



Analysis of pattern for Investor and Their Affecting Factors using Statistical Method

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Abstract

In the present research an attempt has been made to discover the elements that have a crucial effect on the investment selections for a sample of 93 investors in Rajasthan as well as other cities in India. For the investor it is a hard to take the decision for investment due to lake of information available. Proper information and guidance is required to make investment in various available resources such as banks, insurance, fixed deposited, mutual funds, share market etc. In present paper the authors contributed to determine the discrimination of investment with respect to gender wise on information available for various resources of investments. The present work also concludes the behavioral attitude of male and female investor in relation to the alternatives of investment. A survey form is generated and took an opinion of 65 male and 28 female investor to determine the behavior towards the factor influence the expenditure elements. The study uses statistical approach which includes descriptive, regression, and one-way ANOVA analysis for determination of influencing factor. The study concludes that there are many influencing factor which affect the decision for the investments. It is found that gender and age factor most influence the decision towards the investment. All investor think about the available resources before investing in different areas and also decide about the level of risk.

Keyword: Long term investment, Regression analysis, ANOVA, Descriptive statics

1. Introduction

India as a developing nation is turning into greater effective and requires massive capital for diverse developmental venture. In order to enhance the investment among man or woman's investor, it's miles vital to study the investment conduct of individuals and pick out the factors that inspire them to make investments, so that idle financial savings can be channelized into funding. Investment selections are encouraged by means of many reasons. It is a tolerable reality that the financiers are inside the primary position within the economic market. The mood of buyers is not fixed. It changes from position to place and from protection to safety. Hence, it's miles vital to identify the factors which influence investment selections. In order to boom investment and formulate appropriate theories and policies, it's miles important to recognize how individuals put money into securities and different financial alternatives to be had. A lot of things have an impact on investors in framing their perceptions on numerous funding options. (Jakhar and Motwani (2019)

In India, there are numerous investment options available, ranging from marketable and liquid assets to non-marketable ones. Some investments are highly volatile, while others are relatively stable and reliable. Investment behavior refers to how investors select, anticipate, analyze, and evaluate their decision-making processes. This includes aspects such as investment

psychology, data collection, understanding and defining objectives, conducting research, and performing analysis. Collectively, this process is known as "Investment Pattern."

The research has been performed especially to recognize about the individual investor's notion closer to deciding on the objective for which they save money for the future. In every existence cycle stage, the saving goal of an individual continually adjustments. Such a change takes place not because of the age of the buyers, but also due to the profession, training qualification, and earnings level class in which they fall.

2. Literature Review

Wadhwa et al. (2018) did study on various influencing factors on decision making of investor. They concluded that education of investor, their occupation and financial literacy found most significant factor for the investor. Singh and Yadav (2016) concluded that the behavior of investor improve changed before and after investment. They also showed that the safety with respect to investment found more preferable over the other factors. Obamuyi, T. M. (2013) researched about choice making method as new aspects towards the behavior of the investor. Surendar, G (2015) studied about only salaried person. He found that the maximum responded invested in long term investment and purchasing the home. Their criteria for the investment was safety and low risk. Patel, B., & Modi (2017) showed that there is significant positive relationships exist between age, income and education level with respect to insurance. They concluded that as the age increased the investor more interested to buy insurance. They also found that the peoples with higher education and income level behaves positive on investment. Dıvanoglu & Bagci (2018) presented the role of past experience as the most influencing factors over the other such as economic and financial stability while making the decision for the investment. Gautam and Matta (2016) found that the primary school level education and awareness plays a most significant role towards the behavior of future investor. They concluded duration of investments and household annual income, are the two important factors for studying the investor financial behavior. Wadhwa et al. (2019) did the study on perceptions of small investor for investing in mutual funds. They found financial inclusion create an important effect on the economy of the small investor. Purohit and Sharma (2012) conducted a detailed research on the behavior of investor making their investment in mutual funds. They examined the performance analysis of reputation of mutual funds. Sireesha and Laxmi (2013) showed that various influencing factors such as gender, age, and friends are mostly affect the investment decisions of the respondents. They showed the conservative behavior of respondent for investing the saving in liquidity. Dhar and Dey (2012) presented the comparative study on male and female investor. They concluded that male investors are mostly longer-term investors as compared to female investors. Optimism investor are more interested in long term investing while the pessimistic are interested in short term investment. Geetha and Ramesh (2012) found the most significant factor is demographic over the other factors to make the investment decision elements.

Motwani (2013) researched about the fundamental of components of equity investment with respect to small scale investors. They observed that equity investment plays a very crucial role for the performance of a company.

The literature review concluded that to make the decision on investment various influencing factor such as gender, age and demographic most significantly affect. In present research authors did the research on gender and age wise to make the decision on investments.

3. Research Objectives

The study is proposed to attain the following objectives:

- I. To identify the impact of socio-economic profile of retailer investor on their investment decision.
- II. To identify numerous affecting variables which influence the decisions of investment in the equity market.
- III. To identify motivational factor for investor that affect their decision to invest in equity market.

4. Research Methodology

This research methodology ensures a comprehensive and statistically robust approach to analyzing investment patterns and their influencing factors. The research is based on a survey of investors from Rajasthan as well as other states of the country selected based on the judgment of the researcher through a questionnaire.

4.1 Source of Information & Data Collection Method

Primary data shall be used for conducting the intended research. The data will be collected by interviewing individuals on the basis of pre-designed questions, through structured questionnaires and schedules.

4.2 Tools for Collecting Primary Data and Questionnaires

The sample size of the proposed study will be 93. The geographical area for the proposed study will be Rajasthan for the questionnaire and across India for the online collection of data. The required information will be collected from the investors of the selected industries, i.e., Banking & Insurance, mutual funds, NSCs, Public Provident fund (PPF), New Pension Scheme (Scheme (NPS), investment in Gold and Jewelry, real estate, etc. The data will be collected through an interview, a structured questionnaire, and a schedule by means of e-mail questionnaires.

5. Data Analysis

Statistical approach is used for analyzed the data collected from the survey. There are many methods which can be used for analysis purpose, in present research descriptive, regression and one way ANOVA is applied. The descriptive analysis consist of calculation of mean, frequency and standard deviation from the respondent. For analyzing and evaluating the significance of influencing factors, descriptive statistical method found more suitable as it provide the results with high accuracy. Frequency distribution shows the important relationship of respondent demography and other influencing factors. Mean and standard deviation has been calculated to check the feasibility of the responses collected from the respondent. Furthermore,

a comparative analysis also has been made using regression and one way ANOVA on the various influencing factors such as gender, age, occupation, education qualifications and monthly income.

5.1 Research Tool

The tool used for collecting the data is questionnaire. The questionnaire has been prepared in such a way that they judge and collect the information from the respondent. A total of 115 questions are asked from the people of different states of India, mainly focused on Rajasthan, in which 93 questions have been considered for the analysis. The prepared questionnaire divided in two parts. In first part questions asked from the respondent to collect demographic information such as name of respondent, gender, age, area of origin, education qualification, occupation, monthly income, awareness of investments through government as well as non-government ways, motivation for the investment, types of investments most preferable and factors influence the investments. The question on the second part has been formed with the objective to measure the thoughts of respondent on various influencing factors which affect the decision for investment. Second part includes 5 variables such as whether investment should be involved in an education course, comparison between government and private investments, based on the present scenario of Covid-19, how saving becomes important, how investments make an impact before and after Covid-19, and, lastly, the objective of the non-institutional investor shifted from long term to short term. Respondent need to give the answer of these questionnaire. After getting the responses from the respondent, Likert scale is used to measure the accuracy and feasibility of the question. Likert scale is consider one of the renowned tool for analyzing the questionnaire. It is based on the categories of odd number ranges from 1 to 5. These number are again had some code such as 1 represents strongly agreed, 2 represents agree, 3 represents neutral, 4 represents disagree and 5 represents strongly disagreed.

5.2 Reliability test

Measure of internal consistency

Internal consistency is a measure used in research to evaluate the reliability of a test or survey by determining how well its items measure the same underlying construct. The most widely used metric for internal consistency is Cronbach's alpha, which ranges from 0 to 1. A higher alpha value indicates greater consistency among items, typically with a threshold of 0.7 or higher considered acceptable for most studies (Nunnally, 1978). In present study, the alpha coefficient for the 93 respondents and 5 items is .753, suggesting that the items have acceptable internal consistency.

$$\text{Cronbach's Alpha} = \left(\frac{k}{k-1} \right) \left(\frac{S_y^2 - \sum S_x^2}{S_y^2} \right)$$

Where

k = number of test item

S_y^2 = Variance of total score

$$\sum S^2_x = \text{Sum of item variance}$$

Table 1: Interpreting ALPHA for the Likert scale question

Interpretation	
Cronbach's Alpha	Internal Reliability
0.90 and above	Excellent Reliability
0.80 - 0.89	Good Reliability
0.70 - 0.79	Acceptable Reliability
0.60 - 0.69	Questionable Reliability
0.50 – 0.59	Poor Reliability
Below 0.50	Unacceptable Reliability

5.3 Profile of the Respondents

Respondents were asked to fill in the demographic and socio-economic information in the first part of the questionnaire. About 60% of the respondents were of age 20-30, 30% of age 31-40, and 10% of respondents were of age 41 and above. With respect to gender, 69.8% were males and only 30.2% were females. About 43% of the respondents were salaried and 55.9% were self-employed. Out of total respondents, 8.60% of respondents are undergraduate, 24.7% are graduates and 66.66% are post-graduate. Out of total respondents, 29.0% were having salaries up to Rs. 15000, 29% were having salary from Rs. 15001- Rs. 25000, 15% were having a salary from Rs.25001- Rs. 35000, 9.67% were having a salary from 35001-45000 and 20.4% were having a salary above Rs. 45000.

Table 2: Extensive Information of respondents investing in various modes of investment

S.No	Variables	Classifications of variables	Types of Respondents		Total Responses
			Male	Female	
1	No. of Respondents		65	28	
2	Have you invested your savings so far?	Yes	48	20	
		No	17	8	
3	What percentage of your month-to-month profits do you save?	0-10%	30	13	
		11-20%	19	6	
		21-30%	12	6	
		31% & Above	4	3	



4	Are you aware of all the investment plans provided by the Government of India?	Yes	18	6	93
		Partially Yes	17	6	
		No	30	16	
5	Which of the following options have you chosen or pursued?	LIC	28	8	
		FD	21	14	
		KVP	4	3	
		MF	5	2	
		Property	3	1	
		Stocks	2	0	
6	What is your usual investment schedule?	Jewelry	2	0	
		Monthly	29	11	
		Half-Yearly	7	2	
		Quarterly	11	5	
7	What is time period of your investment?	Yearly	18	10	
		Less than 1 year	17	8	
		Between 1-2 years	13	3	
		Between 2-5 years	13	3	
8	Whose recommendation do you are searching for to your investment decisions?	More than 5 years	22	9	
		Local agent	10	7	
		Magazines & newspapers	10	5	
		Banks	6	1	
		Financial Advisor	9	6	
9		Family & friends	30	9	
		Return	48	23	



	What is your short term intention of investment?	Taxation	2	2
		Risk Coverage	5	3
		Liquidity	10	0
10	What is your long time intention of investment?	Children's future	17	8
		Dream Home	12	3
		Retirement corpus	16	5
		Others	20	12
11	Your decision to invest depends upon?	Word of Mouth	6	1
		Past performance	33	16
		Industry analysis	5	1
		Economic scenario	14	7
		Company analysis	5	2
		Credit rating	2	1
12	Availability of investment houses in your vicinity	Available	12	14
		Moderately available	34	9
		Very less	19	5
13	What factors influences your investment decision?	Returns	32	11
		Safety	14	9
		Long Term Plans of Investment	7	3
		Liquidity	14	3
14		Minimum risk	27	8

	What is your risk management for your investment?	Average risk	33	17
		Maximum risk	5	3
15	Age (In Years)	Below 20	0	1
		20 – 30	37	19
		31-40	19	7
		Above 40	9	1
16	Educational Qualifications	Under Graduate	6	2
		Graduate	17	6
		Post Graduate	42	20
17	Occupation	Salaried	28	12
		Self employed	36	16
		Retired	1	0
18	Monthly Income (In Rs.)	Up to Rs. 15000	19	8
		15001-25000	15	12
		25001-35000	12	2
		35001-45000	6	3
		Above 45000	13	3

5.4 Statistical Description

Statistical description summarize and organize data to provide an overview of its main characteristics. They are essential for understanding large datasets by simplifying complex data into meaningful forms. Key measures include central tendency (mean, median, and mode) that indicate the dataset's center, and dispersion (range, variance, and standard deviation) that show the spread of the data. Descriptive statistics do not infer or predict but offer insights into the dataset's structure, helping researchers identify trends, spot anomalies, and prepare for further statistical analysis like hypothesis testing or modeling. Table 3 shows the mean and standard deviation of all the factors. The above table shows that ‘Investment education/awareness must be part of the basic education in a country like India’ and in the scenario such as COVID-19, it has been realized that only savings help when all the sources of income are closed has maximum mean value i.e., 43118 and 4.2258 respectively, followed by ‘Security is going to be the new keyword for all the investors during and after COVID -19’ with mean value 4.1720. The factors which have the lowest mean value of the mean is ‘While taking the investment

decision, most of the people prefer the government Instruments over private companies (3.8925)' and the objective of investment for a non-institutional investor has been shifted from long term to short term (3.5914). Standard deviation indicated that how far the individual responses to a particular question vary or deviate from the given mean.

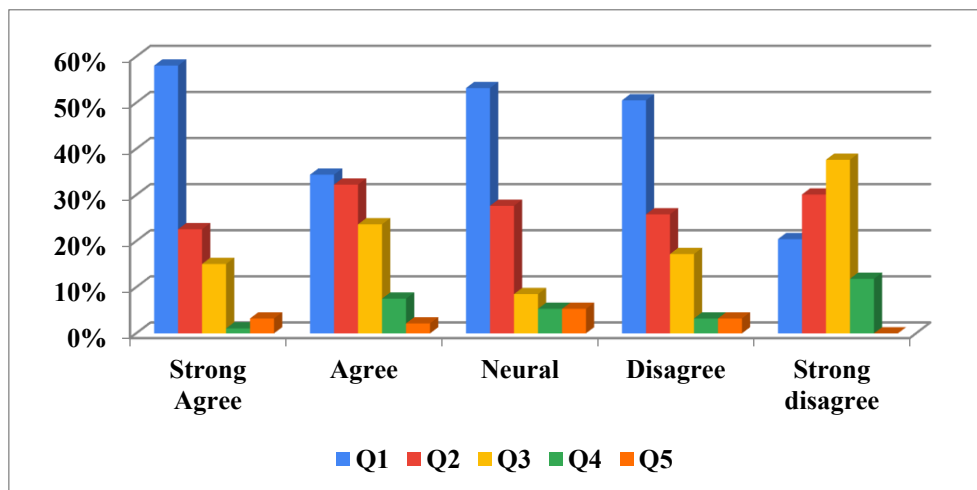
Table 3: Analysis of Frequency, mean and standard deviation

	Q1	Q2	Q3	Q4	Q5
	Frequency distribution (f)				
Strong Agree	54	32	50	47	19
Agree	21	30	26	24	28
Neural	14	22	8	16	35
Disagree	1	7	5	3	11
Strong disagree	3	2	5	3	0
Mean	4.3118	3.8925	4.2258	4.1720	3.5914
Overall Mean	4.0387				
Standard Deviation	3.9048	3.5104	3.8381	3.7817	3.1927

Table 4: Analysis of Likert survey based on questionnaire

	Q.1	Q.2	Q.3	Q.4	Q.5
Strong Agree	58%	34%	53%	51%	20%
Agree	23%	32%	28%	26%	30%
Neural	15%	24%	9%	17%	38%
Disagree	1%	8%	5%	3%	12%
Strong disagree	3%	2%	5%	3%	0%

Figure-1: Behavior of investor towards the non-institutional investment



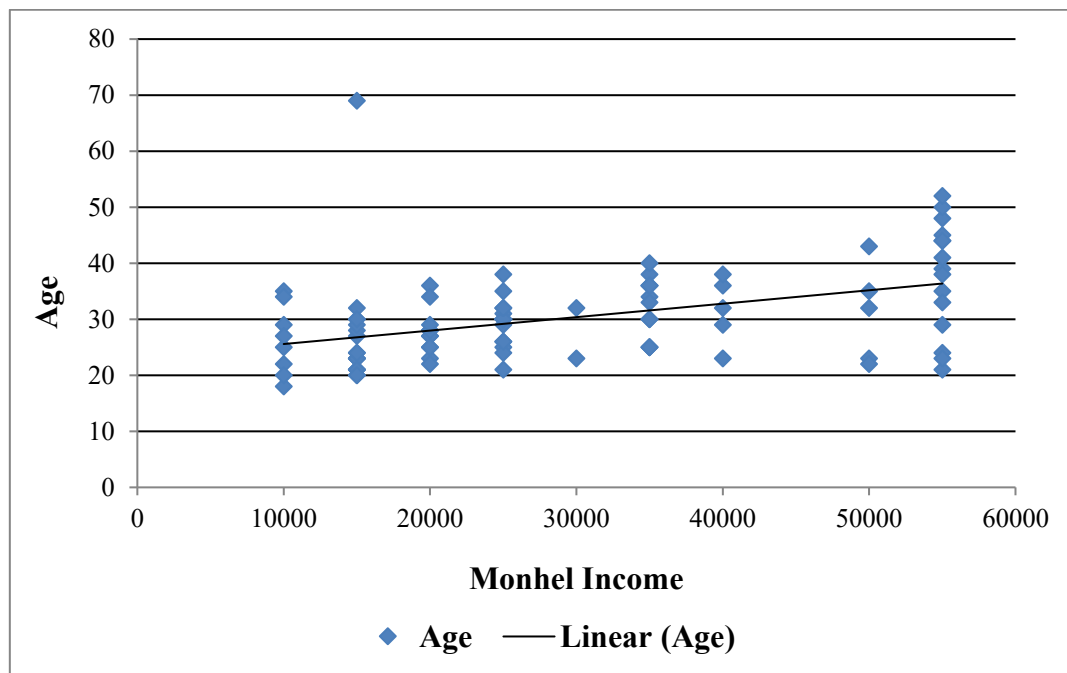
Abbreviations

Q.1	Investment education/awareness must be part of the basic education in a country like India.
Q.2	While taking the investment decision, most people prefer the government Instruments over private companies.
Q.3	In the scenario such as COVID-19, it has been realized that only savings help when all the sources of income are closed.
Q.4	Security is going to be the new keyword for all the investors during and after COVID -19.
Q.5	The objective of investment for a non-institutional investor has been shifted from long term to short term.

5.5 Multiple Regression Analysis

Regression is an effective statistical analysis that lets in measuring the relationship between an established (output) variable and now not just one, however a set of unbiased (input) variables. As a result, the impact of each unbiased variable is controlled for by way of the outcomes of the opposite unbiased variables. In linear regression, statistics are modeled the use of linear predictor features (reflect on consideration on drawing an instantly or linear line thru the records).

Figure 2: Relation between Age and Monthly Income



Synopsis of Result									
<i>Regression Statistics</i>									
Multiple R	0.4613								
R Square	21%								
Adjusted R Square	0.0715								
Standard Error	0.4444								
Observations	93								
ANOVA									
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>				
Regression	14	4.1647	0.2975	1.506	0.01286				
Residual	78	15.4052	0.1975						
Total	92	19.5699							
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>	
Intercept	0.9179	0.4294	2.1378	0.035	0.0631	1.7727	0.0631	1.7727	
A1	-0.0000087	0.0000	-2.2922	0.024	0.0000	0.0000	0.0000	0.0000	



A2	-0.0089	0.0081	- 1.1012	0.002	-0.0251	0.0072	- 0.0251	0.0072
A3	0.1245	0.0840	1.4816	0.142	-0.0428	0.2918	- 0.0428	0.2918
A4	0.0214	0.0511	0.4190	0.006	-0.0803	0.1232	- 0.0803	0.1232
A5	0.0626	0.0617	1.0145	0.003	-0.0603	0.1855	- 0.0603	0.1855
A6	-0.0351	0.0358	- 0.9796	0.003	-0.1063	0.0362	- 0.1063	0.0362
A7	0.0521	0.0369	1.4119	0.162	-0.0214	0.1255	- 0.0214	0.1255
A8	0.0701	0.0497	1.4108	0.162	-0.0288	0.1689	- 0.0288	0.1689
A9	-0.0297	0.0326	- 0.9121	0.003	-0.0945	0.0351	- 0.0945	0.0351
A10	-0.0811	0.0516	- 1.5729	0.119	-0.1838	0.0216	- 0.1838	0.0216
A11	0.0324	0.0437	0.7401	0.004	-0.0547	0.1194	- 0.0547	0.1194
A12	0.0231	0.0434	0.5320	0.006	-0.0634	0.1096	- 0.0634	0.1096
A13	0.0513	0.0438	1.1717	0.02	-0.0359	0.1385	- 0.0359	0.1385
A14	0.0868	0.0804	1.0804	0.002	-0.0732	0.2469	- 0.0732	0.2469

Abbreviations

A1	Monthly Income (In Rs.)
A2	Age
A3	Educational Qualification
A4	What percentage of your month-to-month profits do you save?
A5	Are you aware of all the investment plans provided by the Government of India?
A6	Which of the subsequent avenues have you ever opted for?
A7	What is your usual investment schedule?



A8	What is your investment horizon?
A9	Whose recommendation do you are searching for to your investment decisions?
A10	What is your short term intention of investment?
A11	What is your long-term intension of investment?
A12	Your decision to invest depends upon?
A13	What factors influence your investment decision?
A14	What level of risk are you ready to adopt for your funding street?

Conclusion

The analysis of investor patterns and their influencing factors using statistical methods provides valuable insights into the decision-making behaviors and preferences of investors. By applying techniques such as regression analysis, factor analysis, and clustering, key determinants such as demographics, risk tolerance, market trends, and external economic conditions were identified as significant influencers of investment choices. Statistical methods not only highlighted correlations and causations but also allowed segmentation of investors into meaningful groups for targeted strategies. The findings emphasize the importance of data-driven approaches in understanding investor behavior, enabling financial institutions, policymakers, and advisors to tailor solutions, improve engagement, and foster informed investment decisions.

Results of this study indicate that there are many influencing factors that affect the behavior of the investor. In present studies, 14 different factors have been considered and questionnaires prepared. The level of risk while investing is found the most significant parameters and schedule of investment and its horizon found less significant parameter as per the value of p determined by ANOVA analysis. The analysis additionally indicates that there are statistically full-size variations amongst diverse age companies of the traders in phrases of their consideration in various modes of investments. However, an investor's consideration for the advice of experts or advice from other sources differs significantly from one age group to another.

Again, the authors observed no statistically widespread difference among buyers having exclusive academic qualifications. But it observed that the traders from diverse earnings businesses differ substantially in their attention of expert recommendation and different specific problems.

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