Do Male and Female Investors employ different decision making tools in the equity market?

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Abstract: The decision making tools employed by investors in the secondary equity market is influenced by the gender bias. Researchers have identified that the female investors participate less in the equity market, especially in India because of lesser financial knowledge and poor awareness compared to the male investors. This study aims to identify the differences between the male and the female investors in terms of the decision making tools employed for making stock investment decisions. By using a questionnaire survey on a sample of 436 secondary equity investors residing in Chennai, this study measures the variables influencing the stock investment decision which was further reduced to the five decision making tools namely: Economy analysis, Industry analysis, Company analysis, Technical analysis and Advocate's recommendation. Using Independent sample t-test, the means of the tools: Industry analysis and Advocate's recommendation were found to differ between the male and the female investors. Investors and wealth managers need to be aware of this gender bias in order to make efficient decisions in the equity market and aim towards a more rational market.

IndexTerms **- Investor behavior, Fundamental analysis, Technical analysis, Peer recommendation, Secondary equity market.**

I. INTRODUCTION

Researchers have identified that the female investors participate less in the equity market, especially in India because of lesser financial knowledge and poor awareness compared to the male investors. Most studies in other countries have also supported this result. It is important to identify the gender differences between the male and the female investors in terms of equity investing in order to nullify the gender bias and aim towards a more rational equity environment.

The stock purchase decision in the equity market is a very cumbersome task as it needs the assimilation of abundant information. The market being very uncertain, several variables influence the stock investment decision. Depending on the dominant influential variables, the decision making tool adopted differs from investor to investor. Investors with deep understanding of the companies listed in the equity market, spend a lot of time in investigating the company's fundamentals from the balance sheets and annual reports to identify the key ratios and make a buy/sell decision. This refers to fundamental analysis where the economy in general, the industry in which the company is categorized and the company itself is analyzed step by step. The next type of decision making tool is the technical analysis where the past stock price movements are analyzed in order to notice significant trends and to make the stock investment decision accordingly. Several technical indicators are also employed to identify the significant buy/sell signals. Advocate's recommendation refers to peer recommendations which come from friends, family members, professionals like brokers, financial advisors, wealth managers, etc. on stock investment decisions.

This study tries to bridge the two concepts by identifying the gender differences in terms of the decision making tools employed to make a stock investment decision in the equity market. From a sample of 436 secondary equity investors residing in Chennai, a questionnaire survey was run and the variables influencing the stock investment decision was identified. The decision making tool employed was identified by reducing the variables using the Principal Component Factor analysis method. Using Independent sample t- test, the financial differences between the male and female investors in terms of the decision making tool employed was identified.

II. LITERATURE REVIEW

Gender is an essential determinant of investor behavior (Mayfield et al., 2008). The gender differences remained even for the management styles (Claes, 1999), the money styles, their perception of money and the way money was handled (Prince, 1993). The variations were also found in terms of item-specific confidence judgments based on the content (Lundeberg et al., 1994). Gender had a detrimental impact on the aversion to risk taking (Barber & Odean, 2001; Felton et al., 2003; Byrnes et al., 1999; Jianakoplos & Bernasek, 1998). The variations in information processing capability were responsible for the difference in risk-taking and confidence levels (Graham et al., 2002). Bajtelsmit and Bernasek (1996) found that men and women had varying investment behavior. Women were found to be more careful in their investment decisions and also more risk averse than the male investors. Kabra et al. (2010) documented that both gender and age influenced the risk taking capacity of the investor. Graham et al. (2002) proved that female investors had less confidence in their investment decisions compared to the male investors in similar scenarios. They also showed that women more regressively processed financial information compared to men but traded less often than men. Schmidt and Sevak (2006) found differences in wealth assimilation on the grounds of gender and marital status in the US households.

Hallahan et al. (2004) documented that women had lower risk tolerance than men. The female professional investors demanded reduction of risk more than men during portfolio assignment (Olsen & Cox, 2001). Sjöberg and Engelberg (2006) found that women had higher emotional intelligence compared to men but women were lesser than men in terms of risk preferences. Bajtelsmit et al. (1999) found that women showed higher aversion to risk when compared to men in the wealth distribution of their pension plans. The reluctant attitude of women to invest in high risk investments compared to men was found in several studies (Olsen & Cox, 2001; Hariharan et al., 2000). In financial literacy as well, the female investors were found to be less than men (Worthington, 2006).

In this study, gender's influence on the five decision making tools in the stock market is examined using Independent sample t-test. The following table explains each decision making tool and the factors considered while employing each tool in the equity market for making stock investment decisions.

Decision Making Tool	Definition	Factors Considered in the Decision making tool
Economy Analysis	While employing this decision making tool, investors use economic indicators to make stock investment decisions.	RBI rate GDP, Growth rate, etc. Current economic indicators like inflation
Industry Analysis	Investors use industry benchmarks to make stock investment decisions in the equity market.	Government policies relating to the industry to which the company belongs Future prospects of the industry to which the company belongs Technology changes in the industry to which the company belongs Supply chain constraints in the industry to which the company belongs Market for the industry to which the company belongs
Company Analysis	The financial statements and company reports are used to identify the fundamentals of the company before investing in the company's stocks.	Profits of the company Bonus shares issued by the company Data in reports & prospectuses of the company Financial statements of the company Dividends paid by the company
Technical Analysis	The movement of the stock's prices in the past is observed to find patterns while making stock investment decisions.	Support and resistance levels Chart Patterns like Head and Shoulders, etc. Indicators and oscillators Moving averages
Advocate's Recommendation	Recommendations from peers are considered while making stock investment decisions.	Family member's opinion to invest in the stock market Professional recommendation to invest in the stock market e.g.: stock brokers, financial advisors, etc. Friend or co-worker's recommendation to invest in the stock market

III. Objective of the Study

This study aims to determine the difference between the male and female investors in terms of the types of decision making tools employed in order to make stock market decisions in the equity market.

IV. Sample and Methodology

The population for the study is the secondary equity investors residing in Chennai. The samples selected for the study are the members of the Tamil Nadu Investors Association (TIA) and the clients of a popular financial services company, Integrated. The data was collected via the questionnaire survey method. TIA was selected as it was the only formal body which allowed access to collect data from its members. Integrated was selected as it was the only company which allowed access to collect data from its clients. The total valid questionnaires collected were 436 and hence the total sample size was 436.

V. Results and Discussion

When Independent sample t-test was performed between the two groups of the male and the female investors, it was found that the tests were significant only for the decision making tools: Industry Analysis and Advocate's recommendation.

5.1 Economy Analysis

Table 5.1 shows the Independent sample t-test results when the means of the decision making tool, Economy analysis is compared between the groups of male and female investors. The p-value for one-tail test is 0.381 as it is 0.762 for the two-tailed test. Hence the result is insignificant as the p-value is not less than the alpha value of 0.05.

Table 5.1: Independent sample test results for Economy analysis

Levene's Test for Equality of Variances		F	Sig.	T	Df	Sig. (2-tailed)
Economy Analysis	Equal variances assumed	.003	.957	.303	434	.762
	Equal variances not assumed			.301	196.587	.764

5.2 Industry Analysis

Table 5.2 shows the Independent sample t-test results when the means of the decision making tool, Industry analysis is compared between the groups of male and female investors. The p-value for one-tail test is 0.003 as it is 0.006 for the two-tailed test. Hence the result is significant as the p-value is less than the alpha value of 0.05. The mean of the male investors (0.0775) is higher than the mean of the female investors (-0.2188) as shown in Table 5.3. Hence the male investors are more likely to employ industry analysis for stock investment decisions compared to the female investors.

Table 5.2: Independent sample test results for Industry analysis

Levene's Test for Equality of Variances		F	Sig.	T	df	Sig. (2-tailed)
Industry Analysis	Equal variances assumed	4.699	.031	2.739	434	.006
	Equal variances not assumed			2.901	221.866	.004

Table 5.3: Group Statistics for Industry analysis

	Gender of the respondent	N	Mean	Std. Deviation	Std. Error Mean
Industry Analysis	Male	322	.0774805	1.02146200	.05692385
	Female	114	-.2188484	.90563874	.08482084

5.3 Company Analysis

Table 5.4 shows the Independent sample t-test results when the means of the decision making tool, Company analysis is compared between the groups of male and female investors. The p-value for one-tail test is 0.2055 as it is 0.411 for the two-tailed test. Hence the result is insignificant as the p-value is not less than the alpha value of 0.05.

Table 5.4: Independent sample test results for Company analysis

Levene's Test for Equality of Variances		F	Sig.	t	Df	Sig. (2-tailed)
Company Analysis	Equal variances assumed	4.183	.041	-.822	434	.411
	Equal variances not assumed			-.773	178.418	.441

5.4 Technical Analysis

Table 5.5 shows the Independent sample t-test results when the means of the decision making tool, Technical analysis is compared between the groups of male and female investors. The p-value for one-tail test is 0.132 as it is 0.264 for the two-tailed test. Hence the result is insignificant as the p-value is not less than the alpha value of 0.05.

Table 5.5: Independent sample test results for Technical analysis

Levene's Test for Equality of Variances		F	Sig.	t	Df	Sig. (2-tailed)
Technical Analysis	Equal variances assumed	9.253	.002	-1.119	434	.264
	Equal variances not assumed			-1.254	251.09	.211

5.5 Advocate's Recommendation

Table 5.6 shows the Independent sample t-test results when the means of the decision making tool, Advocate's recommendation is compared between the groups of male and female investors. The p-value for one-tail test is 0.0005 as it is 0.001 for the two-tailed test. Hence the result is significant as the p-value is less than the alpha value of 0.05. The mean of the female investors (0.2668) is higher than the mean of the male investors (-0.0945) as shown in Table 5.7. Hence the female investors are more likely to employ advocate's recommendation for stock investment decisions compared to the male investors.

Table 5.6: Independent sample test results for Advocates' Recommendation

Levene's Test for Equality of Variances		F	Sig.	T	Df	Sig. (2-tailed)
Advocates' Recommendation	Equal variances assumed	.987	.321	-3.353	434	.001
	Equal variances not assumed			-3.529	218.981	.001

Table 5.7: Group Statistics for Advocates' Recommendation

	Gender of the respondent	N	Mean	Std. Deviation	Std. Error Mean
Advocates' Recommendation	Male	322	-.0944542	1.01416025	.05651694
	Female	114	.2667918	.91137222	.08535783

From the summarized t-test results (Table 5. 8) we can infer that only in industry analysis and advocate's recommendation, male and female respondents differed. In addition, the male respondents employed industry analysis more than the female respondents whereas the female respondents employed advocate's recommendation more than the male respondents. In financial literacy, the female investors were found to be less than men, (Worthington, 2006). This explained why the female investors in the sample more likely employed peer recommendations for decision making whereas the male investors on the other hand preferred industry analysis. Hence, like what Mayfield et al. (2008) mentioned, gender seemed to be an important determinant of investor behavior.

Table 5.8: Summary of the ANOVA test results – Decision Tools vs. Gender

S.No	Decision Making Tools	t value	p-value for one tail test
1	Economy Analysis	0.303	0.381
2	Industry Analysis	2.739	**0.003****
3	Company Analysis	-0.822	0.2055
4	Technical Analysis	-1.119	0.132
5	Advocate's Recommendation	-3.353	**0.0005****

** - rejected at 0.01 level * - rejected at 0.05 level

VI. Conclusion

The results of the study clearly show that the male and female investors differ in terms of the decision making tools employed to make stock investment decisions in the equity market. The sample of secondary equity investors consisted of 26% of female investors and 74% of male investors. The questionnaire survey measured the variables influencing the stock investment decision, from which the decision making tools employed were derived using Principal Component analysis. The gender differences among the decision making tools: Economy analysis, Industry analysis, Company analysis, Technical analysis and Advocate's recommendation were tested using the Independent sample t-test. The results of the test showed that only in Industry analysis and Advocate's recommendation, the male and female investors differed. In addition, the male investors employed industry analysis more than the female investors whereas the female investors employed advocate's recommendation more than the male investors. Investors and financial professionals guiding the investors should be aware of this gender bias and make investment decisions more rationally in order to develop an efficient equity environment.

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