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Comparative analysis of emotional biases in investment decisions

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Abstract
Background: Emotional Biases have influence in investment decision of SACCO members. These biases are overconfidence, loss aversion, and herd behavior. We seek to establish empirically to what extent each emotional bias contributes to investment decisions and identify which emotional bias has an overarching influence.
Objective: To identify influence of each emotional bias and establish which among them has overarching influence.
Method: Perception based data was collected among 284 Imarisha SACCO members in Kericho County, Kenya between 28th to 31st July, 2025. The data collected was self-filled questionnaire using KoboCollect. The data was checked for completeness, entered in excel, cleaned, coded and analyzed. First the data was tested for normality before Principal Component Analysis (PCA) to compare the strength of the three dimensions; PC1, PC2, PC3. Results were obtained and interpreted.
Results: The principal component analysis revealed that herd behavior (PC1) emerged as the most significant emotional bias, loading strongly at 75.2% and explaining the largest share of variance at 58.26%. Overconfidence bias (PC2) also featured prominently, with a positive loading of 70.1%, and together with herd behavior, the two accounted for 81.26% of the total variance, underscoring their combined influence on investment decisions. Conversely, loss aversion bias (PC3) loaded negatively (-76.4%), indicating that it primarily acts as a constraint, discouraging SACCO members from making investment decisions. Overall, herd behavior exerts a disproportionate influence compared to other biases, while loss aversion uniquely inhibits investment participation.

Keywords: Emotional biases, comparison, investment

Introduction

Emotional biases are decisions that are influenced by feelings rather than rational logical thought (Armansyah, 2023) [3]. Many people are maladjusted in correcting these biases which emerge from intuition or impulse rather than deliberate action (Ebenezer Y. Akinkoye, 2020) [5]. In the investment world, emotions are often associated with perceptions or beliefs about relations or objects and feelings, which result in illogical decision-making (Nagesh B, 2025) [10]. It is then advised that investors, including those who obtain investment funds from SACCOs, recognize and filter their emotional biases for rational decision making (John Wambua, 2023) [7]

In this way, overconfidence bias refers to investors believing in something exceedingly (Armansyah, 2023) [3]. It leads to individuals overestimating knowledge and underestimating predictions due to their perceived superior potential. Previous studies have concluded that individuals exhibit three domains of overconfidence bias; over-placement, over-precision, and over-estimation (Said Kelana ASNAWI, 2024) [12]. First, over-placement is where individuals think they are better than the rest, thus, over-placing their performance relative to others. Second, over-estimation refers to people overestimating their ability/opportunity to succeed compared to others. Lastly, over-precision refers to individuals believing with unmerited certainty in their estimations (Kigen, 2020) [9].

Definitively, loss aversion bias is the tendency of investors to fear losses, driven more by avoidance than potential gains (Ahmed Bouteska, 2020) [2]. The more one experiences losses, the more likely they are prone to loss aversion.

Studies show that feeling of loss outweighs enjoyment in making profit (KARTINI, 2021) [8]. Other studies on manifestation of loss indicate the asymmetrical impact of gains and losses: investors react more strongly to losses than equivalent gains. As such, investors cling to underperforming assets in hope of recovery while prematurely selling profitable ones out of the fear of losing the accumulated gains (Ahmed Bouteska, 2020; Ebenezer Y. Akinkoye, 2020) [2, 5]. In addition, loss aversion bias significantly shapes decision-making since investors tend to prioritize minimizing potential losses over pursuing higher returns. They value gains and losses differently and often favoring safer options (Ahmed Bouteska, 2020; KARTINI, 2021) [2, 8]. Psychometrically, loss aversion is tied to emotional responses like anxiety and regret. These drive irrational investment behaviors, which include exiting investment too early or avoiding calculated risk that could yield long-term benefits (Eric Kipchirchir Kipsaat, 2020) [6].

In this paper we define herd behavior as investors prone to following what other peers are investing in without conducting a fundamental analysis first (Adik Duwi Rahayu, 2020) [1]. It is shaped by three major elements: informational cascades, fear of missing out (FOMO), and social influence. Informational cascades arise when individuals, rather than relying on their private information, mimic the actions of others, assuming that the crowd holds superior knowledge, which can amplify market trends and distort asset valuations (Ebenezer Y. Akinkoye, 2020; Pupu Wang, 2022; Tamplin, 2023) [5, 11, 13]. FOMO, on the other hand, compels investors to chase opportunities they see others profiting from. They often abandon rational analysis in favor of impulsive decisions, a dynamic that inflates asset prices and heightens volatility (Tamplin, 2023) [13]. Lastly, social influence reinforces herding by driving individuals to take cues from others, particularly in uncertain conditions, under the assumption that the majority cannot be wrong, an assumption that can fuel market bubbles during frenzied buying or crashes during mass sell-offs (Adik Duwi Rahayu, 2020; Ebenezer Y. Akinkoye, 2020; Eric Kipchirchir Kipsaat, 2020; Tamplin, 2023) [1, 5, 6, 13].

In this study, we seek to establish empirically to what extent each emotional bias contributes to investment decisions and identify which emotional bias has an overarching influence.

Methods

A stratified random sampling technique was employed to collect primary data from 284 respondents of Imarisha SACCO between 28th and 31st July. Data collection was conducted through a self-administered questionnaire using KoboCollect. The raw data was subsequently cleaned and subjected to normality tests prior to analysis. Quantitative methods were applied in the analysis, with Principal Component Analysis (PCA) utilized to examine and compare the relative strengths of the three dimensions of emotional biases (overconfidence bias, loss aversion bias, and herd behavior bias). Data analysis was carried out using R 4.5.1 and the results were interpreted accordingly.

Results

Normality Test

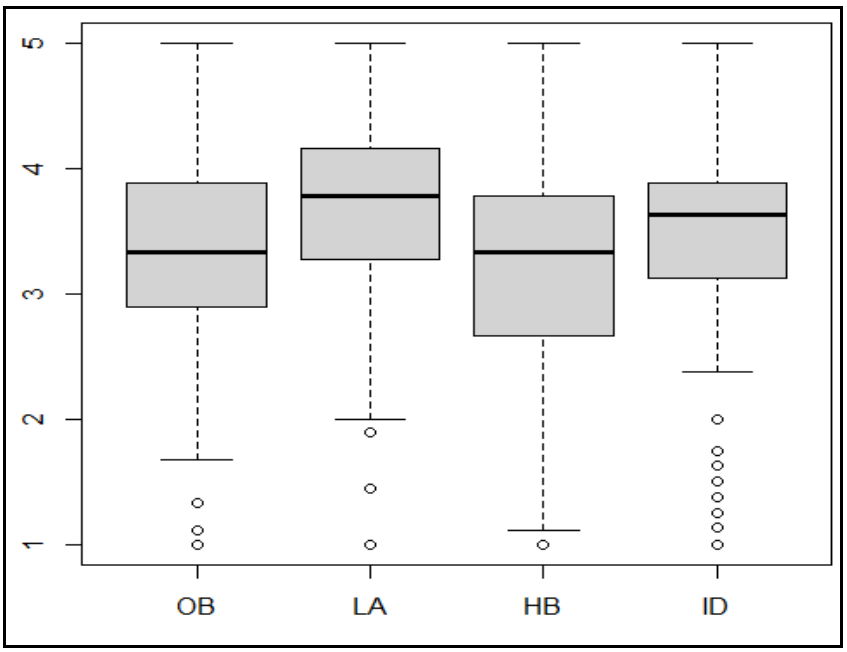

Fig 1: Normality test (Box Plot Presentation)

Normaity of the data was assessed visually using box plots which indicated the data was normal. This confirmed that the dataset satisfied the assumption of normality and was therefore appropriate for subsequent statistical analyses and generalization of findings.

Principal Component Analysis (PCA)

The study employed PCA to identify which of the three dimensions of emotional biases had the most influence on SACCO members' investment decisions

Table 1: Principal Component Analysis Results

	PC1	PC2	PC3
OB	0.3850813	0.7010285	0.6002262
LA	0.5343850	0.3608812	-0.7643281
HB	0.7524261	-0.6150803	0.2356505
Evaluation of PCA			
Standard deviation	0.3814	0.2397	0.2163
Proportion of variance	0.5826	0.2300	0.1874
Cumulative proportion	0.5826	0.8126	1.0000

Source: Researcher (2025)

Interpretation

1. PC1: is a herd behavior (HB) dimension which loads strongly (75.2%). It is the most significant bias.
2. PC2: is largely overconfidence bias (OB) dimension which OB loads positively at (70.1%).
3. PC3: is mostly loss aversion (LA) bias dimension loading strongly inversely (-76.4%). It shows that most SACCO members decisions are influenced by LA bias inhibiting their decision to invest.
4. HB is the strongest bias because it explains 58.26% proportion of variance.
5. Both HB and OB bias explain 81.26% proportion of variance.
6. Therefore, herd behavior has disproportionate influence on investment decision compared to other emotional biases going by proportion of variance it explains in PC1. On the other hand, loss averse singularly inhibits SACCO members in this study from investment given that PC3 loads strongly negative.

Discussions

PCA revealed that herd behavior emerged as the most influential emotional bias on investment decisions among SACCO members. Indicatively, herd behavior loaded strongly on PC1 which loads at 75.24%, explaining 58.26% of the total variance. The findings indicate that herd tendences exert a disproportionate influence compared to both loss aversion and overconfidence bias as illustrated. It implies that members investment decisions are largely influenced by observing and emulating others rather than relying on their own independent judgments (KARTINI, 2021) [8].

In the analysis PC2 was found to be primarily overconfidence bias dimension loading positively at 70.1%. Both herd behavior and overconfidence biases account for 81.26% of variation proportion. The association of both biases indicate synergies in their influence on investment decisions. This implies that some members may demonstrate excessive judgments in their own ability to evaluate investment outcome coupled with the influence of others (Ebenezer Y. Akinkoye, 2020) [5].

In addition, PC3 is a loss aversion bias dimension, loading inversely at-76.4%. The strong negative loading indicates that loss aversion functions as a critical inhibitory influence among members in making investment decisions. That is, members exhibit strong tendencies to avoid investment where there is perceived possibility of incurring loses, even when such opportunities may offer favourable returns. These findings align with the prospect theory which posits that individual weigh potential losses more heavily than gains (Daniel Kahneman, 1979) [4].

Recommendation

Based on the findings of this study, it is important to develop policies that enable members to wade through their emotional biases and make logical and sound investment decisions.

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