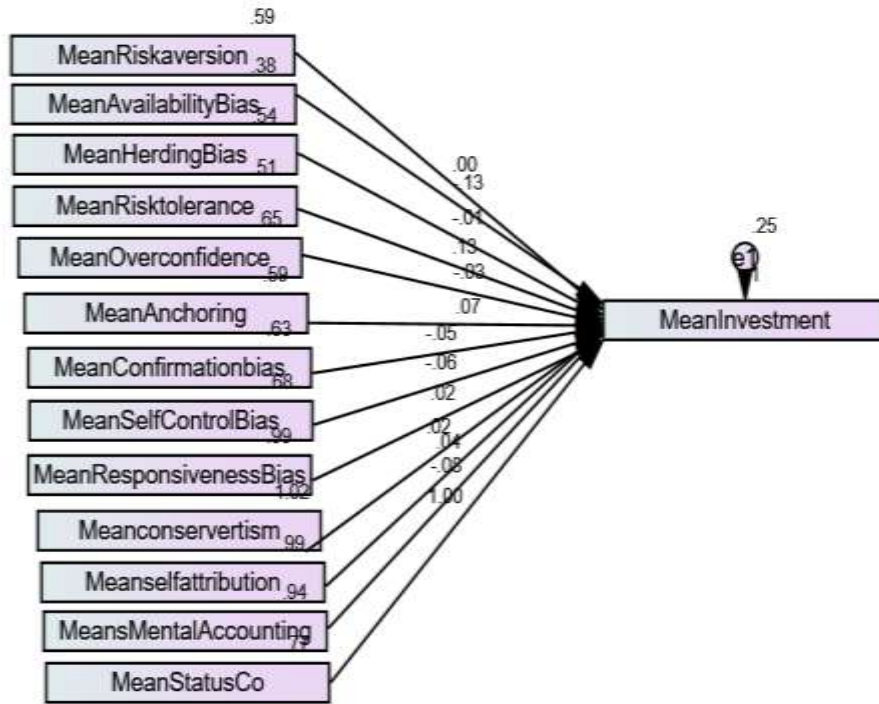


Figure 4

			Estimate	S.E.	C.R.	P
Mean Investment	<---	MeanRiskaversion	0.003	0.028	0.11	0.913
Mean Investment	<---	MeanAvailabilityBias	-0.128	0.035	-3.689	***
Mean Investment	<---	MeanHerdingBias	-0.009	0.029	-0.296	0.767
MeanInvestment	<---	MeanRisktolerance	0.128	0.03	4.254	***
MeanInvestment	<---	MeanOverconfidence	-0.027	0.027	-1.031	0.302
MeanInvestment	<---	MeanAnchoring	0.074	0.028	2.669	0.008
MeanInvestment	<---	MeanConfirmationbias	-0.049	0.027	-1.796	0.072
MeanInvestment	<---	MeanSelfControlBias	-0.062	0.026	-2.381	0.017
MeanInvestment	<---	MeanResponsivenessBias	0.02	0.022	0.938	0.348
MeanInvestment	<---	Meanconservertism	0.016	0.021	0.733	0.463
MeanInvestment	<---	Meanselfattribution	0.044	0.022	2.041	0.041
MeanInvestment	<---	MeansMentalAccounting	-0.078	0.022	-3.527	***
MeanInvestment	<---	MeanStatusCo	1			

The model shows that alternate hypothesis is accepted for the effect of Availability bias, risk tolerance, Mean Anchoring, mean self-Control Bias, mean self-attribution, and Mean mental Accounting. For other variables, Null hypothesis is accepted.

This shows that the information availability, risk tolerance level of the investor, the information one takes for investment decisions.

	Estimate	S.E.	C.R.	P
MeanRiskaversion	0.592	0.036	16.386	***
MeanAvailabilityBias	0.385	0.023	16.386	***
MeanHerdingBias	0.543	0.033	16.386	***

MeanRisktolerance	0.51	0.031	16.386	***
MeanOverconfidence	0.647	0.039	16.386	***
MeanAnchoring	0.593	0.036	16.386	***
MeanConfirmationbias	0.626	0.038	16.386	***
MeanSelfControlBias	0.683	0.042	16.386	***
MeanResponsivenessBias	0.988	0.06	16.386	***
Meanconservatism	1.023	0.062	16.386	***
Meanselfattribution	0.989	0.06	16.386	***
MeansMentalAccounting	0.944	0.058	16.386	***
MeanStatusCo	0.767	0.047	16.386	***

All the variances are statistically significant and hence, all the means have adequate estimated values.

DISCUSSION & CONCLUSION

The results show that the respondents are highly heterogenous in nature except in gender and the respondents use all digital information for investment decisions. The investment decision is influenced by information available and how the information is used. The results show that there is an effect of digital information as it is easy to identify the right investment matching the own needs and capacities. It reduces the risk and confusion in decision. Chat GPT-like tools help with it. Confirmation, self-control, Anchoring, overconfidence, and risk aversion have high mean. This shows that the investors tend to presume information than truly analyzing them.

The model shows that alternate hypothesis is accepted for the effect of Availability bias, risk tolerance, Mean Anchoring, mean self-Control Bias, mean self-attribution, and Mean mental Accounting. These biases affect investment decisions.

Information availability, self-control and mind accounting have negative regression coefficients, and it shows the lack of time to seek correct information or not using logical thinking in investment. But Risk aversion. Risk aversion has positive regression, and it shows that the investors use digital information to take correct decisions.

The limitation of this paper is the deep analysis of how data is used to avoid fraudulent research and the cognitive abilities to differentiate investments. These are the scope for future research.

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