

EXPLORING COGNITIVE BIASES AND EXTERNAL FACTORS IN CRYPTOCURRENCY INVESTMENT THROUGH AN EXTENDED TAM FRAMEWORK

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Abstract

The growing interest in cryptocurrency investment is driven by the allure of high returns, often amplified by media narratives and technological novelty. However, this enthusiasm frequently overlooks significant risks such as market volatility, fraud, hacking, and regulatory uncertainty. Cognitive biases, including the Ostrich Effect (Galai & Sade, 2003) and Pro-Innovation Bias (Rogers, 1976), distort decision-making. This study investigates the psychological, social, and knowledge-based factors influencing cryptocurrency investment decisions and proposes strategies to mitigate risks through improved financial education. Using an extended Technology Acceptance Model (TAM), the research explores the roles of social influence, financial knowledge, future outlook, along with perceived usefulness and ease of use in shaping investment intentions. The findings highlight that social influence ($B = .378, p < .001$), financial knowledge ($B = .349, p < .001$), and optimism about the future of cryptocurrencies ($B = .199, p < .001$) significantly impact the willingness to invest. Additionally, perceived usefulness ($B = .265, p < .001$) strongly predicts investment choices, while ease of use ($B = .112, p > .05$) has a negligible effect. Higher levels of social influence, financial knowledge, and optimism are associated with a stronger intention to invest in cryptocurrencies. These results suggest that targeted financial education can help reduce cognitive biases, promote a better understanding of cryptocurrency risks, and encourage safer investment choices.

Keywords: *Cryptocurrency investment, cognitive biases, financial education, Technology Acceptance Model (TAM), social influence.*

1. Introduction

Cryptocurrencies have emerged as a disruptive innovation, attracting investors with promises of high financial returns and technological advancement. However, their intangible nature and market volatility expose investors to significant risks, which are often overlooked due to cognitive biases like the Ostrich Effect (Galai & Sade, 2003) and Pro-Innovation Bias (Rogers, 1976). These biases lead individuals to underestimate risks while overestimating benefits. Media narratives further distort this perception, fueling an optimistic view of potential profits and downplaying the associated dangers (Shahzad et al., 2022). This study aims to examine how psychological, social, and knowledge-based factors influence cryptocurrency investment intentions and to develop strategies for reducing investment risks through enhanced financial education.

2. Methods

Qualitative Phase: Two focus groups (Kitzinger, 1994) were conducted via online platform (Zoom) involved participants ranged in age from 22 to 36 years to explore the motivations, biases, and knowledge gaps related to cryptocurrency investment. The first group consisted of individuals with no prior experience (4 males, 4 females), while the second included experienced cryptocurrency investors (4 males, 4 females). Each session lasted approximately 120 minutes and was guided by semi-structured questions. Thematic analysis (Braun & Clarke, 2006) was used to identify key themes including:

- **Emotional Drivers:** Participants highlighted **fear of missing out (FOMO)** and **excitement** as dominant factors influencing their investment choices.
- **Sources of Knowledge:** Investors relied heavily on social media, online forums, and influencers, often leading to biased or incomplete information.

- **Perceived Risks and Regulation Awareness:** Many participants underestimated regulatory risks and market volatility, reinforcing the presence of cognitive biases such as overconfidence and the Ostrich Effect. These themes informed the design of the survey questionnaire.

Quantitative Phase: The quantitative phase involved an online survey distributed to 306 participants (147 males, 159 females) aged 18-35. The survey collected data on sociodemographic variables, FOMO (Fear of Missing Out) (Przybylski et al., 2013), financial knowledge (both self-assessed and objective measures), and cryptocurrency confidence (adapted from Katona's Consumer Confidence Index, 1968). The survey also assessed Technology Acceptance Model (TAM) constructs such as perceived usefulness, perceived ease of use, and investment intentions using validated Likert-scale items (Davis, 1989). Data were analyzed using SPSS 28, and statistical techniques including correlations, regressions, t-tests, ANOVA, and mediation models were applied using PROCESS for SPSS (Hayes, 2022).

3. Results

The extended TAM model explained 49.4% of the variance in cryptocurrency investment intentions. Key findings include:

- **Social Influence:** A significant positive correlation ($r = 0.42, p < 0.001$) between social influence and perceived usefulness indicates that approval from peers and social networks enhances investment motivation (Venkatesh & Davis, 2000).
- **Financial Knowledge:** Self-assessed financial knowledge was positively correlated with investment intentions ($r = 0.47, p < 0.001$), although discrepancies between perceived and actual knowledge were evident. Higher objective financial literacy correlated with more cautious investment behavior ($r = -0.35, p < 0.01$) (Hastings et al., 2013; Zhao & Zhang, 2021).
- **Future Outlook:** Optimistic views on the future sustainability of cryptocurrencies strongly influenced investment intentions ($r = 0.51, p < 0.001$) (Katona, 1968).
- **Perceived Usefulness vs. Ease of Use:** While perceived usefulness ($r = 0.45, p < 0.001$) strongly predicted investment intentions, perceived ease of use had a negligible effect ($r = 0.12, p > 0.05$), highlighting the importance of perceived benefits over simplicity in decision-making (Davis, 1989).

4. Discussion

The findings highlight the critical role of both cognitive biases and external factors in shaping investment behavior. The qualitative phase revealed that overconfidence and emotionally driven decision-making were particularly evident in cryptocurrency investments, aligning with previous research on investors' optimistic bias despite historical market crashes (Galai & Sade, 2003). Additionally, social media and peer influence reinforced the Pro-Innovation Bias, leading investors to accept new technology uncritically while overlooking potential risks (Rogers, 1976). The quantitative phase highlighted the influence of psychological and external factors on investment decisions. Social influence enhanced perceived usefulness, which in turn increased investment intentions. Greater optimism about the future of cryptocurrencies also led to a higher willingness to invest. Perceived financial knowledge correlated with higher investment intentions, though higher objective literacy led to more cautious behavior (Hastings et al., 2013). Perceived usefulness was a stronger predictor than ease of use, emphasizing the importance of perceived benefits over simplicity.

These findings emphasize the need to bridge the gap between perceived and actual financial knowledge while addressing cognitive biases. As also partially highlighted in more recent studies (Shahzad et al., 2022), external factors such as media narratives and social influence significantly impact investment behavior. Financial institutions should develop targeted educational programs to enhance financial literacy and help mitigate these biases.

5. Limitations and future perspectives

This study has some limitations that warrant consideration. First, the sample is limited to individuals aged 18-36, which may not fully capture the investment behavior of older demographics who may have different risk tolerance and financial literacy levels. Future research could explore a broader age range to compare how different age groups perceive and react to cryptocurrency investment. Second, the reliance on self-reported data for financial knowledge and FOMO may introduce biases. Participants may overestimate their financial literacy or may not fully acknowledge the emotional drive behind their

investment decisions. Future research could employ a longitudinal approach to track changes in investor perceptions and behaviors over time. Future studies could also incorporate more objective measures of financial literacy and include longitudinal designs to assess changes in attitudes and behaviors over time. Lastly, while this study integrated external variables like social influence and financial knowledge into the TAM framework, other factors—such as regulatory awareness, media consumption patterns, and psychological traits—could provide additional insight into cryptocurrency investment intentions. Future research could extend this model by exploring these additional variables, as well as examining the role of regulation and investor protection in mitigating risks.

6. Conclusions

This study extends the Technology Acceptance Model by incorporating social influence, financial knowledge, and future outlook, providing a more comprehensive understanding of cryptocurrency investment intentions. The findings emphasize the need for financial education to mitigate cognitive biases and enhance decision-making. By addressing gaps in financial literacy and promoting a more balanced understanding of cryptocurrency risks, investors can make more informed and secure investment choices, relying less on emotions or impulsive decisions and more rational, knowledge-based assessments that lead to less risky investments. Future research could explore how these insights can be applied to develop more effective educational tools and interventions.

References

- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- Galai, D., & Sade, O. (2003). The 'ostrich effect' and the relationship between the liquidity and the yields of financial assets. *The Journal of Business*, 79(5), 2741-2759.
- Hastings, J. S., Madrian, B. C., & Skimmyhorn, W. L. (2013). Financial literacy, financial education, and economic outcomes. *Annual Review of Economics*, 5(1), 347-373.
- Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (3rd ed.). Guilford Press.
- Katona, G. (1968). Consumer behavior: Theory and findings on expectations and aspirations. *The American Economic Review*, 58(2), 19-30.
- Kitzinger, J. (1994). The methodology of focus groups: the importance of interaction between research participants. *Sociology of health & illness*, 16(1), 103-121.
- Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in human behavior*, 29(4), 1841-1848.
- Rogers, E. M. (1976). New product adoption and diffusion. *Journal of consumer Research*, 2(4), 290-301.
- Shahzad, S. J. H., Anas, M., & Bouri, E. (2022). Price explosiveness in cryptocurrencies and Elon Musk's tweets. *Finance Research Letters*, 102695.
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, 46(2), 186-204.
- Zhao, H., & Zhang, L. (2021). Financial literacy or investment experience: which is more influential in cryptocurrency investment?. *International Journal of Bank Marketing*, 39(7), 1208-1226.