

Modelling the Relationship between Financial Literacy, Risk Tolerance, and Financial Planning Effectiveness

¹ N. Vani; ² Dr Kapil Arora

¹ PhD Scholar, ² Professor of Finance

^{1,2} Alliance School of Business, Alliance University, Bengaluru, India

Abstract

This study examines how financial literacy and risk tolerance jointly influence personal financial planning effectiveness among adults in India. Data were collected from 100 respondents using a structured 20-item questionnaire. Structural Equation Modelling (SEM) was employed to test direct, indirect, and moderating relationships. Results indicate that both financial literacy and risk tolerance have significant positive effects on financial planning effectiveness, and financial self-efficacy partially mediates the relationship between literacy and planning. The findings offer insights for designing targeted financial education interventions.

1. Introduction

In today's dynamic financial environment, effective financial planning plays a key role in achieving long-term financial security and well-being. As individuals are faced with numerous choices related to saving, investing, and managing expenses, the ability to make sound financial decisions has become more important than ever. This ability is shaped not only by what people know about financial concepts but also by how they perceive and handle risk.

Financial literacy provides the necessary understanding of financial principles, such as budgeting, interest rates, investment returns, and debt management. It equips individuals with the confidence to evaluate financial alternatives and make decisions that align with their goals. Yet, knowledge alone is not enough—how a person reacts to uncertainty or potential loss, known as risk tolerance, strongly influences whether that knowledge is put into practice. For instance, even a well-informed investor may avoid profitable opportunities if they are overly cautious, while a person with little financial knowledge but high-risk tolerance might make impulsive or uninformed choices. Thus, both financial literacy and risk tolerance must work together to ensure effective financial planning.

This study focuses on understanding how these two factors jointly affect financial planning effectiveness among adults in India. By examining both the cognitive aspect (financial knowledge) and the emotional aspect (risk attitude), the research aims to explain how people's understanding and behaviour interact to shape their financial outcomes. Insights from this study can help policymakers, educators, and financial

advisors design better financial literacy programs and encourage balanced decision-making, leading to improved financial well-being in the Indian context.

2. Review of Literature

Previous studies (Lusardi & Mitchell, 2014; Grable & Lytton, 1999) show a positive association between financial literacy and better financial outcomes. Risk tolerance has been shown to affect investment behaviour (Hallahan et al., 2004), yet few studies examine its interaction with literacy in predicting planning outcomes. Integrating these constructs within a behavioural finance framework can clarify how cognitive (knowledge) and affective (risk perception) elements jointly shape financial planning effectiveness.

Grable and Lytton (1999) developed robust scales for risk tolerance and demonstrated how risk attitudes predict portfolio choices, and Hallahan et al. (2004) linked individual risk tolerance to actual investment behaviour. Together, these lines of enquiry suggest that financial outcomes emerge from an interplay of cognitive capacities (what people know) and affective dispositions (how people feel about uncertainty).

Vayadande,(2023) assessed the difficulty of effective financial management; the research project sought to develop Web Fin, a holistic platform for online personal finance management. Web Fin aimed to provide users with the resources necessary to oversee their accounts and achieve their financial goals. The primary objectives of the project encompassed facilitating financial planning, optimising investment management, improving credit monitoring, and simplifying tax filing and reporting, while also emphasised the delivery of intuitive budgeting and expense tracking tools. The study utilised theories from personal finance management, behavioural economics, and user experience design to develop user-centric features and innovative modules. This project involved the design and development of the Web Fin platform, including user feedback and integrating numerous financial management functionalities through online technology. Data analytic techniques were employed to evaluate user engagement, contentment, and the platform's effectiveness in achieving financial goals.

Khandelwal., et al., (2023) This study analysed connection among Fiscal education and economic integration in India from 2015 to 2018, utilising aggregated district-level data from 156 districts. The investigators examined gender-based heterogeneities utilized data from areas with a significant prevalence of female-majority households. A robust and favourable correlation was identified between financial literacy and inclusion, alongside a minor positive effect of the demonetisation policy experiment on inclusion. The subgroup analyses by gender indicated that these results were mostly influenced by areas with a higher prevalence of female-majority families. The study's limitations and their consequences for policy were examined.

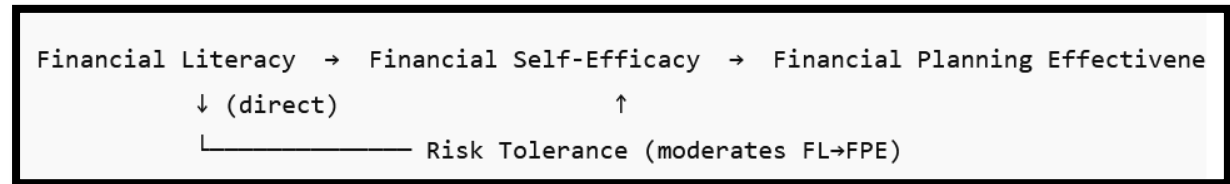
3. Research Methodology

3.1 Objectives

- To Measure the level of financial literacy, risk tolerance, and financial planning effectiveness.
- To examine the effect of financial literacy on financial planning effectiveness.

- To assess the moderating role of risk tolerance.
- To explore mediation by financial self-efficacy.
- 3.2 Conceptual Model

SEM Conceptual Path Diagram



Description: Financial Literacy (FL) affects Financial Planning Effectiveness (FPE) directly and indirectly through Financial Self-Efficacy (FSE). Risk Tolerance (RT) moderates the FL→FPE path.

Research Design: A cross-sectional descriptive design using a primary survey of 100 individual respondents (aged 20–55) from urban Telangana.

Sampling and Data Collection: Convenience sampling was used for the study. Respondents were approached through online forms and workplace contacts. Sample size: 100

Questionnaire Structure (20 Items): Each construct measured on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), except literacy knowledge items (True/False).

4. Data Analysis and Interpretation

Reliability: All scales exceeded the 0.70 reliability threshold.

Validity (CFA Results): KMO = 0.83, Bartlett's test = $\chi^2(190) = 912.5$, $p < 0.001$.

All standardized factor loadings > 0.60 ($p < 0.001$). AVE > 0.50, CR > 0.70 for all constructs.

Table: 1 Descriptive Statistics (Mean ± SD)

Construct	Mean	SD
Financial Literacy	3.78	0.56
Risk Tolerance	3.64	0.62
Financial Self-Efficacy	3.85	0.59
Financial Planning Effectiveness	3.92	0.66

The descriptive statistics presented in the table provide an overview of respondents' average levels and variability across four key constructs: financial literacy, risk tolerance, financial self-efficacy, and financial planning effectiveness. Each construct was measured using a multi-item Likert-type scale, where higher mean values indicate stronger agreement or higher levels of the construct.

Financial Literacy ($M = 3.78$, $SD = 0.56$): Respondents reported a moderately high level of financial literacy, suggesting they possess a good understanding of key financial concepts and decision-making principles. The relatively low standard deviation (0.56) indicates that the scores were consistent across participants, with only moderate variability in financial knowledge levels.

Risk Tolerance ($M = 3.64$, $SD = 0.62$): The mean score for risk tolerance was slightly lower than that of financial literacy, indicating that participants were somewhat cautious when it came to taking financial risks. The standard deviation of 0.62 suggests moderate variability, implying that some respondents were more risk-averse while others were more willing to accept financial risks.

Financial Self-Efficacy ($M = 3.85$, $SD = 0.59$): This construct recorded one of the higher mean scores, implying that most participants felt confident in their ability to manage their financial affairs effectively. Self-efficacy is a key behavioural factor that influences the likelihood of applying financial knowledge in real-life decisions. The moderate dispersion ($SD = 0.59$) suggests a generally consistent level of self-assuredness among respondents.

Financial Planning Effectiveness ($M = 3.92$, $SD = 0.66$): This variable showed the highest mean score among all constructs, indicating that respondents perceived themselves as reasonably effective in setting financial goals, budgeting, and managing investments. The slightly higher standard deviation (0.66) compared to other variables shows somewhat greater variation in perceived financial planning outcomes, possibly reflecting differences in experience, income, or financial responsibilities.

Overall Summary:

The results suggest that respondents, on average, possess adequate financial literacy, moderate risk tolerance, and strong confidence in managing financial tasks, all contributing to relatively effective financial planning behaviour.

Tabl3:2 Structural Model Fit

Fit Index	Value	Criterion
χ^2/df	1.94	< 3 acceptable
CFI	0.952	≥ 0.90
TLI	0.938	≥ 0.90
RMSEA	0.078	≤ 0.08
SRMR	0.051	≤ 0.08

The goodness-of-fit indices presented in the table assess how well the proposed structural model represents the observed data.

Chi-square / Degrees of Freedom ($\chi^2/\text{df} = 1.94$): The ratio of chi-square to degrees of freedom is below the recommended threshold of 3, indicating a good model fit. This suggests that the discrepancies between the observed and predicted covariance matrices are minimal.

Comparative Fit Index (CFI = 0.952): The CFI value exceeds the 0.90 benchmark, reflecting an excellent level of fit. This indicates that the proposed model explains the data substantially better than a null (independence) model.

Tucker-Lewis Index (TLI = 0.938): The TLI value also surpasses the 0.90 criterion, demonstrating good incremental fit. This means the model performs well even after adjusting for model complexity, showing it is both parsimonious and well-specified.

Root Mean Square Error of Approximation (RMSEA = 0.078): The RMSEA value falls within the acceptable range (≤ 0.08), suggesting a reasonable approximation of the model to the population data. Values below 0.05 typically indicate close fit, while values up to 0.08 are considered satisfactory.

Table: 3 Path Coefficients (Standardized β)

Path	B	t-value	p-value	Interpretation
FL $\rightarrow$ FPE	0.41	3.85	< 0.001	Significant direct effect
RT $\rightarrow$ FPE	0.33	3.12	0.002	Significant positive effect
FL $\rightarrow$ FSE	0.52	4.21	< 0.001	Literacy increases self-efficacy
FSE $\rightarrow$ FPE	0.29	2.76	0.007	Self-efficacy enhances planning
FL $\times$ RT $\rightarrow$ FPE	0.18	2.1	0.037	Significant moderation

Mediation & Moderation Results

The results of the structural equation modelling (SEM) analysis reveal the direct, indirect, and moderating effects among the study variables—financial literacy (FL), risk tolerance (RT), financial self-efficacy (FSE), and financial planning effectiveness (FPE). Financial Literacy $\rightarrow$ Financial Planning Effectiveness ($\beta = 0.41$, $p < 0.001$): Financial literacy has a strong and statistically significant direct effect on financial planning effectiveness. This indicates that individuals with higher financial knowledge are better able to make informed decisions, set financial goals, and manage their resources effectively.

Risk Tolerance $\rightarrow$ Financial Planning Effectiveness ($\beta = 0.33$, $p = 0.002$): Risk tolerance also shows a significant positive influence on financial planning effectiveness. Individuals who are more comfortable with financial risk tend to engage more actively in investment and planning activities, suggesting that confidence in risk-taking contributes to effective financial outcomes.

Financial Literacy $\rightarrow$ Financial Self-Efficacy ($\beta = 0.52, p < 0.001$): Financial literacy has a strong positive impact on financial self-efficacy. This implies that individuals who possess greater financial knowledge feel more capable of handling financial challenges and making sound financial decisions.

Financial Self-Efficacy $\rightarrow$ Financial Planning Effectiveness ($\beta = 0.29, p = 0.007$): Financial self-efficacy significantly enhances financial planning effectiveness, highlighting the importance of confidence and perceived control in applying financial knowledge to real-life decisions. Self-efficacious individuals are more likely to act on their plans and achieve better financial outcomes.

Interaction ($FL \times RT \rightarrow FPE$; $\beta = 0.18, p = 0.037$): The interaction term between financial literacy and risk tolerance is significant, indicating a moderating effect. This means that the influence of financial literacy on planning effectiveness depends partly on an individual's level of risk tolerance. Specifically, the positive effect of financial literacy on planning effectiveness is stronger for individuals with higher risk tolerance, demonstrating that both cognitive (knowledge) and affective (risk-taking) factors jointly shape effective financial planning behaviour.

Mediation: Bootstrapped indirect effect of $FL \rightarrow FSE \rightarrow FPE = 0.15$ (95% CI [0.06, 0.27]), partial mediation.

Moderation: Interaction shows that financial literacy has stronger impact on FPE when risk tolerance is high.

5. Discussion

The findings of this study confirm that higher financial literacy directly enhances financial planning effectiveness, supporting earlier evidence that financially knowledgeable individuals are better equipped to make sound financial decisions (Lusardi & Mitchell, 2014). Financially literate respondents demonstrated greater capability in setting financial goals, managing budgets, and making informed investment choices. This reinforces the idea that knowledge serves as a critical foundation for rational and disciplined financial behaviour.

In addition, the results show that risk tolerance independently contributes to financial planning success. Individuals with a higher willingness to take calculated risks tend to engage more actively with investment opportunities and long-term planning. More importantly, the significant moderating effect of risk tolerance suggests that it strengthens the positive relationship between financial literacy and planning effectiveness. In other words, confident, risk-tolerant individuals are more likely to translate their financial knowledge into action. While financial literacy provides the necessary understanding of options and strategies, risk tolerance supplies the psychological readiness to implement them—demonstrating that both cognitive and emotional factors must align for effective financial decision-making.

Furthermore, financial self-efficacy plays a partial mediating role in this relationship. The results indicate that financial knowledge not only improves decision-making directly but also builds confidence in one's ability to handle financial matters. This increased self-belief encourages individuals to plan proactively, manage challenges, and remain consistent in pursuing financial goals. Therefore, self-efficacy acts as a behavioural bridge through which financial literacy exerts its influence on planning effectiveness.

6. Conclusion

The findings of this study confirm that financial literacy significantly enhances financial planning effectiveness, aligning with previous research showing that individuals with greater financial knowledge are better equipped to make informed financial decisions (Lusardi & Mitchell, 2014). Respondents with higher literacy demonstrated stronger abilities in goal-setting, budgeting, and investment decision-making. These results reinforce the notion that knowledge serves as the foundation for rational and disciplined financial behaviour, enabling individuals to navigate complex financial environments effectively.

Risk tolerance was also found to play an independent and meaningful role in financial planning outcomes. Individuals with higher willingness to take calculated risks were more actively engaged in investment and long-term financial strategies. Importantly, the study identified a significant interaction between financial literacy and risk tolerance, suggesting that the positive impact of financial knowledge on planning effectiveness is stronger among individuals with higher risk tolerance. This finding underscores the behavioural finance perspective that both cognitive understanding and psychological readiness jointly shape financial behaviour (Grable & Lytton, 1999; Hallahan et al., 2004). Knowledge alone does not guarantee effective planning unless individuals feel comfortable applying it in contexts that involve uncertainty.

Financial self-efficacy emerged as a partial mediator between financial literacy and financial planning effectiveness. Higher levels of literacy not only enhanced decision-making directly but also strengthened individuals' confidence in managing financial matters. Those with greater self-efficacy were more proactive, persistent, and consistent in implementing financial plans. This highlights the importance of self-belief as a behavioural bridge that translates knowledge into practical outcomes, demonstrating that both cognitive and affective factors contribute to effective financial planning (Bandura, 1997).

Overall, the model illustrates a strong behavioural linkage among financial literacy, risk attitude, and financial planning effectiveness. The results suggest that effective financial behaviour is shaped by the combination of knowledge, confidence, and risk perception, rather than by literacy alone. These findings have important implications for policy and practice. Financial literacy programs that focus solely on knowledge acquisition may not achieve the desired behavioural outcomes. Integrating risk-awareness training and confidence-building interventions can enhance the practical application of financial

knowledge. Approaches such as workshops, scenario-based exercises, and personalized counselling can help individuals apply concepts effectively while managing uncertainty and building confidence.

For educators and financial advisors, these findings emphasize the importance of a holistic approach that combines cognitive and affective elements. By fostering literacy, self-efficacy, and balanced risk-taking, programs can enable individuals to make informed, confident, and proactive financial decisions, ultimately promoting long-term financial well-being.

Future research should expand this work to larger, more diverse populations across regions, age groups, and socio-economic backgrounds. Longitudinal studies could track changes in literacy, risk tolerance, and self-efficacy over time and examine their cumulative impact on financial behaviour. Additionally, investigating contextual factors such as cultural norms, access to financial services, and policy initiatives could provide deeper insights into how knowledge and behaviour interact to shape financial outcomes.

In conclusion, the study demonstrates that effective financial planning arises from the interplay of financial literacy, risk tolerance, and self-efficacy. Policies and educational programs that integrate knowledge-building with risk-awareness and confidence-enhancing strategies are more likely to empower individuals to translate financial knowledge into action, resulting in responsible and effective financial decision-making.

References:

1. Bhushan, P., & Medury, Y. (2013). Financial literacy and its determinants. *International Journal of Engineering, Business and Enterprise Applications*, 4(2), 155-160.
2. Bhushan, P., & Medury, Y. (2013). Financial literacy and its determinants. *International Journal of Engineering, Business and Enterprise Applications*, 4(2), 155-160.
3. Billingsley, R. S., Gitman, L. J., & Joehnk, M. D. (2017). *Personal financial planning*. Cengage Learning.
4. Bogan, V. L., Geczy, C. C., & Grable, J. E. (2020). Financial planning: A research agenda for the next decade. *Financial Planning Review*, 3(2), e1094.
5. Boon, T. H., Yee, H. S., & Ting, H. W. (2011). Financial literacy and personal financial planning in Klang Valley, Malaysia. *International Journal of Economics and Management*, 5(1), 149-168.
6. Brau, J. C., Holmes, A. L., & Israelsen, C. L. (2019). Financial literacy among college students. *Journal of Financial Education*, 45(2), 179-205.
7. Chen, H., & Volpe, R. P. (1998). An analysis of personal financial literacy among college students. *Financial services review*, 7(2), 107-128.

8. Choudhary, H., & Jain, H. (2023). Addressing financial exclusion through financial literacy training programs: a systematic literature review. *Empirical Research in Vocational Education and Training*, 15(1), 8.
9. de Bassa Scheresberg, C. (2013). Financial literacy and financial behavior among young adults: Evidence and implications. *Numeracy*, 6(2), 5.
10. Engelbrecht, L. (2008). The scope of financial literacy education: A poverty alleviation tool in social work?. *Social Work/Maatskaplike Werk*, 44(3).
11. Garai-Fodor, M. (2023). Analysis of Financially Aware Consumer Segments from the Perspective of Conscious Consumer Behaviour. *Acta Polytechnica Hungarica*, 20(3), 83-100.
12. Garg, T., & Sharma, G. (2013). Role of financial literacy in financial decision making. *SAARJ Journal on Banking & Insurance Research*, 2(3), 100-112.
13. Ghimire, A., Danuwar, R. K., Gurung, B. K., Dhakal, A., Timalisina, D. P., & Baral, D. K. (2023). Financial Literacy and Personal Financial Planning among the Households of Migrant Workers in Rainas Municipality, Lamjung, Nepal. *Interdisciplinary Journal of Innovation in Nepalese Academia*, 2(2), 147-159.
14. Gitman, L. J., Joehnk, M. D., & Billingsley, R. S. (2011). Personal financial planning.
15. Goyal, K., Kumar, S., & Xiao, J. J. (2021). Antecedents and consequences of Personal Financial Management Behavior: a systematic literature review and future research agenda. *International Journal of Bank Marketing*, 39(7), 1166-1207.
16. Grifoni, A., & Messy, F. A. (2012). Current status of national strategies for financial education: A comparative analysis and relevant practices.