THE PSYCHOLOGY OF THE MARKET: ARE COGNITIVE ILLUSIONS DRIVING RISK-RELATED INVESTOR BEHAVIOUR?

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Abstract

This study investigates how cognitive illusions, rooted in heuristics and prospect theory, influence individual investment decisions in the Egyptian Stock Exchange (EGX). The research gap stems from the limited understanding of how behavioural biases affect decision-making in emerging markets, where financial literacy and market efficiency remain underdeveloped. The study aims to provide empirical evidence on the extent to which specific biases shape investor behaviour, thereby bridging the gap between behavioural finance theory and practice. Data were collected through a structured survey of 300 active investors, and the analysis employed reliability and validity testing, normality checks, correlation analysis, and ordinary least squares (OLS) regression modelling to test the proposed hypotheses. The findings reveal that availability, overconfidence, and the gambler's fallacy significantly affect investment decisions, whereas representativeness and anchoring biases do not. Similarly, loss aversion and regret aversion play a decisive role in shaping investor behaviour, whereas mental accounting and self-control biases have limited applicability. These findings are partially consistent with existing arguments within the behavioural finance literature (Youssef et al., 2021; Mansour et al., 2023; Gamal & Wahba, 2025) and their extension to the Egyptian environment. The paper closes with real-world implications for investors and policymakers, respectively, underlining its usefulness for enhancing financial decision-making and regulatory policies in emerging economies.

Keywords: Cognitive Illusions, Heuristics, Prospects, Individual Investment Decision, Risk Egypt, EGX

Authors' individual contribution: Conceptualisation — H.W., A.A., and R.P.; Methodology — H.W., A.A., and R.P.; Validation — H.W., A.A., and R.P.; Formal Analysis — H.W., A.A., and R.P.; Investigation — H.W., A.A., and R.P.; Writing — Original Draft — H.W., A.A., and R.P.; Writing — Review & Editing — H.W., A.A., and R.P.; Visualisation — H.W., A.A., and R.P.; Supervision — H.W. and R.P.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

1. INTRODUCTION

Why do investors sometimes ignore hard data and follow their gut? Why do they hold onto losing stock longer than they should? These behaviours, often perceived as irrational, are neither random nor unpredictable. In the classical financial theories, the assumptions that investors act rationally, maximise their utility based on objective information, and markets are efficient, have always

shaped the market dynamics. However, the real-world experiences have shifted sights from this traditional view to the modern financial paradigm. As the modern financial markets have become complicated, understanding how humans make decisions has never been more critical than nowadays.

Consequently, behavioural finance has emerged as a vital framework to illustrate these discrepancies, highlighting the role of psychological and sociological factors in financial decision-making. Among the most significant contributors, the extensive research by Daniel Kahneman and Amos Tversky has guided scholars in the field to gain a grasp of the cognitive psychology aspect in the behavioural finance domains. Tversky and Kahneman (1974) and Kahneman and Tversky (1979) have developed the theories of heuristics and prospects, respectively.

Heuristics, the mental shortcuts or rules of thumb, have explained how individuals make decisions relying on little information, based on subjective judgments or biased experiences. Furthermore, prospect theory explains how individuals are not always making decisions to maximise their utility, but how they make decisions based on their gains and losses. These biases jointly can lead to observable deviations in the judgments, often leading individuals to make suboptimal financial and investment decisions.

In emerging markets, these psychological distortions may be even more significant, due to a number of reasons: 1) where investor education and market transparency are still in question; 2) understanding psychological biases is under investigation; and 3) limited financial literacy and empowerment. Hence, individual investors, in particular, are vulnerable to their psychological component whenever they are making an investment choice, affecting their overall investment experiences. Additionally, the rising participation in the Egyptian capital markets, understanding how individual investors think, feel, and do, and where, when and how they are vulnerable to these cognitive illusions, becomes a matter of fact crucial to improving the financial landscape.

While the literature in behavioural finance proceeds to improve and expand globally, this area in Egypt remains relatively fragmented. The existing literature has mainly focused on externalities influencing investor irrationality and decisions in question. Youssef et al. (2021) and Mansour et al. (2023) have incorporated financial literacy; Hafez (2021) and Elbendari and Moharam (2023) have explored the impact of the COVID-19 pandemic; eventually, Gamal and Wahba (2025) resolved the dilemma of informed and uninformed investors' differentiation. However, the question remains: are Egyptian individual investors primarily making decisions based on illusions? This study aims to bridge this gap by addressing this question, offering a comprehensive analysis of the impact of cognitive illusions within the Egyptian landscape.

The findings of this study will assist individual investors to be making sound and rational decisions, based on understanding how, in reality, cognitive illusions might be affecting their decisions. Furthermore, the implications provide guidance to policymakers to tailor their financial policies, integrating financial education programmes and initiatives that elaborate on psychological biases and robust policy frameworks to avoid behavioural biases, and improve accordingly the strategic direction of the investment environment from a behavioural lens. Not only may such measures and implications strengthen the rational investment decisions, but also the overall market dynamics and stability, not only in Egypt, but also in other emerging markets.

Following the introduction, Section 2 reviews the prior literature and develops the hypotheses, focusing on behavioural aspects of investment decisions. Section 3 outlines the research methodology, including the target population, sampling, data, and analytical procedures. Section 4 presents the data analysis, covering the baseline for the discussion of results. Section 5 discusses the findings in relation to existing theory, and Section 6 concludes with key implications, recommendations, and study limitations.

2. LITERATURE REVIEW AND RESEARCH HYPOTHESES

2.1. Investment decision: Transition from traditional to behavioural approach

Investment decision is a sophisticated process, where individuals intentionally choose to give up on current consumption for future greater gains (Kishori & Kumar, 2016). The classical finance perspective argues that investors are rational, markets are efficient, and information is fully disclosed with accessible to all individuals. This viewpoint is based on the foundational theories of the expected utility (EU) theory and the efficient market hypothesis (EMH). As stated by Sharpe (1964), Fama (1970), and Hirshleifer (1985), individuals aim to market the highest possible returns based on the prior assumptions.

Nonetheless, studies have viewed these theories and assumptions in two opposing ways. On one hand, some researchers believe in maintaining the classical perspective, emphasising that investors generally exhibit rationality when making monetary decisions (Ben Ameur et al., 2020). On the other hand, some believed and presented evidence that investors are irrational, driven by psychological distortions (Kumar & Goyal, 2015). These opposing argumentations have led to the urgency of understanding behavioural finance, a paradigm incorporating finance, economics and psychology to provide elaboration to these behaviours.

Whilst the classical financial perspective emphasised that markets are efficient and investors are rational, the behavioural finance embraces that investors are irrational, making some decisions based on their emotional component, driven by psychological biases. Thus, behavioural finance shifted the sights from the ideal rational economic and financial models to a more realistic operationalisation of how investors behave, act and react in the financial markets. As reported by Bikhchandani (1992) and Pompian (2012), investors in many stances do not make decisions based on the accessibility of information or rationality, respectively.

Relying on the work of the two pioneering psychologists (Tversky & Kahneman, 1974; Kahneman & Tversky, 1979) who introduced the theories of heuristic and prospect theories, respectively, has built the path for a vast number of studies to be conducted in behavioural finance. Waweru et al. (2008), alongside Dangol and

Manandhar (2020), found that heuristics acknowledged as mental shortcuts assist investors in making complex investment choices. Furthermore, Khan and Butt (2024) supported the prospect theory by elaborating how investors assess the gains and losses in a manner that lacks rationality.

Jahanzeb (2012) and Ghalayini and Alkees (2021) combined the terms of heuristics and prospect theories to form the basis, described as 'cognitive illusions', mental shortcuts that excessively affect investment decision-making. This term offers valuable insights into why investors frequently base their decisions by deviating from rationality, to a more behavioural approach, leading to an understanding of these psychological biases comprehensively, and how they affect real-world investment environments.

2.2. Heuristics and investment decision

The way individuals think and make sense of the world is deeply rooted in three core cognitive tools: logic, probability, and heuristics (Gigerenzer, 2008). These tools collectively shape our understanding and interpretation of everyday experiences. Logic is grounded in structured mental processes and truth-preserving systems that assist individuals in constructing valid arguments (Johnson-Laird, 1983). Probability, in contrast, has reshaped areas such as statistics, scientific experimentation, and even genetic testing by focusing on the chances of different outcomes occurring (Boole, 2012). Heuristics, unlike the other two, deal with how people navigate decision-making under uncertainty, often drawing conclusions from incomplete or imperfect information (Kahneman & Tversky, 1973).

Heuristics act as mental shortcuts that simplify complex decisions, especially when time or information is limited. Researchers initially described them as rules of thumb (Tversky & Kahneman, 1974), while later studies refined and applied them to practical decision-making contexts (Ritter, 1998). Although often seen as sources of irrational behaviour, heuristics help individuals interpret situations, react quickly, and make choices with minimal effort (Waweru et al., 2008). Researchers have investigated their influence on investment decisions and found strong links between heuristic use and financial choices (Dangol & Manandhar, 2020). Research typically explores these effects through key dimensions such as availability, representativeness, anchoring, gambler's fallacy (Tversky & Kahneman, 1974), and overconfidence (Dittrich et al., 2005).

H1: Heuristics have a significant effect on the individual's investment decision.

Tversky and Kahneman (1974) described availability bias as the tendency for individuals to judge the likelihood of an event based on how easily they can recall similar past experiences. Availability bias often stems from people overestimating their ability to remember events, especially when those memories relate to current situations (Read & Grushka-Cockayne, 2011). For instance, investors may choose to buy shares in a company they recently saw in the news, assuming its visibility signals strong performance, even without reviewing its fundamentals. Over time, individuals build personal experiences, and they often rely on these memories to make decisions that feel subjectively relevant. Investors tend to make choices based on a mix of personal experiences, accessible information, and subjective judgment (Pompian, 2012). Salman et al. (2021) and Wang (2023) supported that availability bias significantly affects investment decisions, due to their basis of decision on available information to be utilised.

H1a: Availability bias has a significant effect on the individual's investment decision.

Overconfidence is the gap between a person's confidence and their actual accuracy in judgment (Oskamp, 1965). Even though confidence is an optimistic and positive projection, overconfidence can overshadow this by leading to flawed decisions. Overconfidence bias is how individuals overly believe in their own knowledge, skills, abilities and competencies (Hvide, 2002). Even though the initial development of heuristics did not include this bias in specific, in an experiment conducted by Dittrich et al. (2005), they reported that two-thirds of the sample projects exhibited overconfidence behaviour. Hence, under uncertain conditions and with limited information, investors might depend on their subjective judgment to engage in trading, leading to losses. Studies reported that overconfidence bias significantly affects individual investors (Shah et al., 2018; Kartini & Nahda, 2021; ul Abdin et al., 2022).

H1b: Overconfidence bias has a significant effect on the individual's investment decision.

Representativeness bias arises when investors judge outcomes by perceived similarity to existing patterns, often generalising from small samples without considering statistical realities (Tversky & Kahneman, 1974; Irshad et al., 2016). For instance, an investor may assume that a company with rapid early growth will continue to outperform, overlooking long-term risks or market shifts. Unlike availability bias, which is driven by easily recalled information (e.g., media coverage), representativeness is rooted in faulty pattern recognition. Prior studies confirm its strong effect on investment decisions (Dangol & Manandhar, 2020; Khan & Bashir, 2020; Cuandra & Tan, 2021; Youssef et al., 2021; Hafez, 2021; Jain et al., 2022).

H1c: Representativeness bias has a significant effect on the individual's investment decision.

Anchoring bias, a key aspect of heuristics, refers to the tendency to rely heavily on the first piece of information, known as the 'anchor', when making decisions. Waweru et al. (2008) noted that anchoring serves as a reference point used in individual judgment, while Pompian (2012) highlighted that anchors guide investor evaluations, even if the initial value is irrelevant. This bias can lead to irrational decisions, as investors may rely on subjective assessments rather than objective data (Shah et al., 2018). Studies have shown that investors often use anchors when developing portfolios and trading assets. As stated by Abu Karsh (2018), Silwal and Bajracharya (2021), and Owusu and Laryea (2023), anchoring significantly shapes individual investment experiences.

H1d: Anchoring bias has a significant effect on the individual's investment decision.

Gambler's fallacy is a cognitive illusion in which individuals incorrectly suppose that past outcomes will influence future opportunities, leading them to expect patterns to 'self-correct' in the short term (Tversky & Kahneman, 1974). For example, an investor may believe that after several consecutive days of stock price declines, the market is 'due' for an upward correction, even though each day's movement is statistically

independent. This is distinct from availability bias, where decisions are based on the ease with which information comes to mind, such as investing in a stock simply because it has been widely recommended by market leaders. While availability bias is driven by memory accessibility, the gambler's fallacy reflects a mistaken belief in short-term mean reversion. Prior research (Kovic & Kristiansen, 2019; Sattar et al., 2020; Pokharel, 2020; Hunguru et al., 2020; Cuandra & Tan, 2021) conceded that the gambler's fallacy significantly shapes investor behaviour, often leading to decisions based on anticipated corrections that may never materialise.

H1e: Gambler's fallacy has a significant effect on the individual's investment decision.

2.3. Prospects and investment decision

In line with EU theory formulated by von Neumann and Morgenstern (1944), Kahneman and Tversky (1979) proposed prospect theory, which was further modified in 1989. Prospect theory challenges the assumption of totally rational decision-making, which forms the basis of EU models, to show that cognition and affection influence the decision process much more significantly. Prospect theory underscores principles like certainty, isolation, and loss aversion, showing that the pain of losses is felt almost twice as strongly as equivalent gains are recognised. Though these ideas were not included in the initial formulation, advancements thereafter, such as regret aversion, mental accounting, and self-control, have been theoretically linked to the basic principles of the theory. Empirical findings also attest to the applicability of prospect theory in the fields of finance and business investment (Khan & Butt, 2024; Iram et al., 2021).

H2: Prospect theory has a significant effect on the individual's investment decision.

Risk aversion, introduced by Arrow (1965), provided the foundation for the concept of loss aversion. Kahneman and Tversky (1979) demonstrated that individuals experience the psychological pain of losses as roughly twice as intense as the pleasure derived from equivalent gains. Critics, however, have questioned the operationalisation of 'losses' and 'gains', noting that framing a loss as 'punishment' and a gain as 'reward' may exaggerate psychological responses and divert attention from the underlying economic value. Despite such critiques, loss aversion has remained a central and enduring concept in behavioural finance, offering a strong explanation for the irrationality often displayed by investors, in contrast to the assumptions of EU theory. Empirical evidence confirms that loss aversion significantly influences investment decisions (Istiana & Nur, 2020; Yuwono & Elmadiani, 2021; Hafez, 2021; Gupta & Shrivastava, 2022; Mansour et al., 2023).

H2a: Loss aversion has a significant effect on the investment decision.

Regret aversion arises when investors avoid making decisions to escape the possibility of future regret, whether from missed opportunities or poor actions (Landman, 1987; Baker & Nofsinger, 2010). For example, an investor may delay buying a promising stock, fearing the regret of loss if the investment performs badly. While this appears similar to loss aversion, the distinction lies in their focus: loss aversion reflects the tendency to feel losses more strongly than equivalent gains, leading investors to hold losing positions, whereas regret

aversion is driven by the emotional anticipation of self-blame for making an incorrect choice. Empirical findings on regret aversion are mixed, with studies reporting neutral, negative, or positive effects (Sukamulja et al., 2019; Shafqat & Malik, 2021; Hidayah & Irowait, 2021; Ardini et al., 2023; Rahman Rahawarin, 2023), though evidence from the Egyptian context (Mansour et al., 2023) underscores its relevance.

H2b: Regret aversion has a significant impact on individual investment decisions.

Mental accounting refers to the way people categorise, evaluate, and keep track of their financial transactions (Rabin & Thaler, 2001). As such, financial choices are often driven by individual perceptions and experience instead of being driven by conventional financial principles. Grinblatt and Han (2005) demonstrated that mental accounting has a significant effect on subjective financial decision-making, a finding further supported by Thaler (2016), who noted that people often irrationally differentiate between income and expenditure. For example, an investor may view dividend income as 'additional funds' for discretionary spending while being overly conservative about their original capital, even though both components comprise total wealth. Therefore, existing studies (Isidore & Christie, 2019; Hunguru et al., 2020; Anwar et al., 2023; Dadashi et al., 2023) confirm that mental accounting is influential in determining investment behaviour, mainly through the distortion of financial and investment decisions.

H2c: Mental accounting has a significant impact on individual investment decisions.

Robbins and Judge (2009) explained self-control bias as the behavioural tendency in which people view themselves as controlling their own destinies, which can be looked at from two points of view: an internal locus, where outcomes are the result of personal choice, and an external locus, where outcomes are due to chance. Moreland (2018) and Smith et al. (2019) highlighted the relationship between self-control and investment behaviour. This bias is commonly studied alongside hyperbolic discounting, where people prefer immediate returns at the cost of long-run financial rewards. Recent research (Sapkota, 2023; Sharma et al., 2025) offers evidence that self-control bias has a considerable impact on investment choices due to a lack of financial discipline.

H2d: Self-control has a significant impact on individual investment decisions.

3. RESEARCH METHODOLOGY

3.1. Target population and sample design

The target population of the study is the Egyptian individual investors who are either currently and actively investing in the Egyptian Stock Exchange (EGX) or have prior experience in it. The dynamic nature, high activity, liquidity and easy access to EGX, with minimal barriers for entry and exit, made it applicable for the individual investment decisions analysis. Bougie and Sekaran (2019) emphasised that, in an undefined population, the optimal sample would be 384.

To ensure the sample represents the entire population, the study relied on online platforms to distribute the surveys, deploying social media

platforms as well. These platforms provide broader access to the respondents across the Egyptian geographical landscape. In the initial phase, the research applies conventional non-probability sampling techniques. To expand the sample, it encourages participants to share the questionnaire with other potential investors, thereby initiating a snowball sampling process. This combined approach increases the likelihood of capturing a representative set of responses from across the investor population.

3.2. Data and methodology

The research approach used included two different phases. A pilot study was first done using interviews with experts. Thereafter, 30 questionnaires were administered to measure reliability and validity. These questionnaires were on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree) and had 42 items, of which 7 were related to investment choices, 19 to heuristics, and 16 to prospect theory in the context of behavioural finance data collection.

The study adopted a standardised questionnaire to gather primary data from individual investors. Nonetheless, other methodologies, such as behavioural experimental designs, laboratory experiments, and observations, could result in

collecting responses within simulated trading environments while directly measuring the effects. Furthermore, in-depth interviews and focus groups could complement the findings with a qualitative aspect. Even with such methodologies, structured questionnaires have the potential for their ability to rapidly collect standardised data from large samples, improving statistical validity and generalisation of results. The following equations are the numerical reflection of the model:

$$IID = \alpha + \beta_1 H + \beta_2 P + \varepsilon \qquad (1)$$

where, *IID* denotes the individual investment decision, *H* reflects the heuristics, and *P* represents the prospects. $\beta_1 H$ and $\beta_2 P$ represent the coefficients of heuristics and prospects, respectively.

$$IID = \alpha + \beta_k HDim + \beta_z PDim + \varepsilon \qquad (2)$$

where, *HDim* and *PDim* refer to the variables representing the heuristics and prospect dimensions, with *k* and *z* indicating the number of variables within each, respectively. The coefficients β_k and β_z reflect the loadings corresponding to these dimensions.

Figure 1. Conceptual framework
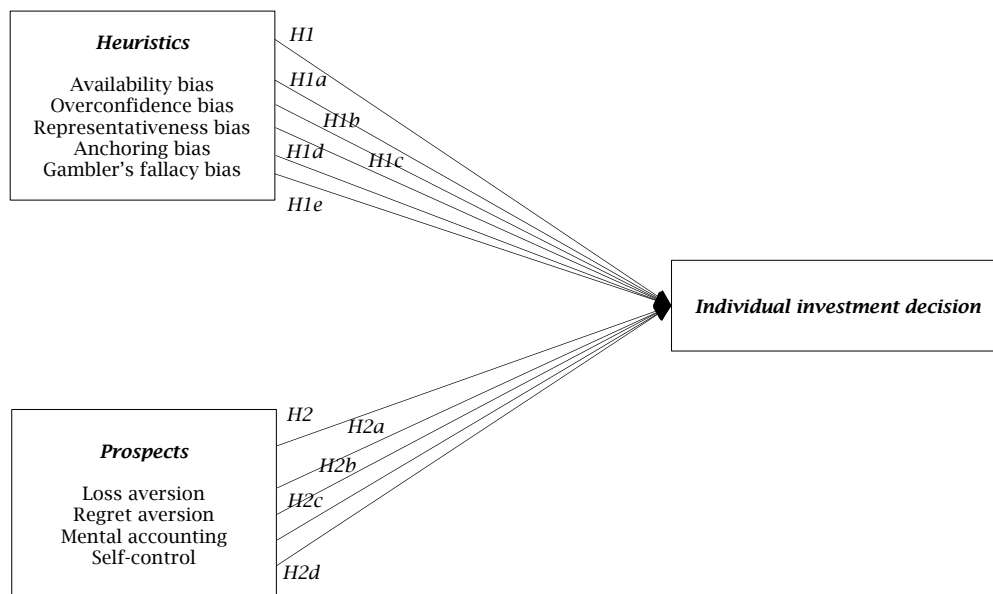
To examine the relationships between variables, the study employed Pearson correlation analysis to review the relationships existing amongst the variables of constructs, alongside regression analyses using the ordinary least squares (OLS) method. Before running the model, the researcher validated essential assumptions: normality was tested, multi-collinearity was reviewed using the variance inflation factor (VIF), and linearity was assessed by plotting standardised residuals against predicted values. These steps ensured the robustness and accuracy of the statistical analysis.

4. DATA ANALYSIS

4.1. Demographics profile and investment preferences

The demographic analysis of the sample, which includes 300 respondents, shows a majority of 58% male participants, while females make up the remaining 42%. Most respondents are single (52.7%), with only 9.3% falling under other marital statuses. In terms of education, 48.7% hold a Bachelor of Science or Arts degree, indicating a suitable academic background for investment-related insights. Employment status reveals that 64.7% are employed, while 12.7% are self-employed and 22.6%

are unemployed. The annual income distribution centres on EGP 100,000 or more for 38% of the respondents. Age distribution is relatively balanced, with the highest representation (28.6%) in the 16–24 age group and the lowest (12.7%) among those aged 60 and above.

Table 1. Demographics profile

Demographics	Features	Frequency	Percentage
Gender	Female	126	42%
	Male	174	58%
Marital status	Single	158	52.7%
	Married	52	17.3%
	Married with kids	62	20.7%
	Others	28	9.3%
Age group	16–24 years old	86	28.6%
	25-30 years old	62	20.7%
	31-40 years old	50	16.7%
	41-59 years old	64	21.3%
	60+ years old	38	12.7%
Education level	High school diploma	26	8.7%
	Bachelor of Science/Arts	146	48.7%
	Master's degree	64	25.3%
	Ph.D.	38	17.3%
Annual income	55,000–65,000	54	18%
	65,001–75,000	52	17.3%
	75,001–85,000	44	14.7%
	85,001–100,000	36	12%
	100,000+	114	38%
Employment status	Unemployed	68	22.6%
	Employed	194	64.7%
	Self-employed	38	12.7%
Years of experience	< 1 year	144	48%
	1–3 years	74	24.7%
	3–5 years	28	9.3%
	5–10 years	30	10%
	10 years <	24	8%

Note: N = 300.

Table 2. Investment preferences

Demographics	Features	Frequency	Percentage
Investment preference	I prefer developing my own portfolio of financial assets.	158	52.7%
	I tend to follow the market and invest in mutual funds or exchange-traded funds.	142	47.3%
Preferred investment choice	I will invest in an optimised portfolio of stocks and bonds.	110	36.7%
	I will invest in blue-chip stocks.	130	43.3%
	I will invest in government bonds.	60	20%

Note: N = 300.

4.2. Reliability and validity

The reliability assessment, conducted using Cronbach's alpha, indicated acceptable consistency across most statements, with values ranging from 0.701 to 0.899. To further confirm internal consistency, composite reliability (CR) was calculated and found to exceed the 0.5 threshold, ranging between 0.515 and 0.730, as suggested by Netemeyer et al. (2003). Validity was verified through several measures, including the Kaiser-Meyer-Olkin (KMO) test, Bartlett's test of sphericity, average variance extracted (AVE), and factor loadings. AVE values ranged from 0.5 to 0.8, while loadings were within 0.5 to 0.7, indicating satisfactory convergent validity. Discriminant validity was confirmed using the Fornell-Larcker criterion, where inter-construct correlations remained lower than the square roots of their corresponding AVEs.

4.3. Normality test

Normality tests, along with the Kolmogorov-Smirnov and Shapiro-Wilk tests, demonstrated that every variable except prospects exhibited non-normal distribution patterns ($p < 0.05$). The sample size of 300 enables the use of parametric tests despite the fact that all variables except prospects showed non-normal distribution according to Kolmogorov-Smirnov and Shapiro-Wilk tests. According to Green and Salkind (2012), the precision of results increases with larger sample sizes. Even though some variables exhibit non-normal distributions, the large sample size helps parametric tests deliver valid and reliable results. The method gains widespread acceptance because large sample sizes create conditions which approximate population normality.

4.4. Correlation matrix and multi-collinearity test

The study utilised the Pearson correlation matrix to demonstrate how different cognitive illusion dimensions interact with individual investment choices. A multi-collinearity test was performed through VIF analysis to evaluate how well one variable predicts another variable's behaviour. The VIF scores of all variables fell below the Osemeke et al. (2024) recommended threshold of 2.5, which confirms that variable relationships can be properly analysed. The outcomes show that multi-collinearity does not create problems for the regression analysis process as described in the next section. The findings support the validity of the conclusions about the investment behaviour effects of cognitive biases.

Table 3. Correlation matrix

	H	*AVB*	*OB*	*RB*	*AB*	*GFB*	*P*	*LA*	*RA*	*MA*	*SC*	*IID*
H	1											
AVB	0.745**	1										
OB	0.710**	0.306**	1									
RB	0.789**	0.746**	0.381**	1								
AB	0.840**	0.696**	0.472**	0.817**	1							
GFB	0.605**	0.148**	0.410**	0.142*	0.251**	1						
P	0.587**	0.540**	0.434**	0.526**	0.565**	0.176**	1					
LA	0.528**	0.532**	0.264**	0.505**	0.544**	0.177**	0.773**	1				
RA	0.489**	0.529**	0.180**	0.549**	0.543**	0.107	0.611**	0.662**	1			
MA	0.490**	0.419**	0.431**	0.360**	0.410**	0.213**	0.812**	0.465**	0.276**	1		
SC	0.111	0.624	0.274**	0.068	0.082	-0.025	0.512**	0.030	-0.125*	0.376**	1	
IID	0.400**	0.294**	0.493**	0.233**	0.255**	0.193**	0.253**	0.164**	0.208**	0.185**	0.139**	1

Note: H: heuristics AVB: availability bias, OB: overconfidence bias; RB: representativeness bias; AB: anchoring bias; GFB: gambler's fallacy bias; LA: loss aversion; RA: regret aversion; MA: mental accounting; SC: self-control; IID: individual investment decision.
* Correlation is significant at the 0.01 level (2-tailed). ** Correlation is significant at the 0.05 level (2-tailed).

4.5. Regression analysis

A multiple regression model has been deployed by the study, after ensuring all crucial statistical assumptions are met. To investigate the relationship between cognitive illusions and individual investment decisions, the study developed two models. The first model is directed toward testing hypotheses *H1* and *H2*. The second model examined each dimension of heuristics and prospects solely on the individual investment decision. Tables 6 and 7 present the findings of the first and second model summaries, where explanatory variable values are 29.5% and 39.35% respectively, presenting the degree of changes in the individual investment decision by these variables. Whilst Tables 4 and 5 further verify the statistical significance, with all p-values below 0.05.

Table 4. First model analysis of variance

Model	Sum of squares	Df	Mean square	F	Sig.
Regression	66.665	15	4.444	9.327	0.000
Residuals	135.331	284	0.477		
Total	201.997	299			

Table 5. Second model analysis of variance

Model	Sum of squares	Df	Mean square	F	Sig.
Regression	91.225	29	3.146	7.668	0.000
Residuals	110.771	270	0.410		
Total	201.997	299			

Table 6. First model: Parameter estimates

Model	Unstandardised coefficients		T-statistics
	Beta	Std. error	
Constant	-0.372	0.526	-0.708
Heuristics	0.625	0.123	5.091*
Prospects	0.317	0.137	2.317*
Adjusted R-squared	0.295		

Note: * Parameter estimates refers to p < 0.05.

Table 7. Second model: Parameter estimates

Model	Unstandardised coefficients		T-statistics
	Beta	Std. error	
Constant	0.028	0.530	0.052
Availability bias	0.201	0.101	1.994*
Overconfidence bias	0.441	0.080	5.538*
Representativeness bias	-0.085	0.159	-0.531
Anchoring bias	-0.105	0.158	-0.663
Gambler's fallacy bias	0.034	0.008	4.250*
Loss aversion	0.075	0.019	3.947*
Regret aversion	0.301	0.121	2.486*
Mental accounting	-0.029	0.099	-0.287
Self-control	0.066	0.082	0.807
Adjusted R-squared	0.393		

Note: * Parameter estimates refers to p < 0.05.

5. DISCUSSION OF RESULTS

Table 6 provides a holistic view of the research findings, where heuristics and prospects have a significant impact on the individual investment decision, leading to the acceptance of *H1* and *H2*. The regression results reveal standardised coefficients of (0.625) for heuristics and (0.317) for prospects, which reflect a notable influence on decision-making patterns. These values indicate a considerable degree of irrationality within the Egyptian investment environment, consistent with observations reported by Youssef et al. (2021), Hafez (2021), Metwally (2023), Elbendari and Moharam (2023), Metawa et al. (2024), and Gamal and Wahba (2025). Their collective research

highlights the psychological complexities that influence investor behaviour in Egypt's stock market.

Table 7 breaks down these constructs into their sub-dimensions, demonstrating the impact of specific cognitive biases on individual decisions. Availability bias (0.201), overconfidence (0.441), gambler's fallacy (0.034), loss aversion (0.075), and regret aversion (0.301) all show significant influence. Consequently, *H1a, H1b, H1e, H2a*, and *H2b* are accepted. These outcomes suggest that Egyptian investors often rely on limited or readily available information when making decisions, which reflects earlier findings by Hafez (2021). This behaviour aligns with Pompian's (2012) discussion on limited memory and personal experience as factors driving psychological decision-making tendencies.

Regarding overconfidence, Metwally and Darwish (2015), along with Metwally (2023), highlighted its presence in Egyptian markets, attributing it to a 'certainty effect', where investors overrate their understanding and skills. This explains why overconfidence emerged as the most significant bias in this study. On the other hand, the gambler's fallacy showed a significant influence, contrasting with Hafez (2021), who found it insignificant. The current results suggest that Egyptian investors tend to believe in pattern-based movements of market trends, indicating a subjective psychological view of repeated outcomes, especially during upward or downward market phases.

Loss aversion and regret aversion also emerged as influential psychological factors in the investment process. Hafez (2021) estimated that a significant proportion, 61% of Egyptian investors, are loss-averse. This was reinforced by Mansour et al. (2023), who noted that this trait directly affects market capitalisation, reflecting how personal emotions shape overall market dynamics. Similarly, Youssef et al. (2021) and Mansour et al. (2023), who found that investors tend to avoid anticipated disappointment by developing portfolios cautiously, aiming to minimise future regret and emotional discomfort, supported regret aversion.

Conversely, representativeness, anchoring, mental accounting, and self-control biases were found to be statistically insignificant in influencing investment decisions. As a result, hypotheses *H1c, H1d, H2c*, and *H2d* were rejected. Although earlier research by Youssef et al. (2021) and Hafez (2021) suggested that representativeness bias was relevant, this study provides a contrasting outcome. According to Pompian (2012), representativeness bias often stems from neglecting sample size or base-rate information, something Egyptian investors may be more mindful of, which could explain the lack of influence in this context, and not relying on the generalisation matching concept.

Anchoring bias has an insignificant impact in this study, which is opposed to the earlier studies by Abu Karsh (2018) and Youssef et al. (2021). This might mean that Egyptian investors do not rely on fixed reference points, 'anchors', when making decisions. Instead, they may focus more on investments that offer high returns and base their choices on experience. Hence, this relatively sound decision-making process might deteriorate the impact of anchoring bias, making their investment decision based on a strategy, where individuals base their decisions, neglecting later on the starting value of their investments.

Mental accounting, which is when people treat money differently depending on where it comes from or what it is for, also has an insignificant impact. Ozkan and Ozkan (2020) stated that this bias could cause people to make irrational financial choices. However, this study suggests Egyptian investors tend to think of money in a more rational way, not splitting it into categories. Similar results were found in other developing countries by Dewi et al. (2021), Singh and Kumar (2022), and Novandalina et al. (2022), where people also treated money as a whole.

Similarly, self-control bias also had no significant effect on the investment decision. This is supported by the findings of Atmaningrum et al. (2021), who reported that self-control does not have an impact on long-term investing. The results from Egypt suggest that investors there are generally disciplined and plan, rather than making impulsive financial decisions.

Overall, the study shows that only some psychological biases affect how Egyptian investors make decisions. Biases like overconfidence, availability bias, gambler's fallacy, loss aversion, and regret aversion play a role in shaping the individual investor's experience and decision. Nevertheless, others, like anchoring, representativeness, mental accounting and self-control do not have a significant impact. This suggests that Egyptian investors may think more rationally in some areas, but still be influenced by emotions and mental shortcuts in others.

Financial consultants, policy-makers, and even individual investors can benefit from understanding which psychological triggers are most influential in decision-making. Tailored investor education programmes and policy interventions could aim to reduce cognitive errors and encourage more informed and rational investment strategies. These research findings also pave the path for potential research opportunities in Egypt and similar emerging markets, where culture and institutional variables may have an effect on the investment processes.

6. CONCLUSION

The study contributes significantly to addressing various gaps in the existing literature; however, it is not without its limitations, which not only contextualise the findings but also highlight areas for future research. The analysis predominantly targeted cognitive biases in investment decision-making while not considering other vital dimensions, such as emotional and social influences. Furthermore, the reliance on online data collection methods might overlook the viewpoints of rural populations and individuals with limited financial literacy. Although the impact of digital platforms and financial technologies was acknowledged, the study did not investigate these elements thoroughly, suggesting ample opportunities for future research aimed at enriching the understanding of behavioural finance in Egypt and analogous markets.

Despite these challenges, the research undertook measures to mitigate certain limitations. For instance, it ensured diversity within the sample in terms of gender allocation, income distribution, educational level, occupation, and age brackets. Nonetheless, these acknowledged limitations provide fertile ground for future research. Opportunities exist to broaden demographic representation, assess the effectiveness of national financial literacy initiatives, and explore the integration of behavioural finance education into

Egypt's financial literacy framework. Additionally, investigating factors such as emotional stability and investment intentions could further advance the domain of behavioural finance.

In recent years, Egypt has launched several initiatives aimed at enhancing financial literacy and promoting financial inclusion. A pertinent example is the Central Bank of Egypt's financial literacy campaign, designed to foster saving habits, increase awareness of banking services, and improve access to formal financial products. This initiative specifically targets women, young people, and underserved communities and is part of the government's overarching strategy to enhance financial inclusion.

Another significant initiative is FinYology, which stands for "FinTech and Youth", a collaboration between the Egyptian Banking Institute and the Central Bank aimed at cultivating entrepreneurship and innovation among students. This programme encourages participants to develop FinTech-driven projects that address market needs, bridging the gap between academia, financial institutions, and the private sector. While effective in empowering students with entrepreneurial skills, its primary focus centres on innovation rather than decision-making behaviour among investors.

Additionally, the EGX has established an ambassadorship and training of trainers programme, which operates across several universities. In this programme, selected students receive training on stock markets, investment, and brokerage, subsequently acting as ambassadors who conduct awareness workshops for high school students and promote investment knowledge within their communities. This initiative successfully disseminates technical knowledge regarding market operations and empowers youth with practical financial skills.

Collectively, these programs illustrate Egypt's dedication to advancing financial literacy and inclusion on a national scale. However, a shared limitation among them is the predominant focus on technical and informational knowledge, often overlooking the behavioural and psychological aspects of decision-making. In the current era, where social media is pursuing its path in changing behaviours, attitudes and personalities at one point in time, the behavioural finance paradigm should be embraced and integrated into the educational stems for the younger generations and adults.

This study elucidates the significant impact of psychological biases on investment behaviour within the EGX. It highlights biases such as overconfidence, regret aversion, and loss aversion, demonstrating why traditional theories like the EMH and EU theory fall short of capturing the complexities of investor behaviour in Egypt's dynamic market. The findings emphasise that while financial knowledge is necessary, it is rendered ineffective unless accompanied by an understanding of the behavioural tendencies that affect actual decision-making.

In light of this context, the deficiencies in Egypt's financial literacy programs become increasingly apparent. Although those initiated by the Central Bank, the Egyptian Banking Institute, and EGX have promoted public awareness and technical competence, their effectiveness is limited by a lack of behavioural finance education. Consequently, individuals may develop an understanding of financial instruments yet continue to make suboptimal choices influenced by cognitive biases.

By incorporating behavioural finance into existing initiatives, significant enhancements could be realised. For instance, the Central Bank's campaign could implement interactive simulations to illustrate how emotions impact financial decisions, while the FinYology program might integrate behavioural insights into its entrepreneurial training to assist students in navigating psychological biases, and even help them to develop fin-tech applications assisting individuals to understand their personas. Moreover, the EGX ambassadorship program could enrich its curriculum with behavioural case studies reflecting real-world decision-making pressures.

At the individual level, it is essential for investors to foster awareness regarding how cognitive shortcuts and biases influence their financial decisions. On an institutional level, embedding behavioural finance within financial literacy frameworks would transform existing initiatives into comprehensive programmes, empowering citizens to make rational decisions. This strategic integration would not only cultivate more resilient investors but also enhance market efficiency, contribute to national goals of financial inclusion and sustainable economic development, and further the global discourse on behavioural finance in emerging markets.

Future research could also deploy longitudinal or experimental approaches to capture how behavioural biases evolve over time or under varying economic and political conditions. Expanding the scope beyond individual investors to include institutional perspectives may provide a more comprehensive understanding of market behaviour. Moreover, comparative cross-country analyses could reveal cultural and structural factors shaping investor psychology in emerging economies.

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