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"Developing an investment behavior model: influence of age, income, and financial knowledge in the derivatives market"

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Abstract: *This study investigates how demographic variables including age, income and education have impact on behavior in derivatives market. The study examines investment frequency, relation between income and investment in derivatives market, and most importantly the significance of financial literacy in trading success using secondary data which is collected from 495 respondents who are from major cities of Saurashtra region like Rajkot, Bhavnagar, Jamnagar, and Junagadh. The data was collected through standardized questionnaire to study the investment trends.*

According to the findings, younger investors trade in derivatives less frequently, mostly because they lack of money and less financial expertise, while people with professional degrees and higher incomes participate in the market more and they were also able to generate better investment results. The study suggests an investment model that categorise investors into beginner, middle and advanced levels. The findings also highlight the necessity of focused financial literacy initiatives to improve decision making and encourage market participation.

Key Words: *Investment Behavior, Derivative Market, Income Level, Age Group, Financial Literacy.*

1. INTRODUCTION

The market for derivatives has seen considerable expansion among different demographic groups in recent years. In 2023, the global activity in exchange-traded derivatives rose significantly, with retail investors playing a crucial role in this rise. Although the popularity of derivatives trading is on the rise, participation is mainly affected by factors like financial literacy, income levels, and Investment experience. Young investors, especially those between 18 to 24, tend to participate less due to their limited financial means and understanding. Conversely, individuals aged 35 to 44, who are typically at their professional peak, are more active in derivatives trading as they possess higher disposable income and a better understanding of investment vehicles.

Derivatives Market in India: Current Status and Future Prospects

The derivatives market in India has undergone remarkable changes since the launch of derivatives in year 2000. The National Stock Exchange (NSE) and the Bombay Stock Exchange (BSE) are playing a major role in enabling derivatives trading across the nation. Currently, the Indian derivatives market consider among the largest in the world by volume, especially in Index options and future. This market offers investment avenues for hedging, speculation, and arbitrage, drawing in institutional investors, hedge funds, and retail traders.

At present, the Indian derivatives market includes several financial instruments, including futures and options related to equities, indices, currencies, and commodities. The introduction of interest rate derivatives and the ongoing expansion of the market to incorporate additional asset classes have increased its depth and liquidity. SEBI, the regulatory authority, is persistently taking measures to increase transparency, reduces risks, and increase participation. The rise of algorithmic and high-frequency trading has further improved market efficiency and trading volume.

The derivatives market in India currently facing issues including regulatory challenges, gaps in financial literacy, and excessive speculation. A significant number of retail investors are still unaware of the functioning of derivatives, which results in less-than-optimal participation. Furthermore, there is a crucial requirement for enhanced risk management frameworks and strong infrastructure to support ongoing market growth.

Anticipating the future, the Indian derivatives market appears to have bright outlook. The ongoing integration of financial markets, the rise of institutional involvement, and the growing use of advanced trading techniques are projected to fuel growth. The introduction of new derivatives products, such as sector-specific indices and more complex instruments, is expected to draw a broader array of investors. Additionally, government and regulatory initiatives aimed at improving financial literacy and strengthening investor protection will be essential for promoting market stability and sustainable development.

The key products available in the Indian derivatives market include:

- **Equity Derivatives** – Consists of index futures and options, stock futures, and options that allows investors to hedge their equity holdings.

- **Currency Derivatives** – Allowing traders and companies to protect themselves from currency fluctuations, especially in contracts involving USD/INR, EUR/INR, GBP/INR, and JPY/INR.

- **Commodity Derivatives** – These derivatives are traded on exchanges such as National Commodity and Derivatives Exchange (NCDEX) and the Multi Commodity Exchange (MCX), and they cover commodities like agricultural products, gold, silver and crude oil.

- **Interest Rate Derivatives** – Instruments designed to hedge interest rate risk, including futures contracts based on government securities and interbank rates.

The derivatives market is expected to grow further because of India's expanding economy, growing integration with international financial markets, and regulatory reforms. To ensure its smooth development, reduce systemic risks, and promote participation – all of which will contribute to a more resilient financial ecosystem – investors, traders, and legislators must collaborate.

2. LITERATURE REVIEW :

In investment decisions Financial Literacy plays very crucial role. Lusardi and Mitchell (2014) gave importance to financial literacy as it has huge impact on retirement planning, market participation, and wealth accumulation. Financial knowledge is a crucial component of participating in derivatives market as their research shows a strong correlation between it and wise investment choices. Psychological factors have significant impact on the behaviour of investors. According to Barber and Odean (2001), who address the issue of overconfidence in trading decisions, male investors are more likely to engage in excessive trading, which can result in less-than-ideal outcomes. Similarly, Dhar and Zhu (2006) investigate the disposition effect and investor sophistication, finding that inexperienced investors tend to hold on loss making stocks for longer than they should, affecting their overall portfolio performance.

Two essential components of investing are asset pricing and market efficiency. To shed light on market irregularities and risk factors that impact pricing, Fama and French (1992) present the cross-section of expected stock returns. With his theory of narrative economics, Shiller (2017) expands on this conversation by describing how media and stories impact investment patterns and produce market bubbles. Both institutional and retail investors have contributed significantly to the substantial growth of the Indian derivatives market. Bhagwat and Maravi (2016) examine the past and present state of the Indian commodity derivatives market, highlighting its development and the regulatory obstacles it faces. Comparably, Saroha and Yadav (2013) talk about the potential and problems of the Indian derivatives market, giving importance to investor awareness, regulatory limitations, and market depth.

The effect of financial literacy on participation in the derivatives market is examined in a study by Hsiao and Tsai (2018). Because they are more knowledgeable about risk management techniques and product intricacies, people with greater financial literacy are more likely to trade derivatives, according to their research. Chui (2012) gives a summary of derivatives markets, going over different products and how participants behave in international financial markets. Trading practices were changed globally, including in India, by the Covid-19 pandemic. When Parmeshwar et al. (2022) investigated the trading patterns of Indian youth during and after the lockdown, they discover that increased access to digital trading platforms and flexible work-from-home arrangements led to a rise in retail participation in the equity and derivatives markets

Overall, the review of literature highlights the value of financial literacy, psychological biases, regulatory structures, and market efficiency in shaping investor behavior in derivatives markets. These studies underscore the need for targeted educational initiatives and policy measures to improve participation and financial decision-making among retail investors.

3. OBJECTIVES

- **To examine the relationship between age and investment behavior in the derivatives market –** Understanding how different age groups participate in derivatives trading, including their trading frequency and risk preferences.

- **To analyse the impact of income levels on investment patterns in the derivatives market** – Evaluating whether higher income groups engage more frequently in derivatives trading and how income influences risk tolerance.

- **To assess the role of financial literacy and education in investment success –** Investigating how different levels of education impact investment outcomes, particularly in derivatives trading

4. RESEARCH METHODOLOGY

4.1 Research Design

This study is based on secondary data collected from 495 respondents across major cities of Saurashtra region, including Rajkot, Jamnagar, Junagadh and Bhavnagar. The respondents were classified by age, income, and education level to analyse their investment patterns in the derivatives market. With tables we have highlighted the key findings, focusing on investment frequency, income correlations, and investment outcomes based on education.

The study offers a regional perspective on investment behavior by segmenting the respondents among cities focusing on the ways in which financial literacy and economic conditions affect derivatives trading in Saurashtra. The results of this study can help investment firms, financial institutions, and regulators to create focused financial literacy initiatives, encourage smart trading practices, and boost market participation. The suggested model will help varied investor in decision making in derivatives market.

4.2 Data Interpretation

A structured questionnaire was prepared to collect primary data from the Major cities of Saurashtra region viz. Rajkot, Bhavnagar, Junagadh, and Jamnagar.

Relationship between Age and Investment in Derivative Market

Age Group	1-10 times	11-25 times	26-50 times	Regularly	Total
18-24	99	5	5	5	114
25-34	70	15	15	10	110
35-44	130	35	45	20	230
Above 45	10	15	10	10	45
Total	**309**	**70**	**75**	**45**	**495**

Tabel 1.1 – Relationship between Age and Investment in Derivatives Market

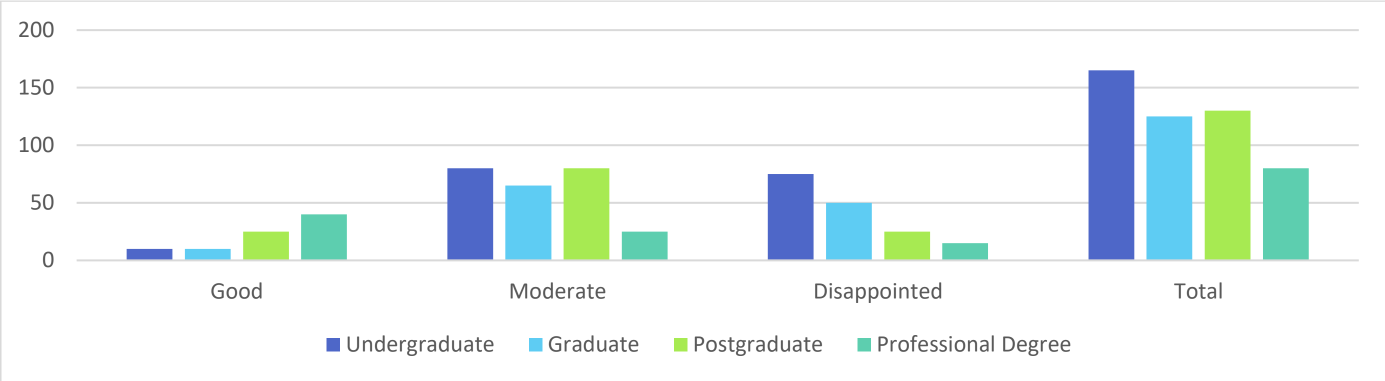

Figure 1.1 - Relationship between Age and Investment in Derivatives Market

- Younger investors (18-24 years) have limited participation in the derivatives market, mostly engaging in 1-10 transactions per year.
- The 35-44 age group shows the highest level of engagement, suggesting that middle-aged investors have greater experience and confidence in derivatives trading.

Relationship between Income and Investment Pattern of Respondents in a Year

Income Group	1-10 times	11-25 times	26-50 times	Regularly	Total
Below 1,50,000	45	15	10	5	75
1,50,001 -3,00,000	150	20	20	5	195
3,00,001- 4,50,000	40	5	20	5	70
Above 4,50,000	75	30	25	30	160
Total	**310**	**70**	**75**	**45**	**495**

Tabel 1.2 – Relationship between Income and Investment Pattern of Respondents

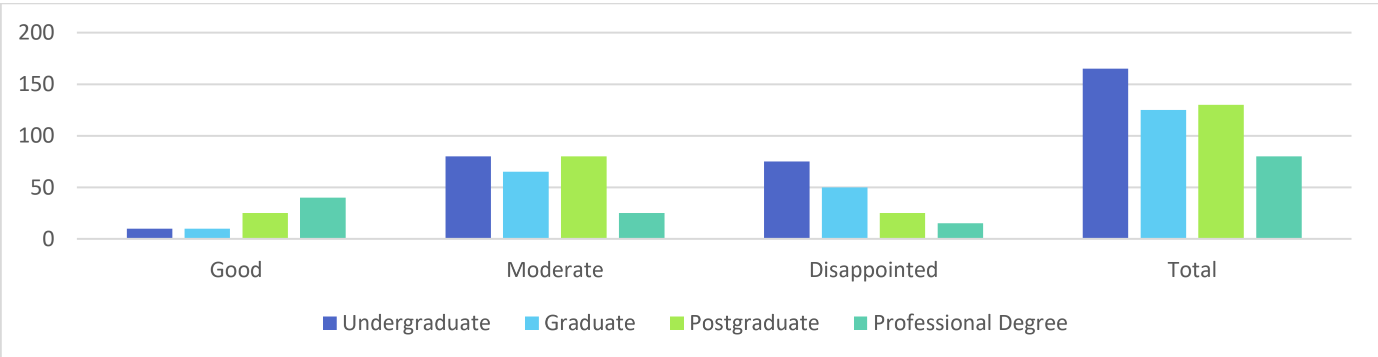

Figure 1.2 – Relationship between Income and Investment Pattern of Respondents in a year

- Higher-income individuals (above Rs. 4,50,000) have a greater propensity for frequent investments, including regular trading.
- Lower-income individuals predominantly invest less frequently, indicating risk aversion or lack of disposable income for speculative investments.

Relationship between Qualification and Investment Result

Qualification	Good	Moderate	Disappointed	Total
Undergraduate	10	80	75	165
Graduate	10	65	50	125
Postgraduate	25	80	25	130
Professional Degree	40	25	15	80
Total	85	250	165	495

Tabel 1.3 - Relationship between Qualification and Investment Result

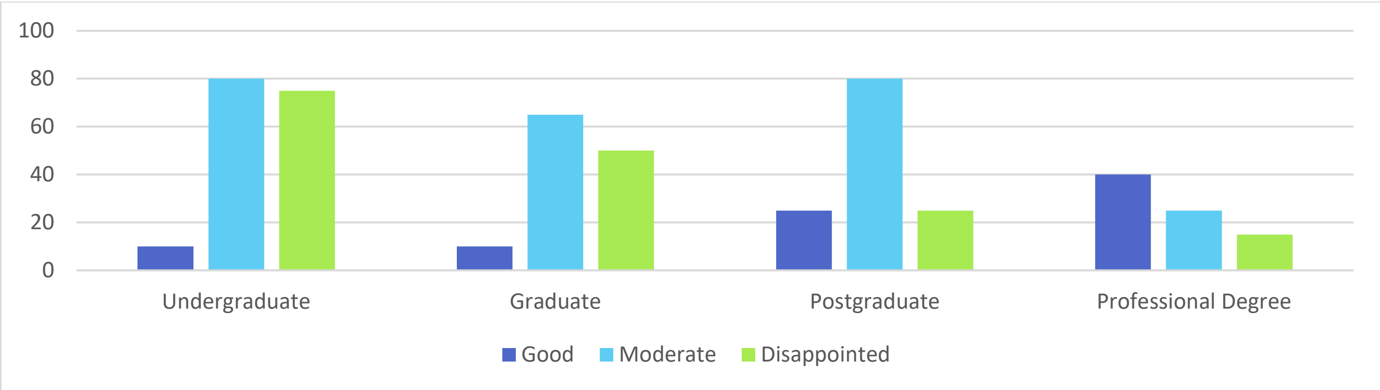

Figure 1.3 - Relationship between Qualification and Investment Result

- Investors with professional degrees achieve the best results in their investments, likely due to superior market analysis skills.
- Undergraduate investors face the highest level of disappointment, suggesting a need for better financial literacy programs.

4.3 Investment Model for Derivatives Market

Based on the insights from the analysis, the following model can be proposed for investors looking to enter the derivatives market effectively:

Investor Categorization

- **Beginner (1-10 transactions/year):** Focus on learning and risk assessment by starting with basic derivative instruments such as index options and futures. Beginners should prioritize understanding market movements, price fluctuations, and the fundamentals of derivatives trading before engaging in active trading.

- **Intermediate (11-50 transactions/year):** Employ strategic trading with risk management by diversifying into different derivative instruments, including stock options and commodity futures. Intermediate traders should develop their knowledge of technical analysis and hedging strategies to reduce risk.

- **Advanced (Regular trading):** Engage in active portfolio diversification and leverage technical analysis by incorporating complex trading strategies such as arbitrage, spread trading, and algorithmic trading. Advanced investors should actively monitor market trends, global economic conditions, and financial news to make informed investment decisions.

Income-Based Strategy:

- **Low-Income (<3,00,000 INR):** Engage in conservative investment with a long-term perspective by focusing on low-risk derivative instruments, such as covered calls and protective puts. Low-income investors should limit their exposure to high-volatility instruments to minimize financial risks.
- **Middle-Income (3,00,001-4,50,000 INR):** Utilize a balanced portfolio with moderate risk by including a mix of options and futures contracts. This group should aim to balance speculative investments with hedging strategies to protect against market downturns.
- **High-Income (>4,50,000 INR):** Diversify across various derivative instruments with advanced hedging techniques such as straddles, strangles etc. High-income investors should allocate capital to multiple asset classes, including commodities, currency derivatives, and stock indices, to optimize returns and minimize portfolio risk.

Educational Focus

- **Undergraduate Investors:** Should undergo financial education programs before active participation. This can include enrolling in online courses, attending financial seminars, and gaining exposure through simulated trading platforms to build confidence in their trading abilities.
- **Postgraduate and Professional Investors:** Should leverage their analytical skills to optimize trading strategies by utilizing advanced risk assessment tools, financial modelling, and algorithmic trading platforms. Experienced investors should continuously update their knowledge by keeping up with market research and academic publications.

  By following this model, investors can optimize their engagement in the derivatives market, improve their results, and mitigate risks effectively. Additionally, financial institutions and regulatory bodies should consider offering tailored educational programs and investment advisory services to different investor categories to enhance market participation and financial literacy.

5. FINDINGS

The results suggest that age, income, and education significantly influence investment behavior in the derivatives market. Younger investors trade less frequently, likely due to lower income and lack of financial knowledge. Higher-income individuals tend to engage more actively in derivative trading, possibly due to greater risk tolerance. Educational background plays a crucial role in investment outcomes, with professional degree holders achieving better results.

These findings are valuable for financial institutions, investment firms, and policymakers to design targeted programs that enhance financial literacy and encourage responsible trading habits. By focusing on structured investment education, particularly for younger and lower-income investors, financial regulators can bridge knowledge gaps and enable more informed decision-making in the derivatives market. Increased awareness and training initiatives can improve financial stability and market efficiency by reducing uninformed speculation and excessive risk-taking.

Furthermore, these insights can be leveraged by brokerage firms and financial advisors to tailor investment products that cater to different investor profiles. By offering customized guidance based on an individual's income, age, and education level, firms can enhance customer satisfaction and improve overall market participation. Encouraging responsible investing through personalized financial advice can lead to greater economic growth and a more inclusive financial ecosystem.

6. CONCLUSION

This study confirms that financial literacy and income levels are key determinants of investment behavior in derivatives. Higher-income investors trade more frequently, while those with better education make more informed decisions. The respondents for this study were from major cities in the Saurashtra region, where investment patterns were assessed across different demographics.

Policymakers should focus on improving financial education among younger and lower-income investors to enhance market participation. By implementing targeted financial literacy programs, regulators can help equip new investors with the necessary skills to navigate the derivatives market efficiently and reduce financial risks. Special emphasis should be placed on integrating financial literacy into educational institutions and offering hands-on training for investors to develop confidence in trading derivatives.

Additionally, structured investment models tailored to different investor profiles can aid in optimizing portfolio performance. An improved understanding of derivatives trading strategies, risk management techniques, and market trends can help investors make calculated decisions, ultimately contributing to more stable and inclusive financial markets. Encouraging participation from investors in underrepresented income groups through awareness programs and risk mitigation strategies can enhance overall market efficiency and economic growth.

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