Optimism and Overconfidence as Predictors of Ethnic Entrepreneurship Investment Success: The Mediating Role of Financial Literacy

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Abstract

This study investigates the roles of optimism and overconfidence in shaping investment outcomes among ethnic entrepreneurs, with a particular focus on the mediating function of financial literacy. Drawing on behavioral entrepreneurship and financial capability literature, we examine how these cognitive traits influence entrepreneurial decision-making and performance in contexts characterized by limited access to formal financial resources and institutional support. Data were collected through a survey of 183 ethnic entrepreneurs in Quebec, and structural equation modeling (SEM) was employed to test both direct and indirect relationships among optimism, overconfidence, financial literacy, and investment outcomes. The findings reveal that excessive optimism negatively affects investment outcomes both directly and indirectly through financial literacy, while overconfidence operates primarily through a mediated pathway. Financial literacy emerges as a critical mechanism enabling entrepreneurs to translate psychological traits into effective financial decisions, mitigating the potential adverse effects of cognitive biases. These results underscore the importance of integrating behavioral and capability-based perspectives in ethnic entrepreneurship research and suggest that interventions aimed at enhancing financial literacy can foster more informed, resilient, and successful entrepreneurial outcomes.

Keywords: Ethnic Entrepreneurship, Optimism, Overconfidence, Financial Literacy, Investment Outcomes, Cognitive Biases

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1. Introduction

Entrepreneurship is widely recognized as a key driver of economic growth, innovation, and social development. Within this field, ethnic entrepreneurship, entrepreneurial activity by individuals from immigrant or minority ethnic backgrounds (Salehi, 2026; Volery, 2007), has attracted growing attention, as ethnic entrepreneurs often face unique structural, cultural, and resource-based challenges (Haq, Johanson, Davies, Ng, & Dana, 2024). Understanding the factors that influence investment success among ethnic entrepreneurs is particularly important, as their financial decisions and resource allocation directly impact business performance, sustainability, and long-term growth.

Psychological traits play a pivotal role in shaping investment-related entrepreneurial behavior. Among these, optimism, the tendency to expect positive outcomes (Tenney, Logg & Moore, 2015), and overconfidence, the overestimation of one's knowledge, skills, or control (Duttle, 2016), are cognitive characteristics that strongly influence decision-making. Optimism encourages calculated risk-taking and persistence in investments, whereas overconfidence may lead to biased judgments, excessive risk exposure, and suboptimal allocation of financial resources (Bernoster, Rietveld, Thurik, & Torrès, 2018). These traits are particularly relevant for ethnic entrepreneurs, who often face limited access to financial capital, social networks, and market information, amplifying the effects of cognitive biases on investment outcomes (Barberis & Thaler, 2003).

Financial literacy, the ability to understand, analyze, and manage financial resources (Eniola & Entebang, 2016), emerges as a crucial mediator in this context. It is not only the knowledge of financial mechanics, but also the ability to make informed investment decisions, evaluate risks, and allocate resources effectively. Entrepreneurs with higher financial literacy can better evaluate investment risks (Senaya, 2025), make informed financial decisions, and channel optimism or overconfidence into productive investment strategies that improve performance and sustainability (Wise, 2013). Conversely, limited financial literacy may exacerbate the negative consequences of overconfidence and unrealistic optimism, resulting in poor investment choices, reduced returns, and unsustainable business practices (Barber & Odean, 2001).

Despite growing interest in behavioral determinants of entrepreneurship, research examining the combined effects of optimism, overconfidence, and financial literacy on ethnic entrepreneurship investment success (EEIS) remains scarce. Most existing studies (Ram & Jones, 2008) focus on general entrepreneurship or single psychological traits, overlooking the mechanisms through which these cognitive characteristics influence investment intentions, investment performance, risk-taking, decision-making, and long-term business sustainability. Investment success is operationalized through these four dimensions, making the variables measurable and contextually relevant. Addressing this gap, the present study investigates the effects of optimism and overconfidence on ethnic entrepreneurship investment success, with financial literacy as a mediating factor. By examining these relationships, the study contributes to behavioral entrepreneurship literature and offers practical insights for policymakers,

educators, and practitioners seeking to enhance investment outcomes among underrepresented ethnic entrepreneurs.

2. Theoretical Background

2.1. Ethnic Entrepreneurship

Ethnic entrepreneurship, which refers to the entrepreneurial activities of individuals from minority or immigrant backgrounds, plays a vital role in economic development, innovation, and social mobility, particularly in contexts where mainstream employment opportunities are limited (Light & Gold, 2000; Dana, 2007). Ethnic entrepreneurs often operate within their communities or in broader markets, leveraging cultural, social, and familial networks to create and sustain businesses. These networks not only provide critical resources and information but also facilitate access to niche markets that may otherwise remain untapped (Salehi, 2026; Light, 1979). However, ethnic entrepreneurs frequently face structural constraints, such as limited access to formal financial channels, institutional support, and professional networks, which can restrict both the establishment and growth of their ventures (Zhou, 2004).

Understanding ethnic entrepreneurship requires a focus on both behavioral motivations and observable outcomes. For this study, ethnic entrepreneurship is conceptualized along four interconnected dimensions that collectively define investment success in these ventures. Entrepreneurial intentions reflect the desire or plan to start or expand a business, capturing the motivational and cognitive precursors of entrepreneurial action (Krueger, Reilly, & Carsrud, 2000). Entrepreneurial performance captures tangible results, including revenue growth, profitability, and market expansion (Brush, Edelman, Manolova, & Welter, 2009). Decision-making and risk behavior encompass strategic choices, willingness to engage in calculated risk, and adaptation to dynamic market conditions (Shane, 2003). Finally, business sustainability reflects the long-term viability of the venture, integrating these dimensions to assess the enduring impact of effective intentions, performance, and adaptive decision-making on entrepreneurial continuity (Rosenbusch, Brinckmann & Bausch, 2011).

By explicitly defining these dimensions as components of investment success, this framework provides a structured lens for examining how ethnic entrepreneurs translate motivation and behavior into measurable outcomes. It also sets the stage for exploring the influence of individual cognitive traits and competencies, such as optimism, overconfidence, and financial literacy, on investment-related entrepreneurial performance.

2.2. Cognitive Traits in Ethnic Entrepreneurship: Optimism and Overconfidence

Entrepreneurial outcomes in ethnic entrepreneurship, such as investment intentions, performance, decision-making quality, and long-term sustainability, are strongly influenced by individual cognitive traits. Among these traits, optimism and overconfidence have been widely recognized as key psychological drivers shaping entrepreneurial behavior (Bernoster, Rietveld, Thurik & Torrès, 2018), particularly under conditions of uncertainty and constrained resources.

Optimism refers to a generalized expectation that positive outcomes will occur (Carver & Scheier, 2014). Within ethnic entrepreneurship contexts, optimism plays a motivational role by fostering persistence, proactive engagement, and opportunity pursuit despite structural barriers, limited access to capital, or institutional constraints. Optimistic entrepreneurs are more likely to translate entrepreneurial intentions into concrete investment actions, engage in calculated risk-taking, and remain adaptive in response to changing market conditions (Ibrahim & Abdul Kohar, 2025). However, the literature also cautions that excessive optimism may distort risk perception, leading to the underestimation of potential challenges or the overcommitment of financial and personal resources, which can negatively affect investment performance and long-term business sustainability (Bernoster et al., 2018).

Closely related to optimism, overconfidence reflects an individual's tendency to overestimate their knowledge, skills, or degree of control over outcomes (Hayward, Shepherd, & Griffin, 2006). In entrepreneurial settings, overconfidence can stimulate decisive action, faster opportunity recognition, and a greater willingness to invest under uncertainty, potentially enhancing early-stage performance. For ethnic entrepreneurs, who often rely on personal judgment in the absence of formal support structures, overconfidence may initially compensate for information gaps. Nevertheless, persistent overconfidence can also result in biased decision-making, excessive risk exposure, and resistance to corrective feedback, particularly in complex or volatile market environments (Karki, Bhatia, & Sharma, 2024).

Taken together, optimism and overconfidence shape both the motivational and behavioral dimensions of ethnic entrepreneurship. These cognitive traits influence how entrepreneurs assess opportunities, allocate financial resources, and manage risk, thereby affecting all stages of the entrepreneurial process, from investment intentions and execution to performance outcomes and long-term sustainability. Their dual role, as both enabling and potentially constraining forces, highlights the importance of examining how these traits interact with financial capabilities, such as financial literacy, in shaping effective and sustainable entrepreneurial investment behavior.

2.3. Financial Literacy as a Mediating Mechanism

Financial literacy plays a critical role in transforming entrepreneurial attitudes and cognitive traits into effective investment outcomes. It refers to an individual's ability to understand financial concepts, interpret financial information, and make informed decisions regarding budgeting, financing, risk management, and investment evaluation (Lusardi & Mitchell, 2014; Allgood & Walstad, 2016). In the context of ethnic entrepreneurship, financial literacy is particularly important due to frequent constraints in access to formal financial advice, institutional support, and capital markets.

While optimism and overconfidence shape entrepreneurs' motivation, risk perceptions, and willingness to invest, these cognitive traits alone do not guarantee successful investment outcomes (Salamouris, 2013). Financial literacy enables entrepreneurs to assess the feasibility of investment opportunities, evaluate costs and expected returns, and align their expectations with realistic financial projections (Seraj et al., 2022). For optimistic entrepreneurs, financial literacy can act as a balancing mechanism, allowing positive expectations to be supported by sound financial analysis rather than intuition

alone (Mahmood et al., 2024). In contrast, insufficient financial knowledge may amplify the negative effects of excessive optimism and overconfidence, increasing the likelihood of misjudged investments or financial strain (Mandiri & Sriwidharmanely, 2025).

Similarly, financial literacy moderates the behavioral consequences of overconfidence. Overconfident entrepreneurs may be inclined to act decisively and commit resources quickly; however, financial literacy provides the analytical tools necessary to validate assumptions, recognize financial risks, and adjust strategies when needed (Salamouris, 2013; Seraj et al., 2022). By enhancing awareness of cash-flow management, financing options, and investment risks, financial literacy reduces the likelihood that overconfidence results in biased decision-making or overinvestment (Mandiri et al., 2025; Mahmood et al., 2024).

Through this mediating role, financial literacy connects cognitive traits to key dimensions of ethnic entrepreneurship investment success, including investment intentions, performance, decision-making quality, and long-term sustainability. Entrepreneurs who combine optimism and confidence with strong financial knowledge are better equipped to convert entrepreneurial motivation into sustainable and successful investment outcomes (Luthans, Youssef & Avolio, 2006). Consequently, financial literacy functions not merely as a background skill, but as a central mechanism through which psychological traits influence entrepreneurial investment success in ethnic entrepreneurship contexts.

3. Hypotheses Development and Proposed Model

Entrepreneurial investment success is shaped not only by structural conditions but also by individual cognitive traits that influence how opportunities are perceived, evaluated, and acted upon. Among these traits, optimism and overconfidence play central roles in entrepreneurial behavior, particularly in contexts characterized by uncertainty and resource constraints, such as ethnic entrepreneurship.

Optimism, defined as a general expectation that positive outcomes will occur, encourages persistence, opportunity recognition, and proactive engagement (Carver et al., 2014). In ethnic entrepreneurship, optimism can motivate entrepreneurs to initiate or expand investments despite barriers such as limited access to capital or formal networks. Optimistic entrepreneurs are therefore more likely to develop strong entrepreneurial and investment intentions and to pursue actions that may enhance performance. However, excessive optimism may also lead to the underestimation of risks, unrealistic expectations, or insufficient contingency planning, potentially weakening decision-making quality and long-term sustainability (Bernoster et al., 2018). Accordingly, optimism is expected to exert a significant influence on ethnic entrepreneurship investment success, though this influence may not always be uniformly positive.

H1: *Optimism has a significant effect on ethnic entrepreneurship investment success.*

Overconfidence, which reflects an overestimation of one's abilities, knowledge, or control over outcomes, similarly affects entrepreneurial investment behavior.

Overconfident entrepreneurs may be more inclined to take decisive action, commit resources, and engage in risk-taking, which can support opportunity exploitation and early investment performance (Hayward, Shepherd, & Griffin, 2006). In ethnic entrepreneurship contexts, overconfidence may help entrepreneurs act despite uncertainty and institutional constraints. At the same time, overconfidence can result in biased judgments, overinvestment, or limited responsiveness to negative feedback, thereby undermining decision-making quality and business sustainability over time (Salamouris, 2013; Hayward et al., 2006). These mixed effects suggest that overconfidence plays a complex but meaningful role in shaping entrepreneurial investment success.

H2: *Overconfidence has a significant effect on ethnic entrepreneurship investment success.*

While optimism and overconfidence directly influence investment-related behaviors, their effects are unlikely to translate automatically into successful outcomes. Financial literacy serves as a key mechanism through which these cognitive traits are transformed into effective entrepreneurial investment decisions. Financial literacy refers to the ability to understand financial concepts, evaluate investment risks, manage resources, and make informed financial decisions (Lusardi & Mitchell, 2014). For optimistic entrepreneurs, financial literacy can help align positive expectations with realistic financial assessments, improving investment performance and sustainability (Luthans et al., 2007; Seraj et al., 2022). For overconfident entrepreneurs, financial literacy can counterbalance cognitive bias by grounding decisions in financial analysis and evidence-based evaluation (Mahmood et al., 2024; Malmendier & Tate, 2005).

In this sense, financial literacy does not merely enhance performance directly but mediates the relationship between cognitive traits and investment success. By enabling entrepreneurs to assess opportunities more accurately and manage risks effectively, financial literacy channels optimism and overconfidence into productive entrepreneurial outcomes.

H3: *Financial literacy mediates the relationship between optimism and ethnic entrepreneurship investment success.*

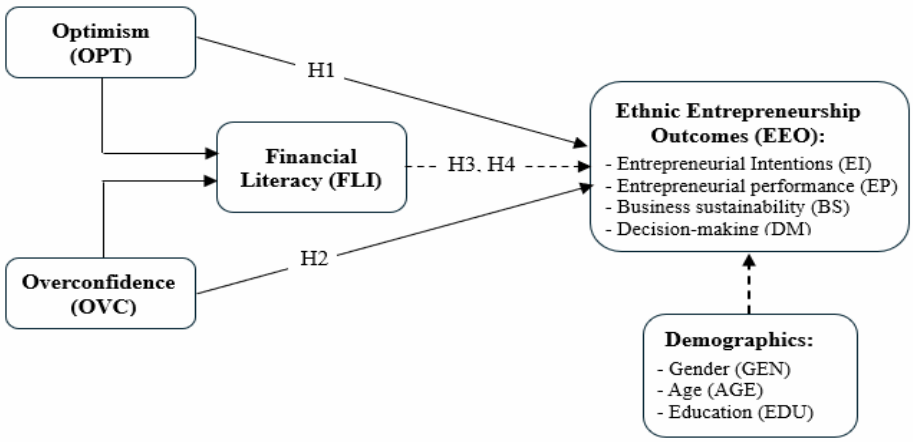
H4: *Financial literacy mediates the relationship between overconfidence and ethnic entrepreneurship investment success.*

Taken together, these hypotheses integrate behavioral entrepreneurship theory, financial capability research, and ethnic entrepreneurship literature. They suggest that optimism and overconfidence shape entrepreneurial investment success both directly and indirectly through financial literacy. This integrated perspective recognizes the motivational value of cognitive traits while acknowledging the critical role of financial competence in mitigating potential biases.

Figure 1 presents the proposed conceptual model. In this model, optimism and overconfidence function as independent variables influencing ethnic entrepreneurship investment success, which is operationalized through entrepreneurial intentions, performance, decision-making and risk behavior, and business sustainability. Financial literacy is positioned as a mediating variable linking cognitive traits to these outcome dimensions. In addition, demographic characteristics, including gender, age, and

education, are included as control variables to account for individual differences that may affect entrepreneurial behavior (Lafaurie et al., 2007). The model provides a comprehensive framework for empirically testing the proposed direct and mediated relationships.

Figure 1: Proposed model



4. Methodology

4.1. Research Design

This study adopts a quantitative research design to empirically examine the relationships among optimism, overconfidence, financial literacy, and ethnic entrepreneurship outcomes. Primary data were collected through a survey approach, which allowed for the systematic measurement of constructs and statistical testing of hypothesized relationships. This design was particularly suitable for capturing patterns of cognitive behavior and investment outcomes among ethnic entrepreneurs (Bell, Harley & Bryman, 2022). The research forms part of a larger project conducted using a mixed-methods approach, where quantitative results are complemented by qualitative insights to provide a more comprehensive understanding of ethnic entrepreneurial outcomes.

4.2. Participants and Samples

The target population consisted of ethnic entrepreneurs operating in Quebec (Canada). Participants were defined as ethnic entrepreneurs if they met the following objective criteria: (1) they were first-generation immigrants or members of an ethnic minority, (2) they had founded or co-founded a business, (3) they had invested personal financial resources in real or tangible assets (excluding stock market investments), and (4) they had created at least one paid job in Quebec. These criteria ensured that respondents were classified based on measurable entrepreneurial activity, rather than self-identification alone, distinguishing true entrepreneurship from mere business ownership (Light & Gold, 2000; Dana, 2007).

Owing to the large and heterogeneous population, a large population sampling approach was adopted to ensure appropriate respondent selection (Levy & Lemeshow,

2013). A total of 183 valid questionnaires were collected. Participants were recruited using a combination of convenience and purposive sampling, drawing from ethnic small business associations, advisory institutions, immigrant service and counseling centers, and publicly available entrepreneurial directories, including Quebec Business Listings (QBL), Montreal Local Small Business (MLSM), the Directory of Entrepreneurship Support Organizations (DESO), and the Montreal Island Directory of Community Services (MIDCS).All participants were informed about the purpose of the research and provided written consent. The study adhered to ethical guidelines, ensuring confidentiality, voluntary participation, and data protection. Ethical approval was obtained from the UQO Research Ethics Committee prior to data collection.

4.3. Measures and Instruments

Data were collected using a structured questionnaire developed through the integration of validated scales from prior research and insights derived from the qualitative phase of this study. The qualitative phase consisted of 23 semi-structured interviews with ethnic entrepreneurs in Quebec, conducted to explore perceptions of investment decisions, risk-taking, financial capabilities, and behavioral tendencies (Salehi, 2025. Findings from this phase informed the development and refinement of the survey items, ensuring that the questionnaire was relevant, meaningful, and contextually appropriate, while remaining aligned with established theoretical frameworks.

The questionnaire consisted of two main sections. The first section collected demographic and background information, including age, gender, and education level. The second section measured the constructs included in the conceptual model, focusing on optimism, overconfidence, financial literacy, and ethnic entrepreneurship investment outcomes. All substantive items were measured on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree) to ensure consistency and comparability across constructs.

Before full-scale data collection, a pilot study with 20 ethnic entrepreneurs was conducted to evaluate item clarity, reliability, and contextual appropriateness. Feedback from the pilot study was used to refine the wording of the questionnaire, ensuring that the instrument accurately captured both generalizable theoretical constructs and context-specific insights from the qualitative phase.

4.3.1. Dependent variable: ethnic entrepreneurship investment success

Ethnic entrepreneurship investment success was operationalized along four dimensions: 1) Entrepreneurial intentions (EI), 2) Entrepreneurial performance (EP), 3) Decision-making and risk-taking behavior, including adaptability (DM), and 4) Business sustainability (BS). These dimensions reflect both financial and non-financial objectives typical of ethnic entrepreneurial investments. Measurement items were informed by established models (Elmassah et al., 2022; Invernizzi et al., 2017; Shenhar and Dvir, 2007) and further refined based on qualitative insights, ensuring alignment with the experiences and priorities of ethnic entrepreneurs.

4.3.2. Independent variables: optimism and overconfidence

The development of the optimism and overconfidence measures was primarily informed by insights generated during the qualitative phase of the study, ensuring that the items reflected the lived experiences and cognitive tendencies of ethnic

entrepreneurs. In addition to these emergent themes, several established frameworks were incorporated to strengthen the conceptual and empirical grounding of the scales. Among these, Sheffrin's (2001) model, widely regarded as one of the most robust and validated approaches, served as a foundational reference. Further support was drawn from the work of Salem (2017) and Suresh (2024), whose studies provided additional theoretical and measurement guidance.

4.3.3. Mediator: financial literacy

Financial literacy (FL) was measured using a multidimensional framework that captures individuals' competencies, professional abilities, and opportunities in managing their finances and investments. Financial competence assessed respondents' foundational knowledge of essential financial and investment concepts. Financial professionalism examined the practical application of this knowledge, including financial planning, risk assessment, and informed financial decision-making. Financial opportunity evaluated respondents' access to financial resources, tools, and educational environments that facilitate the utilization and enhancement of financial knowledge. This composite framework was developed drawing on widely recognized financial literacy models, particularly those proposed by Lusardi and Mitchell (2014) and Allgood and Walstad (2016), thereby ensuring conceptual rigor and empirical validity.

4.3.4. Control variables: demographics

In this study, demographic characteristics, including age, gender, and education level, are incorporated as control variables, as each has the potential to influence the behaviors and decisions of ethnic entrepreneurs. Controlling for these variables ensures that the observed relationships among the main constructs are not confounded by underlying demographic differences. Gender was coded as a binary variable (1 = male, 2 = female). Age was measured using five ordered categories, with higher values indicating older age groups. Education level was captured using seven categories, where higher scores represent higher levels of formal education attained by the respondents. Including these controls contributes to a more accurate examination of the effects of optimism, overconfidence, and financial literacy on entrepreneurial outcomes.

4.4. Measures and Instruments

For data analysis, this study employed Structural Equation Modeling (SEM), an advanced statistical method particularly suited for examining complex datasets and multiple relationships among variables (Stein, Morris, & Nock, 2012). SEM is widely used in social science and management research to test theoretical models by estimating both observed and latent variables (Mueller & Hancock, 2018). In this research, analysis was conducted using Smart PLS-4, a leading software package for Partial Least Squares SEM, which is especially appropriate for exploratory research, small-to-medium sample sizes, and models with multiple constructs and indicators. The evaluation of the structural model included commonly recommended goodness-of-fit indices, such as the Chi-square distribution, the Normed Fit Index (NFI), and other fit statistics to ensure the adequacy of the proposed model. Additionally, SPSS 27 was utilized to perform the descriptive statistical analysis, providing insights into the demographic characteristics of respondents and the distribution of key study variables.

5. Results and Findings

5.1. Samples Characteristics

Table 1 shows the demographic profile of the respondents. According to the table, the majority of participants are male (54%, n=99) and 45% (n=84) female. The majority (74%, n=136) of the respondents are in the age group of >40. The highest frequency assigned to age group of 41-50. Over 94% (n=172) held at least a college diploma.

Table 1: Status of the participants' demographics (n=183)

	Gender		Age					Education			
	Male	Female	≤ 20	21-30	31-40	41-50	≥ 51	Secondary	College	Bachelor	≥Master
N	99	84	0	11	36	66	70	11	84	63	25
%	54.1	45.9	0.0	6.0	19.7	36.1	38.3	6.0	45.9	34.4	13.7

Note: Gender was coded as a binary variable (1 = male, 2 = female). Age was measured using five ordered categories, with higher values indicating older age groups. Education level was captured using seven categories, where higher scores represent higher levels of formal education attained by the respondents.

5.2. Assessment of Measurement and Structural Model

Before applying SEM using the PLS approach, it is essential to verify that independent variables are not highly collinear. Multicollinearity can bias parameter estimates and undermine model validity. A common check is the correlation matrix, where values above 0.80 suggest potential multicollinearity (Oguntunji & Makram, 2019; Berry & Feldman, 1985). In this study (Table 2), correlation among variables, while significant at the 0.01 level, remained below 0.80, indicating that multicollinearity is not a concern.

Table 2: Matrix of correlation between independent variables

		OPT	OVC
OPT	**Optimism**	1	
OVC	**Overconfidence**	0.475**	1

Note:**p<0.01 Correlations without any asterisks are insignificant.
Correlations above 0.80 are typically viewed as an indication of multicollinearity, suggesting that the variables may overlap and distort regression estimates (Dormann et al., 2013; Gujarati & Porter., 2009)

Beyond the correlation analysis, this study also assessed collinearity using variance inflation factor (VIF) and tolerance statistics. As shown in Table 3, all VIF values were under 5, which is within the widely accepted limit (Jeng, 2023), suggesting no collinearity concerns. In addition, some scholars propose a stricter cutoff of VIF < 3.3 for PLS-SEM. The present findings also satisfy this more conservative guideline, confirming that multicollinearity is not an issue.

Table 3: VIF of the independent variables

Variables	OPT1	OPT2	OPT3	OPT4	OPT5	OVC1	OVC2	OVC3	OVC4	OVC5
Sig.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tolerance	0.672	0.364	0.674	0.846	0.762	0.750	0.501	0.566	0.623	0.355
VIF	1.489	2.748	1.484	1.182	1.312	1.333	1.997	1.768	1.605	2.818

Note: VIF < 5 → Generally considered acceptable; multicollinearity is not a serious issue.
VIF between 5 and 10 → Indicates moderate multicollinearity; may be tolerable depending on the context but should be checked carefully.
VIF > 10 → Problematic; strong multicollinearity is present, and corrective measures (e.g., removing/reducing variables, combining predictors, or using techniques like ridge regression) are usually needed (Jeng, 2023)

All variables showed VIF values below 3, comfortably within the accepted threshold. This result confirms that multicollinearity is not present in the dataset. In other words, the predictors are not excessively correlated, and each contributes distinct information to the model. As a result, all independent variables can be retained for subsequent analysis without concerns about inflated standard errors or unstable coefficient estimates.

Also, the reliability and validity of the constructs were evaluated, with the results presented in Table 4. The first criterion used for this assessment was Cronbach's alpha. A minimum threshold of 0.70 is generally considered acceptable (Ekolu & Quainoo, 2019), and all constructs exceeded this value, indicating good internal consistency and satisfactory reliability. In addition, the second criterion, Rho-A, also falls within the acceptable range. The Rho-A values are 0.741and 0.745 for optimism and overconfidence respectively, 0.767 for financial literacy, and 0.737 for the EEs' investment outcomes indicating satisfactory reliability. The third criterion, and composite reliability, also demonstrates acceptable levels. The values range from 0.747 to 0.826, suggesting strong internal consistency and confirming good composite reliability across the constructs. As shown in the table, convergent validity was assessed using the Average Variance Extracted (AVE). The AVE values for all constructs ranged between 0.542 and 0.592, exceeding the recommended threshold of 0.50 (Fornell and Larcker, 1981). This indicates that each construct explains more than half of the variance in its indicators, thereby confirming that convergent validity has been adequately established.

Table 4: Reliability and validity of the constructs

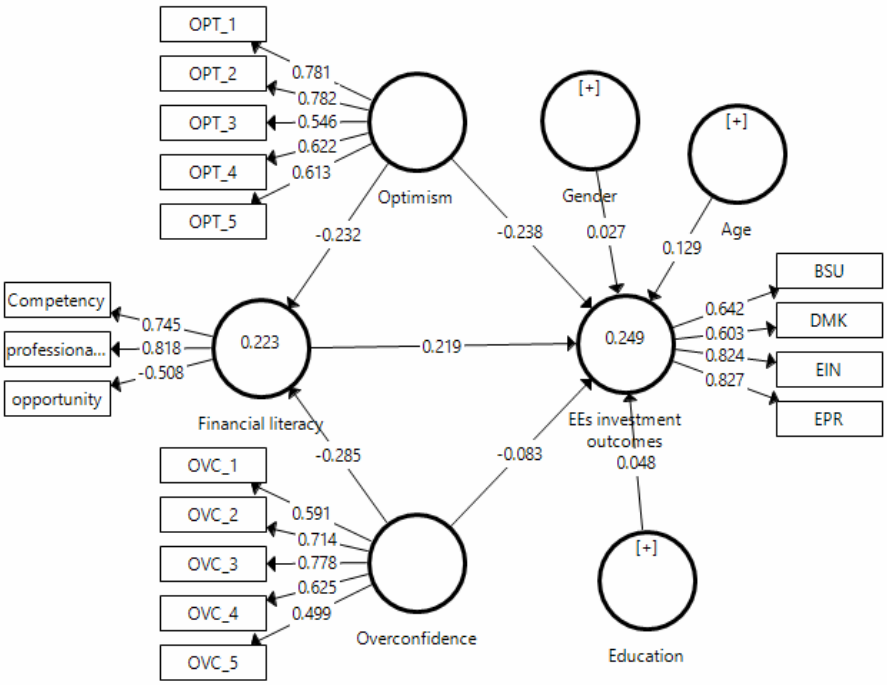
Construct	Coronach- α	rho-A	Composite reliability	AVE
Optimism	0.741	0.730	0.805	0.557
Overconfidence	0.745	0.768	0.779	0.542
Financial literacy	0.767	0.753	0.747	0.559
EEs' investment outcomes	0.737	0.764	0.826	0.592

Note: acceptable value for Coronach- α is >0.7, rho-A is >0.7, CR is >0.7, and AVE is >0.5 (Fornell and Larcker, 1981)

In this regard, the factor loadings for each of the indicators were calculated (Figure 2) to assess the extent to which the observed variables represent their respective latent constructs. Factor loading essentially reflects the correlation between an indicator and its underlying construct, with higher values demonstrating stronger associations. According to established guidelines, a loading value greater than 0.40 is considered

acceptable, provided that the result is also statistically significant, which is commonly determined by a t-value exceeding 1.96 (Table 5).

Figure 2: Loading values of the indicators



As presented in Figure 2, the factor loadings in this study surpass the minimum threshold of 0.40, thereby confirming the adequacy of the measurement model. This suggests that the indicators selected for each construct have sufficient explanatory power and contribute meaningfully to the representation of their latent variables.

On the other hand, the results presented in Table 5 report the t-values associated with the factor loadings. As shown, the t-values range between 4.36 and 24.12, which are substantially higher than the critical threshold of 1.96 at the 0.05 significance level. Exceeding this threshold indicates that the factor loadings are statistically significant and not a result of random variation. Therefore, these results provide further evidence that the indicators are reliable and contribute meaningfully to their respective constructs.

Table 5: Outer loading of the items

Measures		Optimism		Overconfidence		Financial literacy		EEs investment	
		Loading factor	t-value	Loading factor	t-value	Loading factor	t-value	Loading factor	t-value
OPT_1	Expectation of positive entrepreneurial outcomes	0.781	20.479						
OPT_2	Belief that challenges will work in one's favor	0.782	22.070						
OPT_3	Confidence in positive future business outcomes	0.546	7.090						

	Measures	Optimism		Overconfidence		Financial literacy		EEs investment	
		Loading factor	t-value	Loading factor	t-value	Loading factor	t-value	Loading factor	t-value
OPT_4	Anticipation of successful decision results	0.622	8.996						
OPT_5	Belief that outcomes will improve despite uncertainty	0.613	8.688						
OVC_1	Overestimation of entrepreneurial abilities			0.591	5.092				
OVC_2	Excessive confidence in prediction accuracy			0.714	9.499				
OVC_3	Strong reliance on past experience in new situations			0.778	15.920				
OVC_4	Tendency to overlook risks due to high self-trust			0.625	7.258				
OVC_5	Belief in higher decision accuracy than reality			0.499	3.860				
COM	Financial competence					0.745	11.714		
PRF	Financial professionality					0.818	17.201		
OPP	Financial opportunity					0.508	4.359		
EIN	Entrepreneurial Intentions							0.642	8.411
BSU	Business sustainability							0.603	8.227
DMK	Decision-making							0.824	23.213
EPR	Entrepreneurial performance							0.827	24.117

Additionally, two measures were used to assess discriminant validity: the Fornell and Larcker criterion and the Heterotrait-Monotrait (HTMT) correlation ratio, both of which evaluate the degree of correlation between constructs. As shown in Table 6, the square root of the AVE for heuristics is 0.711, which exceeds its correlations with other constructs in the same column, including decision-making and success of EEs' investment. Similarly, the square root of the AVE for decision-making is 0.755, the highest value in its corresponding column. Also, based on the HTMT ratio, discriminant validity is supported. The accepted threshold for the HTMT index is 0.90 (Yusoff et al., 2024); values below this indicate that the constructs are sufficiently distinct. As shown in the table, all HTMT values are below 0.90, confirming that the research instrument demonstrates acceptable discriminant validity.

Table 6: Discriminant validity based on Fornell and Larcker and Heterotrait-Monotrait criteria

Construct	Fornell & Larcker ratio				Heterotrait-Monotrait ratio			
	EEIO	FLI	OPT	OVC	EEIO	FLI	OPT	OVC
EEs' investment outcomes	**0.732**				-			
Financial literacy	0.387	**0.703**			0.603	-		
Optimism	-0.414	-0.422	**0.676**		0.573	0.637	-	
Overconfidence	0.366	-0.439	0.665	**0.648**	0.501	0.743	0.757	-

Finally, before testing the hypotheses, it is also necessary to assess the fit of the model. Evaluating model fit ensures that the proposed structural model adequately represents

the data and provides reliable results. For this purpose, Smart-PLS fit indices such as SRMR, d_ULS, d_G, Chi-square, and NFI were examined (see Table 7).

Table 7: Model fit

	Saturated model	Estimated model
SRMR	0.091	0.091
d_ULS	0.981	0.981
d_G	0.578	0.578
Chi-square	585.279	585.279
NFI	0.911	0.911

The overall model fit was evaluated using SRMR, d_ULS, d_G, the chi-square statistic, and NFI for both the saturated and estimated models. As shown in the results (SRMR = 0.091; d_ULS = 0.981; d_G = 0.578; χ^2 = 585.279; NFI = 0.911), the indices for the saturated and estimated models are identical, indicating stable and consistent estimation. The SRMR value of 0.091 is slightly above the strict criterion of 0.08 but still within an acceptable range for PLS-SEM models, particularly when models contain multiple constructs and indicators. More importantly, the NFI value of 0.911 exceeds the recommended threshold of 0.90, demonstrating a strong comparative model fit relative to the null model. The d_ULS and d_G values are below typical upper bound cutoffs, and interpretation would normally consider their bootstrapped confidence intervals; however, the reported values indicate no issues with extreme discrepancies between the empirical and model-implied correlations. Overall, the updated indices suggest that the model exhibits acceptable to good fit, providing support for the adequacy of the measurement and structural specifications after refinement.

5.3. Hypotheses Tests

After establishing the adequacy of both the measurement and structural models, the study proceeds to test the proposed research hypotheses. Specifically, it investigates the impact of optimism and overconfidence, treated as the independent variables, on financial literacy as mediator and EEs' investment outcomes as dependent variable. Additionally, the potential effects of gender, age and education are examined to determine whether these demographic factors influence the relationship between the variables or direction of the observed relationships.

Table 8: total path estimates

	β	*SD*	*t*	*p*
Direct path				
Gender >>> EEs' investment outcomes	0.027	0.068	0.390	0.696
Age >>> EEs' investment outcomes	0.129	0.077	1.673	0.094
Education >>> EEs' investment outcomes	0.048	0.056	0.852	0.394
Optimism>>>Financial literacy	-0.232	0.090	2.594	0.010
Overconfidence >>> Financial literacy	-0.285	0.089	3.201	0.001
Optimism >>> EEs' investment outcomes	-0.250	0.105	2.384	0.017
Overconfidence >>> EEs' investment outcomes	-0.094	0.121	0.779	0.436
Financial literacy >>> EEs' investment outcomes	0.219	0.083	2.885	0.004
Indirect path				
Optimism >>> Financial literacy >>> EEs' investment outcomes	-0.058	0.028	1.995	0.044
Overconfidence >>> Financial literacy >>> EEs' investment outcomes	-0.068	0.036	1.977	0.041

Figure 3 and Table 8 present the results of the hypothesis tests derived from the structural model. They illustrate the hypothesized relationships along with the total path coefficients, while Table 9 provides a detailed summary of the outcomes for each hypothesis.

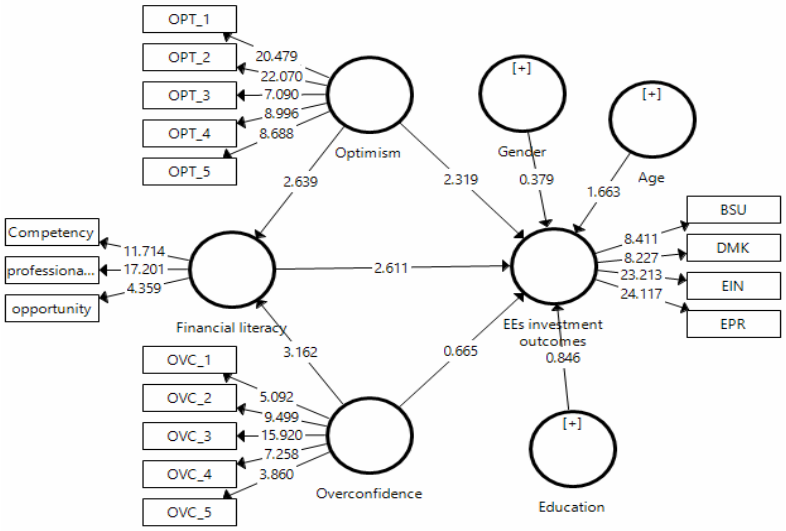
Given the p-values are less than 0.05, the first hypothesis examining direct relationships between optimism and EEs investment outcomes is supported (p=0.017, β=-0.250). The regression coefficients indicate that a one-unit increase, for example, in optimism is associated with 25% in EEs' investment outcomes. The negative sign of the regression coefficients indicate reverse relationships between the variables involved. However, hypothesis 2, addressing the relationships between overconfidence and EEs investment outcomes (p>0.05), is not statistically significant and therefore it does not confirm.

Table 9: the hypotheses testing

		β	*SD*	*t*	*p*	result
Hypothesis						
H1	Optimism >>> EEs' investment outcomes	-0.250	0.105	2.384	0.017	supported
H2	Overconfidence >>> EEs' investment outcomes	-0.094	0.121	0.779	0.436	N/A
Mediation roles						
H3	Optimism >>> Financial literacy >>> EEs' inv. outcomes	-0.058	0.028	1.995	0.044	supported
H4	Overconfidence >>> Financial literacy >>> EEs' inv. outcomes	-0.068	0.036	1.977	0.041	supported

On the other hand, the mediation analysis indicates that financial literacy plays a significant role in shaping the effects of the predictors on ethnic entrepreneurs' investment outcomes. The indirect effect of optimism through financial literacy was statistically significant (β = –0.058, p = 0.044), demonstrating an indirect influence on investment outcomes. The indirect effect of overconfidence through financial literacy was also statistically significant (β = –0.068, p = 0.041), indicating a mediating pattern for overconfidence. Overall, these results show that financial literacy mediates both relationships, with slightly different effect sizes across the two pathways.

Figure 3: The path model



Finally, the analysis of control variables showed that demographic characteristics, including gender, age, and education, did not exert significant effects on the model's relationships. All corresponding p-values exceeded the 0.05 threshold, indicating that none of these variables had a statistically meaningful impact on the associations among the main constructs. These results suggest that the observed relationships between optimism, overconfidence, financial literacy, and investment outcomes remain stable regardless of respondents' demographic profiles.

6. Discussion

6.1. Overview of Key Findings

The results of this study reveal several important empirical patterns regarding the cognitive characteristics of ethnic entrepreneurs and their investment outcomes. First, optimism exhibited a significant negative direct effect on investment outcomes, indicating that higher levels of optimistic bias were associated with lower-than-expected actual investment success, reflecting observed results rather than prior intentions or assessments. In contrast, overconfidence did not show a significant direct effect, suggesting that its influence may operate indirectly, for example through decision-making processes or financial management.

Both optimism and overconfidence were found to have negative associations with the effective application of financial knowledge, demonstrating that these cognitive biases can limit entrepreneurs' ability to grasp, interpret, and apply financial concepts meaningfully in their investment decisions. Financial literacy, conceptualized as a combination of financial knowledge, interpretative ability, practical skills, and the capacity to organize and manage enterprise financing, had a strong positive effect on investment outcomes. This confirms its central role in enabling ethnic entrepreneurs to make sound, evidence-based investment decisions. Additionally, financial literacy mediated the effects of both optimism and overconfidence, highlighting that part of the influence of these cognitive traits on investment outcomes flows through their impact on how financial knowledge and skills are applied in practice.

Finally, demographic variables (gender, age, and education) did not show statistically significant effects in this study. While prior literature suggests that gender may have a meaningful impact on entrepreneurial outcomes, particularly in ethnic entrepreneurship contexts, in this sample the primary explanatory mechanisms appear to be cognitive and financial rather than demographic, underscoring the importance of focusing on psychological traits and financial capabilities.

6.2. Interpretation of Direct Effects

The direct negative effect of optimism on investment outcomes provides strong evidence that optimistic bias can undermine the financial decision-making of ethnic entrepreneurs. Although optimism is traditionally viewed as a driver of entrepreneurial motivation and persistence (Carver & Scheier, 2014), prior behavioral research consistently shows that excessive optimism can lead to inaccurate assessments of market conditions, underestimated risks, and overcommitment to weak opportunities (Hmieleski & Baron, 2009; Puri & Robinson, 2007). For ethnic entrepreneurs, these effects may be amplified due to limited access to financial resources, constrained

networks, and structural barriers in mainstream markets (Salehi, 2026; Ram et al., 2008; Light et al., 2013). Optimistic assumptions may therefore translate into overinvestment in uncertain opportunities, neglect of critical market signals, or persistence in strategies that are less viable within their specific socio-economic context. The pattern found in this study aligns with these observations, indicating that optimism, when not grounded in realistic evaluation, can have particularly detrimental effects on financial and investment outcomes among ethnic entrepreneurs.

In contrast, overconfidence did not demonstrate a significant direct relationship with investment outcomes. This suggests that the influence of overconfidence may not be immediately reflected in financial results but instead operates indirectly through mechanisms such as financial literacy (Moore & Healy, 2008). For ethnic entrepreneurs, who often rely heavily on personal experience, informal networks, and self-guided learning due to limited institutional support (Kloosterman & Rath, 2001), overconfidence may lead to overestimating their abilities or underestimating financial risks without producing immediate observable effects on investment performance. While overconfidence can sometimes encourage persistence, opportunity-seeking, and rapid decision-making (Hayward et al., 2006), it may also result in neglecting critical financial information, underutilizing available resources, or failing to seek external advice. In this context, overconfident ethnic entrepreneurs may unknowingly make suboptimal financial choices that accumulate over time, indirectly affecting investment outcomes through reduced decision quality. The non-significant direct effect observed here emphasizes that the consequences of overconfidence are more subtle and operate primarily by shaping knowledge acquisition and risk assessment rather than directly determining short-term financial performance.

Financial literacy exhibited a strong positive effect on investment outcomes, reinforcing its role as a foundational capability for effective entrepreneurial decision-making (Lusardi & Mitchell, 2014; Van Rooij, Lusardi & Alessie, 2011). For ethnic entrepreneurs, who often face barriers such as limited access to formal financial education, language challenges, and restricted engagement with mainstream financial institutions (Light, Rezaei & Dana, 2013; Chaganti & Greene, 2002), financial literacy is particularly critical. In this study, ethnic entrepreneurs with higher financial literacy achieved better investment results, suggesting that financial knowledge allows them to evaluate opportunities more realistically, manage scarce resources efficiently, and mitigate risks associated with cognitive biases such as optimism and overconfidence. Moreover, financial literacy may enhance the ability to plan strategically, seek external advice when necessary, and adapt to changing market conditions, providing a practical mechanism to overcome structural and institutional constraints. The positive and significant direct relationship confirms that investment success depends not merely on psychological traits but heavily on the entrepreneur's ability to apply financial concepts in practice.

Lastly, the absence of significant effects for demographic variables such as gender, age, and education indicates that these characteristics do not meaningfully shape investment outcomes within this sample of ethnic entrepreneurs. These finding highlights that, in contexts where structural and resource limitations are salient, cognitive traits and financial literacy are more critical determinants of entrepreneurial

performance than demographic factors (Baron, 2007; Shane, 2003). It also suggests that the influence of optimism, overconfidence, and financial knowledge operates consistently across demographic subgroups within the ethnic entrepreneurial population examined.

6.3. Interpretation of Mediating Effects

The results show that financial literacy significantly mediates the relationships between optimism and overconfidence and investment outcomes among ethnic entrepreneurs. Specifically, optimism indirectly affects investment outcomes through financial literacy. This finding suggests that overly optimistic ethnic entrepreneurs may be less likely to acquire or effectively apply financial knowledge, which in turn undermines the quality of their investment decisions. At the same time, financial literacy has positive effects on ethnic entrepreneurs' investment outcomes. In ethnic entrepreneurial contexts, where formal financial guidance and institutional support are often limited, this indirect pathway highlights the critical role of financial literacy in translating entrepreneurial motivation into tangible outcomes. Excessive optimism may create a false sense of self-confidence and reduce engagement with financial planning, risk assessment, and informed decision-making (Hmieleski & Baron, 2009; Lusardi & Mitchell, 2014). By playing a mediating role, financial literacy explains how the psychological trait of optimism affects actual investment performance, suggesting that the detrimental effects of excessive optimism are not only direct but also operate through entrepreneurs' ability to manage financial knowledge effectively. This underscores that improving financial literacy can help mitigate the negative consequences of optimism on investment outcomes.

Similarly, overconfidence indirectly affects investment outcomes through financial literacy among ethnic entrepreneurs. Although overconfidence did not show a significant direct effect on investment performance, its negative impact emerges when considering its influence on financial knowledge. Overconfident ethnic entrepreneurs may overestimate their abilities, rely heavily on intuition, or underestimate the importance of structured financial planning, which can reduce engagement with financial education and effective application of financial concepts. In contexts where ethnic entrepreneurs face limited access to formal guidance, language barriers, and constrained networks, this mediating role of financial literacy is especially important. By shaping how overconfidence translates into actual investment behavior, financial literacy helps explain the subtle, indirect pathways through which cognitive biases affect performance (Moore & Healy, 2008; Lusardi & Mitchell, 2014). This suggests that strengthening financial literacy can mitigate the adverse effects of overconfidence, enabling ethnic entrepreneurs to make more informed, strategic, and effective investment decisions.

Taken together, these findings underscore that cognitive traits alone do not fully determine investment outcomes in ethnic entrepreneurship. Rather, the ability to acquire, interpret, and apply financial knowledge plays a central mediating role, shaping how both optimism and overconfidence influence investment performance. Financial literacy enables ethnic entrepreneurs to counterbalance the potential adverse effects of cognitive biases, facilitating more accurate risk assessment, strategic planning, and effective resource allocation. These results highlight that interventions

aimed at enhancing financial literacy are crucial, as they provide a mechanism through which psychological traits are translated into tangible entrepreneurial outcomes. The mediating role of financial literacy emphasizes the need for an integrated approach that combines behavioral insights with capability development to support sustainable and informed decision-making in ethnic minority business contexts.

6.4. Theoretical Contributions

This study makes several important theoretical contributions to the literature on ethnic entrepreneurship, cognitive biases, and financial literacy. First, it extends our understanding of how psychological traits, specifically optimism and overconfidence, influence the financial decision-making and investment outcomes of ethnic entrepreneurs. While prior research has examined these traits in general entrepreneurial contexts (Hmieleski & Baron, 2009; Moore & Healy, 2008), this study highlights their specific implications within ethnic minority populations, demonstrating that excessive optimism can directly undermine investment performance, whereas overconfidence primarily operates through indirect mechanisms. This nuanced perspective enriches behavioral entrepreneurship theory by showing that the effects of cognitive biases are context-dependent and mediated by critical capabilities. In addition, the study provides empirical evidence for the mediating role of financial literacy in ethnic entrepreneurship. By demonstrating that financial literacy explains how optimism and overconfidence translate into investment outcomes, the research integrates behavioral and capability-based perspectives, showing that cognitive traits alone are insufficient to predict performance. This contribution aligns with and extends prior work on financial literacy as a protective mechanism (Lusardi & Mitchell, 2014; van Rooij, Lusardi & Alessie, 2011) and highlights its pivotal role in minority entrepreneurial contexts, where formal financial guidance is often limited.

Moreover, the findings contribute to the literature on ethnic entrepreneurship by emphasizing the interaction between individual cognitive characteristics and structural constraints. The results suggest that psychological traits influence outcomes differently depending on the presence of financial knowledge and access to resources. By integrating cognitive biases, financial literacy, and investment performance in a single model, this study provides a comprehensive framework for understanding how behavioral and capability factors jointly shape ethnic entrepreneurs' decision-making and success. This framework can guide future research exploring interventions aimed at enhancing financial literacy to mitigate the negative consequences of cognitive biases in minority business settings. Overall, the study underscores the importance of considering both behavioral and capability dimensions in entrepreneurship research, particularly in ethnic minority contexts. By highlighting the mediating role of financial literacy, it bridges gaps between cognitive psychology, financial education, and ethnic entrepreneurship, offering a robust theoretical basis for understanding and supporting the performance of ethnic entrepreneurs in resource-constrained and uncertain environments.

6.5. Practical Implications

The findings of this study offer several actionable insights for policymakers, educators, and practitioners aiming to support ethnic entrepreneurs. First, the negative effects of

excessive optimism and overconfidence on investment outcomes highlight the need for targeted behavioral interventions. Training programs and workshops can help ethnic entrepreneurs recognize cognitive biases in their decision-making, develop realistic expectations, and adopt structured approaches to evaluating opportunities and risks. Such interventions can reduce the likelihood of overinvestment, misallocation of resources, and persistence in ineffective strategies. Furthermore, the mediating role of financial literacy emphasizes its importance as a practical lever for improving entrepreneurial performance. Financial education initiatives tailored to ethnic entrepreneurs should focus on enhancing both knowledge and practical application, including budgeting, investment evaluation, risk assessment, and strategic resource management. By strengthening financial literacy, ethnic entrepreneurs can counterbalance the potentially detrimental effects of optimism and overconfidence, make informed investment decisions, and better navigate resource constraints and market uncertainties.

Additionally, institutions and support organizations should consider providing accessible financial advisory services, mentorship programs, and learning resources that account for the specific challenges faced by ethnic entrepreneurs, such as limited access to formal networks, language barriers, and institutional biases. These support mechanisms can complement cognitive and educational interventions, fostering an environment in which ethnic entrepreneurs can translate motivation and psychological traits into sustainable business outcomes. Finally, these practical implications suggest that interventions targeting both psychological and capability dimensions, rather than focusing on demographic characteristics, are likely to be the most effective in enhancing investment performance among ethnic entrepreneurs. Policymakers and practitioners can use these insights to design comprehensive support programs that address both the cognitive and practical needs of ethnic minority business owners, ultimately promoting more successful and resilient entrepreneurial ventures.

6.6. Limitations and Future Research

Despite its contributions, this study has several limitations that should be considered when interpreting the findings. First, the cross-sectional design limits the ability to draw causal inferences between cognitive traits, financial literacy, and investment outcomes. Future research could employ longitudinal designs to examine how optimism, overconfidence, and financial literacy influence investment performance over time, capturing dynamic changes in decision-making and outcomes. Also, the study relies on self-reported measures for psychological traits and financial literacy, which may introduce response biases. Although validated scales and pilot testing were used to enhance reliability and validity, future research could incorporate objective measures of financial literacy, investment decisions, and performance to provide more robust evidence.

In addition, the study focuses on a specific population of ethnic entrepreneurs, which may limit generalizability to other entrepreneurial contexts or ethnic groups. Future studies could replicate the model across different countries, sectors, and minority populations to examine the universality of the findings and explore how cultural, institutional, and market differences moderate these relationships. While the study controlled for demographic variables such as age, gender, and education, other

contextual and environmental factors, such as access to social networks, institutional support, or market conditions, were not included. Future research could integrate these factors to provide a more comprehensive understanding of the mechanisms influencing ethnic entrepreneurs' investment outcomes. Finally, the study focused primarily on investment outcomes as the dependent variable. Future research could expand the scope to include other measures of entrepreneurial success, such as business growth, sustainability, adaptation, and social impact, to capture the multidimensional nature of ethnic entrepreneurship.

Addressing these limitations in future research will strengthen the theoretical and practical understanding of how cognitive traits and financial literacy interact to shape the success of ethnic entrepreneurs, providing more nuanced guidance for interventions and policy design.

7. Conclusion

This study highlights the nuanced interplay between cognitive traits and financial capabilities in shaping the investment outcomes of ethnic entrepreneurs. Beyond identifying the direct and indirect effects of optimism and overconfidence, the findings underscore the pivotal role of financial literacy as a mechanism through which psychological tendencies are transformed into tangible performance. The research suggests that fostering financial knowledge, rather than solely targeting motivational or demographic factors, can empower ethnic entrepreneurs to navigate uncertainty, mitigate bias, and enhance strategic decision-making. By emphasizing the mediating function of financial literacy, this study provides a fresh perspective on how behavioral and capability-based factors converge to influence entrepreneurial success, offering a targeted pathway for interventions that support resilient and informed ethnic entrepreneurship.

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