

## Influence of the Selected Behavioural Biases on Intermediaries in Initial Public Offerings Market: A Survey

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**Abstract:** This study investigates the role of the selected behavioural biases on intermediaries' decision making in the Initial Public Offerings (IPO) market. Based on the review of literature, four behavioural biases viz. 'overconfidence', 'availability', 'representativeness' and 'anchoring' are included in this study. A self-administered structured questionnaire is designed to measure the behavioural biases. Further, as a part of data analysis, non-parametric tests are used to examine the role of demographic factors on behavioural biases. Besides, behavioural biases are also ranked according to their prevalence among intermediaries. It has been found that intermediaries in the IPO market are prone to behavioural biases. In addition, demographic factors of intermediaries seem to influence behavioural biases. The 'availability' and 'representativeness' are found to be prominent behavioural biases that influence the intermediaries' decision making in the Indian IPO market. The findings can help intermediaries themselves, regulators and issuer firm to augment their understanding of the role of behavioural biases in decision making. A guided 'nudge' would help intermediaries to make their decision more rational. Besides, the findings would help policymakers in designing policies, training manuals, and course curricula to minimize intuition-based decision making.

**Keywords:** Behavioural biases, Financial markets, Initial public offerings, Demographics factors, Non-parametric tests.

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## 1. Introduction

The decision to transform a private entity into a public entity is a strategic decision in a firm's life. Raising capital is not a dominant reason to go public by a firm (Pagano *et al.*, 1998). Instead, other predominant strategic factors lead a firm to take the IPO route (Mang, 2001; Lowry, 2003; Brau and Fawcett, 2006; Badnaruk *et al.*, 2008; Chemmanur *et al.*, 2009; and Chod and Lyandres, 2011). Further, floating a firm's IPO is a complex process and requires intermediary professionals such as merchant bankers or underwriters, brokers, syndicates, research analysts, etc.

In approaches to decision making, traditional finance is based on the assumptions of rationality whereas behavioural models of finance have been tilted towards intuition-based decision making. Traditional finance assumes a normative model of decision making where the decision-maker is rational; markets are efficient and the decision making is based on expected utility theory. In practice, systematic deviations in actual behaviour are widely observed. Unlike 'econs', humans are subject to cognitive, psychological and social factors in their decision making. The relevant literature reveals that people optimise their decision making process and systematically deviate from the prescribed norms due to human-related factors (De Bondt and Thaler, 1985; Benartzi and Thaler, 1995). Thus, these systematic deviations have been explained through behavioural aspects of human decision making. The extant literature has widely covered the behavioural aspects of investors' decision making in financial markets. However, the evidence also supports that investment managers and other experts are not immune from behavioural biases (Tversky and Kahneman, 1983; Northcraft and Neale, 1987; Englich *et al.*, 2006).

## 2. Review of Literature

The decision making style is a learned habit. The critical differences among styles involve the amount of information considered during a decision and the number of alternatives identified when reaching decisions (Driver *et al.*, 1990). Harren (1979) classified decision making styles into dependent, rational and intuitive.

Simon (1957) shows a different perspective of decision making in which the rationality of individuals is limited due to the constraints of information, cognitive factors and time. Heuristics and biases are systematic errors that lead to adverse outcomes (Tversky and Kahneman, 1973). Fundamental heuristics such as representativeness, availability, and anchoring (Tversky and Kahneman, 1974), psychological biases (Baker and Nofsinger, 2002) and inconsistency through imperfect information (Bikhchandani *et al.*, 1992) play a crucial role in understanding irrational decision making. Unlike traditional finance, behavioural finance studies the role of perceptions, memories, thoughts without awareness in suboptimal investment decision making (Hilton, 2001). Baker and Nofsinger (2002) demonstrated that thoughts and feelings could change the decision making process from rational to irrational.

The research work examined the perception of intermediaries towards the IPO market. Intermediaries provide a bridge between the issuer of shares and investors. They facilitate the process of price determination; provide relevant information to parties; ensure compliance with all statutory and legal provisions and other related services. The previous studies show intermediaries in IPO markets are prone to behavioural biases (Ritter and Welch, 2002; Ljungqvist and Wilhelm, 2005).

This paper has covered only four behavioural biases viz. overconfidence, availability, representativeness and anchoring to study perceptions of intermediaries in the IPO market. The related literature of the selected behavioural biases shall be covered in the sub-section of scales description of the survey.

### **3. Research Objectives**

The research work aims to study the perception of intermediaries in the Indian IPO market. Further, the study is limited to investigate the association between selected behavioural biases present in intermediaries' decision making and their demographic characteristics. Based on review of literature and rationale of the study, the following research objectives are formulated:

- To investigate the presence of the behavioural biases like overconfidence, availability, representativeness and anchoring among the intermediaries in the Indian IPO market.
- To examine the association between demographic factors like age, education, gender, and professional experience of the intermediaries and the selected behavioural biases.
- To identify the most pronounced behavioural biases among intermediaries in the Indian IPO market.

### **4. Research Methodology**

#### **4.1 Survey Design**

The study is based on the primary data, collected through a self-administered questionnaire. Intermediaries groups, including merchant bankers or lead managers, syndicates members, bankers to the issue and brokers are considered as the population. The rationale to use the convenience sampling technique is due to its simplicity, quickness and cost-effectiveness. The selection of respondents is not restricted to any specific geographic area. The reason is that intermediaries deal with the clients or issuer across India and abroad without any possible geographical preferences. Therefore, intermediaries belong to the IPO process are our target respondents.

A total of 345 individual intermediaries associated with various professional roles in the IPO market were approached via email and LinkedIn. Besides, targeted respondents were contacted in person, but later on, due to the ongoing COVID-19 pandemic, it could not be possible to visit personally. So then, the respondents were approached through electronic means of communication. A total of 58 respondents had participated in the survey, and after scrutiny, 10 responses were discarded for further analysis because of incomplete or non-serious responses. The response rate is 13.9 per cent. Thus, the investigation has used a sample of 48 responses. The sample size is as per the rule suggested by Kline (2015) and later adopted by Akhtar and Das (2019).

#### **4.2 Description of Scales in the Survey**

Based on extant literature, intermediaries are found to be using 'shortcuts. The study covers heuristics or mental shortcuts used by various intermediaries for decision making. In heuristics, biases viz, overconfidence, availability, representativeness, and anchoring are covered to develop scales for measuring the effect of the behavioural biases on intermediaries IPOs decision making. The scales to measure various behavioural bias are on a five-point Likert scale. Besides, some necessary modifications in the framing of the

statement are done to make them relevant for intermediaries. The item codes A1, A2, A3, A4 and A5 are used to collect the personal information and are part of the data analysis. A brief description of scales used for capturing the selected behavioural biases of intermediaries is as follows:

**(a) Overconfidence (OC)**

Better than average effect (Alicke *et al.*, 1995; Babcock and Loewenstein, 1997), self-attribution (Langer and Roth, 1975), the illusion of control (Miller and Ross, 1975) and optimism (Taylor and Brown, 1988) as components of overconfidence are used to frame statement to measure overconfidence among intermediaries. Items A6, A7, A8 and A9 in the questionnaire capture the overconfidence of intermediaries in the IPO market.

**(b) Representativeness (RP)**

People's tendency to the overweight likelihood of an outcome that appears most representative of the evidence presented is also examined for intermediaries in the IPO market. The selection of an investment avenue by considering its good characteristics and individual's past experience of similar circumstances seems to be a manifestation of representative bias (Tversky and Kahneman, 1974; Barberis *et al.*, 1998; Waweru *et al.*, 2008; Rasheed *et al.*, 2018). The scales have been developed to measure representative bias in which respondents agree or disagree with making their investment decisions based on good characteristics, including the reputation of merchant bankers or underwriters (items A10 and A11) and past individual's experience of intermediaries (items A12 and A13).

**(c) Availability (AV)**

The swiftness in recalling information and assigning probabilities of occurrence of something may be considered less effort-taking or shortcuts, but it is not an efficient one. Familiarity with an object and tendency to prestigious overweight attributes of decision and underweight less conspicuous issues are the dimensions on which behavioural bias of intermediaries are being measured (Oran, 2008; Shiller, 1998; Yalchin *et al.*, 2016). Items A14, A15 and A16 measure familiarity to an object and item A17 measures the effect of vividness or imagery (Sirri and Tufano, 1998; Jain and Wu, 2000; Barber *et al.*, 2005; Waweru *et al.*, 2008) on intermediary's decision making regarding IPOs.

**(d) Anchoring (AC)**

The effect of irrelevant quantitative information on intermediaries' decision making is examined under behavioural bias, anchoring. For example, to use a number as a starting point and adjust up or down to arrive at a judgment is a manifestation of anchoring bias. Reference points and limited attention are being taken as factors for developing scales for measuring anchoring bias among intermediaries (Sahi *et al.*, 2013). Items A18 and A19 measure the bias on the dimension of reference point, and Items A20 and A21 measure the tendency of intermediaries to make decisions based on limited attention.

Based on previous literature, a survey questionnaire has been developed to capture the selected behavioural biases in the decision making of individual intermediaries in the IPO market. Despite all the efforts to

design a bias-free survey, some specific biases are expected in the collected data. However, the standard procedure for the administration of survey has been followed with all possible cautions.

### 4.3 Methods

The research work aims to study the perception of intermediaries in the IPO market. Based on this primary objective, the study uses standard statistical techniques to analyse data. Descriptive statistics and correlation have been used for univariate and bivariate analysis, respectively. Convenience sampling poses profound implications to establish the normality of the data. Based on the sample size and further examination, the data is assumed non-normal. Consequently, non-parametric tests are used to analyse the data. The Chi-square test is used to analyse the association between the selected behavioural biases and categorical demographic variables. Further, to compare the means of two or more independent groups, based on the categorical variable, the Kruskal Wallis (KW) and Mann Whitney (MW) tests are used. KW and MW tests use mean ranks to examine the difference between the mean responses of two or more independent groups. Menkhoff *et al.* (2010), Menkohff *et al.* (2013), and Khan *et al.* (2016) used a similar method to examine the association among the variables. Besides, Spearman rank correlation is used to analyse the intra-construct and inter-construct relationships.

The prevalence of behavioural biases among intermediaries is examined through the ranking of behavioural biases. A ranking based on mean values will be assigned to biases to determine which bias has been given the highest importance by the intermediaries. Mean values of responses are used to assigning the overall ranking, bias-wise ranking and rank of prevalence biases. In the overall ranking, first, mean values of all measurement items, irrespective of the underlying construct, are to be arranged from highest to lowest. Thus, it will highlight the scales for a given construct that obtained higher ranks relative to other constructs. Second, bias-wise ranking provides within the constructs rankings to its measurement items to identify the most prominent scale within a construct. Third, the rank of prevalence biases ranks, mean values of all measurement items of a construct will be consolidated to reach a single value. This single value of each bias shall be taken as a proxy for the bias and will be compared to assign ranks from highest to lowest based on the consolidated mean. This method aims to identify the most prominent bias amongst intermediaries.

## 5. Data Analysis and Findings

### 5.1 Characteristics of Data

Table 1 presents attributes of data, age, gender, educational qualification, professional role and professional experience. A brief description of these characteristics is as follows:

#### (a) Age

The data primarily comprises the responses of young and middle-aged intermediaries. The groups '18-30' and '31-45' contain responses of 39.6 per cent and 43.8 per cent, respectively. Therefore, these two groups collectively hold 83.3 per cent responses. On the other hand, the group '46-60' has only 14.6 per cent of responses.

**(b) Gender**

The sample data is highly skewed to male respondents. The male respondents are 91.7 per cent of the sample, and only four females have participated in the survey, which has a meager share of 8.3 per cent.

**(c) Educational Qualification**

A majority of the respondents had acquitted professional qualifications such as CA/CS/MBA etc. These respondents comprise 58.3 per cent of the sample size. The respondents with graduation and post-graduation degrees share equally in other 41.7 per cent. Thus, professional qualification holders dominate the sample.

**(d) Professional Role**

The respondents in the survey belong to a diverse class of intermediaries. The respondents who have participated in the survey have performed various roles in the IPO market, including a lead manager or merchant banker, company secretary, broker or syndicates, financial expert and financial consultant. Besides, other categories of respondents belong to auditors and lawyers etc. Broker/Syndicates contributes to 25 per cent of the sample size. The respective shares of financial consultant and financial experts are 22.9 per cent and 18.8 per cent. Lead managers or merchant bankers are 14.6 per cent, company secretaries are 8.3 per cent, and ‘others’ are 10.4 per cent of the sample.

**(e) Professional Experience**

In our sample data, the respondents who have long professional experience, say more than ten years in the intermediation of IPOs issues, comprise 45.8 per cent of the sample. The respondents of professional experience of more than seven years but less than ten years are 14.6 per cent of data. 20.8 per cent of responses belong to professional experience between 3-6 years. The share of respondents with experience of less than three years is 18.8 per cent of the sample size.

*Table 1: Data Characteristics.*

<i>Characteristics</i>	<i>Code</i>	<i>Count</i>	<i>Percent</i>	<i>Cumulative Percent</i>
<b>Age (in Years) (A1)</b>				
18-30	1	19	39.6	39.6
31-45	2	21	43.8	83.3
46-60	3	7	14.6	97.9
> 60	4	1	2.1	100.0
Total		48	100.0	
<b>Gender (A2)</b>				

Female	1	4	8.3	8.3
Male	2	44	91.7	100.0
Total		48	100.0	
<b>Educational Qualification (A3)</b>				
Graduation or less	1	10	20.8	20.8
Post-graduation	2	10	20.8	41.7
Professionals such as CA/CS/MBA/LLB etc.	3	28	58.3	100.0
Others	4	0	0	100.0
Total		48	100.0	
<b>Professional Role (A4)</b>				
Lead Manager/ Merchant Banker	1	7	14.6	14.6
Company Secretary	2	4	8.3	22.9
Broker/Syndicates	3	12	25.0	47.9
Financial Analyst/Expert	4	9	18.8	66.7
Financial Consultant	5	11	22.9	89.6
Others	6	5	10.4	100.0
Total		48	100.0	
<b>Professional Experience (in Years) (A5)</b>				
Less than 3	1	9	18.8	18.8
3-6	2	10	20.8	39.6
7-10	3	7	14.6	54.2
More than 10	4	22	45.8	100.0
Total		48	100.0	

*Note: A1 to A5 are the codes used in the survey.*

## 5.2 Results of Internal Consistency of Measurement Items

Cronbach alpha test of reliability has been used to test the internal consistency of measurement items under each construct. There are four constructs viz, overconfidence, representativeness, availability and anchoring, measured through five-point Likert scales. Each construct has four measurement items or scales. Therefore, a total of 16 items are to undergo for internal consistency test. Here, Cronbach alpha test is used for the reliability which vary between 0 and 1, where 0 indicates weak internal consistency and 1 indicates perfect internal consistency among the measurement items of the construct. A value of alpha more than 0.7 is to be considered as a benchmark cut off point. However, the value of 0.6 or more can be taken as acceptable to establish the reliability of the items (Nunnally, 1978).

In table 2, all sixteen measurement items, evenly distributed among four constructs, are being provided with their item code in the survey. The Cronbach's alpha values for biases, overconfidence, representativeness, availability and anchoring are 0.637, 0.687, 0.709 and 0.682, respectively. The results reveal that availability bias has crossed the benchmark cut off value of 0.7, whereas representativeness and anchoring biases are very close to the benchmark value of 0.7. However, the alpha value for overconfidence is far from the benchmark limit but under the prescribed acceptable threshold of 0.6. The reason for not dropping measurement items to increase the alpha value is to abide by the rule of thumb for a number of measurement items for a construct, that is, four items for each construct. Thus, it seems that all scales have achieved a reasonable reliability level, and therefore further analysis can be proceeded.

**Table 2: Internal Consistency of Instruments verified with Cronbach Alpha Value.**

<i>Constructs</i>	<i>Item Code</i>	<i>Indicator</i>	<i>Cronbach Alpha</i>
Overconfidence (4)	A6	I believe that I am more capable to identify the high-quality IPOs than other average investment analysts.	0.637
	A7	In my opinion, the return from an IPO cannot be predicted through skills and experience because a good IPO is a matter of luck or chance.	
	A8	I believe that unforeseen events were responsible for the underperformance of my past IPOs selection.	
	A9	In my opinion, the IPOs of younger firms would be good investments because of their earning potential in the near future.	
Representativeness (4)	A10	In my opinion, reputable underwriters/ advisors are more likely to be associated with good quality IPOs.	0.687
	A11	In my opinion, IPOs of the firms backed by venture capitalist	



		are more likely to be successful.	
	A12	I believe that a company with recent positive earning is going to be a good IPO investment.	
	A13	In my opinion, high equity returns during the bull market period are a normal phenomenon.	
Availability (4)	A14	I believe that analyst coverage helps in the success of the IPOs or essential for IPO success.	0.709
	A15	In my opinion, a firm with a good brand name is more likely to be a good IPO investment.	
	A16	I believe that the IPOs of local firms are more likely to be successful than international firms because the information of the local firms is widely available.	
	A17	In my opinion, expert opinions or visual media should be taken into consideration when investing in an IPO.	
Anchoring (4)	A18	In my opinion, the success of an IPO should be measure by comparing its offer price with the first-day listing closing price.	0.682
	A19	If the first-day listing closing price of an IPO falls below the offer price, the share should be sold immediately.	
	A20	I believe that IPOs are offered at cheap prices and provide good returns.	
	A21	In my opinion, subscribed for IPOs when equity indices are at their peaks reduce chances of loss.	

*Note:* The number of indicators is given in the brackets.

### 5.3 Descriptive Statistics

Table 3 presents descriptive statistics of each measurement item corresponding to its respective constructs. Independents mean values of all measurement items of constructs viz, overconfidence, representativeness, and availability are more than 3. It shows that the overall perception of intermediaries towards these biases are 'strong'.

*Table 3: Descriptive Statistics of all Measurement Items Corresponding to their Respective Constructs.*

<i>Item Code</i>	<i>Behavioural Biases</i>	<i>N</i>	<i>Mean</i>	<i>Std. Dev</i>	<i>Variance</i>	<i>Skewness</i>	<i>Kurtosis</i>	<i>Max</i>	<i>Min</i>	<i>Range</i>
A6	Overconfidence	48	3.58	1.069	1.142	-.718	-.107	5	1	4
A7	Overconfidence	48	3.71	1.010	1.020	-.795	.059	5	1	4
A8	Overconfidence	48	3.06	1.359	1.847	-.118	-1.215	5	1	4
A9	Overconfidence	48	3.46	1.166	1.360	-.651	-.318	5	1	4
A10	Representativeness	48	3.35	1.000	1.000	-.245	-.672	5	1	4
A11	Representativeness	48	3.67	.808	.652	-.571	.029	5	2	3
A12	Representativeness	48	3.38	1.024	1.048	-.081	-1.189	5	2	3
A13	Representativeness	48	3.77	.805	.648	-1.083	2.312	5	1	4
A14	Availability	48	3.79	.849	.722	-.448	-.195	5	2	3
A15	Availability	48	3.94	.861	.741	-.713	.195	5	2	3
A16	Availability	48	3.13	1.104	1.218	.437	-1.191	5	2	3
A17	Availability	48	3.60	.984	.968	-.234	-.898	5	2	3
A18	Anchoring	48	2.81	1.085	1.177	.077	-.887	5	1	4
A19	Anchoring	48	2.29	1.010	1.020	.795	.059	5	1	4
A20	Anchoring	48	2.73	1.125	1.266	.192	-1.000	5	1	4
A21	Anchoring	48	2.75	1.082	1.170	.210	-.426	5	1	4

In other words, intermediaries' decision making in the IPO market is seen to be influenced by these three biases. However, the mean values of all measurement items of anchoring bias are less than three and show a relatively 'weak' perception of intermediaries towards anchoring bias. Therefore, the influence of anchoring bias on decision making is not so palpable. The dispersion values, standard deviation, variance and range appear to be reasonable. The benchmark value for Skewness is -1 to +1, and the results show that all values are within the range except item A13. However, this value is nearest to the benchmark value. Similarly, all kurtosis values are within the range of -3 to +3. Thus, there are measurement items that seem to be

normally distributed. However, these are preliminary findings, and they need to be further analyzed for statistical inferences.

#### 5.4 Results of Independent-Samples Kruskal-Wallis Test

The sample dataset is grouped into independent samples based on categorical variables. After that, it will be tested for a difference in means of the independent samples to establish the association between behavioural biases and categorical variables. Finally, based on data characteristics, the responses of intermediaries to all indicators are grouped into independent samples categorical variables such as age, educational qualification and professional experience. The results for categorical variables, age; educational qualification and professional experience are being provided given below:

##### (a) Age

Table 4 presents results of the Kruskal-Wallis test and Mann-Whitney tests for comparison of the independent groups, categorized based on the age of the respondents. Only two indicators, A9 and A18 of overconfidence and anchoring bias, are significant at the 5 per cent significance level. Besides, the Mann-Whitney test shows that the mean of responses to item A9 of age groups' 18-30' is statistically different from group' 46-60'. Therefore, the statement 'In my opinion, IPOs of younger firms would be good investments because of their earning potential in the near future', which measured overconfidence on the factor of 'optimism' among intermediaries, found that older intermediaries differ from younger ones. It seems that younger intermediaries are more 'optimistic' than the aged intermediaries.

Similarly, to the statement 'In my opinion, the success of an IPO should be measure by comparing its offer price with the first-day listing closing price', the responses of age group' 46-60' are statistically different from age groups' 18-30' and' 31-45'. It indicates that intermediaries in the age group' 46-60' are relatively more disagree on the factor of using a 'reference point' to assess their investment decision. Thus, it seems that age as a demographic factor is associated with at least one indicator item of each, overconfidence and anchoring bias.

*Tables 4: Kruskal-Wallis and Pairwise Mann-Whitney Test Statistics of Demographic Variable, Age.* [Significance level: \* = 0.05, \*\* = 0.01, \*\*\* = 0.001]

Item Code	Behavioural Bias	Kruskal-Wallis Test						Pairwise Mann-Whitney Test			
		Age	N	Mean	S.D	Mean Rank	Sig	Statistics			
A9	Overconfidence	18-30	19	3.74	0.87	27.13	0.04*		18-30	31-45	46-60
		31-45	21	3.62	1.20	26.50		31-45	196.50		
		46-60	7	2.57	1.13	14.50		46-60	29*	38.00	
		>60	1	1.00	1.17	2.50		>60	0.00	1.00	0.50
A18	Anchoring	18-30	19	2.84	1.02	25.18	0.02*				
		31-45	21	3.19	1.03	28.90		31-45	167.50		
		46-60	7	1.86	0.69	12.50		46-60	30*	23.5**	
		>60	1	1.00	1.09	3.00		>60	1.00	0.00	1.00

*Note:* The table presents the results for items whose responses were significantly different from each other. Test statistics of the pairwise Mann-Whitney test are presented in a matrix form. A brief description of indicator items is mentioned here; A9 = In my opinion, IPOs of younger firms would be good investments because of their earning potential in the near future; A18 = In my opinion, the success of an IPO should be measure by comparing its offer price with the first-day listing closing price.

**(b) Educational Qualification**

Table 5 shows that two indicators of anchoring bias and one indicator of availability are significant in the independent Kruskal-Wallis test of the mean difference. The statement corresponding to Item A19 (anchoring bias) ‘If the first-day listing closing price of an IPO falls below the offer price, the share should be sold immediately’ found significant at 5 per cent level. Intermediaries belong to a group of professional degrees seem to be more disagree with the statement. Through the Mann-Whitney test, it has been indicated that the mean value of responses for the group ‘graduate or less’ differs from the group of respondents belong to ‘professional education’.

**Tables 5: Kruskal-Wallis and Pairwise Mann-Whitney Test Statistics of Demographic Variable, Educational Qualification.** [Significance level: \* = 0.05, \*\* = 0.01, \*\*\* = 0.001]

Item Code	Behavioural Bias	Kruskal-Wallis Test						Pairwise Mann-Whitney Test		
		Education	N	Mean	S.D	Mean Rank	Sig	Mean Rank	Test Statistics	
A16	Availability	Graduation or Less	10	4.00	0.82	23.60	0.01*		Grd	PG
		Post-graduation	10	2.60	1.27	23.95		PG	17**	
		Professional	28	3.00	0.98	25.02		Prf.	64**	98.00
		Others	0	0.00	0.00	0				
A19	Anchoring	Graduation or Less	10	2.20	0.79	24.05	0.02*		Grd	PG
		Post-graduation	10	3.10	0.99	34.55		PG	26*	
		Professional	28	2.04	0.96	21.07		Prf.	120.50	63.5**
		Others	0	0.00	0.00	00				
A20	Anchoring	Graduation or Less	10	3.70	0.95	35.85	0.01*		Grd	PG
		Post-graduation	10	2.30	0.68	19.30		PG	15.5**	
		Professional	28	2.54	1.14	22.30		Prf.	61**	122.50
		Others	0	0.00	0.00	00				

**Note:** The table presents the results for items whose responses were significantly different from each other. Test statistics of the pairwise Mann-Whitney test are presented in a matrix form. A brief description of indicator items is mentioned here; A16 = I believe

*that IPOs of local firms are more likely to be successful than international firms because the information of the local firms is widely available; A19 = If the first-day listing closing price of an IPO falls below the offer price, the share should be sold immediately; A20 = I believe that IPOs are offered at cheap prices and provide good returns. Besides the description of categories is; Grd. = Graduation or Less; PG. = Post Graduate; Prf. = Professional qualification.*

Similarly, intermediaries having post-graduation degrees responded differently as compare to intermediaries with a professional degree. The responses to another indicator of anchoring bias, A20, with the corresponding statement 'I believe that IPOs are offered at cheap prices and provide good returns' vary with the educational qualification of intermediaries. Intermediaries having education of graduation or less seems agreeable to the statement. The mean value of graduates' responses is statistically different from the groups having post-graduation and professional education.

The item A16 (Availability bias) with the statement 'I believe that IPOs of local firms are more likely to be successful than international firms because the information of the local firms is widely available' is found statistically significant across the independent groups. Intermediaries belong to the group, 'graduation or less' are found to agreeable on the scale to the statement. Besides, the mean value of 'graduation or less' responses differs from groups' post-graduation and 'professionals'.

### **(c) Professional Experience**

The selected behavioural biases have not been found associated with the independent groups based on the professional experience of intermediaries in the IPO market. No indicator across the constructs is found to be statistically significant mean difference across the groups. It seems that intermediaries are indistinguishable from the selected behavioural biases if they have different professional experiences.

Therefore, analysis of independent groups based on age, educational qualification and professional experience highlights some associations between the selected behavioural biases and categorical variables. For example, while Overconfidence and anchoring biases vary with the age of intermediaries, availability and anchoring biases have a statistically significant association with the educational qualification of intermediaries. In contrast, professional experience seems to be not associated with behavioural biases among intermediaries.

## **5.5 Results of Correlation Analysis**

Table 6 presents the results of the correlation analysis. The significant intra-construct and inter-construct relationships results are being discussed for each construct. Besides, the significant correlation relationships between the items of a construct in the discussion, with all items of other constructs, are shown in the brackets.

*Table 6: Correlation Matrix Note: Item Codes are the same as Codes used in the Sample Survey for Intermediaries.*

[Significance level: \* = 0.05, \*\* = 0.01, \*\*\* = 0.001]

Items	Biases	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21
A6	Overconfidence	1															
A7	Overconfidence	0.59** *	1														
A8	Overconfidence	.253	0.35*	1													
A9	Overconfidence	.208	.188	0.30*	1												
A10	Representativeness	.161	.273	.171	0.37* *	1											
A11	Representativeness	.230	0.35*	.233	.075	0.54* **	1										
A12	Representativeness	.088	.108	-.017	0.30*	.283	0.44**	1									
A13	Representativeness	.084	.073	.290	-.022	.156	0.40**	0.36*	1								
A14	Availability	0.30*	.101	.122	-.138	.089	.238	.165	.115	1							
A15	Availability	.341	.174	.003	.156	.125	.184	0.29*	.102	0.48*	1						
A16	Availability	.099	-.005	.066	0.29*	.152	-.143	.202	.081	.233	0.41**	1					
A17	Availability	0.29*	0.29*	0.51** *	0.33*	0.30*	.232	.172	.259	0.43**	0.40**	0.38**	1				
A18	Anchoring	.115	-.032	.239	0.34*	.141	.073	0.31*	0.29*	-.113	-.036	.198	.248	1			
A19	Anchoring	0.33*	-.040	.266	.245	.022	.043	.077	.084	-.027	.046	-.110	.033	0.44* *	1		
A20	Anchoring	.117	-.034	.192	0.47* *	.257	-.101	-.058	-.046	-.038	.224	0.37*	.189	.202	.277	1	
A21	Anchoring	.074	-.068	.228	0.36*	0.34*	.170	.183	.250	-.058	-.017	.134	.065	.249	0.40* *	0.54* **	1

*Note:* Brief description of indicator items is mentioned here; A6 = I believe that I am more capable to identify the high-quality IPOs than other average investment analysts; A7 = In my opinion, the return from an IPO cannot be predicted through skills and experience because a good IPO is a matter of luck or chance; A8 = I believe that unforeseen events were responsible for the underperformance of my past IPOs selection; A9 = In

*my opinion, IPOs of younger firms would be good investments because of their earning potential in the near future; A10 = In my opinion, reputable underwriters/advisors are more likely to be associated with good quality IPOs; A11 = In my opinion, IPOs of the firms backed by venture capitalist are more likely to be successful; A12 = I believe that company with recent positive earning is going to be good IPO investment; A13 = In my opinion, high equity returns during bull market period are normal phenomenon; A14 = I believe that analyst coverage helps in success of the IPOs or essential for the IPO success; A15 = In my opinion, a firm with good brand name is more likely to be a good IPO investment; A16 = I believe that IPOs of local firms are more likely to be successful than international firms because the information of the local firms is widely available; A17 = In my opinion, expert opinions or visual media should be taken into consideration when investing in an IPO; A18 = In my opinion, the success of an IPO should be measure by comparing its offer price with the first day listing closing price; A19 = If the first day listing closing price of an IPO falls below the offer price, the share should be sold immediately; A20 = I believe that IPOs are offered at cheap prices and provide good returns; A21 = In my opinion, subscribed for an IPOs when equity indices are at their peaks reduce chances of loss.*

**(a) Overconfidence: Item Codes: A6, A7, A8, A9**

The scales measuring overconfidence bias, A6, A7, A8 and A9, do not have high correlations with other measurement variables. The item A6 has a significant positive correlation with A7 (overconfidence), A14 (availability), A17 (availability) and A19 (anchoring). Item A7 is found to has a significant positive correlation with A8 (overconfidence), A11 (representativeness) and A17 (availability). Similarly, A8 is positively related to items A9 (overconfidence) and A17 (availability). In last, A9 is found to be significantly correlated with A10 (representativeness), A12 (representativeness), A16 (availability), A17 (availability), A18 (anchoring), A20 (anchoring) and A21 (anchoring). The statement ‘In my opinion, expert opinions or visual media should be taken into consideration when investing in an IPO’, which has scaled availability bias, has shown a significant positive correlation with all items of overconfidence bias.

**(b) Representativeness: Item Codes: A10, A11, A12, A13**

Representative bias is significantly correlated with the items within the construct and between the items of other constructs. Item A10 is positively correlated with A11, item A11 with items A12 and A13; and item A12 with item A13. Inter constructs significant correlation relationships are found between item A10 with items A9 (overconfidence), A17 (availability) and A21 (anchoring); A11 with item A7 (overconfidence); A12 with A9 (overconfidence), A15 (availability) and A18 (anchoring); A13 with A18 (anchoring). The statement A18 (anchoring), ‘In my opinion, the success of an IPO should be measure by comparing its offer price with the first-day listing closing price’, is found to be significantly related to items A12 and A13.

**(c) Availability: Item Codes: A14, A15, A16, A17**

Availability bias has correlated with items within and between the items of other constructs. For example, item A17 has been significantly positively correlated with all other items within the construct, availability. The other intra construct correlation relationships are found between items Intra construct significant correlation relationships between item A14 with Items A15; and item A15 with A16. Inter construct relationships are item A14 with A6 (overconfidence); Item A15 with A12 (representativeness), and A16 with A9 (overconfidence) and A20 (anchoring). Besides, Item 17 is a statistically significant positive correlation relationship with all measurement items of the construct, overconfidence, an item, A10 of representativeness bias.



**(d) Anchoring: Item Codes: A18, A19, A20, A21**

The intra construct significant correlational relationships are found for item A21 with items A19 and A20. Besides, item A18 is found to be positively correlated with item A19. The other significant inter construct correlation relationships are for item A18 with A9 (overconfidence), A12 (representativeness) and A13 (representativeness); A19 with A6 (overconfidence); A20 with A9 (overconfidence); and A21 with A9 (overconfidence), A10 (representativeness).

**5.6 Rankings of Prevalence of Biases**

All measurement items are to be tested by the one-sample test for the significance of the mean value of the distribution. All requisite conditions for applying a one-sample t-test have been met, and the test results shall be valid for this study. The results are:

**(a) Overall Ranking**

The responses to all measurement items of their respective constructs are being arranged based on their mean values. As all statements respond on a five-point Likert scale, the magnitude of strong disagreeability to strong agreeability is bound to vary between 1 to 5. Table 7 shows the result of the one-sample t-test. All measurement items have significant mean-statistics at a 5 per cent significance level. Thus, all items are qualified to be arranged as per their mean scores from highest to lowest.

Table 7 arranges items based on their mean values. It shows that intermediaries in the IPO market are mostly prone to availability bias. The top two indicators, A15 and A14, have obtained the highest mean values relative to other indicators. The highest mean values to statements, A15 and A14, indicate that intermediaries, too, overweighs prestigious attributes and underweight less conspicuous attributes of the issuing firms. Thus, availability bias seems to form an effective influence over intermediaries' decision making in the IPO market.

Followed by availability bias, item A13 of representativeness bias is ranked number three. It indicates that intermediaries perceive the bull market phase as a critical factor in the success of an investment decision. In another way, they underweight firm-specific factors to overall market factors. Thus, the overweight likelihood of investment success appears most representative of the boom period. Overconfidence bias's item A7 has found a fourth place in Overall ranking, which indicate intermediaries rely upon their skills and experience to filter out the good IPOs from bad IPOs and undermine the role of luck in their decision making. It seems that intermediaries are influenced by the factors of self-attribution and the illusion of skills. Better than average effect of overconfidence can also be seen in the responses of intermediaries. Out of 48 respondents, 31 respondents either 'agree' or 'strongly agree' to the statement (A6).

Representativeness (A11) and availability (A17) biases are other leading biases with their respective rank of 5 and 6. Anchoring bias is found to have a weak influence over the intermediaries' decision making towards IPOs.

*Table 7. Overall Ranking based on Mean Values of all the Indicator Items.*

Item Code	Behavioural Bias	No. of Responses	Level of Importance					Mean	t-statistics	Rank
			SD	D	I	A	SA			
A15	Availability	48	0	4	7	25	12	3.938	31.70***	1
A14	Availability	48	0	4	11	24	9	3.792	30.92***	2
A13	Representativeness	48	1	2	10	29	6	3.771	32.44***	3
A7	Overconfidence	48	1	7	6	25	9	3.708	25.44***	4
A11	Representativeness	48	0	5	11	27	5	3.667	31.45***	5
A17	Availability	48	0	8	12	19	9	3.604	25.38***	6
A6	Overconfidence	48	2	7	8	23	8	3.583	23.33***	7
A9	Overconfidence	48	4	6	10	20	8	3.458	20.55***	8
A12	Representativeness	48	0	13	10	19	6	3.375	22.84***	9
A10	Representativeness	48	1	10	13	19	5	3.354	23.24***	10
A16	Availability	48	0	19	11	11	7	3.125	19.62***	11
A8	Overconfidence	48	8	10	9	13	8	3.063	15.61***	12
A18	Anchoring	48	5	16	12	13	2	2.813	17.96***	13
A21	Anchoring	48	6	14	17	8	3	2.750	17.61***	14
A20	Anchoring	48	6	18	9	13	2	2.729	16.81***	15
A19	Anchoring	48	1	7	6	25	9	2.292	15.73***	16

*Note:* The indicator item is a five-point Likert scale where SD = Strongly Agree, D = Disagree, I = Indifferent, A = Agree, and SA = Strongly Agree. [Significance level: \* = 0.05, \*\* = 0.01, \*\*\* = 0.001]

**(b) Bias-Wise Ranking**

The bias-wise ranking aims to arrange all measurement items of a construct as per their mean score from highest to lowest. It highlights the dominance of the measurement items concerning their fellow items within a construct. As each measurement item is guided to capture a specific factor of a construct, identifying leading factors would help draw precise inferences from the results. Table 8 presents a mean score of all measurement items with category ranks within the construct and overall ranks. Item A7, which capture the role of the illusion of control, is a leading item of overconfidence. Followed by item A6, which measure better than the average effect among intermediaries. It seems that illusion of control and better than average effect influence intermediaries while taking IPOs decisions.

In representativeness bias, instrument A13 lead other instruments of the construct. People’s tendency to use their personal experience as representative of the current decision making where it might be possible that all other required conditions to get the same results have been changed. The other measurement item of

representativeness bias based on ‘previous experience’ is ranked three within the construct. Besides, Item A11 (category rank 2) measures the representativeness bias by factoring ‘good characteristics’ of a potential investment. Thus, both previous experience and good characteristics associated with IPOs investment are factored into the decision making of intermediaries.

It has been already found that availability is a leading bias in the decision making of intermediaries. Within the availability bias, prestigious attributes dominate as a factor of the bias. Item A15, which captures the influence of a prestigious attribute of an issuer company, a ‘good brand name’, is topped in the ranking. Followed by familiarity with the issuer company is found to be an essential factor of availability bias. The influence of anchoring bias over intermediaries’ decision making in the IPO market is weak compared to other biases. However, within anchoring bias, the reference point is a leading factor as item A18 ranked 1.

**Table 8: Bias-wise Individual Ranks for Items Corresponding to each Bias.**

<i>Item Code</i>	<i>Behavioural Bias</i>	<i>Mean</i>	<i>Category Rank</i>	<i>Overall Rank</i>
A7	Overconfidence	3.708	1	4
A6	Overconfidence	3.583	2	7
A9	Overconfidence	3.458	3	8
A8	Overconfidence	3.063	4	12
A13	Representativeness	3.771	1	3
A11	Representativeness	3.667	2	5
A12	Representativeness	3.375	3	9
A10	Representativeness	3.354	4	10
A15	Availability	3.938	1	1
A14	Availability	3.792	2	2
A17	Availability	3.604	3	6
A16	Availability	3.125	4	11
A18	Anchoring	2.813	1	13
A21	Anchoring	2.750	2	14
A20	Anchoring	2.729	3	15
A19	Anchoring	2.292	4	16

**(c) Ranking of Biases in the Order of Prominence**

The rank of prevalence biases is aimed to identify leading behavioural biases that influence the decision making of intermediaries. Ranking to behavioural biases, overconfidence, representativeness, availability and anchoring is assigned based on their consolidated mean value. To calculate the consolidated mean value of

respective bias, the mean values average of all measurement items of each construct is to be calculated. For instance, in overconfidence, an average of mean values of items; A7, A8, A9, and A10, is calculated. Similarly, after calculating consolidated mean values of the other three biases, the ranking will be assigned based on these consolidated mean values. Table 9 provides consolidated mean values of all behavioural biases with corresponding ranks. Availability bias is found to be the most prevalent bias amongst intermediaries with a consolidated rank of 3.615. Followed by representativeness and overconfidence, biases influence the decision making of intermediaries with their respective consolidated mean values of 3.542 and 3.453. In last, anchoring bias is found to be least prevalent in intermediary’s decision making concerning IPOs. It ranked 4 with a consolidated mean value of 2.646.

*Table 9: Ranking of Biases in the Order of Prominence.*

<i>Behavioural Bias</i>	<i>Mean</i>	<i>Rank</i>
Availability	3.615	1
Representativeness	3.542	2
Overconfidence	3.453	3
Anchoring	2.646	4

## 6. Conclusion

The study examined the perception of intermediaries in the Indian IPO market. Using the non-parametric test, the research work examined the association between the selected behavioural biases and demographic variables. Moreover, the study identified the prevalent behavioural biases in the decision making of intermediaries in the Indian IPO market. The results reveal robust statistical evidence that intermediaries are prone to behavioural biases in their decision making.

The results show that the age of intermediaries was found to be associated with anchoring and overconfidence biases. Young intermediaries show high optimism (overconfidence) than the aged respondents. Besides, the middle-aged intermediaries are less inclined to use reference points (anchoring bias) in their decision making. Further, availability bias among intermediaries differs based on their education level. However, professional experience does not influence the susceptibility of behavioural biases among intermediaries.

In addition, the findings reveal that the availability and representative biases are prominent behavioural biases that influence the intermediaries’ decision making. Under the influence of availability bias, intermediaries take a cue from the good characteristics of the issuer firm for the selection of IPOs. Followed by, familiarity with the issuer company is found to be an essential factor of availability bias which affect the decision making of intermediaries. They tend to act on favourable analyst coverage for the IPO decision making. It shows that intermediaries rely on intuition-based or irrational decisions in the Indian IPO market.

Besides, prestigious attributes of the decision in consideration dominate as a factor of the representative bias. The investor's tendency to rely on stereotypes or similar characteristics for judgment of IPO investment leads to irrational decision making. Thus, the influence of the behavioural biases on intermediaries in the IPO market promotes intuition-based decision making. A decision based on intuition is irrational and biased because it is not based on a complete analysis of the available information but rather on gut feeling and heuristics (Simon, 1987).

The research work augments the literature of behavioural economics in financial markets in the various ways. First, this study reaffirms that the Indian IPO market is yet to achieve market efficiency. The heuristics and biases influence the intermediary's behaviour in the IPO market. Besides, demographic factors are found to be crucial to understand the behaviour of intermediaries in the Indian IPO market. Second, this study found that intermediaries are prone to availability and representativeness biases. Understanding behavioural aspects of decision making would help intermediaries to overcome the biases and make their decision more rational. Third, the work has implications for the regulator, the SEBI in the Indian context, to analyze and understand the IPO market's functioning with intermediaries' real-life judgment behaviour. The policymakers are encouraged to pay attention to the psychology of investment decision making while framing the policies. Although, behavioural biases in the judgment of investment prospects are hard to minimize or regulate, yet awareness among the intermediaries may create a difference. A guided 'nudge' towards the behavioural biases would help them to make their decision more rational. Besides, the findings would help policymakers design policies, training manuals, and course curricula that emphasize various aspects of behaviour in decision making.

In conclusion, the models based on the assumption of rationality and the behavioural models of decision making do not substitute for each other. Instead, they both complement each other. Therefore, further study in the IPO market would uncover many aspects of human decision making.

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