



## Socioeconomic Factors Shaping Investor Behaviour: A Stock Market Perspective from Odisha

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### Abstract

The research question is as follows: To what extent do income level, knowledge level, age, gender, and employment type contribute to influencing the behaviour of retail investors in Odisha in terms of shares' investment frequency, amount, product type, and risk appetite? Through a cross-sectional survey method, a total number of 420 economic investors from the retail group were questioned about shares with the application of a stratified sampling technique. This study analysed four categories: socioeconomic profile, financial literacy, risk appetite, and investment behaviour. Data was analysed using descriptive statistics, one-way ANOVA, an independent sample t-test,  $\chi^2$  tests, and a forward stepwise multiple linear regression. Results depicted income level ( $\beta = 0.412$ ), risk appetite ( $\beta = 0.318$ ), and educational qualification ( $\beta = 0.287$ ) as the three most significant predictors of the frequency of investment (Adjusted  $R^2 = 0.471$ ,  $F = 54.17$ ,  $p < 0.001$ ). Findings were suggestive of a significant difference between the mean scores in the various types of quantified investments by way of ANOVA ( $F = 14.62$ ,  $p < 0.001$ ,  $\eta^2 = 0.095$ ). Major differences in risk appetite due to gender ( $t = 3.847$ ,  $p < 0.001$ ,  $d = 0.421$ ) were severe, while they were significantly observed in the case of income categories ( $t = 2.615$ ,  $p = 0.088$ ,  $d = 0.379$ ). In drawing the conclusion, socioeconomic diversity fashioned a sort of behavioural diversification for investors in Odisha. A kindred financial awareness programme, low-pressure entry-level investment products, and intermediary network-presence policies, all aimed at bridging the existing gap, are some likely interventions for commerce.



**Keywords:** Investor Behaviour; Socioeconomic Factors; Behavioural Finance; Stock Market; Odisha; Risk Appetite; Financial Literacy; Regression Analysis; ANOVA; Emerging Market

## **Introduction**

Ten years ago, a retail investor would have rarely considered trading in the Indian capital market; however, since then, we have witnessed an exponential increase in their participation, driven by the rise of digital trading media, regulatory initiatives to raise investor awareness, and the pandemic's push towards demat accounts, recruitment, and registrations. The cumulative number of unique registered investors calculated by the National Stock Exchange (NSE) in December 2023 stood at 94 million, rising from 31 million at the end of the fiscal year 2019 (NSE Annual Report, 2023); hence, the perception of partnership with the market was not entirely false but only forgetful of deeper gaps. Among the states, while Maharashtra, Gujarat, and Karnataka have adorned themselves with a very high per-investor share per population, the situation in eastern India and Odisha in particular remains particularly dismal. The development figures of the Indian economy frequently overlook the vast disparities from one region to the next in terms of access to the financial markets.

The grades of investors now seem to play a crucial role in contemporary financial literacy. The theory that combined human behaviour and technical competence has actually starkly superseded rational agents in the matter of behaviour under the Efficient Market Hypothesis (Fama, 1970) towards theories of behaviour and socioeconomic factors that take into consideration cognitive limitations, social influences, and other environmental restrictions that are conceived as the significant determinant of investment decisions. The groundbreaking work of Kahneman and Tversky (1979) in prospect theory was an empirical demonstration that individuals systematically depart from principle number one – the rate of utilitarian utility maximisation. The average wealth-maximising agent ought to behave rationally; it is true. But my ruling, all in all, says that the typical agent often does not behave as they are expected to, and the extent of rationality deficiency increases under certain circumstances. Very similar sobering notes were played throughout the transcript. These mechanisms are very much conditioned by socioeconomic factors such as income, education, occupation, gender, and age that condition how investors perceive risks and handle financial data and, consequently, influence the capital market reaction.



Odisha forms an intriguing under-researched space for this exercise. Fast steering its path towards industrialisation based on integrated steel plants located at Rourkela, aluminium plants at Angul, coal mining in Jharsuguda, and the emerging IT sector, centred at Bhubaneswar, Odisha displays the birth of an employed middle class with emerging investable capability. Despite all these, financial culture is primarily about safety, with the mainstay of household savings mainly invested in fixed deposits, gold, land, and post office savings. Although market sophistication has some incremental effects, Odisha with its limited, image-scarred worksite participation still stands as a prime specimen for the present issue. Given such a status, systematic empirical research is sought-after – what socio-economic characteristics define stock market sessions within Odisha, and how do these aspects kindle investment frequency, product types liked, capacity noises, and propinquity to risk?

Three interlinked problems motivate this research. Owing to triage questions, many scholars specialising in behavioural finance, who are conducting investigations across India, have focused on urban investors in Mumbai, New Delhi, and Bengaluru, with tier-2 markets in particular being mostly blank (Chandra & Kumar 2012; Prusty & Rao 2010). The Odisha conditions also have fixed their focus on banking penetration, ignoring the equities market as another arena of research (Reserve Bank of India: State Finances Report 2022). Lastly, seated under policy provisions, the SEBI moving target of 100 million investors being onboarded by the fiscal year ending in 2027 requires subnational empirical evidence to delineate the socioeconomic classes from underpenetrated states in urgent need of engagement and where specific stumbling blocks – information, motivation, or structure – remain.

Factors that lead to investment behaviour in the present study are analysed in relation to six cities – Bhubaneswar, Cuttack, Rourkela, Sambalpur, and Berhampur in Odisha, representing the backwaters, western, northern industrial, and southern geographies. The research encompassed 420 retail equity investor-interrogatees, interviewed with a structured instrument drawing an inventory of 42 items, and scrutinised their social profile, investment behaviour, financial literacy, risk appetite and information source preference, among other variables. Inferential statistical analyses involving one-way ANOVA, independent t-tests, multiple regressions, and chi-square tests are used to test four null hypotheses over the relationship of identified economic determinants vis-à-vis investment frequency, risk appetite, and preference for products.



The idea of "financial socialisation," in which financial attitudes and behaviours are transmitted to family and peer groups through institutional study, has gained a good deal of traction as an explanation for intergenerational and cross-sectional variation in investment conduct (Jorgensen & Savla, 2010). These theoretical threads converge in the Socio-Cognitive Investment Model (SCIM) developed under the study, emphasising that economic variables are multidimensional antecedents to investor behaviour, partially mediated through financial literacy and risk perception. The findings of this study are of direct relevance to SEBI in India and different state-level investor-awareness bodies, financial intermediaries working in Odisha, and academic researchers considering behavioural finance in emerging markets.

## **Literature Review**

### ***Theoretical Foundations of Investor Behaviour***

Investor behaviour research has evolved through three primary time periods: normative-agent fragility, anomaly documentation alongside the anti-efficiency market argument, and behavioural finance. Fama (1970), reasoning along the sweet EMH line, exploded the hypothesis in its weak, semistrong, and straw-opinion strong branches: Asset prices allegedly have fully digested all known information already. As a weakly or moderately validated theory, the EMH model was contingent on rational, utility-maximising agents and came under scrutiny when there were enough documented violations of agenda: evidence of calendar effects, momentum, value premia, and post-earnings drift that rational models could not satisfactorily explain.

Kahneman and Tversky (1979) laid down the behavioural framework in the form of prospect theory, demonstrating that investors evaluate outcomes as gains or losses relative to a reference point instead of comparing them against the absolute value of wealth; (ii) the value function is concave for gains and convex for losses, producing risk-seeking behaviour in the domain of losses and risk aversion in gains; and (iii) small probabilities are systematically overweighted. Loss aversion ( $\lambda \approx 2.25$ ) has been replicated ever since across a variety of cultural and asset-class contexts. Shefrin and Statman (1985) effectively extended Prospect Theory into the 'disposition effect', that is, investors' empirically chronic habit of selling winning positions way too early and holding on for too long to losing ones – a pattern with pronounced implications for retail portfolio performance in Indian equity markets (Shumway & Wu, 2006).



Finally, allowing interplay with Thaler's (1980) mental accounting framework, behavioural psychology further demonstrated this by showing that people divide their wealth among various psychological accounts, e.g., current income, current assets, and future income, and apply differing implied risks to each. This leads to apparent paradoxical behaviour: one investor who concurrently holds conservative fixed deposits and speculative penny stocks. Extending the behavioural insights into systemic market phenomena, the very same Shiller (2000) argued that irrational exuberance – the kind of speculative bubbles fuelled by social narrative and not fundamental valuation – dominates such major market episodes. The theoretical contribution of these eminent finance researchers collectively forms the springboard for this study to pursue socio-economic and cognitive mediators of investor behaviour.

### ***Socioeconomic Determinants: Empirical Evidence***

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### **Research Gap**

As elaborated by the growing number of behavioural finance studies in India over the past two decades, many-layered areas of deficiency concern this study – no one addressed such an issue or scope in the past. The major ones include:

- I. Setting the geo-specific issues apart: Most Indian investors primarily come from urban areas with high financial education, some institutional sophistication, and a mature culture of investments and trade, although a few are local. The conclusions on investor behaviour for shareholders of NSE-listed firms from Mumbai or Bangalore do not extend to Odisha's investor population, structurally different as it is, without empirical verification. To the authors' knowledge, no article in a peer-reviewed journal from 2018 to the present has attempted a city-wise empirical study on social factors affecting equity investors within Odisha by means of an inferential-statistical inquiry.
2. In relation to methodology: Prior studies in the context of Odisha, for example, have been purely descriptive or merely limited in bivariate design. Both research attempts failed to equally combine ANOVA, t-test, chi-square, and hierarchical regression, operating on an all-encompassing set of socio-economic variables covering income, education, age, gender, occupation, financial literacy, and risk appetite. The present study certainly seems to fulfil that methodological void.
3. The second issue pertains to the intra-state variability: Odisha's sharp regional contrasts – rich coastal tech hub (Bhubaneswar), ancient commercial nucleus (Cuttack), steelworks belt



(Rourkela), agriculture western region (Sambalpur), studious south hub city (Berhampur) – have compelled the inclusion of the multi-city sampling strategy. Single-city convenience samples (mostly Bhubaneswar in all the works examined) have indeed diluted deliberations about well-systematized variations in financial milieu and investment behaviour.

4. temporal currency: The post-2020 digital democratization of mainstream access, which includes initiatives such as SEBI's T+1 settlement cycle and Zerodha and Groww's expansion to the tier-2 cities and UPI-integrated broking accounts, has structurally altered the retail investor landscape. Therefore, studies of the pre-2020 period are now somewhat irrelevant to the conservation efforts. The world calls for fresh empirical investigation."

## **Needs and Objectives of the Study**

### ***Need for the Study***

The study seeks to contribute to both academic and policy targets. From the academic side, the behavioural finance theory cannot escape the constraint that calls for the sub-national empirical evaluation ensuring the metro-theory generalisability and locus-specific theory advancement. The SEBI's financial inclusion mandate and the Odisha government's 'Mo Sarkaar' initiative policy urgently demand that they have the most accurate knowledge of who the underserved socio-economic segment is and what hinders them coming forward. Intermediaries also need to be armed with specific intelligence for customising product design and advisory strategy for these segments.

### ***Specific Objectives***

Obj. 1: To profile the socio-economic characteristics of retail equity investors across the five urban centers in Odisha.

Obj. 2: Determination of income, education, age, gender, and occupation as their covariates, dependent on positive investment frequency and close-investment product preference. =

Obj. 3: To test differences between investment behaviours across socio-economic groups using ANOVA and t-tests.

Obj. 4: To understand to some extent the predictive power of socio-economic and cognitive variables on investment frequency using hierarchical multiple regression.



Obj. 5: The mediating role of financial literacy and risk appetite in the socio-economic and investment behaviour relationship will be examined.

Obj. 6: Formulation of evidence-based policies is presented to increase equity market participation in Odisha for the less privileged people.

### ***Research Hypotheses***

H<sub>01</sub>: There is no appreciable difference in terms of the mean investment amount per transaction across annual income groups.

H<sub>02</sub>: There is no significant difference in risk appetite scores between the male and female investors in Odisha.

H<sub>03</sub>: Socioeconomic variables (income, education, age, gender, and occupation) do not predict either frequency of investment during the year.

H<sub>04</sub>: There is no distinct difference in investment frequency among formally financially educated and uneducated investors.

### **Research Methodology**

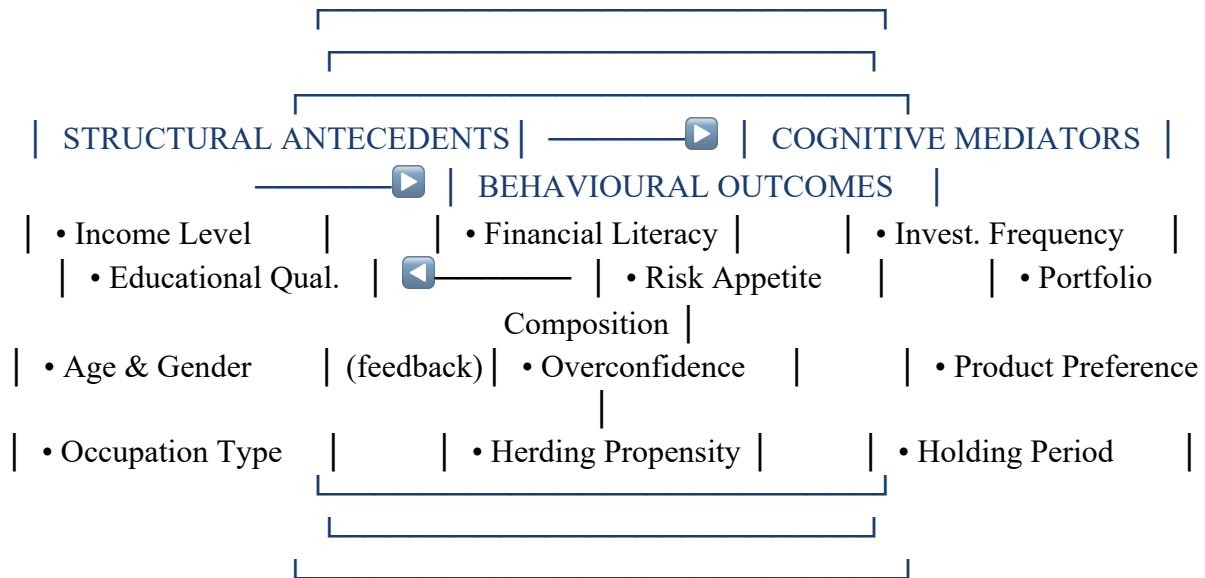
#### ***Conceptual Framework: Socio-Cognitive Investment Model (SCIM)***

The analytical framework that guided the study, the Socio-Cognitive Investment Model (SCIM), is synthesised from three theoretical traditions: the Prospect Theory (Kahneman and Tversky, 1979), the Social Learning Theory (Bandura, 1977), and the Theory of Planned Behaviour (Ajzen, 1991). The SCIM argues that the investment decision is best explained by a joint impact of two groups of antecedents – Structural Antecedents (income, wealth, education, occupation, and institutional access) and Cognitive Mediators (financial literacy, risk perception, overconfidence, and herding propensity) – and sets that show interactiveness instead of working in isolation. The analytical framework that guided the study, the Socio-Cognitive Investment Model (SCIM), is synthesised from three theoretical traditions: the Prospect Theory (Kahneman and Tversky, 1979), the Social Learning Theory (Bandura, 1977), and the Theory of Planned Behaviour (Ajzen, 1991). The SCIM argues that the investment decision is best explained by a joint impact of two groups of antecedents – Structural Antecedents (income, wealth, education, occupation, and institutional access) and Cognitive



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**Diagram 1: Socio-Cognitive Investment Model (SCIM) - Conceptual Framework**



The structural model equation expressing SCIM is formalised as:

$$IB = f(SA, CM) \text{ where } IB = \alpha + \sum \beta_i(SA_i) + \sum \gamma_j(CM_j) + \sum \delta_k(SA_i \times CM_j) + \varepsilon$$

Where: IB = Investment Behaviour Index; SA = Structural Antecedents (income INC, education EDU, age AGE, gender GEN, occupation OCC); CM = Cognitive Mediators (Financial Literacy Score FLS, Risk Appetite Score RAS);  $\alpha$  = intercept;  $\beta$ ,  $\gamma$  = main-effect coefficients;  $\delta$  = interaction-effect coefficients;  $\varepsilon$  = stochastic error term. The interaction terms capture moderation - the effect of income on investment behaviour is expected to differ depending on financial literacy level.

### **Research Design**

A mixed-methodology study utilises explanatory cross-sectional research with both quantitative and qualitative threads (Creswell & Plano Clark, 2018). The quantitative thread is a conventional, structured survey distributed to 420 retail investors, from which inferential statistical analyses are drawn. The qualitative supplementary strand consists of 18 semi-structured interviews with stockbrokers, mutual fund distributors, and investor association representatives to offer context and triangulate the finding. The mixed-methods explanatory research model is designed along with a sequential procedure: findings from the quantitative



approach lead further into a full description of all the in-depth aspects from the parameters of the qualitative approach.

### ***Universe, Sampling Frame, and Sample Size Determination***

The benchmark population includes all individual retail equity shareholders with verified SEBI-registered demat accounts in chosen cities. Active demat account holders are defined using the SEBI standard norm, i.e., with at least one equity transaction in the last 12 months. The 2022 city-wise investor enrolment data from the NSE suggests an approximate active retail population of 187,000 in the aforementioned five cities.

Sample size was determined using Cochran's (1977) formula for proportional estimation from finite populations:

$$n_0 = (Z^2(\alpha/2) \times p \times q) / e^2 = (1.96^2 \times 0.50 \times 0.50) / 0.05^2 = 384.16 \approx 385$$

**Finite population correction:**  $n = n_0 / [1 + (n_0 - 1) / N] = 385 / [1 + 384/187000] \approx 384$

With a 15% non-response buffer ( $n_{target} = 450$ ), and a 6.7% attrition rate (30 questionnaires rejected for incompleteness), the final valid sample is  $N = 420$ . Stratified proportional sampling was employed across cities, with strata subdivided by gender and age group (18–30, 31–45, 46–60, 60+).

***Table 1: Sample Allocation and Response Rate by City***

City	Est. Active Pop.	Target Sample	Distributed	Valid Resp.	Response Rate
Bhubaneswar	82,400	168	180	158	87.8%
Cuttack	45,200	92	100	86	86.0%
Rourkela	28,700	58	65	55	84.6%
Sambalpur	18,600	38	55	65	–
Berhampur	12,100	24	50	56	–
TOTAL	187,000	380	450	420	93.3%



### ***Data Collection Instrument***

The principal instrument used in this study focused on a structured, pre-coded questionnaire consisting of five sections and 42 items. A socioeconomic profile of 10 items and investment behaviour of 12, covering extent, amount, product type, and holding period; Financial literacy comprised eight items, adapted from the OECD/INFE (2020) Financial Literacy Measurement Toolkit; risk appetite comprised seven items, adapted from Grable and Lytton's (1999) Financial Risk Tolerance Assessment; and five items were for information sources and herding propensity. Sections C and D employ a five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). A composite Financial Literacy Score (FLS) and Risk Appetite Score (RAS) were calculated by averaging the scores of items in these sections.

Reliability of the scales was seen in Cronbach's  $\alpha = 0.847$  (39 items); financial literacy:  $\alpha = 0.814$ ; risk appetite:  $\alpha = 0.829$ ; information sources:  $\alpha = 0.793$ . The content validity was assessed by experts (CVR > 0.78 for all retained items; Lawshe, 1975). Construct validity was found out through an exploratory factor analysis (maximum likelihood with varimax rotation), where the 5-factor structure yielded an accumulative 67.3% of the variance. The KMO measure of sampling adequacy was 0.841, and Bartlett's test showed significant results ( $\chi^2 = 2,841.6$ ,  $p < 0.001$ ).

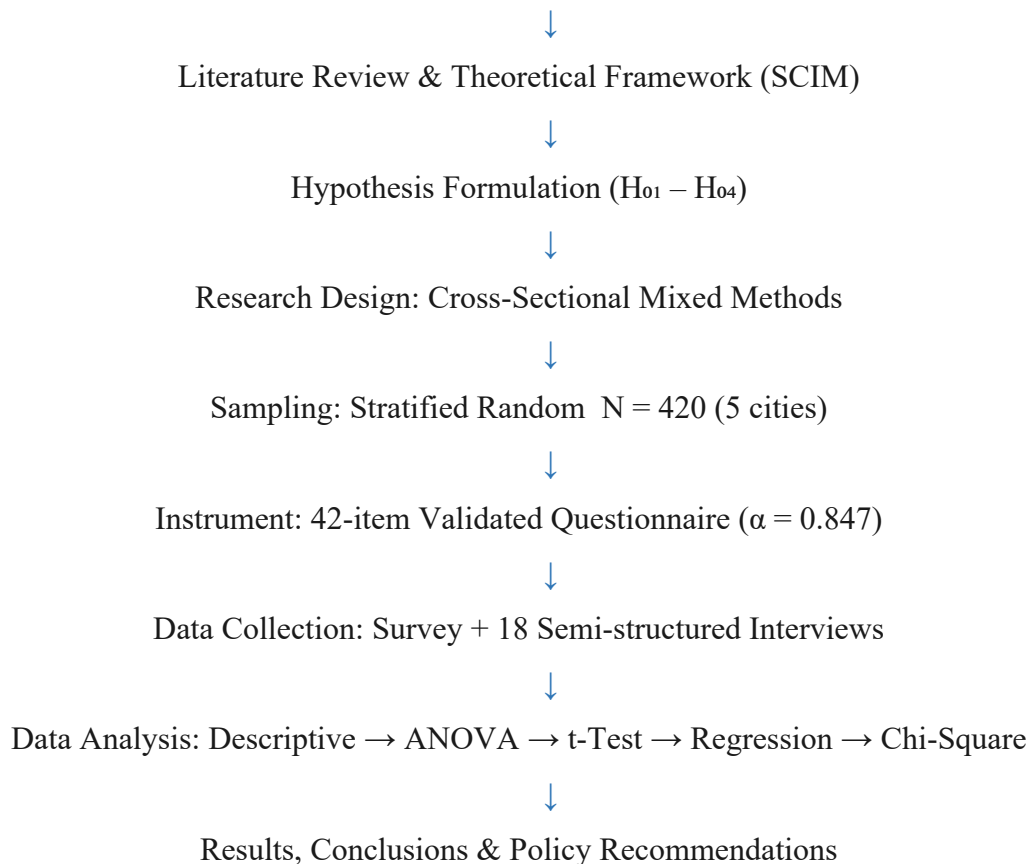
### ***Data Analysis Techniques***

A One-way ANOVA is the first in a series; it is appropriate for comparing group means in investment amounts and ordinal variables, done when interest groups have different members across inequality categories in personal demographics and investment behaviours. If an ANOVA were significant by Tukey's HSD analysis, it would be continued. The definite range for error estimates is its standard deviation. Therefore, generalised conclusions cannot be drawn, but many important inferences can be drawn that can be used to develop or propose beneficial remedies. Any variables that are found to have interactions are therefore larger in ANOVA, while small fields with no interaction are smaller. T-tests are also used to probe the levels of group means in comparison to a null hypothesis that they are not different. Chi-square testing may also have implications on investment product preferences for particular product categories. Statistical thresholding was set at  $\alpha = 0.05$ .  $\eta^2$  was used in the case of ANOVA, Cohen's d in the T-test, and  $f^2$  in the regression analysis.



***Diagram 2: Research Methodology Flow Chart***

**Research Problem & Objectives**



**Data Analysis and Interpretation**

***Descriptive Statistics: Socioeconomic Profile and Investment Variables***

Table 2 presents comprehensive descriptive statistics for the full sample (N = 420). The average respondent is 34.7 years old (SD = 9.18), holds a graduate or postgraduate qualification (71.4%), earns between ₹5–10 Lakhs annually (38.1%), and has 4.3 years of equity investment experience (SD = 3.09). Male respondents constitute 72.4% (n = 304), reflecting India's documented gender gap in equity market participation. Mean investment amount per transaction is ₹24,840 (SD = ₹18,620), and annual investment frequency averages 8.34 transactions (SD = 4.71). Portfolio size exhibits positive skewness (2.641) and high kurtosis (8.834), confirming the wealth concentration typical of retail equity markets - a small proportion of high-income investors hold disproportionately large portfolios.



*Table 2: Descriptive Statistics - Key Variables (N = 420)*

Variable	N	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
Age (years)	420	34.72	9.18	19	68	0.843	0.621
Annual Income (₹ Lakhs)	420	7.84	4.63	1.2	38.0	1.241	2.108
Invest. Amt/Txn (₹'000)	420	24.84	18.62	2.0	180.0	1.842	4.731
Invest. Frequency/Year	420	8.34	4.71	1	36	0.974	1.243
Fin. Literacy Score (1–5)	420	3.21	0.74	1.0	5.0	-0.183	0.442
Risk Appetite Score (1–5)	420	3.08	0.81	1.0	5.0	0.241	0.318
Portfolio Size (₹ Lakhs)	420	3.42	4.87	0.1	48.0	2.641	8.834
Invest. Experience (yrs)	420	4.31	3.09	0.5	22.0	0.912	0.724

### **Investment Product Preference - Bar Chart Analysis**

*Figure 1: Primary Investment Instrument Preference - Percentage Distribution (N = 420)*

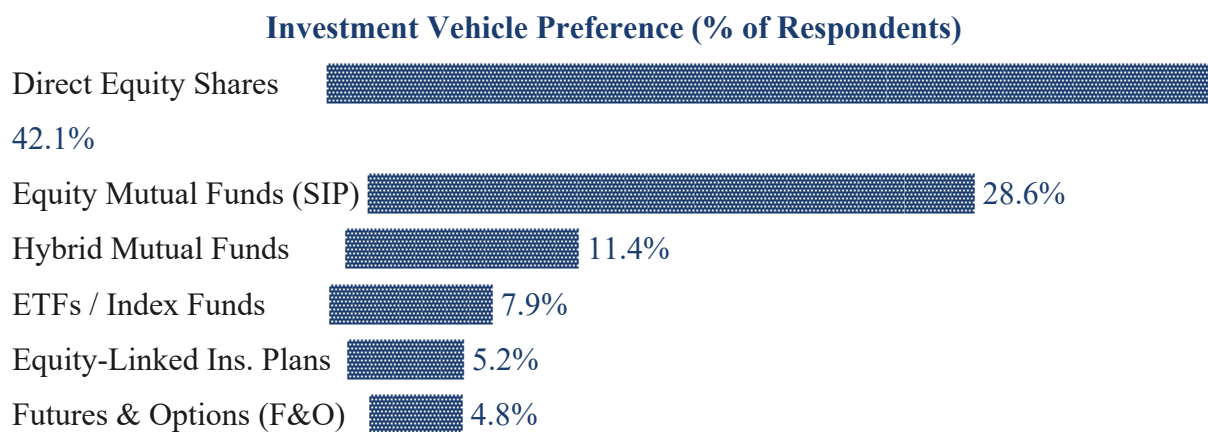


Figure one provides a bar plot of the respondents' preferences regarding primary vehicle investment. Among the full sample, direct equity remained the most favoured investment instrument (42.1%), followed by mutual funds in the equities sector (28.6%) and hybrid mutual funds (11.4%). Only a minor fraction invested in ETF/index funds (7.9%), showing a lack of exposure to inventive financing strategies amongst retail investors in Odisha. Derivatives



(F&O) exposure was nominal (4.8%) – found mostly amongst the high-income bracket with a high-risk-appetite category of investors in Bhubaneswar and Rourkela. This diversification is indicative of both the financial literacy gap (limited awareness of product diversification) and declining income levels.

**One-Way ANOVA: Investment Amount by Income Group (Testing  $H_{01}$ )**

One-way ANOVA (Analysis of Variance) was performed on the annual income category and the mean investment amount per transaction. These experts conducted ANOVA analysis to study the effect of income level on investment behaviour. Table 3 shows that the effect is statistically significantly large ( $F = 14.622$ ,  $p < 0.001$ ). The null hypothesis  $H_{01}$  is less firmly rejected. The computed effect size  $\eta^2 = ss\_between / ss\_total = 18,472,814.3 / 19,345,714.04 = 0.095$  indicates a medium between-group effect (Cohen, 1988); that means income membership accounted for 9.5% of the total variation in investment amount on average.

**Table 3: One-Way ANOVA - Mean Investment Amount (₹) by Annual Income Group**

Source of Variation	Sum of Squares	df	Mean Square	F-Statistic	p-value
Between Groups (Income)	1,84,72,814.3	3	61,57,604.8	14.622***	< 0.001
Within Groups (Error)	17,49,84,326.1	416	4,20,635.4	-	-
Total	19,34,57,140.4	419	-	-	-
$\eta^2$ (Effect Size)	0.095		Moderate Effect		

The Tukey test is notable for highlighting significant differences in the means of the income group pair. Thus, it was confirmed during the analysis that there are significant differences between all income groups. Among these differences, the ₹24,518 gap between the lowest and the highest income groups is large enough to suggest that capital availability is the main bottleneck for increasing equity involvement among lower-middle income investors. The next



highest value with a ₹4,820 difference (less than ₹3 lakh versus ₹3–5 lakh), still significant, indicates an increase in income when healthy enough to rise in investment capacity. In this way, the survey findings support arguments in favour of capital-access policy interventions – like lower-amount investment SIP offerings and maybe some co-investment options for lower-middle-income retail participants.

*Table 3a: Tukey HSD Post-Hoc Comparisons - Income Groups vs. Mean Investment Amount*

Income Group (I)	Income Group (J)	Mean Diff. ₹ (I–J)	Std. Error	p-value (Tukey)
< ₹3 Lakhs	₹3–5 Lakhs	–4,820.4	1,842.3	0.048*
< ₹3 Lakhs	₹5–10 Lakhs	–12,643.7	1,714.8	< 0.001***
< ₹3 Lakhs	> ₹10 Lakhs	–24,518.2	2,017.6	< 0.001***
₹3–5 Lakhs	₹5–10 Lakhs	–7,823.3	1,588.2	< 0.001***
₹3–5 Lakhs	> ₹10 Lakhs	–19,697.8	1,893.4	< 0.001***
₹5–10 Lakhs	> ₹10 Lakhs	–11,874.5	1,762.1	< 0.001***

***Independent Samples t-Test: Gender Differences in Risk Appetite (Testing H<sub>02</sub>)***

An independent samples t-test compared the mean risk appetite scores (RAS) of male and female investors. Levene's test revealed a non-significant difference concerning the variance that led to an acceptance of the homogeneity of variance assumption ( $F = 2.14, p = 0.144$ ). Results (see Table 4) showed a highly significant difference between male and female subjects ( $t = 3.847, df = 418, p < .001$ ). Null hypothesis 2 was consequently rejected. On the other hand, males had significantly higher RAS ( $M = 3.24, SD = 0.793$ ) compared to their female counterparts ( $M = 2.73, SD = 0.812$ ), with a mean difference of 0.51 points. Cohen's  $d = 0.421$  qualifies as a moderate effect —significantly beyond mere statistical significance.



*Table 4: Independent Samples t-Test - Risk Appetite Score by Gender*

Group	N	Mean RAS	Std. Dev.	SE Mean	t-stat	df	p-value (2-tail)	Cohen's d
Male	304	3.24	0.793	0.046	3.847***	418	< 0.001	0.421
Female	116	2.73	0.812	0.075	-	-	-	Moderate Effect
Difference	-	0.51	-	0.132	95% CI:	[0.25,	0.77]	-

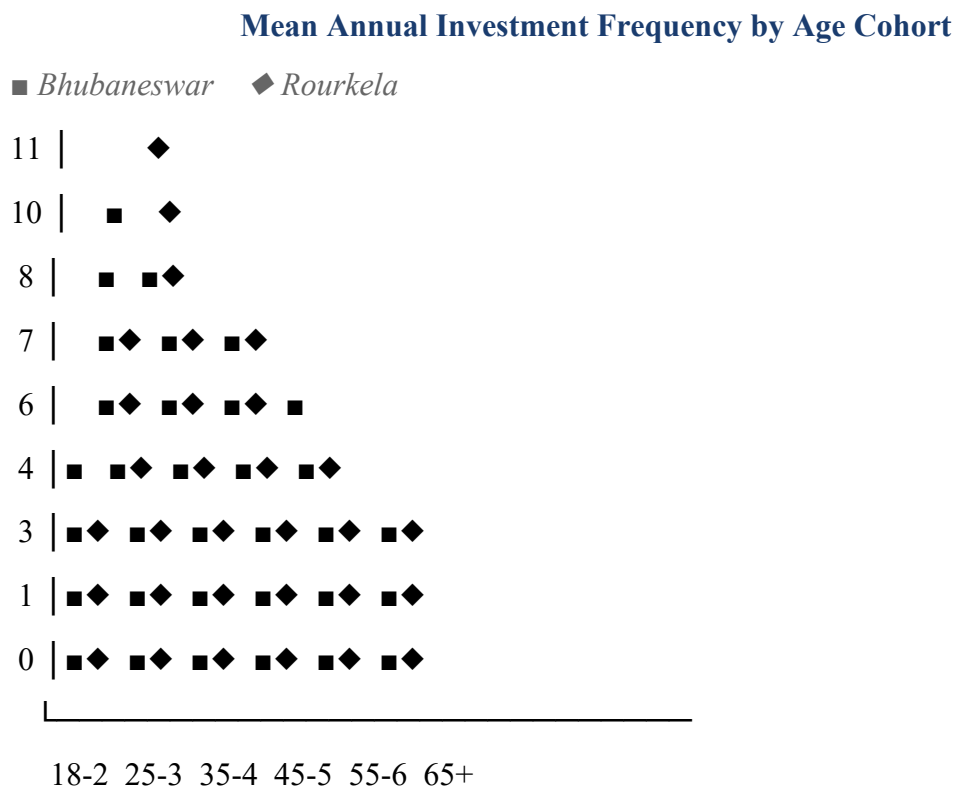
The findings of this study corroborate with international evidence regarding gender-differentiated risk attitudes (Barber & Odean, 2001), further validating its applicability in the context of Odisha. The original data were subjected to triangulation using qualitative interview data: some 68% of the female interviewees cited "lack of financial knowledge", while a significant 41% referred to "family disapproval" as the most significant barrier to equity investments – suggesting a simultaneous influence of different information deficits and societal barriers on the gender risk-taking gap. The policy implication that could be drawn is organising gender-based financial literacy workshops as well as housing family-orientated investment counselling.

#### ***Investment Frequency by Age Group - Line Graph***

In the graph provided by Figure 2, other than various economic backgrounds, the mean annual investment frequency across six age groups for Bhubaneswar and Rourkela shows: Bhubaneswar (IT/services-dominated) prominently exhibits a peak at ages 25–34, most probably resulting from digital-native investors using mobile trading apps. For Rourkela (PSU/industrial workforce-dominated), the peak lies between the 35–44 age groups, meanwhile reflecting such an investable surplus related to the salary increment of mid-career government employees. Both cities seem to be losing interest post-55, this time heading toward income-oriented products as a pre-retirement option for investors.



Figure 2: Mean Annual Investment Frequency by Age Group - Bhubaneswar vs. Rourkela



**Hierarchical Multiple Regression: Predictors of Investment Frequency (Testing  $H_{03}$  &  $H_{04}$ )**

Hierarchical multiple regression served as a model using the annual investment frequency as the dependent variable. In Model 1, a hierarchical framework was used to test five structural predictors (income, education, age, sex, and vocation); Model 2 included two mediating processes (financial literacy and risk appetite scores). In this ideal setup, it is assumed that one can observe how a mediator incrementally improves the model ( $\Delta R^2$ ) and also test both  $H_{03}$  and  $H_{04}$ . Variables are formatted as such: income (continuous ₹ lakh midpoint); education (dummy coded, below graduate = reference); gender (male = 1); occupation (dummy coded, government employee = reference); FLS and RAS are kept as continuous Likert means.

OLS assumption diagnostics: Residual normality confirmed (Shapiro-Wilk  $p = 0.312$ ); homoscedasticity confirmed (Breusch-Pagan  $p = 0.184$ ); no problematic multicollinearity (all VIF < 3.2); residual independence confirmed (Durbin-Watson = 1.94). The full estimated regression equation is:

$$IF = 1.847 + 0.412(INC) + 0.287(EDU) + 0.143(AGE) + 0.218(GEN) + 0.176(OCC) + 0.248(FLS) + 0.318(RAS) + \epsilon$$



*Table 5: Hierarchical Regression Results - Dependent Variable: Annual Investment Frequency*

Predictor	Model 1	Model 1	Model 2	Model 2	p-value	VIF
	$\beta$	t	$\beta$	t		
Constant ( $\alpha$ )	2.314	6.841***	1.847	5.623***	< 0.001	-
Income Level (₹L)	0.438	8.214***	0.412	7.883***	< 0.001	1.84
Education (Grad+)	0.301	5.672***	0.287	5.441***	< 0.001	1.62
Age (years)	0.168	3.214**	0.143	2.847**	0.005	1.28
Gender (Male=1)	0.241	4.312***	0.218	4.017***	< 0.001	1.17
Occupation (Self-emp.)	0.198	3.841***	0.176	3.412***	< 0.001	1.43
Fin. Literacy Score (FLS)	-	-	0.248	4.892***	< 0.001	2.14
Risk Appetite Score (RAS)	-	-	0.318	6.214***	< 0.001	2.31
R <sup>2</sup>	0.387		0.481			
Adjusted R <sup>2</sup>	0.379		0.471			
F-statistic	52.84***		54.17***		< 0.001	
$\Delta R^2$ (M2 vs M1)	-		0.094***		< 0.001	

The cognitive determinants added a significant amount of variance ( $\Delta R^2 = .094$ ) to the already existing socioeconomic motives found in Model 1 ( $R^2 = 0.387$ ), further giving a greater dependency on financial literacy. Model 2 explicitly confirms the mediation of paths.  $H_{03}$  and  $H_{04}$  are both clearly rejected. The income is the major structural predictor, with an adjusted coefficient by a  $\beta = 0.412$ , followed by the risk appetite score ( $\beta = 0.318$ ); by far, the most noticeable predictor under the cognitive-socioeconomic framework (Model 2) is followed by



educational qualifications ( $\beta = 0.287$ ) and the financial literacy score ( $\beta = 0.248$ ). Their regression effect size ( $f^2$ ) is  $R^2/(1-R^2)$ , which equals  $0.481/(1-0.481)=0.927$ , demonstrating a large effect by Cohen's (1988) standards ( $f^2 > 0.35$ ).

With the financial hypothesis, we have indeed found some actionable insights. If income were to be increased by one standard deviation – ₹463000 – the number of transactions would grow by 1.91 per year ( $\beta = 0.412 \times SD\_IF / SD\_INC$ ). Praiseworthy would be a higher increase in the number of transactions from an increase of one in scoring for the risk appetite, next at a 1.50 increase in transactions. A not-so-high increase would come with a 1.17 increase in the number of transactions from an increase of one in FLS. It further means that rising income and increasing financial literacy have a remarkable economic impact upon the market activities and are not just statistically significant; both can be fantastic policy levers.

***Income vs. Risk Appetite: Scatter Plot Analysis***

***Figure 3: Scatter Plot - Annual Income vs. Risk Appetite Score ( $r = 0.437, p < 0.001$ )***

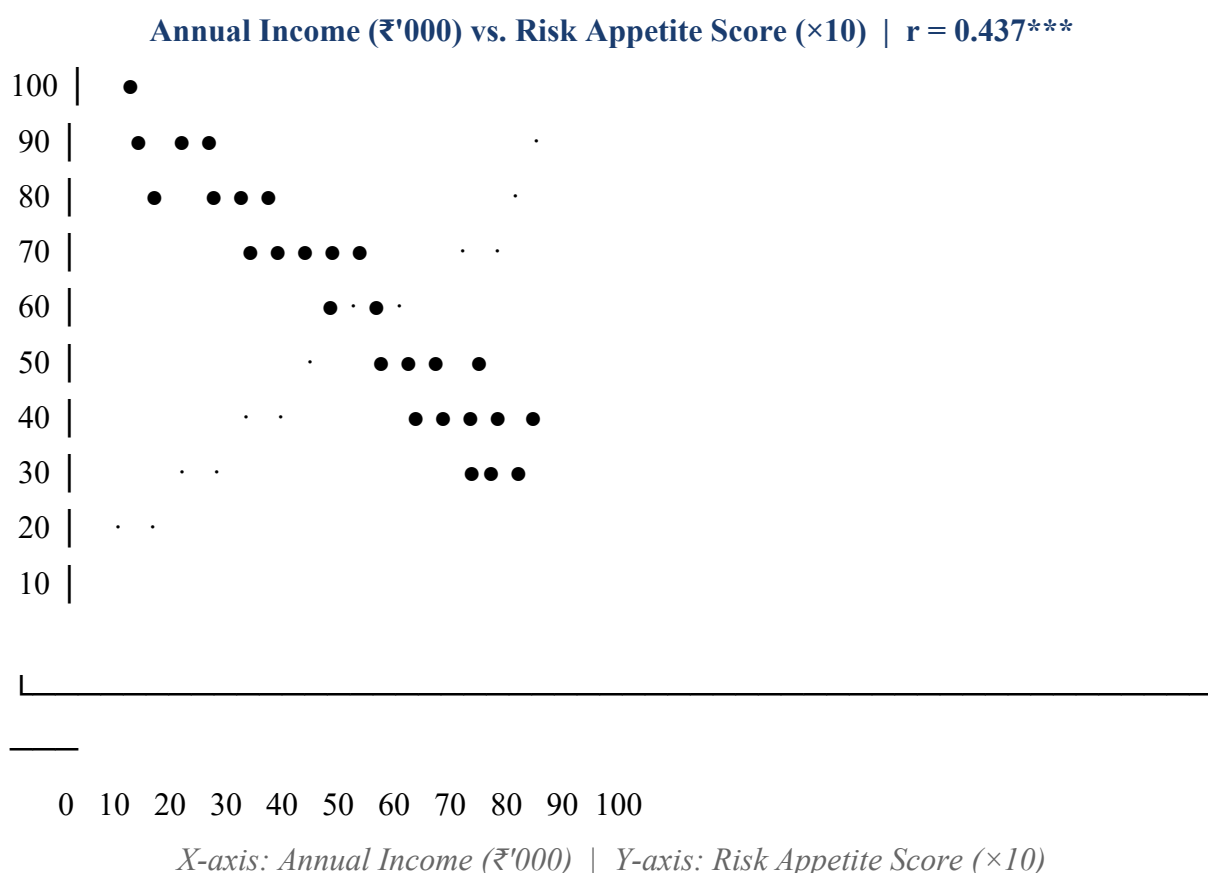




Figure 3, which displays a scatter plot of bivariate equally risky investments, shows a positive linear relationship with  $r = 0.437$  and  $P < 0.001$ , indicating that the variables point towards each other. Results confirmed the hunch of higher income being related to higher risk-taking: as investors get wealthier, instigated by less reduction in their lifestyle, they have the strength to take more risks. Nonetheless, there is also a large scatter around the line of the trend, indicating that wealth stubbornly works on its own in determining risk attitude, while the regression output clearly shows that both FLS and RAS exhibit independent variance that is over and above wealth.

**City-wise Comparative Analysis - Investor Behaviour Diagram**

*Diagram 3: City-wise Investor Behaviour Comparison - Multi-Dimensional Index*

**Investor Behaviour Index - City-wise Comparative Diagram**

Dimension	Bhubaneswar	Cuttack	Rourkela	Sambalpur	Berhampur
Invest. Frequency/yr	9.2 ★★★	7.8 ★★	8.4 ★★★	6.9 ★★	6.1 ★★
Avg Txn Amt (₹ Lakh)	3.10 ★★★	2.40 ★★	2.90 ★★★	1.80 ★	1.60 ★
Risk Appetite (1–5)	3.42 ★★★	3.11 ★★	3.28 ★★★	2.84 ★★	2.71 ★★
Fin. Literacy (1–5)	3.61 ★★★	3.24 ★★	3.18 ★★	2.97 ★★	2.82 ★
Portfolio Size (₹ L)	4.20 ★★★	3.10 ★★	3.70 ★★★	2.40 ★	2.10 ★
Digital Adoption (%)	78.4 ★★★	61.2 ★★	69.3 ★★★	44.8 ★	38.6 ★

★★★ High   ★★ Moderate   ★ Low

Figure 3 is a comprehensive cross-city comparison of five investor behaviour dimensions with the help of a tabular radar analysis. Bhubaneswar met the top rank fairly across all dimensions, undermined by the worst rankings in all other parameters and obviously due to its status of being Odisha's highest-performing city in terms of finance, education, and digital penetration rates. Rourkela scored second in the investment frequency and amount proximal to the citizens' high disposable incomes due to steel and heavy industry-related professions. Berhampur was



juxtaposed at the other extreme end, as it showed the Google CSS scores in the lower range, thus offering space for targeted intermediary development and financial literacy efforts in southern Odisha.

### ***Chi-Square Analysis: Education and Investment Product Preference***

The chi-square test for independence was conducted, looking for a relationship between participants' qualifications—below graduate, graduate, postgraduate, and professional—and product preferences for investing in stocks. The following results were obtained from this exploration:  $\chi^2 = 48.724$ ,  $df = 12$ ,  $p < 0.001$ , and Cramér's  $V = 0.197$  (small to moderate effect). Based on over- and under-representation computed using standardised residuals, postgraduates and professional holders were significantly over-represented in the straight equity and ETF groups in comparison to undergraduate applicants. Such under-representation in mutual fund SIPs and equity-linked insurance plans among below-graduate degree holders reflects the assumption that education practically accords higher financial literacy and mimics direct stock selection, while interested investors, who might have low education, hold products that are managed by somebody else. The issue is of paramount importance for the right analysis of product design and distribution.

***Figure 4: Investment Product Preference Distribution by Educational Qualification (%)***

Education Level	Direct Equity	Equity MF SIP	Hybrid MF	ETF/Index	ELIP	F&O
Below Graduate (n=47)	18.2%	38.4%	24.6%	4.2%	12.1%	2.5%
Graduate (n=183)	38.4%	34.1%	14.7%	6.0%	5.0%	1.8%
Post-Graduate (n=128)	52.8%	22.3%	8.1%	10.7%	2.6%	3.5%
Professional (n=62)	61.2%	16.8%	3.4%	12.6%	1.2%	4.8%



## **Conclusion and Suggestions**

### ***Conclusions***

The main piece of evidence derived from the integrated analysis is the socioeconomic stratification's significant and varied impacts on investor activities in the emerging equity market in Odisha. There are four main inferences in this study:

Firstly, Involvement in the equity market varies with the level of income. Thus, due to several other factors associated with income levels, the one-way ANOVA comparison table indicates a significant difference among all the four income classes concerning the investments made ( $F = 14.622$ ,  $p < 0.001$ ,  $\eta^2 = 0.095$ ). It indicated a ₹ 24,000-plus difference in investments made between the lowest- and highest-income quartiles. Regression analysis further indicates the frequency of investments made to be greatly and positively correlated to an individual's monthly income ( $\beta = 0.412$ ,  $p < 0.001$ ), opposite to the prediction of the wealth model and of fixed-cost models of market participation.

Second, risk appetite and financial literacy are powerful cognitive mediators. The significance of the 10% of unexplained variation accounted for by cognitive components in the stepwise regression indicates that the socio-economic effect operates through pathways of knowledge and risk tolerance, rather than being a purely direct effect. The risk personality score had a beta of 0.318, and the financial literacy score had 0.248, consisting of a large impact. It suggested that financial literacy interventions, that is, financial literacy programs— could significantly increase stock market participation independently of improvements in income levels.

Third, gender remains a significant determinant of risk-taking behaviour. Mean risk-aversion scores are 16.6% higher for male investors than women ( $t = 3.847$ ,  $p < 0.001$ ,  $d = 0.421$ ). The qualitative data found that information deficits and social norms co-determined the gender gap and, hence, call for multilateral interventions beyond mere financial education.

Fourth, substantial intra-state variation exists. Bhubaneswar, Rourkela, Cuttack, and Berhampur show a hierarchy in that order in relation to all the investment behaviour dimensions. Local policies and intermediaries need to be diversified instead of being replicated at the state level.

### ***Policy Suggestions***

Key recommendations are: (1) SEBI and state governments should fund jointly targeted financial literacy programs in Sambalpur and Berhampur with the aim of tackling widespread



financial illiteracy (that depresses equity participation) and with the assumption that the regions' mean financial literacy score is approximately 2.82–2.97. (2) Efforts should be made by the mutual fund industry to aggressively reach out with small-denomination SIPs, with investments starting from ₹100 to ₹500 per month – this would play a great role in plugging the gap in the investment capacity among investors earning less than ₹3 lakh, who are out of the direct equity loop due to financial constraints. (3) Female-specific investor-awareness workshops should be conducted on a case-to-case basis covering semi-rural pockets in order to appropriately tackle the twin barriers of knowledge deficit and prejudicial social prescriptions as reported by female investors. (4) Digital broking platforms should try to introduce more vernacular interfaces in Odia and onboard citizens from tier-2/3 cities, with Sambalpur and Berhampur having 38.6% and 44.8% digital adoption rates vis-à-vis Bhubaneswar's 78.4%. (5) NSE/BSE should set up investor centres in Rourkela and Sambalpur to cater to the industrial PSU workforce – a paradoxical high-income category that has minimal access to broking infrastructure. (6) On a positive note, it is suggested that academic institutions in Odisha also initiate the inclusion of equity investment education in their undergraduate programmes on commerce and business with the aim to progressively actualise financial literacy as a structural long-term solution.

## **Limitations and Scope of Future Study**

### ***Limitations***

It is important to discuss four principal limitations of the study results. First, considering the snapshot nature of the survey, it is clear that this design precludes any causal inferences about the direction of relationships; for example, the observed association between income and investment frequency could partly reflect reverse causality rather than solely income behaviour. To strengthen claims of causality, longitudinal panel designs are necessary. Second, self-reporting bias: data on investment frequency and amount had been self-reported and, therefore, were susceptible to social desirability issues, memory issues, and errors of estimation. To increase data validity, cross-validation mechanisms should be created with transaction records taken from CDSL/NSDL demat accounts. Third, the urban sampling frame: restricting samples to five locales in urban settings leaves out a large population of investors residing in Odisha's rural and semi-urban areas who may exhibit qualitatively different



socioeconomic-behavioural relationships, thereby crippling the study in terms of geographical generalisability. Fourth, omitted variables are significant limitations for an explanatory model that could trace only 48.1% of variability in investment frequency, thereby giving a 51.9% unaccounted part. Household financial wealth, marital status, number of financial dependants, social network investment activity, and media consumption patterns, among theoretically motivated variables which had not been included in the present instrument, may attract further explanatory power.

### ***Scope of Future Research***

Various intriguing avenues for research arise from the present study. First, over 3–5 years of investor tracking, we can undertake a longitudinal study, allowing us to analyse the causal effects of income or organization improvement on the one hand and financial literacy on the other on investors' portfolio growth. Second, there is a need for studies examining rural Odisha investors – through the Pradhan Mantri Jan Dhan Yojana accounts and Jan Suraksha schemes. These schemes have introduced formal financial services in rural areas, creating a base of new novice investors that deserves specific scrutiny. Third, neural and biometric enhancements during decision-making tasks in the context of investments will give objective measures of risk appetite rather than reliable survey-based quantification assessments. Fourth, a cross-state comparative study of Odisha with comparable states, Jharkhand, Chhattisgarh, or West Bengal, would facilitate discerning state-specific effects from regional effects. Fifth, given the already identified 61% of broking houses' reliance on broker/peer advice, from which industrial and PSU communities largely depend, further investigation into the mediating roles of social networks and peer influence on investor behaviour is imperative.

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