Interplay of Investor Cognition, Financial Literacy, and Neuroplasticity in Investment Decision Making:
A Study of Nepalese Investors

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Abstract

The study examines how investor cognition and financial literacy impact neuroplasticity among Nepalese investors in stock market by assessing the mediating effect of risk absorption capacity in relation to investor cognition, financial literacy and neuroplasticity in investors. The cross-sectional data was purposefully collected from 389 respondents ranging from under 25 years to older residing in the Kathmandu valley and had previously invested in market and incurred losses. Primary data was analysed quantitatively by using SMART-PLS. The study findings indicated significant impacts of the constructs - investors' cognition, financial literacy, and risk absorption, on investors' neuroplasticity. Additionally, the structural model affirms that risk absorption acts as a mediator in the relationship between investors' cognition, financial literacy, and neuroplasticity. By filling in empirical gaps and utilising social cognitive theory, this study advances our knowledge of how investor cognition, financial literacy, risk absorption capacity, and neuroplasticity impacts financial decisions, especially in developing countries like Nepal. Thus, this study stresses the eminent role of cognitive processes and financial literacy in decision-making, with the potential to assist policy formulation for equity-related financial product marketers and aid in tackling psychological trauma and reluctance among prospective investors in stock markets due to past losses.

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INTRODUCTION AND STUDY OBJECTIVES

Literacy, and neuroplasticity stands at the pinnacle of the contemporary world (Pokhrel, 2023), and are increasingly crucial factors in affecting investment decision-making, supporting individuals to make sound and informed choices in the dynamic financial landscape (Jolles et al., 2021; Kasoga, 2021). Fulfilling financial requirements through investments is a continual process that is frequently made more complicated by the impact of emotions and cognitive biases on investor rationality (Zahera & Bansal, 2018; Sahi, 2017).

Developing the cognitive skills of investors is eminent, as it enables neuroplasticity to transcend negative past experiences (Lieder & Griffiths, 2020) and develop a more rational and calculated approach to investment (Taylor & Marienau, 2016). These cognitive dimensions include social cognition, which takes into account societal scenarios, cold cognition, which depends on reliable data sources for decision-making, hot cognition, which prefers information from acquaintances and experts, and metacognition, which grabs on past experiences to make predictions about future investment decisions (Behara et al., 2022). Similarly, financial literacy includes an understanding of economic and financial concepts that enables investors to effectively utilise their resources, maximise returns, oversee risk through stock market participation, make informed predictions in open markets, and use asset return information

to lower return uncertainty in portfolio decisions (Thomas & Spataro, 2018). In addition, studies (Xu et al., 2022; Sivaramakrishna, 2017) have shown that financial literacy has a positive impact on individual investors' involvement, choice of investments, and human capital development. The stock market, as an avenue for resource mobilisation, makes a major contribution to economic growth and offers investment possibilities. Furthermore, higher levels of financial literacy have been associated to better financial management and behaviour, surged stock market engagement, and a greater tendency for stock market trading among individuals (Shapiro, 2019).

Pandey et al. (2020) stated that Nepalese stock market has had a number of historical scams that have had a lasting detrimental effect on investors' memories and psychology. As a result, due to the market's perceived weakness, many people view stock market investment as gambling. This psychological stress is frequently caused by the market's unpredictability and losses, which discourage further investment and jeopardise the economy's long-term viability (Thapa & KC, 2020). Recognising the significance of domestic investment for economic growth, it becomes crucial to understand and address the psychology of investors who have suffered losses, pushing them to re-engage through informed planning and the processing of pertinent information. In addition, Lusardi (2019) revealed that the importance of financial literacy has expanded as a result of the liberalisation of financial markets, which has been fuelled by easier access

to credit and financial instruments. As a result, several nations have developed and implemented national financial literacy projects, often concentrating on younger generations. Contrary, there has been a significant increase in investor engagement in the Nepalese stock market (Vaidya, 2021), as seen by the expansion of Demat accounts and increased trade volume on the NEPSE. However, rather of forming rational investment decisions, many investors frequently rely on mental shortcuts and easily accessible information, often from informal sources like friends and family. This trend has been associated with poor decision-making as investors frequently follow crowd behaviour or are influenced by media and social networks.

Cognitive processes, financial literacy, and neuroplasticity have become emerging research topics in investment decision making. As people explore financial markets, their cognitive mechanisms and financial literacy influence their decisions (Kasoga, 2021). Because many people are investing in the stock market to increase their wealth despite widespread financial illiteracy (Subedi, 2023), the relationship between financial literacy and individual stock market involvement has gained significant attention from practitioners, regulators, and policymakers. Similarly, Goyal and Kumar (2021) postulated that lack of financial literacy often leads to inadequate retirement savings and excessive debt accumulation, hindering individuals from benefiting from financial innovations. As more individuals enter the world of investments, the importance of financial literacy, cognitive ability, and the role of neuroplasticity in fostering rational and informed decisions cannot be overstated.

The existing research is mostly concerned with the thought processes, mindsets, and motivations of individual investors. Similarly, fewer studies have looked at the problem of luring potential and unsuccessful investors back into the market. On the other hand, ample number of prior studies (Abideen et al., 2023; Cruciani & Cruciani, 2017; Cavezzali et al., 2012) have predominantly focused on Western settings (i.e. developed countries), with fewer studies concentrating on developing countries (Behera et al., 2021; Naiwen et al., 2021; Nadeem et al., 2020), underscoring the growing need to investigate these concepts in such economies highlighting empirical and knowledge gap issues. Considering the significant of psychological distress and financial losses people have suffered as a result of making unwise investment decisions influenced by various sources (recommendations from friends, relatives, the media, and social platforms), it becomes clear why this issue needs to be addressed promptly. Additionally, investors in Nepal lack grasp of fundamental financial concepts due to a lack of financial literacy.

In order to emphasise such pertinent but understudied issues, the current study aims to examine how investor cognition and financial literacy impact neuroplasticity among Nepalese investors in stock market. Likewise,

the study also examined the mediating effect of risk absorption capacity in relation to investor cognition, financial literacy and neuroplasticity in investors. Furthermore, this study implicitly provided comprehension about the multifaceted factors shaping investment decisions and the effects of negative experiences, with special emphasis on the development of cognitive skills through a variety of information avenues for improved decision-making, risk management, and long-term investment success. This approach aids investors comprehending their past mistakes, enhancing their risk tolerance, and making prudent decisions for sustained and lucrative investments. To create a deductive research model for this study, a comprehensive literature assessment was conducted, drawing on observable variables across the management, psychology, and medical science fields. This study intends to rehabilitate investors' cognitive faculties, strengthen their reasoning skills, and reignite their confidence for future investing initiatives by highlighting the concept of financial literacy and neuroplasticity.

Literature Review and Hypotheses Development

This section presents literature review as well as the hypotheses developed.

Global Perspectives on Financial Literacy, Cognitive Abilities and Investment Behaviour

Globally, different countries have different methods for making investment decisions. Developed nations like the US and the UK investors place an eminent emphasis on rational analysis, whereas France and Germany use a structured five-stage procedure, but in contrast UK uses a six-stage approach (Roberts & Henneberry, 2007). Over 55% of people in the US, 33% in the UK, but just 13% in China participate in the stock market (Khandelwal, 2021). Similarly, developed nations also provided a variety of investing options, including stocks, mutual funds, ETFs, and derivatives (Marszk & Lechman, 2020). With the help of cutting-edge technology, AI analytics, blockchain, data visualisation, and robo-advisors, millennials are trading in the stock market more and more in the US compared to any other nations (Das, 2023). In addition, studies conducted in Europe, including Denmark, Finland, Germany, Hungary, Italy, Norway, Poland, and others, show that cognitive abilities have an impact on investment behaviour (Adit et al., 2022) and that financial knowledge and experience has an impact on decision-making (Sudindra & Naidu, 2018). The aforementioned empirical literatures on developed countries offer a useful overview of the global investment decision-making landscape by highlighting differences in approaches, stock market participation rates, the influence of technology on investment behaviour, and the role of individual characteristics in shaping decisions.

Social pressure has a significant impact on investment decisions in developing nations like India (Raut, 2020), while Pakistan struggles with a lack of financial literacy (Sabir et al., 2019) and psychological factors have a significant

impact on investment decisions in Malaysia. According to several studies (Nanziri & Leibbrandt, 2018; Ferreira & Dickason, 2018; Dickason & Ferreira, 2018), African stock markets need technical and institutional development to address liquidity issues and promote regional integration (Asongu, 2012). Furthermore, investors in Africa also tend to overreact to events, which have an impact on mutual funds, and thus also lack financial literacy. Additionally, developed nations like the US, the UK, Denmark, Finland, Germany, and Italy are at the forefront of study on the dynamics of investment decision-making. On the other hand, emerging economies like India, Pakistan, Malaysia, and Indonesia also show a lot of interest in this field. Scholars from India, such as Behera et al. (2020); Mushinada (2020); Rasool & Ullah, 2020, have made important contribution on financial literacy and cognitive abilities, while European research, represented by Munoz et al., 2020 and Loerwald & Stemmann, 2016, has dug into the implications of cognitive abilities and financial knowledge on investment behaviour. Similarly, Simanungkalit et al. (2023) and Ming (2016) stated that the age group that invests in the stock market the most varies by country, but millennials is increasingly active, especially in developed and developing countries, where they are employing technology and showing a greater propensity to do so than previous generations. Globally, governments and policymakers place a high priority on the promotion of financial literacy as a way to support their economies by encouraging better investing habits, which can

increase personal financial stability and spur national economic growth (Hacioqlu & Aksoy, 2021). Governments are putting in place a variety of measures to do this, including educational campaigns, regulatory frameworks, digital literacy programs, and the promotion of stock market investment for wealth generation and economic growth. While emerging nations struggle with psychological factors and constrained investment options (Khanna & Palepu, 2010), developed nations enjoy better access to information and financial literacy and understanding (Pazarbasioglu & Mora, 2020).

Mobile trading platforms help to close this gap in developing nations. As a result of cultural, economic, and psychological factors, investment decision-making differs across the globe (developed and developing countries), with financial knowledge and emotional responses being crucial.

Having a financial literacy rate of 59% in general, Nepal shows considerable regional and gender disparities. Similarly (NRB, 2022) revealed that the Sudurpaschim Province has the lowest rate at 54.86%, while Bagmati Province has the highest rate at 84.99%. On average, men are more financially literate than women are (72.64% vs. 61.57%). Several studies Pokhrel (2023); Karmacharya et al. (2022) in Nepal show that cognitive abilities significantly influence investors' ability to absorb risk and make financial decisions, and that external advice and social networks, such as family and friends, as well as

factors like the company, market, and risk-return considerations, play key roles in shaping investment decisions. In addition, it is essential for Nepalese investors, particularly newcomers, to concentrate on the fundamentals of the company and engage in technical analysis and market trends. According to Parajuli and Shrestha (2020) studies, there is a general trend of low risk tolerance among investors in Nepal, even though men exhibit a greater propensity for taking risks. However, those who have a deeper understanding of financial markets and global trends are more likely to take on higher risks.

Investors' Cognition and Neuroplasticity

As shown by studies from Dhungana et al. (2022); Syarkani and Alghifari (2022), numerous studies in the fields of behavioural finance and neuroeconomics have examined the influence of cognitive processes, including cognitive biases like loss aversion and overconfidence, on investment decisions and the resulting neural adaptations in decision-making structures. Additionally, the incredible capacity of the brain to remodel itself in response to experiences and learning is emphasised by the field of neuroplasticity. Neuroscientific studies, like those done by Al-Dahan et al. (2019) show how cognitive activity, like learning new things or taking on difficult tasks, can affect the way the brain has been programmed and functions. When it comes to making investment decisions, knowledge gathered through cognitive processes that are supported by social learning can lessen the psychological ramifications brought on by negative experiences and market crashes, allowing investors to better handle losses and make decisions that are well-informed.

Similarly, Education cultivates the fundamental knowledge that promotes financial literacy, which in turn develops through a variety of cognitive determinants and encourages sustained participation in the financial markets. Financial literacy is facilitated by education by enabling retrospective analysis of previous choices, empowering the creation of sound future strategies, and subsequently encouraging neuroplasticity. According to studies of Vanderpal et al. (2021): Barkar et al. (2016), Lowenstein et al. (2001) individuals with excellent analytical abilities, emotional intelligence, self-awareness, and social cognition have more intelligent and adaptable investing strategies. According to the social cognitive theory (SCT), people who have acquired specific cognitive skills-possibly through formal education or by seeing successful investors-might be more flexible in their decision-making and investment approaches. Thus, the following hypothesis is established:

H1: There is a significant impact of investors' cognition on the neuroplasticity among Nepalese investors.

Investors' Cognition and Risk Absorption Capacity

According to Coleman (2023), investors' risk-taking behaviour in stock trading is significantly influenced by their cognitive capacities, which are

moulded by information processing. Cognitive exercise provides people with the knowledge necessary to make considered and prudent financial decisions, highlighting the need of having access to reliable information sources Kusev et al. (2017); Blajer et al. (2018). Similarly, individuals have been inspired to take calculated risks by cognitive processes that lead to knowledge acquisition (Kusev et al. 2017), and when investors have access to relevant cognitive resources, they can make well-informed decisions about taking risks that will improve their overall results (Blajer et al., 2018). Meanwhile, the growth of investors' risk tolerance is determined and influenced by their cognitive capabilities, which are crucial to their decision-making. Similarly, investors' behaviour is influenced by their cognitive aptitude because information acquisition and analysis can have an impact on their risk tolerance, which in turn affects how they trade stocks (Coleman, 2023). In contrast, financial literacy helps to reduce cognitive biases and foster confidence in investment decisions.

As demonstrated by studies from Bhanu (2023); Ainia and Lutfi (2019), behavioural finance studies have extensively examined how various aspects of investor cognition, including cognitive biases like loss aversion and overconfidence, can significantly influence risk perception and decision-making, thereby enhancing or hindering an investor's capacity to absorb and manage risk. In addition, the ability of an investor to assess and absorb risks objectively, manage emotional

responses, mitigate cognitive biases, and adapt their risk-absorbing capacity based on social influences and peer behaviour are all influenced by different aspects of investor cognition, such as cold cognition, hot cognition, meta cognition, and social cognition Vanderpal et al. (2021); Barkar et al. (2016), Lowenstein et al. (2001). To this end, in line with SCT, investors' cognitive processes-which are affected by financial literacy, neuroplasticity, and learning from observation-have a substantial impact on their ability to absorb risk through self-regulation, self-efficacy, and external factors. Thus, the following hypothesis is established:

H2: There is a significant impact of investors' cognition on the risk absorption capacity of Nepalese investors.

Financial Literacy and Neuroplasticity

Prior behavioural finance studies including Khawar and Sarwar (2021); and Rahman et al. (2021) have looked into the ways that financial literacy enhances neuroplasticity, facilitating the brain's adaptation, as increased financial knowledge improves cognitive flexibility, empowering investors to skilfully adjust to changing market dynamics. Numerous empirical studies (Dureha & Jain, 2022; Khan & Usman, 2021; Munoz et al., 2020) have emphasised the significance of financial literacy as a cognitive instrument to promote adaptability and confirm a strong positive relationship between financial literacy and neuroplasticity, showing that knowledgeable investors exhibit

increased resilience in understanding and responding to financial data. It fosters understanding of the underlying causes of previous financial losses and permits the creation of effective decision-making methods in the future, ultimately encouraging neuroplasticity. Additionally, studies Ahmed et al. (2021); Raut (2020), have shown that the application of strategies like educational programs, decision-making simulations, and real-world experiences, all of which are suggested to strengthen financial literacy, builds investors' ability to make more knowledgeable and flexible investment decisions, which perfectly aligns with SCT. Thus, the following hypothesis is established:

H3: Financial literacy significantly and positively influences neuroplasticity of the Nepalese investors.

Financial Literacy and Risk Absorption

In addition to boosting cognitive flexibility and learning, financial literacy equips investors with the knowledge they need to make sound decisions and increase their capacity to absorb risk in challenging financial situations (Ademola, 2019). Studie conducted by (Bhanu, 2023; Sahu et al., 2023) have consistently indicated that well-informed investors, particularly those with a thorough comprehension of financial concepts and market dynamics, exhibit better risk absorption capacity. In addition, past empirical studies (Zhang et al., 2021; Awais et al., 2016) have also demonstrated that there is a strong positive correlation between a person's financial literacy and their propensity

to take and absorb risk. This can be attributed to their capacity to make more thoughtful and calculating investment decisions, effectively managing and absorbing risks. Likewise, focused financial education initiatives and practical risk assessment tools can help investors better manage their finances and increase their risk tolerance which perfectly aligns with the SCT. Thus, the following hypothesis is established:

H4: Financial Literacy significantly and positively influences risk absorption capacity of the Nepalese investors.

Risk Absorption Capacity and Neuroplasticity

Those who are more prepared to take chances with their investments seem to have higher levels of neuroplasticity, which allows them to adjust and grow from their financial experiences (Tomlinson, 2021). This relationship emphasises how crucial cognitive flexibility and learning are while making investing decisions. Behavioural factors impact risk absorption; these include a readiness to invest for a lengthy period of time in opportunities comparable to the one being presented and a tendency to take risks without depending on speculation or strategic planning (Shefrin, 2002). This emphasises how important strategic planning is when making investment decisions because it helps diversify portfolios and lowers investment risks, which eventually allows for more deliberate and informed future investments. Previous studies have provided support for this relationship Behara et al. (2022),

for instance, proposed that risk-taking investors frequently employ a learning-oriented approach, which can improve neuroplasticity. Furthermore, a strong association was shown by Hatch et al. (2018) between risk tolerance and the ability to adjust to changing market conditions. In addition, (Kasoga, 2021; Haritha & Uchil 2016), stressed out that investors that exhibit risk-absorption behaviour are able to overcome the psychological impact of previous stock market losses, fostering a more optimistic view of future investment opportunities. Seeing good risk management can increase an investor's ability to absorb risk and their neuroplasticity through (observation, learning and social interaction), which are critical factors in making investing decisions, which fits with the principles of SCT.

Thus, the following hypothesis is established:

H5: Risk Absorption capacity significantly and positively Neuroplasticity of the Nepalese Investors.

Mediating Role of Risk Absorption Capacity

Explaining how investor cognition and financial literacy affect neuroplasticity requires an understanding of the critical role that risk absorption capacity plays. According to Adiputra (2021), risk tolerance and cognitive characteristics are closely associated, and people who are more tolerant of risk typically exhibit more flexible cognitive processes. Several previous studies (Mohta, &

Shunmugasundaram, 2023; Lusardi, 2019; Sheedy & Lubojanski, 2018) have demonstrated that financial literacy enhances risk tolerance and facilitates strategic investment planning to lower risks, which resembles the brain's neuroplasticity. Similarly, renowned researchers have highlighted that risk tolerance, in addition to cognitive processes and financial literacy, can have a positive long-term impact on neuroplasticity Samsuri et al., 2019; Sharma, 2020; Sheedy & Lubojanski, 2018). Consistent practice, self-control, and supervised instruction can help attain this improvement, which will ultimately encourage long-term and knowledgeable investing behaviour. In complete accordance with Social Cognitive Theory (SCT), investors can strengthen their ability to absorb risk by observing and learning effective financial management and decision-making. This will reinforce and shape their neuroplasticity. Thus, the following hypothesis is established:

H6: Risk absorption capacity mediates the impact of investors' cognition on the neuroplasticity of Nepalese investors.

H7: Risk absorption capacity mediates the impact of financial literacy on the neuroplasticity of Nepalese investors.

RESEARCH METHODS

This section presents the research methods used in this study.

Table 1
Study Variables Measurement Sources

Constructs	Source of Measurement
Investor Cognition	16 items adopted from (Behera et al., 2022)
Financial Literacy	5 items adopted from (Hamza & Arif, 2019) and 3 items adopted from (Khan, 2016).
Risk Absorption Capacity	12 items adopted from (Behera et al., 2022)
Neuroplasticity	3 items adopted from (Behera et al., 2022) and 3 items adopted from (Rappaport & Corbally, 2022)

Respondents and Procedure

This study employed quantitative approaches to infer and examine structural relationship while utilising the positivism philosophy within a deductive framework. Similarly, to determine the impact of the independent variable both directly and indirectly via a mediating variable, an explanatory study design was adopted. The responses were purposefully gathered, and only those investors who had previously invested in the market and incurred losses were taken into account, which led to psychological distress. In addition, cross sectional data are collected from diverse respondent ranging from under 25 to older, who resided in the Kathmandu valley (i.e., Kathmandu, Bhaktapur and Lalitpur) with the blend of online and offline surveys. The structured questionnaire was administered in Kobo toll box, and link was emailed to potential investors. Similarly, for the offline survey, the questionnaires were distributed at various broker houses, ensuring an adequate representation of samples of all the investors from Kathmandu valley. Initial testing of the question's relevance for internal consistency was done with 20 respondents in a pilot study, and no

cases of multicollinearity were found. Furthermore, since all questions were mandatory, there were no missing data records. At the end of the self-administered survey, 389 responses were collected. Since the population size was unknown, the researchers rigorously applied the Cochran formula to determine an adequate sample size, employing a sample size of 389 respondents underscores the robustness and enhances the generalizability of our findings.

Measurement Scale

The observed items for all latent constructs demonstrated in Table 1 were adopted from existing eminent empirical literature. Similarly, their relations were proven from the prior studies of different conceptual and empirical literatures, which served as the guidelines in the construction of the conceptual framework (figure 1). The measurement items were re-validated to be used for Nepalese context since the scales were established in the different countries. All the items were measured on 5-point Likert scale (1 being "strongly disagree" and 5 being "Strongly agree)". Likewise,

Table 2
Demographic Profiles of the Respondents

Variables	Category	Frequency	Percentage (%)
	Male	222	57
Gender	Female	167	43
	Below 25	89	23
	25-35	249	64
	35-45	35	9
Age	Above 45	16	4
	Up to SEE/SLC	7	1.8
	Plus 2	21	5.4
	Bachelor's	108	27.76
Education Level	Masters and above	253	65.04
	Unmarried	242	62.21
Marital Status	Married	147	37.79
	Private Job	110	28.28
	Government Job	83	21.34
	Students	140	36
	Business/Entrepreneurs	22	5.6
Occupation	Others	34	8.78
	Less than 25000	52	13.36
	25000-50000	176	45.24
	50000-75000	93	24
Income Level	Above 75000	68	17.4

Note. Data collected from survey in 2023

Investor cognition consists of four components (i.e., hot, cold, meta and social cognition), Financial literacy has been derived from three dimensions (i.e., financial knowledge, financial sills and financial behaviour), and risk absorption has been derived from 4 components (recurrence of investment, risk-seeking attitude and risk tolerance capacity and strategic investment planner).

Analysis Tools

In order to analyse the proposed relationship and the impact of their inter-relationship (direct and mediating) PLS-SEM was used. PLS-SEM is considered the most appropriate data analysis technique for our study as it requires a small sample size than the CB-SEM and the data do not need to have normal distribution. Furthermore PLS-SEM enables the retention of a greater number of variables per factor. In the model the connection between the latent and observed variables were categorised as reflective. This is due the fact that changes in the latent variables affect the measurement of the observed

variables. Following Leguina (2015) two approaches, the proposed theoretical model was evaluated by assessing measurement model and structural model.

RE SULTS AND ANALYSIS

The result section is divided into descriptive analysis (profile of respondents), normality test, analysis of measurement model, structural model analysis accompanied by hypothesis testing and mediating analysis.

Profile of the Respondents

Table 2 displays the demographic information gathered from respondents on age, gender, marital status, education level, occupation, and income level.

The table presents the socio-demographic profile of 389 respondents where the majority of the respondents are male (57%), as contrast to the remaining 43% of respondents who are female, which serves the fundamental context for our study. The age group of 25-35 years had the highest percentage (64%) of respondents, followed by the age group of below 25 years (23%). Similarly, diversity can be seen in education levels, as a significant 65.04% of people hold a Master's degree or more, compared to 27.76% who have a Bachelor's degree and 7.2% who have completed their Plus 2 and up to SLC/SEE. On the other hand, the social dynamics of our sample are further enriched by the marital status, which is represented by 62.21% unmarried and 37.79% married people. In terms of occupations, students

comprise the largest group with 36% of the total respondents, followed by those with private jobs (28.28%), while government positions with 21.34% of the respondents and so on. In addition, income levels show that 45.25% of people earn between Rs 25000 - 50,000, 24% between Rs 50 000 - 75000, and 17.45% make more than Rs 75000. Thus, most of the respondents in the study are young unmarried males, highly educated and earning within the range of Rs 50, 000, which formed a cornerstone for socio-demographic understanding.

Descriptive Statistics

Using Smart PLS software, the study commences by determining the normality of the data's distribution of scale indicators. In accordance with the current mean values, respondents' average responses to the 35 items covering six constructs range from 3 to 4.2. Similarly, normality can be assessed by looking at skewness and kurtosis values, which typically fall within the range of -1 to +1. Thus, all the observed items are discovered to be normally distributed, enabling the study to proceed to measurement and structural model analysis stage.

Evaluation of the Outer Measurement Model

To examine the reliability and validity model, we carried out a comprehensive assessment of the Standardised Factor Loading (SFL), Composite Reliability (CR), Internal Consistency Reliability (Cronbach's Alpha), Convergent Validity, and Discriminant Validity. Initially, in pursuit of robust results, SFL of all the employed observed items was computed

Table 3
Evaluation of the Outer Measurement Model

Coding	Latent Variables and Items	Loadings	AVE (Average Variance Explained)	CR (Composite Reliability)	Cronbach's Alpha
IC	Investor Cognition	Loadings			
IC_1	Stock market knowledge	0.686	0.5	0.923	0.91
IC_5	Investment Training	0.751			
IC_6	Stock market index	0.727			
IC_7	Analytical news	0.771			
IC_8	Scholarly articles	0.764			
IC_9	Views of expert investors	0.769			
IC_10	Family discussion	0.64			
IC_11	Suggestions from people	0.708			
IC_12	Friends and relatives	0.652			
IC_13	News on media	0.679			
IC_15	Investment-related mobile app	0.693			
IC_16	Financial Advisor	0.63			
FL	Financial Literacy				
FL_1	Financial Knowledge	0.803	0.579	0.916	0.895
FL_2	Stock market activities	0.799			
FL_3	Financial securities	0.797			
FL_4	Evaluation of statement	0.807			
FL_5	Benefit and cost analysis	0.751			
FL_6	Use of related apps	0.731			
FL_7	Reading habit	0.696			
FL_8	Need and situation analysis	0.692			
NUPL	Neuroplasticity	Loadings			
NUPL_1	Better decision	0.813	0.649	0.917	0.892
NUPL_2	Mental Preparation	0.792			
NUPL_3	Investment ability	0.819			
NUPL_4	Learning and experience	0.815			
NUPL_5	Search	0.773			
NUPL_6	New knowledge and skills	0.82			
RAC	Risk Absorption Capacity				
RAC_1	Active investment	0.632	0.509	0.903	0.879
RAC_2	Repeated investment	0.683			
RAC_3	Investing more	0.7			
RAC_4	Preference of the stock market	0.722			
RAC_6	Past experience	0.793			
RAC_7	No alternation	0.65			
RAC_9	Continuous investment	0.739			
RAC_10	Patience	0.766			
RAC_11	Growth optimism	0.725			

Note. Researchers' calculation based on survey data. Four items of Investor Cognition (IC_2, IC_3, IC_4, and IC_14) and three items of Risk Absorption Capacity (RAC_5, RAC_8, and RAC_12) were dropped due to factor loading issue as their factor loading were less than 0.50.

Table 4
Fornells Larkers Test

	FL	IC	NUPL	RAC
FL	0.761			
IC	0.483	0.707		
NUPL	0.694	0.504	0.806	
RAC	0.519	0.373	0.63	0.714

Note. Researchers' Calculation

Table 5
HTMT Test

	FL	IC	NUPL	RAC
FL				
IC	0.51			
NUPL	0.774	0.531		
RAC	0.58	0.399	0.699	

Note. Researchers' Calculation

and all the observed items' factor loading scores exceeded the threshold criteria of 0.50 (Purwanto, 2021) (See Table 3), signifying that all the factors had satisfactory reliability. Similarly, internal consistency was evaluated through both Cronbach's alpha and composite reliability, with the results postulating Cronbach's alpha values inside the range of 0.879 to 0.910 and CR values spreading from 0.903 to 0.923 (refer to Table 3), confirming the scale's high level of internal consistency (i.e. exceeding the threshold value of > 0.70).

Likewise, to strengthen the analysis of construct reliability using PLS, Rho coefficients values are taken into account. Additionally, the AVE value is used to evaluate convergent validity and is determined satisfactory when it exceeds 0.50. It is clear from Table 4 that all constructs have AVE scores that are above these cut-off criteria, indicating good convergent validity.

Similarly, the assessment of discriminant validity for the constructs was assessed using two prominent and robust criteria, as advocated by Leguina (i.e. the "Fornell-Larker criterion," and the "heterotrait-monotrait" ratio (HTMT). By comparing the Average Variance Extracted (AVE) for each factor with the square of its correlation with other factors, the Fornell-Larcker criterion was evaluated in order to determine the level of expected difference between items measuring different constructs. The Fornell-Larcker criteria, a traditional indicator for measuring discriminant validity, entails contrasting the square
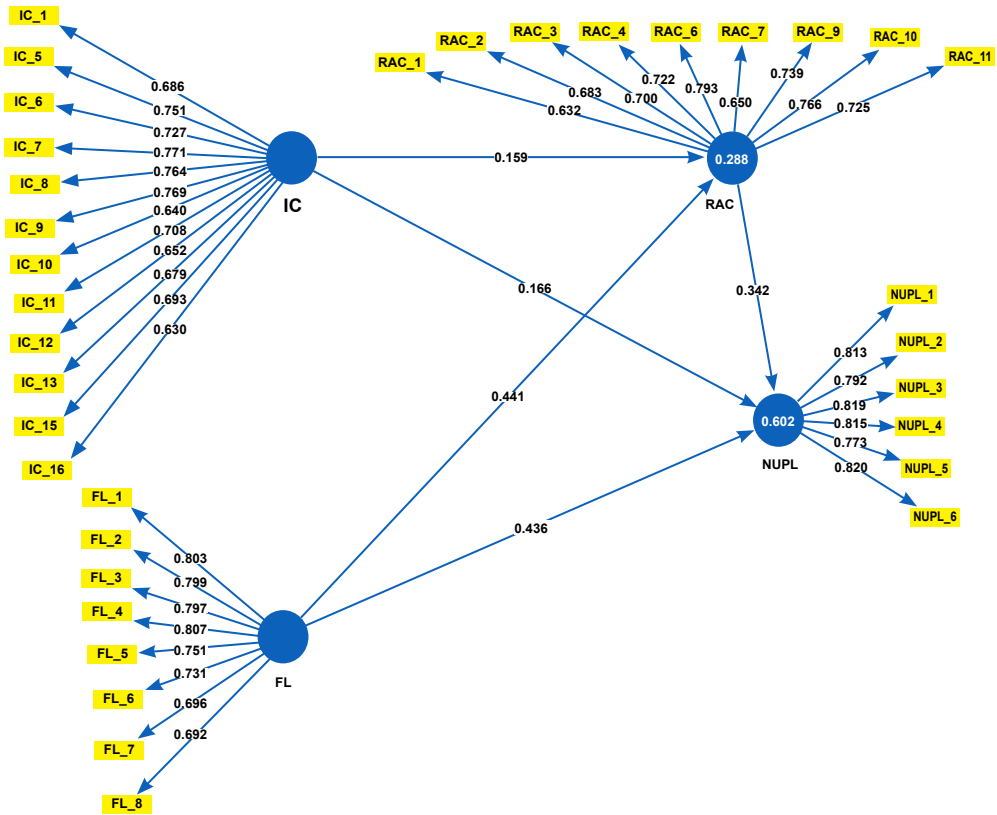
Figure 1. *Study's Structural and Measurement Model*
Note. Researchers' Calculations

root of the Average Variance Extracted (AVE) for every construct with the inter-construct correlations within the structural model, as outlined by Fornell in 1981. As presented in Table 5, the bivariate correlation among all constructs in the model is consistently lower than the square root of the AVE values, indicating a robust level of uniqueness within the construct.

Assessment of Structural Model

To further explore the complex structural relationship between exogenous and endogenous variables, a thorough structural equation analysis was carried out. Likewise, researcher also specifically looked closely at how well the model predicted and explained fluctuations in both the independent and dependent variables. The variance inflation factor (VIF) is a widely employed metric for assessing multicollinearity issue among the independent variables. Furthermore, the observed variables' VIF values spanned from 1.34 to 1.578, all of which fell below the threshold of 3.33, demonstrating the structural model's lack of multicollinearity.

Similarly, the R^2 value increases the structural model's predictive power, so

Table 6
The Structural Model's Results

Structural Path	Beta Coefficient (B)	LLCI (2.50%)	ULCI (97.50%)	Conclusion
H1: IC -> NUPL	0.436	0.077	0.252	Supported
H2: IC -> RAC	0.441	0.035	0.265	Supported
H3: RAC -> NUPL	0.166	0.235	0.456	Supported
H4: FL-> NUPL	0.159	0.33	0.537	Supported
H5: FL-> RAC	0.342	0.335	0.542	Supported

Note. Researchers' Calculation

Table 7
Mediation Analysis

Structural Path	Beta Coefficient (b)	LLCI (2.50%)	ULCI (97.50%)	Conclusion
IC -> RAC -> NUPL	0.054	0.013	0.11	Supported
FL-> RAC-> NUPL	0.151	0.1	0.218	Supported

Note. Researchers' Calculation

it's crucial to make sure the value is high enough to adequately characterise the structural model. When an R2 value exceeds 10%, it is considered sufficient for explaining variance in dependent variable. Here, the study's findings demonstrated that the model's R2 value accounted for the factors relating to risk tolerance and neuroplasticity up to 0.288 or 28.8% and 0.602 or 60.2%, respectively. Explicitly, figure 1 also shows the R2 value and outer loading details. In addition, three variables, namely investor cognition, financial literacy, and risk absorption capacity, collectively explained 60.2% of the variation in neuroplasticity, which ensured satisfactory model fit. Finally, talking about SRMR values, which accounted for 0.065 below the cut of criteria, which exhibited the better fit of the model being used.

Hypothesis Testing

Hypothesis testing is the final stage in the structural model to test the relationship between the constructs. In this setting, researcher used Smart PLS 4, bootstrapping technique to assess the structural model evaluation, which considers the beta value, LLCI, and ULCI, as shown in Table 7. The Beta value usually demonstrates the nature of the relationship. Similarly, SmartPLS 4.0, produced the result from bootstrapping of 10,000 data resampling. Likewise, five direct hypotheses and two mediating relationships are proposed in the current study. All the direct structural paths (H1, H2, H3, H4, and H5) showed significant association, as the finding showed non-zero value between LLCI and ULCI range.

Likewise, to examine whether Risk absorption capacity of investors fully

or partially mediates the relationship, we conducted mediating analysis. Both direct effect of Investor cognition and financial literacy was supported in the study (See table 8), and also the indirect effect of investor cognition and financial literacy on neuroplasticity was supported in the study (non-zero value between LLCI and ULCI, See table 7, which postulates that risk absorption capacity showed partial mediating effect in the relationship.

DATA ANALYSIS AND DISCUSSIONS

This study sheds light on the dynamic relationship between investor cognition, financial literacy, and neuroplasticity in the context of Nepalese investors. We conducted this study in Nepal, a state experiencing dynamic changes in its economic growth and activities. With growing use of financial goods, investment patterns, and access to credit, Nepal has seen substantial political moves toward economic development; yet, the key issue still lies in ensuring sustained economic success among its populace.

In line with the findings of earlier studies (Patel, 2021; Thapa, 2020; Sharma, 2017; Kaiser & Menkhoff, 2017), the socio-demographic background of the respondents indicates a particular demographic group that is distinguished by youth, education, and predominantly male participation in the stock market. Financial literacy differs among respondents, with the majority having a satisfactory level of financial knowledge,

skills, and behaviour; risk absorption capacity displays patterns of recurrence in investment, risk-seeking attitude, and strategic risk taking (Iqbal et al., 2023); and the study indicates that a substantial number of respondents have limited investment experience, and the increase in investors during the COVID-19 outbreak is noted as a reason (Gurbaxani & Gupte, 2021).

The paramount revelation from this study revolves around discovering the direct effect of cognitive dimensions and financial literacy on the neuroplasticity of investors who experienced psychological distress stemming from prior financial losses. Additionally, it explores the indirect effects of investor cognition and financial literacy, especially in relation to mediating factors such as risk absorption. While numerous prior studies have explored combinations related to cognition and decision making, and cognition and risk tolerance but there remains a notable scarcity of studies concerned about cognition aspects that contribute to enhancing the neuroplasticity of investors. Even though many studies have been conducted in western setting by incorporating financial literacy in enhancing decision making, there remain a paucity of literature which tries to address how literacy contributes to risk absorption capacity of investors and promoting neuroplasticity of investors.

Similarly, the various kinds of cognition-cold cognition, hot cognition, social cognition, and metacognition-help investors recognise their areas of strength

and weakness in terms of understanding the market and choosing a strategy. This helps them address problems with their investment decisions, and additionally, the combination of these cognitive dimensions gives investors the capacity to reason, comprehend aspects like risk, return, speculation, fundamental information, and opinions, cultivating sound investment decisions. Likewise, the elements of financial literacy, comprising financial knowledge, financial skills, and financial behaviour, empower investors to assess their proficiency in investment-related areas.

For instance, the study investigated the impact of investor cognition and financial literacy on the neuroplasticity of Nepalese investors. The findings demonstrated that investor cognition and financial literacy serve a vital role in enhancing the neuroplasticity of investors, postulating the significance of cognitive processes and financial knowledge on the brain's adaptation and restructuring in response to stimuli and also emphasising the importance financial knowledge and cognitive process in investment decision making. It is consistent with finding of earlier studies by Behera et al. (2021,), which also highlighted how cognition might affect investing interest and neuroplasticity. In contrast to Pokhrel (2023) findings, which suggest that investors may hold divergent viewpoints and that the effects of cognition and literacy on neuroplasticity may not be uniformly enhanced. In addition, other leading scholars' findings support the idea that interventions aimed at enhancing investor cognition and financial literacy can have a positive impact on investment decisions and the neuroplasticity of the investors.

Similarly, other objectives were to investigate how investor cognition and financial literacy influenced investors' risk-absorption capacity. These findings are consistent with numerous earlier studies, supporting the notion that cognitive processes and financial knowledge do, in fact, play crucial roles in determining investors' risk tolerance. Prior studies, such as Smith et al. (2021) scrutinise into financial literacy and the work of Jones and Brown (2019) focusing on metacognition, have repeatedly revealed that the amalgamation of cognitive aptitude and financial expertise increases investors' awareness of risks and strengthens their capacity for efficient risk management, as confirmed by Lee et al. (2013). Additionally, in line with Behera et al. (2022), this study lends credence to the notion that investor cognition and financial literacy influence risk tolerance, demonstrating their significance in decision-making and resistance to losses.

Furthermore, the mediating role of risk absorption capacity in the association between cognitive factors, financial literacy, and neuroplasticity deepens our comprehension of how these variables interact. With both mediating hypotheses revealing partial mediation, the study emphasised the importance of psychological resilience in managing investment risks. This potential mediation could be attributed to the risk propensity of individuals in Nepal.

Similar to this, Behera et al. (2022) discovered that the association between investor cognition and neuroplasticity was partially mediated by risk absorption which was in line with the finding of our study. In Nutshell, the study highlights the significance of identifying prospective investors among those who have already invested in the stock market or risky assets by evaluating their cognitive skills and emotional attitudes. It provides useful data for stock exchanges, brokers, asset management companies, and mutual fund agencies to comprehend various investor profiles, decision-making factors, and utilise cognitive concept, theories and information sources to guide future investment decisions.

CONCLUSION AND IMPLICATIONS

This study deepens our understanding of how investor cognition, financial literacy, and neuroplasticity are interconnected, shedding light on the cognitive processes that impacts financial decision-making. With regard to developing nations like Nepal, this framework's is especially novel since it presents a fresh perspective on how the brain evolves and adapts in response to financial education and investment experiences. Despite the paucity of existing studies on investor cognition and neuroplasticity, this study has the potential to contribute to these concepts in the academic field and address a substantial empirical gap, while also uncovering how neuroplasticity affects the effectiveness of financial education programs and targeted measures for investors. Additionally, the

study sheds light on the application of social cognitive theory to these aspects, offering a distinctive Nepalese investor perspective. Furthermore, it validates that Investor Cognition and Financial Literacy influences Neuroplasticity through Risk Absorption Capacity, advancing our understanding of psychological and cognitive factors in investment across diverse cultures and economic context.

Similarly, the study findings support the importance of cognitive processes and financial literacy to improve decision-making abilities and financial well-being, providing vital guidance for enhancing individual investors' and financial institutions' decision-making. In addition, it implies that enhancing investor financial literacy can improve risk management, and strategies to boost risk absorption capacity can promote more resilient, adaptable investment behaviours, and also empowering investors to navigate market risks. In similar vein, it also highlighted the significance of psychological resilience in managing investment risks and influencing decision-making. As a result, stock exchanges, brokerage houses, and asset management firms can benefit from the study's findings on how to better understand investor behaviour and apply cognitive principles and theories to make wise investment decisions.

Likewise, to further understand the relationship between investor cognition, financial literacy, risk absorption capacity and neuroplasticity, a longitudinal research design may be used to examine

the causality of the variables. Similarly, future research should explore cognitive attributes (i.e., attitude formation, sentiment analysis), and broader facets of financial literacy to better comprehend how attitudes influence investment decisions. In addition, incorporating respondents from various South Asian regions would provide a broader perspective on investor attitudes toward past losses and psychological influences on investment reluctance. In order to conduct a thorough analysis of the differences in their behaviour, cognition, and financial literacy, which collectively influence their financial decision-making processes, it is essential that future research include a broad spectrum of investors, ranging from individuals to institutional entities like mutual funds, hedge funds, pension funds, and investment advisors. Also, classifying risk-absorbent investors and encouraging collaboration among researchers could also result in more specialised strategies and thorough insights applicable to various markets.

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