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Financial Literacy and Participation in Derivative Market in Kathmandu Valley

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Abstract

Background: Financial literacy is critical for informed investment decisions and effective participation in financial markets. Investors with higher literacy better understand complex instruments, such as derivatives, manage risk, and optimize returns. In emerging markets like Nepal, awareness, access, and socioeconomic factors further influence investor participation.

Purpose: This study examines financial market involvement from the perspectives of financial literacy, awareness, risk aversion, and participation costs, focusing on derivatives markets.

Design/methodology /approach: Grounded in Expected Utility Theory, the study uses an explanatory research design to explore the relationship between financial literacy and derivatives market participation. A non-probability convenience sampling method yielded 297 respondents, with data collected via structured questionnaires through KOBO Toolbox. Ordered logistic regression in STATA was employed to analyze the impact of financial literacy on participation.

Findings: Financial literacy positively affects derivatives market participation. Key factors influencing participation include gender, various information sources (financial institutions, school, handouts), purchase installments, and interest coverage.

Conclusion: Men, married individuals, and financially literate investors are more likely to participate in derivatives markets. Participation is also shaped by risk attitude and income levels. Policy measures enhancing financial literacy and market awareness can stimulate financial market engagement, increase trading, and boost economic activity. Investors should understand derivatives before investing and diversify holdings to maximize returns while minimizing risk.

Keywords: Investment decision, derivative market, financial literacy, expected utility theory, ordered logistic model.

1. Introduction

Derivative markets are an essential component of modern financial systems, providing instruments such as futures, options, and swaps that allow investors to hedge risks, speculate on price movements, and enhance portfolio performance (Y. Hsiao & Tsai, 2017; Gomber et al., 2018). As financial markets have become increasingly sophisticated and interconnected, derivatives have gained prominence among both institutional and individual investors. However, effective participation in derivative markets requires a substantial level of financial literacy, analytical ability, and awareness of associated risks, given the complexity, leverage, and volatility inherent in these instruments (Upper & Valli, 2016; Alghamdi et al., 2021).Financial literacy, broadly defined as the ability to understand financial concepts and make informed economic decisions, has been widely recognized as a critical determinant of investment behavior and financial well-being (Kim et al., 2019; Henager & Cude, 2016). Empirical evidence suggests that individuals with higher financial literacy are more likely to diversify portfolios, assess risk accurately, and avoid excessive speculative behavior (Alghamdi et al., 2021). In contrast, financially illiterate investors are more vulnerable to poor decision-making, overexposure to leverage, and financial distress, particularly in complex markets such as derivatives (Khanal et al., 2022)

Despite the growing importance of derivatives, participation among retail investors remains limited, largely due to inadequate financial knowledge and the perceived riskiness of derivative products (Epaphra & Kiwia, 2021). Surveys indicate that a significant proportion of individuals lack even basic financial understanding, with only a small fraction demonstrating high levels of financial literacy (Wagner & Walstad, 2019). This knowledge gap poses serious concerns, as insufficient understanding of derivative pricing, leverage, and payoff structures can lead to mispricing, excessive speculation, and market inefficiencies (Tai, 2021). The global financial crisis of 2008 further underscored how misuse and misunderstanding of complex financial instruments can amplify systemic risk and destabilize financial systems (Mavelli, 2019).Beyond knowledge constraints, behavioral factors also play a significant role in shaping investment decisions in derivative markets. Behavioral finance research highlights that investors often rely on heuristics and emotional judgment rather than rational analysis, leading to biases such as overconfidence, loss aversion, and herd behavior (Hong Vo et al., 2020). These biases are particularly problematic in derivative trading, where rapid decision-making and exposure to leverage increase the likelihood of suboptimal outcomes. Improved financial literacy has been shown to mitigate such biases by enhancing investors' ability to process information and evaluate risk objectively (Tai, 2021).

The challenges associated with financial literacy and derivative market participation are more pronounced in developing and emerging economies, where access to structured financial education is limited and regulatory frameworks are still evolving (Rudnick & Velasquez, 2018). Weak market transparency, limited investor protection, and inadequate disclosure mechanisms further discourage responsible participation in derivative markets (Alghamdi et al., 2021). In response, regulators and international organizations have emphasized investor education, ethical trading practices, and regulatory oversight as key pillars of sustainable derivative market development (Joao et al., 2015).

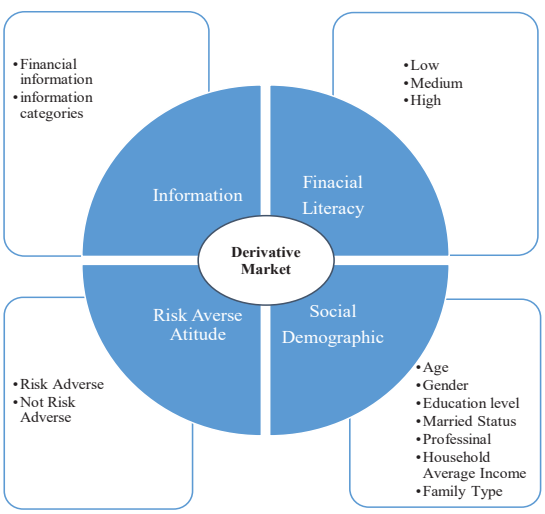
Across Asia, derivative markets exhibit varying degrees of maturity. While economies such as Singapore and South Korea possess advanced derivative infrastructure, many South and Southeast Asian countries continue to face challenges related to investor awareness, regulatory clarity, and market depth (Ouachani, 2021). Financial education initiatives and regulatory interventions, such as disclosure requirements and risk management guidelines, have been adopted to promote responsible participation (Wong, 2019). Nevertheless, aligning investor capability with market complexity remains an ongoing concern. Nepal represents a particularly relevant context, as its financial system is still in a nascent stage and derivative market participation remains limited. Regulatory bodies such as the Securities Board of Nepal (SEBON) and institutions like the Nepal Stock Exchange (NEPSE) have introduced investor education and training programs aimed at improving awareness of financial instruments, including derivatives (Kharel et al., 2018). However, the regulatory framework governing derivative trading is still evolving, and gaps remain in transparency, consistency, and investor confidence.

Despite growing policy attention, there is limited empirical evidence examining the relationship between financial literacy and participation in derivative markets, particularly in developing economies such as Nepal (Nguyen & Nguyen, 2020; Mishra, 2018). Existing studies predominantly focus on general investment behavior or equity markets, leaving derivative markets underexplored. This research gap highlights the need for systematic investigation into investor awareness, perceptions, and behavioral responses toward derivatives. Against this backdrop, the present study aims to examine the implications of financial literacy on investor awareness and participation in derivative markets. By analyzing investors' financial knowledge and decision-making behavior, the study seeks to contribute to the literature on financial literacy, behavioral finance, and market participation, while offering policy-relevant insights for regulators and financial institutions striving to build resilient and inclusive derivative markets.

2. Theoretical Framework and Conceptual Framework

A theoretical framework provides the conceptual foundation for a study by explaining the theories that guide the understanding of the research problem and the relationships among key variables. It helps explain decision-making behavior, particularly under conditions of risk and uncertainty, while remaining within defined assumptions (Ngulube et al., 2004). In financial research, theoretical frameworks are essential for analyzing how investors process information and make investment choices in complex markets. Financial literacy has been widely recognized as a critical factor influencing individuals' ability to understand financial products and make informed decisions in increasingly sophisticated financial systems (Alghamdi et al., 2021). This study draws on Expected Utility Theory, Auction Theory, Heuristic Theory, and Prospect Theory to explain the relationship between financial literacy and participation in derivative markets among Nepalese investors. Expected Utility Theory explains rational decision-making under uncertainty by proposing that investors evaluate alternatives based on the probability-weighted utility of potential outcomes and choose the option that maximizes expected utility (Mongin, 1997). This theory is particularly relevant to derivative markets, where financially literate investors are better positioned to assess risk–return trade-offs and participate rationally. Auction Theory contributes by explaining price discovery and bidder behavior in organized markets, highlighting the role of market knowledge in derivative trading (Krishna, 2010). Heuristic Theory and Prospect Theory provide behavioral perspectives, suggesting that investors often rely on mental shortcuts and exhibit loss aversion, leading to deviations from rational behavior, especially in high-risk derivative environments (Harris & Wu, 2014). Among these, Expected Utility Theory is employed as the primary theoretical framework for this study due to its direct relevance to financial literacy and investment decision-making under uncertainty, while the remaining theories serve as complementary perspectives to explain behavioral and market-structure influences.

Figure 1: Conceptual Framework



Source : Adapted and modified from Epaphra and Kiwia (2021); Hsiao and Tsai (2018)

Figure 1 shows the various factors that financial literacy and participation in derivatives market in different variables. The variables for the study are developed considering the information, financial literacy, risk averse attitude and Social demographic. The model explains the independent variables that can have a financial literacy and participation of derivatives market. It shows that derivatives market is dependent variable and information, financial literacy, risk averse attitude and social demographic are the independent variable that can have a financial literacy and participation in derivatives market. Further independent variable is divided into information factors that will include variable like information source and information categories of trade description. Likewise, financial literacy will include variables like Low, Medium and High of financial literacy. Similarly, the Risk averse attitude will include variables like risk averse and not risk averse of personal attitude. Lastly, Social demographic will include variables like age, gender, education, married status, professional, Residential location and Annual income.

Information Factor and Derivative Market

Information factors play a crucial role in influencing participation in the derivatives market. Hedging can enhance business value by reducing uncertainty and information asymmetry (Y. J. Hsiao & Tsai, 2018). Information factors include sources of information and categories such as changes in real assets, stock market fluctuations, interest rates, taxation, inflation, and other financial products. These factors influence financial literacy and ultimately affect participation in the derivatives market.

Financial Literacy and Derivative Market

Financial literacy enables consumers to make informed financial decisions, build financial security, and achieve personal goals, thereby improving economic stability (Ouachani, 2020). It is a key determinant of stock market participation and investment decision-making. In this study, financial literacy is categorized into low, medium, and high levels, which influence participation in the derivatives market.

Risk Averse Attitude and Derivative Market

Risk-averse attitude refers to individual decision-making behavior toward uncertainty. Decision-makers may exhibit both risk-seeking and risk-averse behavior depending on the. In the derivatives market, investors with risk-averse attitudes tend to avoid high-risk instruments, while those who are not risk-averse are more likely to participate. Thus, risk attitude significantly affects derivatives market participation.

Social Demographic Factors and Derivative Market

Socio-demographic characteristics include age, gender, marital status, education, profession, family type, and annual income. These factors influence financial literacy and participation in the derivatives market. Participation decisions vary depending on investors' personal and family structures, which shape their financial behavior and risk-taking capacity.

3. Research Methods

Study Area and Study Population

The Kathmandu valley was chosen as the research area. Nepal has 77 districts, and 3 districts in Kathmandu valley (Kathmandu, Bhaktapur, and Lalitpur) in Bagmati province were chosen as the research area. Kathmandu valley is located at latitudes 2703213 and 2704910 north, and longitudes 8501131" and 8503138" east, and is almost round in shape, with a diameter of approximately 30 km E-W and 25 km N-S. The valley is about 900 km2 in size and has a central flat area at an elevation of 1300-1400 meter above sea level. This research area is pertinent because the majority of traders and investor are concentrated in this region after the Kathmandu. In addition, the majority of trading and investor are located Kathmandu valley.

Sampling Technique and Sample Size Determination

Sampling involves selecting a subset of observations from a larger population for statistical analysis. This study adopted a non-probability sampling technique due to the difficulty of ensuring equal selection chances for all individuals in the population. Since the exact number of active investors participating in the derivatives market in Kathmandu Valley could not be determined, probability sampling was not feasible. Therefore, convenience sampling was employed, as it allows researchers to collect data from respondents who are readily accessible and actively involved in the derivatives market (Dhungana et al., 2022; Shrestha et al., 2023). Convenience sampling is widely used in similar studies because it is practical, suitable for data analysis, and easy to implement (Devkota et al., 2020). The technique enabled the study to gather relevant data from investors to examine the impact of financial literacy on participation in the derivatives market within Kathmandu Valley.

The sample size was determined using the formula suggested by Adcock (1997). The standard value at a 5% level of significance (z) was 1.96, with an assumed prevalence (p) of 0.5 and q = 0.5. Allowable error (e) was set at 6%. Using the formula ($n_0 = z^2pq/e^2$), the calculated sample size was 266.78. After adding a 5% non-response adjustment (13.34), the final required sample size was approximately 280 respondents. However, the study successfully collected 297 responses from investors in Kathmandu Valley.

Research Instruments, Data Collection and Analysis

This study employed structured research instruments to collect and analyze primary data. A questionnaire survey was used as the main data collection tool, as questionnaires are widely recognized as reliable instruments when designed to be valid, clear, and trustworthy. Both closed-ended and open-ended questions were included to examine the determinants of investors' decisions in the derivatives market. In addition, key informant interviews were conducted with selected individuals possessing relevant knowledge and insights on the subject. Data were collected from investors participating in the derivatives market in Kathmandu Valley.

For data analysis, both descriptive and inferential statistical techniques were applied. Microsoft Excel was used for data entry and tabulation, while KOBO Toolbox facilitated data collection management. Cleaned data were analyzed using SPSS and STATA. Descriptive analysis was first conducted to summarize key characteristics of the data, including socio-demographic profiles, means, minimum values, and standard deviations (Sloman, 2010) An Awareness Index was developed using 23 yes/no questions to measure financial literacy and participation levels. Respondents scoring above 75% were categorized as highly aware (Y=2), those scoring between 50%–75% as moderately aware (Y=1), and those below 50% as less aware (Y=0). Inferential analysis included factor analysis and an ordered logistic regression model to examine relationships between variables. Pre-estimation tests such as specification error (linktest) and goodness-of-fit were conducted to ensure model validity (Meyer, 2014). Post-estimation diagnostics included tests for multi-collinearity using Variance Inflation Factor (VIF < 10) (Shrestha, 2020) and heteroscedasticity using the hettest command, with robust standard errors applied where necessary (Weinstein et al., 2018). Final results were interpreted using coefficients, odds ratios, marginal effects, and logit coefficients to determine the impact of independent variables on derivatives market participation.

Ordered Logistic Model

Ordered logistic was used to analyze the financial literacy and participation in derivative market in Kathmandu valley. Balarabe et al. (2018) in ordered logistic outcome response has some order and is coded 0, 1 and 2 indicate the derivative market. Suppose the likelihood of being in awareness level was described by o3rdered logistic model as:

$$P(D_{DMP}=1)=F(\beta'X)$$

Where

P=Probability Density

D_{DMP}= Dummy Variable

β'=Vector of coefficient
X= Vector of Explanatory Variables

Financial literacy and socio demographic factors, such as household wealth, information sources, asset-specific categories of knowledge, age, gender, marital status, educational background, residential location, employment status, and average annual personal income, are included in the vector of explanatory variables.

According to (Williams, 2016)the ordered logit model, aka the proportional odds model (ologit/po, the ordered logistic model can be used to estimate the probability that the unobserved variable Y* falls within the various threshold limits using the value of Z and the assumed logistic distribution of the disturbance term. For our study, it is to analyze the financial literacy and participation in derivative market in Kathmandu valley.

Order logistic model is specified as:

$$Y_1 = \beta_{0+} \beta_1 x_{1i} + \beta_2 x_{2i} + \beta_3 x_{3i} + \beta_4 x_{4i} + \beta_5 x_{5i} + \beta_6 x_{6i} + \beta_7 x_{7i} + \epsilon_i \ldots\ldots\ldots \text{(Equ 1)}$$

Where,

Y= Awareness level (i= 0, 1, 2)

X= Independent variables (Independent variables are explained in detail in table 1)

B_0=Intercept

$X_{1=}$Age

X_2=Gender

X_3=Marital status

$X_{4=}$Education

$X_{5=}$Yearly Income

X_6=Risk Assessment

X_7= Varity of Information Source

ε = Error terms (Devkota et al., 2021)

where pi is the probability of financial market participation; x1 is the gender; x2 is the age group; x3 is the marital status; x4 is the education level; x5 is the yearly income; x6 is the risk assessment; x7 is the verity of information source financial knowledge; β0 , β1 , β2 ,…,β7 are the parameters and ε1 is the disturbance term.

However, if there is error only in y-variables, then the reduced form of the logit regression model (1)-(3) can be expressed as:

$$Y_1 = E(y=1/x_{i)} = \beta_{0+} \beta_1 x_{1i} + \beta_2 x_{2i} + \beta_3 x_{3i} + \beta_4 x_{4i} + \beta_5 x_{5i} + \beta_6 x_{6i} + \beta_7 x_{7i} \ldots \textit{(equ 2)}$$

Risk Adverse Attitude: Risk aversion refers to the preference for lower uncertainty over higher uncertainty, even when the expected monetary return of the riskier option is equal to or greater than the safer one (Hsiao & Tsai, 2018). Low-risk investments typically provide stable but modest returns with minimal chances of capital loss and generally match or slightly exceed inflation over time (Barberis, 2013). In contrast, high-risk investments may generate significant gains or losses. Risk-averse or conservative investors prefer liquidity, stability, and minimal volatility, ensuring their funds are accessible without waiting for market recovery.

Information Sources: Information regarding housing wealth, financial wealth, net worth, and total wealth plays a crucial role in financial decision-making. Total household wealth is calculated as the current value of assets minus liabilities (Hsiao & Tsai, 2018). Access to accurate financial information influences investment participation and financial literacy.

Age: Age, measured in years of the household head, serves as a reliable proxy for financial behavior (Bouri et al., 2022). Older individuals are often considered more resourceful, positively influencing market participation. Financial decision-making can also be analyzed by generational stage (Henager & Cude, 2016), as investment experience tends to increase with age.

Gender: Gender may influence financial literacy and investment decisions. Studies suggest a positive relationship between gender and financial literacy levels. although its impact on derivative market participation may vary Differences in perspectives and experiences across genders can affect financial decision-making.

Education: Educational attainment and cognitive ability are strong predictors of financial literacy (Hsiao & Tsai, 2017). Even after accounting for education, other factors remain significant. Improving financial education is particularly important for vulnerable groups.

Marital Status: Research findings on marital status are mixed. Some studies show a significant association with financial literacy, while others report no relationship. Alghamdi et al. (2016) found no significant link between marital status and financial literacy or derivatives market participation among Nepalese decision-makers.

Profession: A profession involves specialized knowledge, ethical standards, and formal training (Rohana et al., 2021). Professional background influences financial behavior and decision-making due to varying levels of expertise and exposure.

Family Size: Family size, measured by household members, affects consumption needs and risk preferences. Larger households may be more risk-averse due to greater financial responsibilities (Gomber et al., 2018).

Table1: Variables and Expected Signs of Variable

Variables	Description	Value	Expected Sign
Dependent Variables			
Awareness level of derivative market participation	Participation in Derivative market	1= participation in derivative markets 0= otherwise	±

Independent Variable

Observed Variable	Measures	Indicators	Expected Sign
Socio-Demographic Variables (SDV)	Respondent Age	Years	+
	Respondent Gender	1=Male, 0=Otherwise	±
	Education Status(es)	1=1 = Above bachelor's degree 0=Otherwise	+
	Married Status(ms)	1=Married, 0=Otherwise	±
	Profession	1=Private service sectors 0=Otherwise	±
	Household average income (ai)	More than 5 lakhs=1 Otherwise=0	±
	Family Type	Joint = 1 Other = 0	

Financial Literacy Awareness (FLV)	Low Medium High	1=high 0 = otherwise	±
Variety of Information Source	Financial _Institution TV or radio newspapers Internet and mobile conversations and friends Display of financial business office school curriculum and handouts	1 = yes 0 = otherwise	±
Financial indices	Maintaining Credit ratings	1=yes 0=otherwise	±
	Diversification investment	1= yes 0= Otherwise	±
	Purchase -installment	1= yes 0= Otherwise	±
	Maximum Interest coverage	1= yes 0= Otherwise	±
	Fixed deposit handling	1= yes 0= Otherwise	±
	Deposit practices	1= yes 0= Otherwise	±
	Personal credit report	1= yes 0= Otherwise	±
Risk Averse Attitude Variable	Risk adverse(ra) Not Risk averse(nra)	1= Yes 0=Otherwise	±

4. Results

Demographic information of the respondents

The results show that the demographic information of the respondents reflects diverse characteristics in terms of gender, age, marital status, occupation, income source, and family type. Out of 297 respondents, 237 (79.8%) were male and 60 (20.2%) were female, indicating that both genders are represented, with male participation being dominant. This distribution is similar to Ahmad (2020), where female participation was also 20.2%. In terms of age, the majority of respondents were between 30–39 years (40.07%), followed by 40–49 years (34.34%), 18–29 years (19.19%), 50–59 years (5.72%), and 60 years and above (0.67%). This suggests that most investors are below 40 years of age, which aligns with Luong & Ha (2011). Regarding marital status, 73.74% of respondents were married.

Most respondents were full-time employees (64.98%), while only 2.02% were retired civil servants. A significant proportion (39.39%) reported investment in the derivatives market as their major source of income, 24.92% earned partial income from investments, and 0.67% reported no investment income. In terms of family structure, 49.49% belonged to joint families, 48.48% to nuclear families, and 2.02% to

extended families, indicating higher participation from joint family backgrounds. Regarding sources of financial knowledge, the majority (48.82%) relied on conversations with family and friends, followed by the internet and mobile phones (43.77%), while only 9.43% gained knowledge from school curriculum and handouts. Concerning information categories, most respondents focused on changes in the stock market (92.26%) and financial products (80.47%). Information related to interest rates (74.75%), inflation (56.57%), taxation (47.14%), and real estate changes (19.87%) were also considered, with stock market changes being the most influential factor.

Table 2: Demographic information of the Respondent

Variables	Category	Number	Percentage
Gender	Male	237	79.8%
	Female	60	20.2%
Age	18-29 years	119	40.07%
	30-39 years	102	34.34%
	40-49 years	57	19.19%
	50-59 years	17	5.72%
	60 years and above	2	0.67%
Education Level	Below SLC/SEE	0	0
	SLC/SEE	6	2.02%
	Higher Secondary	39	13.13%
	Bachelors	121	40.74%
	Masters	119	40.07%
	Above Master	12	4.04%
Marital status	Married	219	73.74%
	Unmarried	75	25.25%
	Divorced	3	1.01%
	Widow	0	0
Profession	Full-time Students	22	7.41%
	Full-time employment	193	64.98%
	Part-time employment	51	17.17%
	Domestic house maker	10	3.37%
	Retired civil servant	6	2.02%
	Others	15	5.05%
Household average income (in years)	2-3 lakhs	45	15.15%
	3-4 lakhs	74	24.92%
	4-5 lakhs	59	19.87%
	More than 5 lakhs	117	39.39%
	None	2	0.67%
Family Type	Nuclear	147	49.49%
	Joint	144	48.48%
	Extended	6	2.02%

Financial Knowledge and information	Trade descriptions of financial institutions	119	40.07%
	Discussions or interpretations by investment analysts on TV or radio	103	34.68%
	Newspaper or magazine advertisements and operators related to the TV industry	124	41.75%
	Internet and mobile phones	130	43.77%
	Conversations with family members and friends	145	48.82%
	Display section of financial business office	112	37.71%
	School curriculum and handouts	28	9.47%
Categories of Information	Change in the real estate market	274	91.26%
	Change in the stock market	59	19.87%
	Interest rates	222	74.75%
	Inflation	168	56.57%
	Taxation	140	46.14%
	Information relating to financial products	239	80.47%

Risk Aversion Factors

Risk aversion refers to the tendency of investors to prioritize capital preservation over higher but uncertain returns, where risk is commonly associated with price volatility (Brown et al., 2017). Conservative investors prefer stable and steady growth rather than highly volatile investments that may result in significant gains or losses. In this study, risk-averse attitude was measured using eight Yes/No questions to assess financial literacy and participation in the derivatives market.

The results show a high level of awareness regarding risk-related concepts. About 96.97% of respondents agreed that diversification helps reduce investment risk (See Table 3). Similarly, 95.29% recognized that higher expected returns generally come with higher risk, supporting findings by Epaphra & Kiwia (2021). A large majority (98.65%) understood that bond prices decrease when interest rates increase. Additionally, 85.52% acknowledged currency risk arising from exchange rate fluctuations and limitations in hedging through forward and futures contracts. Around 83.5% were aware that investment-linked insurance products are subject to capital market risks borne by investors. However, 53.87% believed that purchasing futures or options is more likely to result in capital loss compared to bank deposits.

The findings also indicate that 81.48% recognized that options and futures trading involve higher leverage than stock trading, while 82.15% were aware of structured financial instruments integrating fixed income and derivatives features. Furthermore, Y. Hsiao & Tsai (2017) found that a unit increase in basic financial literacy reduces the probability of derivatives market participation by 42.5%, suggesting that individuals with higher financial literacy may be more cautious about participating in derivatives markets

Table 3: Risk Aversion Factors

S.N	Questions	Yes		No	
		No.	(%)	No.	(%)
1.	Does diversification help investors reduce investment risks?	288	96.97	8	2.69
2.	Do investments associated with higher expected returns generally come with more risk?	283	95.29	14	4.71
3.	Do you agree that bond prices will decrease as interest rates increase?	293	98.65	4	1.35

4.	Currency risks are risks that arise from changes in the relative valuation of currencies; you cannot use forwards or futures to hedge currency risk?	254	85.52	43	14.48
5.	In investment-linked insurance products, the investments made are subject to the risks associated with the capital markets; this investment risk in investment portfolio is borne by the policyholder?	248	83.5	49	16.5
6.	Do you think that purchasing futures or options is more likely to result in a capital loss relative to bank deposits?	160	53.87	137	46.13
7.	Does trading in options or futures have much more leverage compared to stock trading?	242	81.48	55	18.52
8.	Structured notes are a type of financial instrument integrating the features of fixed income products and the derivatives. Do structured notes generally have lower investment risk than investment-grade corporate bonds?	244	82.15	51	17.17

Financial Indices of Derivative Market

The results show that respondents from Kathmandu Valley exhibit varied financial literacy and participation in the derivatives market. Among 297 investors, 54.88% agreed that rising gas and electricity prices reduce cost of living and elevate purchasing power, while 45.12% disagreed, which highlights that energy price shocks reduce consumer spending. Additionally, 93.27% agreed that excessively high inflation reduces the purchasing power of the same NPR 1000, whereas 6.73% disagreed.

Regarding credit ratings, 84.51% of respondents maintain their rating by paying dues on time. Most participants indicated consequences of bad credit records: 48.15% noted it affects individuals, 36.36% may face loan rejection, 9.09% may receive lower loan amounts or higher interest, and 6.4% may face credit card approval issues, consistent with Avery et al. (2020). Furthermore, 93.6% viewed credit cards as a payment instrument, and 3.7% recognized revolving credit as inevitable. On financial products, 79.8% agreed that installment payments generally cost more than lump-sum payments, 14.81% were unsure, and 5.39% disagreed. Similarly, 74.75% were aware that banks consult the Joint Credit Information Center for credit status approval, while 14.81% were unaware, supporting Law (2017) on effective legal and regulatory practices. Concerning investment diversification, 48.48% indicated that diversification lowers investment risk, and 47.14% believed that more diversified investments yield higher returns, consistent with Deschryver & Mariz (2020). Regarding risk-return relationships, 86.2% acknowledged that higher returns are associated with higher risk, 10.1% were unsure, supporting He et al. (2018) linking risk aversion to lower stock market expectations. Lastly, 95.62% of respondents indicated that life insurance can be canceled within the effective period if no longer necessary. Overall, the results indicate that respondents demonstrate awareness of financial indices such as inflation, credit, investment diversification, risk-return trade-offs, and derivative market participation.

Inferential Analysis

Summary Statistics

Summary statistic describes the data for communication the largest amount of information as clear as possible. There is displayed mean, standard derivation, minimum and maximum number for giving the information about the gathered data. The conceptual framework model divides the total of 21 variables into sub-sections and then analyzes them in accordance with those divisions. With the exception of age and participation, each variable used in the research has a range of zero to one, with one denoting a yes response and zero denoting a no response. The remaining values can be expressed as numeric variables, and the values 0 and 1 can alternatively be thought of as dummy variables.

Table 4: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Awarenesslvl	297	1.781145	0.4301729	0	2
Age	297	0.1919192	0.3944745	0	1
Gender	297	0.7946128	0.4046661	0	1
Education_lvl	297	0.8484848	0.3591554	0	1
Marital_Status	297	0.7373737	0.4408037	0	1
Profession	297	0.7239057	0.4478185	0	1
income_investment	297	0.5454545	0.49877	0	1
Family_Type	297	0.979798	0.1409282	0	1
From_Finance_News	297	0.5420875	0.4990664	0	1
From_TV_or_Radio	297	0.4949495	0.5008183	0	1
From_newspaper	297	0.5589226	0.497354	0	1
From_internet	297	0.5589226	0.497354	0	1
From_conversations	297	0.5117845	0.5007048	0	1
From_Display	297	0.5555556	0.4977427	0	1
From_school	297	0.2020202	0.4021849	0	1
Maintaining_credit	297	0.9326599	0.251033	0	1
Diversification	297	0.993266	0.0819223	0	1
Purchasing_install	297	0.7979798	0.4021849	0	1
Max_Insurance_cover	297	0.1952862	0.3970899	0	1
Fixed_deposit	297	0.962963	0.1891713	0	1
Deposit_practice	297	0.8787879	0.3269245	0	1
Personal_credit_use	297	0.9259259	0.2623334	0	1

Source: Field Study

The study has been observed among 297 respondents. The table illustrates the twenty one variables used for this study. It presents the information about one dependent variable and Twenty one independent variables considered for the study. Under socio demographic variable, level of family type had highest mean and standard deviation of 0.979798 and 0.1409282 respectively with minimum value 0 and maximum value 1. Looking towards awareness level, the mean and standard deviation are 1.781145 and 0.4301729 respectively. Similarly towards about age of respondents, the mean and standard deviation are .1919192 and .3944745 followed by financial literacy and participation of derivative market help in the growth of investment decision. Looking towards married status, the mean and standard deviation are .7946128 and .4046661 respectively, it indicate majority of respondents are married person participation. The gender mean was 0.7946128 with a standard deviation of 0.4046661 when looking at the gander. The mean and standard deviation of the respondents' level of education are 0.8484848 and 0.3591554, which indicate that the highest number of the respondents is above bachelor's degree. Similarly, the profession's mean is 0.7239057, and its standard deviation is 0.4478185.which indicates that the higher number of respondents in this survey is from full-time employment. The financial knowledge and information come from of financial institute, TV or radio, newspaper and advertisement, internet and mobile, conversations with friends, display of financial business office and school curriculum and handouts, the mean value would be .5420875, .4949495, .5589226, .5589226, .5555556, and .2020202 respectively and standard deviation are .4990664, .5008183, .497354, .497354, .4977427, .4021849 respectively.

Pre-Estimation

As part of the estimation procedure, specification error is run. Finding the validity of a variable, assumption, or statistical model is the goal of specification error.

Specification Error: The specification problem was found using the Stata command link test. No more statistically significant predictors should be discovered unless by coincidence if the model is adequately specified That means that to suit specification error, the variable _hat should be a significant predictor, but _hatsq shouldn't be statistically significant.

Table 5: Specification error test result

```
. linktest

Iteration 0:   log likelihood = -162.3437
Iteration 1:   log likelihood = -142.32031
Iteration 2:   log likelihood = -134.89245
Iteration 3:   log likelihood = -132.24382
Iteration 4:   log likelihood = -131.94541
Iteration 5:   log likelihood = -131.94353
Iteration 6:   log likelihood = -131.94353

Ordered logistic regression                     Number of obs   =        297
                                                LR chi2(2)      =      60.80
                                                Prob > chi2     =     0.0000
Log likelihood = -131.94353                     Pseudo R2       =     0.1873

------------------------------------------------------------------------------
awarenesslevel |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
---------------+--------------------------------------------------------------
         _hat |   1.499958   .4513458     3.32   0.001     .6153362    2.384579
       _hatsq |  -.0815649   .0674678    -1.21   0.227    -.2137994    .0506695
---------------+--------------------------------------------------------------
        /cut1 |   -1.98527   .8556168                     -3.662248   -.3082915
        /cut2 |   2.819854    .771969                      1.306822    4.332885
------------------------------------------------------------------------------
```

Source: Field Study

From the test require of pre-estimation it is found that _hat is statistically significant and_hatsq is statistically insignificant, it indicates there is no specification error in the obtained dataset and we have chosen meaningful predictors.

Post- Estimation

This study conducts multicollinearity and heteroscedasticity under this estimate. There is no autocorrelation since this is not a temporal series of data.

Multicollinearity: When there are linear or non-linear correlations between explanatory variables, this is referred to as multicollinearity. Correlation occurs when the independent variables in a regression model

are connected. The variance inflating factor (VIF), according to Vander Wiel and Meeker (1990), is a test to determine whether our regression model has multicollinearity. Multicollinearity exists if VIF is higher than 10.

Table 6: Multicollinearity

Variable	SQRT		Tolerance	R-Squared
	VIF	VIF		
Awareness level	1.25	1.12	0.7984	0.2016
Age	2.20	1.48	0.4540	0.5460
Gender	1.16	1.08	0.8590	0.1410
Education_Level	1.21	1.10	0.8232	0.1768
Marital_Status	2.06	1.43	0.4858	0.5142
Profession	1.12	1.06	0.8967	0.1033
income_in_years	1.12	1.06	0.8904	0.1096
Family_Type	1.10	1.05	0.9118	0.0882
From_Financial_Institution	1.21	1.10	0.8280	0.1720
From_TV_or_radio	1.32	1.15	0.7565	0.2435
From_newspapers	1.31	1.14	0.7641	0.2359
From_internet_and_mobile	1.34	1.16	0.7456	0.2544
From_conversations_and_friends	1.26	1.12	0.7957	0.2043
From_Display_of_financial_business	1.21	1.10	0.8238	0.1762
From_school_curriculum_and_handouts	1.18	1.09	0.8451	0.1549
Maintaining_Credit_ratings	1.23	1.11	0.8133	0.1867
Diversificated_investment	1.20	1.10	0.8326	0.1674
Purchase_installment	1.26	1.12	0.7953	0.2047
Max_Ins_coverage	1.17	1.08	0.8549	0.1451
Fixed_deposit_handling	1.15	1.07	0.8667	0.1333
deposit_practices	1.42	1.19	0.7025	0.2975
Personal_credit_report	1.34	1.16	0.7437	0.2563
Mean VIF	1.31	-	-	-

Source: Field Study

Variance inflation factors as per the calculation for model is 1.31 and we know that if VIF is greater than 10, there exist multicollinearity. So, we can say that there is no multicollinearity in the data set. The assumption is that there is no multicollinearity if the data set is less than mean VIF 10.

Heteroscedasticity: Heteroscedasticity arises when there is a significant variation in the sizes of the observations. The variability of one variable that is not equal throughout the range of a predicted variable is known as heteroscedasticity. In other words, heteroscedasticity is the term used to describe data with uneven variance across predictor variables. This occurs when the range of data differences varies for the error terms. If the heteroscedasticity is not found, the regression analysis's results will be invalid. This study analyze our data collection using the heteroscedasticity test. The model should fit if prob > Chi2 is more than 0.05.

Table 7 Heteroscedasticity Test

Test Type	Null Hypothesis	Test Statistic (chi^2)	Prob > chi^2	Significance
Breusch-Pagan / Cook-Weisberg Test	Constant variance	47.67	0.00005	Significant

Logistic Regression Analysis

Logistic regression predicts a binary or ordinal outcome based on prior observations (Mai et al., 2019). In this study, ordered logistic regression was used to examine the effect of independent variables age, gender, marital status, education level, profession, family type, sources of financial knowledge, credit rating maintenance, investment diversification, purchase installments, interest rate coverage, fixed deposit handling, deposit practices, and personal credit records on participation in the derivatives market. Results show that age, gender, education level, profession, and financial information sources are significant predictors of derivatives market participation. The table reports coefficients, standard errors, z-statistics, p-values, and 95% confidence intervals. Robust standard errors were applied to account for heteroskedasticity. Key measures analyzed include odds ratios, coefficients, and marginal effects. Model diagnostics indicate a good fit: LR $chi^2(21) = 59.39$, pseudo-$R^2 = 0.1829$, and log likelihood = -132.64971, with cut points at -2.197 and 2.150. These results confirm that the selected variables significantly influence investor participation in the derivatives market.

Table 8: Ordered Logistic Regression

	(1)	(2)	(3)
VARIABLES	**Logit coeff**	**Odds ratio**	**Marginal effects**
Awareness Level			
Age	-0.458	0.633	0.00286
	(0.657)	(0.416)	(0.00439)
Gender	-1.306**	0.271**	0.00816
	(0.598)	(0.162)	(0.00531)
Education Level	-0.645	0.524	0.00403
	(0.602)	(0.316)	(0.00414)
Marital_Status	0.469	1.599	-0.00293
	(0.512)	(0.819)	(0.00349)
Profession	0.363	1.437	-0.00227
	(0.385)	(0.553)	(0.00255)
income_in_years	-0.0526	0.949	0.000329
	(0.351)	(0.333)	(0.00218)
Family Type	-1.274	0.280	0.00796
	(1.027)	(0.287)	(0.00769)
From_Financial_Institution	-0.286	0.751	0.00179
	(0.372)	(0.279)	(0.00248)
From_TVor_radio	0.339	1.403	-0.00212
	(0.370)	(0.520)	(0.00254)
From_newspapers	-0.0344	0.966	0.000215
	(0.351)	(0.339)	(0.00218)

From_interenetand_mobile	-0.0829	0.920	0.000518
	(0.370)	(0.341)	(0.00231)
From_conversationsand_frienns	0.424	1.527	-0.00265
	(0.379)	(0.578)	(0.00251)
From_Displayof_financialbusin	1.115***	3.050***	-0.00697*
	(0.359)	(1.094)	(0.00395)
From_schoolcurriculam_and_handou	-0.815*	0.442*	0.00510
	(0.419)	(0.185)	(0.00331)
Maintaining_Creditratings	-1.135	0.321	0.00710
	(0.784)	(0.252)	(0.00617)
Diversificatied_investment	3.382	29.44	-0.0211
	(2.307)	(67.92)	(0.0174)
Purchase installment	1.783***	5.945***	-0.0111*
	(0.412)	(2.451)	(0.00571)
Max_Ins_coverage	1.077*	2.935*	-0.00673
	(0.553)	(1.623)	(0.00457)
Fixed_deposit_handling	1.202	3.326	-0.00751
	(0.758)	(2.522)	(0.00664)
Deposit practices	-0.179	0.836	0.00112
	(0.545)	(0.456)	(0.00336)
Personal_credit_report	0.658	1.931	-0.00411
	(0.594)	(1.146)	(0.00425)
Constant cut1	-2.197	0.111	
	(2.671)	(0.297)	
Constant cut2	2.150	8.586	
	(2.673)	(22.95)	
Observations	297	297	297

Robust standard errors in parentheses

***** p<0.01, ** p<0.05, * p<0.1**

Source: Field Study

This study discuss about the coefficient in an ordered logistic model, this results shows that financial literacy and participation in derivative market is affected by gender, financial knowledge come from display of financial institution, from school and handout, purchase installment, maximum interest coverage. In comparison to the evidence shown in the study (Perszyk et al., 2019) mention that the gender of investor affects value addition positively and statically significant at 1% significant level. This could be attributed to the fact that gender of investors has better understanding and can add to participation to the participation level. These mentioned factors have affected participation of derivative market significantly. It explains how information come from display of financial institution has a significant and positive influence on derivative market participation. Likewise, Purchase installment has a positive influence on derivative market participation, having a p-value of less than 5% or 10%. While age, gender, education, income, family types have a negative impact on financial literacy and participation of derivative market.

Here researcher says that with an increase in display of financial institution, participation of derivative market increase by 1.115 times. The Purchase installment increased for the participation, which means the participation's derivative market increased by 1.783 times. While age has decreased financial literacy and participation in derivative market by 0.458 times, similarly, gender, level of education, income, family type, all have 1.306, 0.645, 0.0526, and 1.274 times the impact on financial literacy and participation in derivative market, respectively.

In ordered logistic regression, the odds ratio represents the constant effect of a predictor X on the likelihood that one outcome will occur. In regression models, researcher often want a measure of the unique effect of each X and Y. in table 8, there are five significant variables, gender, financial knowledge come from display of financial institution, from school and handout, purchase installment, maximum interest coverage regarding financial literacy and participation in derivative market, having a p-value of less than 1%, 5%, or 10%. From table 8, it can be said that an increase in the age, the odds ratio of participation of derivative market, 0.633 times. Similarly, if there was an increase in the gender, the odds ratio of participation in derivative market world increases by 0.271 times. If the level of education like bachelor level increased then the participation in derivative market is increased by 0.524 times. Again, the participation choose derivative market investment by the household income, which indicates a 0.949 times influence by the income for choosing investment. Likewise, the odds ratio of family type is 0.280 times. When increase the investment of derivative market participation.

Marginal effects are a useful way to describe the average effect of changes in explanatory variable on the change in probability of outcomes in ordered logistic regression and other nonlinear models. In marginal effects, we have five significant variables, which are gender, financial knowledge come from display of financial institution, from school and handout, purchase installment, maximum interest coverage. The results show a marginal effect of gender of 0.00816. This indicates that the financial literacy and participation in derivative market increase 0.00816 with a marginal change in gender. Also, the result shows marginal effects of financial knowledge come from display of financial institution, from school and handout, purchase installment, maximum interest coverage which are -0.00697, 0.00510, -0.00111, -0.00673 respectively. It indicates that awareness level of financial literacy and participation in derivative market decrease 0.00697 with a marginal change in display of financial institution information, 0.00510 by from school and handout, 0.00111 by purchase installment, 0.00673 by maximum interest coverage due to increase information come from school and handout and display of financial institution and lastly decrease 0.00673 due to maximum interest coverage.

5. Discussion

This researcher tries to financial literacy and participation in derivative market in the Kathmandu valley. Various variables are used for participation in derivative market. Such factor is socio-demographic, financial information, and financial indices factors. According to the (Kabakova & Plaksenkov, 2018) Due to its potential to have a beneficial influence on the financial health and growth of the economy, financial information is receiving more and more attention from academics, policymakers, and participants in the financial market(Y. Hsiao & Tsai, 2017). Moreover, logit regressions reveal that gender and marital status account for differences in people's financial market engagement. The positive correlations for gender and marital status suggest that if a person is male or married, they are more likely to participate consistently in the financial market(Epaphra & Kiwia, 2021). More than 75% of respondents who are between the ages of 18 to 40 years old have participation of financial market investment. The study indicates that the ratio of male 79.8% and female was 20.2%, which shows the number of males is higher than females.(Y. Hsiao & Tsai, 2017) found that is an imbalance in power between males and females that exists in investors and that such inequalities are manifested in several ways. It is the also argued that the disparities between males and females are likely to influence their control over participation, which in turn influence support for financial market.

The financial literacy and participation in derivative market is found that almost 44.44% people information that literacy and participation financial indices towards the market. Similarly a respondent shows more positive response towards participation in derivative instrument of investors and traders and help in preserve and investment decision. Therefore the study makes a significant theoretical measurement of derivatives market participation based on a question from the Literacy Survey.

The survey shows that there are different source of income generation in between the respondents which were job holder, family income, farming income and own business and other. It has been seen that 50% of decision in participation of derivative product is made by financial literacy. It is discovered that basic financial literacy has a significantly negative effect, and that this negative effect is economically significant. In other words, with a unitary rise in the degree of basic financial literacy, the chance of participating in the derivatives market is lowered by 48.8%, which shows that those with better levels of basic financial literacy are less likely to do so. It is important to keep in mind that the effects of basic and advanced financial literacy on participation in the derivatives market produce diverse patterns.

Considering that this conclusion may very possibly be related to the properties of complicated derivative products with high risk, it appears obvious, so, it is necessary for people to prepare with greater financial understanding to overcome the more difficult entrance requirements for these products(Y. Hsiao & Tsai, 2017). Under our empirical context, it is feasible for a person to as the basic and advanced financial knowledge levels are created using two different questionnaires, it is possible to simultaneously have poor basic financial literacy and high advanced financial knowledge. The respondents were individually categorized into groups of low, neutral, or high based on their degree of fundamental financial knowledge, and from low to high based on their advanced financial knowledge, in order to address this issue(Hong Vo et al., 2020). Thus, the results shows that by gender, financial institution, from school and handout, purchase installment, maximum interest coverage are statistically significant and influence the financial literacy and participation in derivative market. The financial institution, purchase installment, maximum interest coverage can have a positive impact on the participation in derivative market. Likewise, gender, school and handout can have a negative impact on financial literacy and participation in derivative market. In this study, expected utility theory is taken as the theoretical framework. Based on this theory, questionnaire is developed and data were collected. The variables taken for studying investors in derivative market are participation and risk tolerance. There is significant relation between indirect variables and direct variable which expected utility theory supports.

To increase the sample size and better explore the determinants, the researchers put up a lot of effort. Because it was performed so quickly and only looked at one topic, the research contains a number of limitations. Every attempt was made to employ a bigger sample size and extensively examine the factors by the researchers. To learn more about how locals feel about it, more study on this subject is required in various sections of the nation. Even though this study only used questionnaire surveys, a few in-depth interviews or focused group discussions might have been helpful in uncovering the underlying factors that influence how impacts are perceived to be positive and negative, how satisfied people are, and how much they participate in the derivative market. Investigations should concentrate on analyzing the physical, biological, and socioeconomic influences on investor decision making in order to better understand how Nepal's derivative market functions. It is crucial to look at how information accessibility and risk tolerance affect investors' choices in the derivative market

6. Conclusion

Financial literacy and participation in the derivative market are strongly related because those who lack the knowledge and expertise to successfully negotiate this complex market are less likely to make investments there. Although the derivative market may create huge potential for investors to control risk and earn profits, it also poses considerable hurdles and risks that need for a high level of financial knowledge and

skill to successfully navigate. Making decisions regarding investments, especially those in the derivatives market, requires financial literacy. It assists people in assessing the risks and possible benefits of various investment possibilities and in creating efficient risk management plans. Also, it can encourage more people to participate in the derivative market as those who are aware and confident about the market are more inclined to make investments in it. In addition to increasing market variety and efficiency, this can assist to spread risk among a wider range of small and big organizations.

Financial literacy and participating in derivatives markets is a growing concept in Nepal. This study aimed to determine whether individuals with higher levels of financial literacy are more likely to be active participants in the derivatives markets. It found that factors such as household wealth, gender, home location, and a variety of information sources have a big impact on how many people participate. According to our empirical findings, individual investors are more likely to purchase derivatives products if they have a greater degree of financial literacy. Moreover, we discover that participation rates in the derivatives markets are dramatically increased by wealth, gender, and urban residential region. Additionally, individuals are more likely to participate in the derivatives markets if they have access to a wider variety of information sources to assist their financial literacy.

Empirical findings have implications for policymakers and government officials in terms of both the subjective and personality characteristics of individual investors with regard to their participation in the derivatives market. Our findings show that families are restricted from engaging in the financial sector, even if they are for those who, in comparison to the average population, have high levels of wealth, education, and financial literacy. Financial literacy appears to have a beneficial impact on people's and families' engagement in the financial market since financial knowledge as a measure of financial literacy is positive and very significant.

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