

THE INVESTMENT PUZZLE: UNVEILING BEHAVIORAL FINANCE, RISK PERCEPTION, AND FINANCIAL LITERACY

**Bashar Yaser Almansour^{1,2}, Ammar Yaser Almansour³, Sabri Elkrggli⁴,
Seyed Amirhossein Shojaei¹**

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¹ Muscat University, Faculty of Business and Management, Muscat, Oman

² Balagrae University of Modern Sciences, Benghazi, Libya

³ Oman College of Management and Technology, Department of Administrative and Financial Sciences, Barka, Oman

⁴ University of Benghazi, Benghazi, Libya

Corresponding Author:
Bashar Yaser Almansour

Email: bal_mansour@hotmail.com

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ABSTRACT

Contemporary financial theory upholds the market efficiency hypothesis, asserting that stock prices inherently embody all available information. In contrast, behavioral finance theory challenges this premise by proposing that psychological and emotional factors can wield influence over stock prices. This study delves into the repercussions of behavioral finance factors on investment decisions within the Saudi equity markets, utilizing risk perception and financial literacy as mediating variables. An online questionnaire was disseminated to 350 individual investors, yielding 315 completed responses deemed suitable for analysis. Employing Structural Equation Modeling (SEM), the collected data underwent rigorous scrutiny. The findings reveal that herding, the disposition effect, blue-chip bias, and overconfidence significantly and positively impact both risk perception and financial literacy. Furthermore, all four behavioral finance factors exhibit a substantial positive indirect effect on investment decision-making through the intermediaries of risk perception and financial literacy. It is imperative to acknowledge the study's specific focus on these factors while recognizing the potential influence of other elements on risk perception, financial literacy, and investment decision-making. The research underscores the critical importance of incorporating an individual's perception of risk into investment decisions, as it markedly shapes their proclivity for risk-taking and, consequently, the performance of their investment portfolio. The findings highlight the necessity for investors to recognize and address their behavioral biases. Additionally, the study advocates for advisors and policymakers to formulate strategies aimed at mitigating the impact of these biases. The comprehensive exploration of behavioral finance factors and their implications for investment decisions yields valuable insights for individual investors and stakeholders in financial advisory and policymaking roles.

Keywords: *behavior finance, risk perception, financial literacy, investment decisions*

1. INTRODUCTION

The examination of investment decision-making in financial markets has engendered prolonged discourse between conventional financial theories and behavioral finance perspectives. Conventional finance asserts the application of rational decision-making grounded in exhaustive

information, while behavioral finance contends that investor choices are influenced by emotions, biases, and cognitive constraints (Almansour, 2017). The ongoing debate centers on the influence of non-financial elements on stock prices, with behavioral finance highlighting the significance of psychological and emotional facets alongside market efficiency. Numerous studies have probed behavioral finance factors, encompassing biases, emotional biases, social influences, risk perception, and personality traits, elucidating their potential to induce suboptimal decision-making (Akybayeva et al., 2024; Talapbayeva et al., 2024; Ahmad, 2022; Balcilar et al., 2013; Lather et al., 2020; Navaneeth & Menon, 2018; Singh et al., 2022).

In the intricate landscape of investment decisions, the assessment of risk perception assumes a central and decisive role. Investors, characterized by an inherent aversion to risk, navigate through a dynamic interplay of factors that continually shape and redefine their perception of risk (Hossain & Siddiqua, 2022; Putri Pa et al., 2022; Wildavsky & Dake, 1990). Elevated levels of risk perception often lead to shifts in transaction frequencies and a decrease in market participation. On the other hand, when risk perception is low, it can trigger herding behavior among participants in the market (Ahmed et al., 2022; G. Madaan & Singh, 2019). Behavioral finance factors, encompassing herding behavior, the disposition effect, a preference for blue-chip stocks, overconfidence bias, representativeness bias, loss aversion, heuristics, trust, and financial literacy, wield a substantial influence on investment decisions. Notably, the impact of financial literacy stands out, not only shaping but also augmenting risk perception. Investors with heightened financial literacy levels exhibit a pronounced ability to thoroughly understand and assess investment risks. Acknowledging risk perception as a pivotal mediator is imperative for establishing meaningful connections between behavioral finance, risk perception, and the intricate processes involved in investment decision-making (Ahmed et al., 2022).

The establishment of the Saudi stock market, commonly referred to as “Tadawul,” in 1985 marked a pivotal moment in its ascendancy, transforming it into one of the preeminent stock markets within the Arab region (Alshammari, 2021). A notable trajectory of rapid expansion ensued, culminating in a substantial market capitalization of \$2.6 trillion by the close of 2022. The Saudi Arabian stock market has experienced significant growth and fluctuations in market capitalization over the past decade. Key growth years include 2012, 2018, and 2020, with market capitalization increasing by 25.50%, 7.19%, and 29.83%, respectively, reflecting strong investor confidence and economic recovery. However, the market also faced declines, notably in 2014 and 2021, due to corrections and broader economic challenges (Tadawul, 2021). Within the domain of financial economics, a bubble materializes when the market price of an asset consistently strays from its intrinsic value. This divergence is indicative of a scenario where market dynamics and investor sentiments drive the asset’s price to levels that are not aligned with its fundamental worth or underlying economic factors. Bubbles often result in prices that are inflated beyond what can be justified by the asset’s intrinsic value, and their occurrence raises concerns about the sustainability of such pricing trends (Ahmed et al., 2022; Burton, 2017). In a more precise context, a stock market bubble occurs when the market price of an asset surpasses the discounted value of expected future cash flows. This phenomenon signifies a situation where the current trading price of the asset goes beyond what can be justified by the present value of the anticipated cash flows it is expected to generate in the future. Such occurrences raise concerns about the sustainability of market valuations and often indicate a period of speculative excess where prices are driven by factors other than the fundamental financial health of the underlying assets (Aljifri, 2023).

Historical instances of such bubbles abound, encompassing events such as the Dutch Tulip Mania in 1634, Black Monday in the 1920s, the Dot Com bubble, the Saudi stock market crash

in 2006, the subprime crisis in 2008, and the Covid-19 pandemic. The 2006 crash in the Saudi stock market is particularly noteworthy, primarily attributed to irrational investor behaviors. During the period from 2003 to 2005, the Tadawul All Share Index (TASI) experienced substantial expansion, reaching its zenith on February 25, 2006, before succumbing to a subsequent market collapse. By year-end, TASI had witnessed an approximate 65% diminution in its value. Throughout this specified period, a notable contingent of Saudi investors found themselves heavily reliant on borrowed funds or compelled to liquidate their assets as a means to finance their investments. This financial approach led to a significant surge in loans extended to Saudi citizens, culminating in a gross balance of US\$48 billion (SAR 180 billion) by the conclusion of 2005 (Saudi Exchange, 2024). The adoption of these financial maneuvers had profound consequences, especially for average Saudi families who encountered substantial difficulties in meeting their loan repayment obligations. The widespread reliance on borrowed funds and asset liquidation underscored the challenges faced by investors during this period and contributed to the broader financial landscape's complexities.

This study centers its focus on the Saudi stock market, colloquially referred to as “Tadawul,” which has experienced significant growth but has encountered challenges, notably the 2006 crash attributed to irrational investor behaviors. The relevance of this research is particularly salient in emerging markets such as Saudi Arabia, where behavioral finance biases have the potential to exert a substantial impact on the financial gains and losses of investors (Parveen et al., 2020). The contribution of this study is to address the notable research gap concerning the mediating roles of risk perception and financial literacy in the influence of behavioral finance factors on individual investment decisions within the Saudi equity market. By filling this gap, the study aspires to provide insights that can help investors make well-informed decisions and assist regulators in developing policies that promote a stable and sustainable equity market.

2. REVIEW OF LITERATURE AND DEVELOPMENT OF HYPOTHESES

The relationship between behavioral finance factors and asset prices is a key point of contention between two opposing financial theories: classical finance theory and behavioral finance theory. Classical finance theory posits that asset prices remain unaffected by behavioral finance factors because rational arbitrageurs correct price discrepancies caused by emotional or irrational investors, thereby stabilizing the market and limiting the impact of behavioral biases (Almansour et al., 2023; Bazley et al., 2021). In contrast, behavioral finance theory challenges this perspective, arguing that psychological factors such as overconfidence, herding, and cognitive biases do influence asset prices. These mispricings can persist due to the limitations of arbitrage, allowing behavioral factors to significantly affect the market and lead to inefficiencies (Almansour et al., 2023). The Behavioral finance further delves into how psychological factors impact financial decision-making, revealing gaps in traditional finance models. As noted by Almansour et al., (2023), conventional finance models often fail to capture the irrational behaviors exhibited by investors, resulting in suboptimal investment decisions. In response to this, behavioral finance emphasizes the importance of cognitive biases such as overconfidence, loss aversion, and herd mentality, that shape investor decision-making, often causing them to deviate from rational choices.

The critical examination of risk perception in the realm of investment decision-making illuminates a multifaceted landscape where myriad factors converge to shape individuals' understanding of risk. Scholars such as Almansour et al., (2023) Bazley et al., (2021), and Lentoer & Maepa, (2021) have meticulously delved into this intricate domain, unraveling layers influenced by individual characteristics, prevailing market conditions, and the pervasive impact of

cognitive biases. Behavioral finance, as a theoretical framework, challenges the conventional notion that an individual's perception of risk is solely determined by objective factors. Instead, it contends that biases and heuristics play a substantial role, potentially leading individuals to make decisions that deviate from rationality. This critical perspective underscores the need to explore risk perception within the broader context of behavioral finance. It goes beyond traditional models by recognizing the psychological nuances that permeate the decision-making process, providing invaluable insights into the cognitive intricacies that underlie investment choices (Almansour et al., 2023; Bazley et al., 2021). Furthermore, the critical examination prompts a reevaluation of how risk perception is conceptualized. It challenges the assumption of a purely rational evaluation of risks and emphasizes the subjective nature of risk perception. This departure from a purely objective lens acknowledges that individuals may assess risk through a cognitive lens influenced by behavioral biases, emotions, and heuristics.

Kasoga's (2021) comprehensive exploration of heuristic biases on investment decisions in the Tanzanian stock market extends its investigation into the mediating roles of risk tolerance and financial literacy through multiple mechanisms. Through the collection of data from 316 individual investors via questionnaires and the utilization of structural equation modeling (SEM) for analysis, the study revealed that financial literacy plays a negligible mediating role in the effects of overconfidence, availability, anchoring, and representativeness heuristics on investment decisions. Furthermore, financial literacy does not exert influence on the relationship between risk tolerance and investment decisions. Notably, risk tolerance emerges as a positive mediator in the connections between overconfidence, availability, anchoring, and representativeness heuristics with investment decisions. A noteworthy finding is that overconfidence is the most influential factor on investment decisions, followed by availability, representativeness, risk tolerance, anchoring, and financial literacy.

The revelation of the mediating role played by risk perception underscores the intricate connection between behavioral finance and the decision-making processes of investors (Areiqat et al., 2019; Kasoga, 2021). This critical insight illuminates how investors' perceptions and evaluations of risk become pivotal factors shaping their engagement with behavioral finance principles. To illustrate, an investor characterized by overconfidence may perceive a potentially risky investment as less perilous than its true nature. This distorted perception heightens the probability of the investor making choices that are incongruent with their actual risk tolerance, potentially leading to investments that carry greater risk than they perceive (Kasoga, 2021). Conversely, a loss-averse investor may exhibit a tendency to perceive a seemingly low-risk investment as more precarious than its actual risk level. This cognitive bias may result in missed opportunities for gaining returns, as the investor, driven by an aversion to losses, may opt for safer but potentially less rewarding investment alternatives.

Moreover, the intricate dynamics of herding behavior, influenced by risk perception as asserted by (Almansour et al., 2023), present a nuanced layer that warrants comprehensive exploration within the landscape of investor decision-making. Herding behavior encapsulates the tendency of individuals to conform to the actions of the crowd, mirroring the choices made by others in the financial market. This collective tendency has the potential to significantly shape market dynamics, influencing asset prices and market trends. An intriguing facet of this herding behavior is its potential mediation through the lens of financial literacy, a proposition that gains significance in contexts where investors lack a thorough understanding of financial intricacies. Specifically, in situations marked by a deficiency in comprehensive financial knowledge, overconfident investors may find themselves more susceptible to herding behavior. The rationale behind this susceptibility lies in the tendency of overconfident individuals to seek shortcuts or heuristics in decision-making, often relying on the judgments and actions of their peers. Wat-

tanasan et al., (2020) contribute to this discourse by emphasizing the impact of financial literacy, or the lack thereof, in exacerbating the inclination of overconfident investors to engage in herding behavior. Their insights underscore the critical role of financial knowledge, or the lack thereof, as a determinant influencing the manifestation of herding behavior among investors. This interplay between overconfidence, risk perception, and financial literacy is a complex and dynamic phenomenon that requires meticulous examination. Thus, the study posits the hypothesis that:

H1. Herding significantly influences financial literacy.

H2. Financial literacy acts as a mediating factor in the positive impact of herding on investment decisions.

The disposition effect, recognized as a prevalent behavioral bias in investment decision-making, involves the premature sale of winning investments, a phenomenon extensively documented by (Richards et al., 2017). This behavioral tendency reveals investors' proclivity to prioritize avoiding realized losses, often leading to suboptimal investment outcomes (Ballis & Verousis, 2022; Kasoga, 2021; Ofir & Wiener, 2016; Verma & Verma, 2018). Particularly pronounced in long positions, the disposition effect has been associated with diminished investment performance, especially among less experienced investors (Madaan & Shrivastava, 2022).

Contributing to this discourse, Mumtaz and Smith, (2021) underscore the critical role of financial literacy in influencing the impact of the disposition effect on investment decisions. Expanding upon the foundational work of Richards et al., (2017), who first identified the disposition effect as a noteworthy behavioral bias, Mumtaz and Smith, (2021) assert that investors with heightened financial literacy exhibit an increased ability to resist the biases associated with this effect.

H3. The disposition effect has a significant impact on financial literacy.

H4. Financial literacy acts as a mediating factor in the positive influence of the disposition effect on investment decisions.

The inclination towards blue chip stocks, marked by a preference for shares in well-established companies boasting a stable financial history, represents a discernible phenomenon in investment decision-making, as noted by (Shiva et al., 2020). Investors demonstrating this bias tend to base their choices on the perceived prestige of these stocks rather than conducting a thorough analysis, potentially leading to suboptimal investment decisions. (Ahmed et al., 2022) conducted a study that not only corroborated the presence of the blue chip stocks bias but also shed light on the moderating influence of financial literacy.

Initially identified and highlighted by Shiva and Singh (2020), the bias towards blue chip stocks garnered attention for its impact on investment choices. Ahmed et al., (2022) delved deeper into this relationship, revealing that financial literacy can play a crucial mediating role in the decision-making process. The mediation hypothesis synthesized insights from both Shiva and Singh (2020) and Ahmed et al., (2022) proposing that financial literacy acts as a mitigating factor that shapes how investors navigate biases associated with the preference for blue chip stocks. The hypothesis posits that more financially literate investors are likely to make investment decisions grounded in a comprehensive evaluation of information, thereby reducing the impact of biases linked to the favoritism towards blue chip stocks. Consequently, the study advances the hypothesis:

H5. The bias towards blue chip stocks has a significant impact on financial literacy.

H6. Financial literacy acts as a mediating factor in the positive influence of blue chip stocks bias on investment decisions.

The proclivity of investors characterized by overconfidence towards making riskier decisions has been a focal point of extensive research, as indicated by studies conducted by Fairchild (2009), Paisarn et al., (2021), Yu et al., (2013). Individuals exhibiting overconfidence, marked by an overestimation of their investment capabilities and a propensity for risk-taking, consistently demonstrate a positive correlation with behaviors indicative of risky decision-making (Kasoga, 2021; Wattanasan et al., 2020). This behavioral bias is associated with an increased likelihood of engaging in investments characterized by elevated levels of risk.

Researchers such as Parveen et al., (2020), Wattanasan et al., (2020), Almansour et al., (2023), delve into the intricate interplay between overconfidence, financial literacy, and investment decisions. In particular, Parveen et al., (2020) underscore the impact of various behavioral biases, including overconfidence, on the decision-making processes of investors. Wattanasan et al., (2020) scrutinize the influence of emotional and psychological factors, including overconfidence, on investors' decision-making. Areiqat et al., (2019) contribute to the understanding of the impact of behavioral finance variables, encompassing overconfidence, on stock investment decision-making. Consequently, based on this body of research, the study posits the following hypothesis:

H7. Overconfidence has a significant impact on financial literacy.

H8. Financial literacy acts as a mediating factor in the positive influence of overconfidence on investment decisions.

The phenomenon of herding behavior, characterized by investors' tendency to follow the crowd in decision-making, has been a central focus in the realm of behavioral finance research. Research conducted by Gavrilakis and Floros, (2022), Gupta and Kohli, (2021), Nair et al., (2017), Ng et al., (2022), and Zainul and Suryani, (2021) collectively explores the intricate relationship between herding behavior and investment decisions, providing insights into its underlying mechanisms and consequences. Gavrilakis and Floros, (2022) specifically propose that herding behavior emerges as a response to risk perception and its subsequent impact on stock returns. Notably, during periods of heightened market uncertainty and volatility, investors may resort to herding behavior as a strategic response to minimize perceived risks (Balcilar et al., 2014).

Dickason and Ferreira (2018), and Kasoga (2021) have collectively contributed to the depth of understanding regarding herding behavior and its intricate connection to risk perception. Their studies delve into the multifaceted aspects of how investors navigate the dynamics of herding behavior, shedding light on the nuances that become particularly pronounced during periods of heightened perceived risk in the financial markets. Dickason and Ferreira (2018) scrutinizes the triggers and motivations that propel investors toward herd-like behavior, providing insights into the psychological and cognitive processes involved. Kasoga (2021) offers a perspective on the contextual factors that influence herding tendencies, examining how market conditions and investor sentiment contribute to this phenomenon. Thus, the study hypothesizes:

H9. Herding significantly influences risk perception.

H10. Risk perception serves as a mediating factor in the positive impact of herding on investment decisions.

The disposition effect, characterized by the tendency of investors to hold losing investments longer than winning ones, has been a subject of extensive research in behavioral finance. Notable studies conducted by Richards et al., (2017), Rasool and Ullah (2020), Ahmed et al., (2022), and Almansour et al., (2023) delve into the intricacies of the disposition effect and its implications for investment decisions. Richards et al., (2017), emphasize the impact of the disposition effect on investment behavior, indicating that investors exhibiting this bias tend to

hold onto losing stocks for prolonged periods. [Rasool and Ullah \(2020\)](#) contribute by exploring behavioral biases in investment decision-making, with a specific focus on the disposition effect. [Ahmed et al., \(2022\)](#) add to the discussion, providing insights into the relationship between the disposition effect and investment decisions. Thus, the study hypothesizes:

H11. The disposition effect has a significant impact on risk perception.

H12. Risk perception acts as a mediator in the positive influence of the disposition effect on investment decisions.

The proclivity towards blue chip stocks, wherein investors exhibit a preference for established and financially robust companies, has garnered significant attention within the domain of behavioral finance literature. This phenomenon underscores the behavioral biases that can influence investment decisions. Notably, researches conducted by [Shiva and Singh, \(2020\)](#) and [Ahmed et al., \(2022\)](#) have contributed valuable insights to elucidate the intricate dynamics associated with biases towards blue chip stocks and their impact on investment choices.

In their study, [Shiva and Singh, \(2020\)](#) specifically explore the nexus between overconfidence, risk perception, and the inclination towards blue chip stocks. Their findings reveal a compelling relationship, indicating that investors characterized by overconfidence are more likely to favor blue chip stocks. Conversely, investors with a heightened perception of risk demonstrate a reduced likelihood of displaying this bias. This suggests that psychological factors, such as overconfidence and risk perception, play a crucial role in shaping investors' preferences for blue chip stocks.

[Ahmed et al., \(2022\)](#) extend the investigation into behavioral biases and investment decisions within the specific context of the Pakistan Stock Exchange. Their research provides additional depth by highlighting the mediating role of risk perception in the relationship between biases towards blue chip stocks and investment decisions. This implies that the impact of biases on investment choices is not direct; rather, it is influenced and moderated by investors' perceptions of risk. Thus, the study hypothesizes:

H13. The bias towards blue chip stocks significantly influences risk perception.

H14. Risk perception serves as a mediating factor in the positive impact of blue chip stocks bias on investment decisions.

The proposed hypothesis posits that risk perception functions as a mediating factor in the correlation between overconfidence and investment decisions, serving as a mechanism to mitigate the influence of overconfidence on the decision-making processes of investors. This assertion is rooted in insights gleaned from investigations conducted by [Parveen et al., \(2020\)](#), [Wattanasan et al., \(2020\)](#) and [Almansour et al., \(2023\)](#), which collectively enhance comprehension regarding how overconfidence interacts with risk perception within the context of investment decision-making.

[Parveen et al., \(2020\)](#) underscore the observation that overconfident investors tend to manifest a positive risk perception, establishing a correlation between overconfidence and the manner in which investors perceive and assess risks. Extending this line of inquiry, [Wattanasan et al., \(2020\)](#) delve into the repercussions of emotional and psychological factors, including overconfidence, on the decisions made by investors in the securities market. Their findings underscore the consequential role of overconfidence in shaping investors' attitudes towards risk. Building upon this foundation, [Almansour et al., \(2023\)](#) contribute to the collective understanding by scrutinizing the impact of overconfidence on decision-making related to stock investments, ultimately revealing its substantial influence. Consequently, drawing from this synthesized body of literature, the present study advances the hypothesis that:

H15. There is a significant effect of overconfidence on risk perception

H16. Risk perception mediates the positive effect of overconfidence on investment decisions

Almenberg et al., (2021) accentuate a crucial observation in the realm of financial literacy, asserting that individuals endowed with a higher degree of financial literacy tend to engage in more extensive trading activities. This discerned correlation between financial knowledge and increased trading volume suggests that those with a deeper understanding of financial concepts are more actively involved in various investment endeavors. Essentially, the implication is that an individual's proficiency in financial matters is linked to their proclivity for dynamic and participative engagement in investment activities.

Samsuri et al., (2019) contribute further by elucidating a positive impact of financial literacy on investment decisions. Their findings emphasize the pivotal role that financial knowledge plays in shaping the behavior of investors when making decisions related to investments. In essence, their work underscores the importance of financial literacy as a determinant factor influencing the decision-making processes of individuals in the investment domain. Expanding on this foundation, Niazi et al., (2019) shed light on an additional dimension of the impact of financial literacy. They reveal that individuals with heightened financial literacy are more likely to exhibit a greater degree of risk tolerance. This insight broadens the spectrum of influence that financial literacy wields over various aspects of investment decision-making. It suggests that individuals equipped with a robust understanding of financial principles not only engage more actively in investment activities but also approach risk with a more tolerant mindset. Therefore, based on the synthesis of findings from these studies, the present research advances the hypothesis:

H17. There is a positive correlation between financial literacy and investment decisions.

Wattanasan et al., (2020) conducted an investigation into the intricate interplay among investment risk perception, financial literacy, and investment behavior. Their study reveals that individuals possessing heightened investment risk perception tend to adopt a more judicious and cautious approach to their investment activities. This insight suggests that an individual's perception of the risks associated with investments significantly influences their decision-making, leading to a more prudent and risk-aware investment behavior.

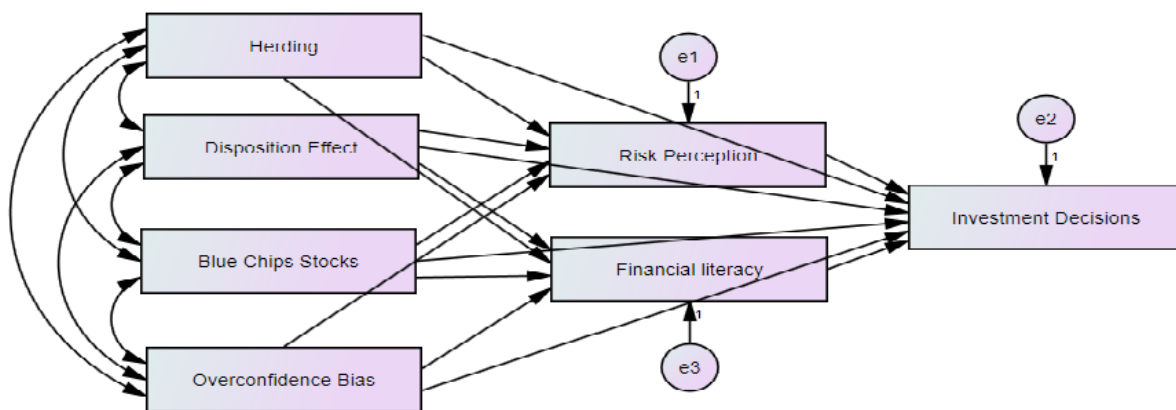
Lima et al., (2020) further emphasize the crucial role of historical risk perception data in refining the accuracy of predicting investment returns. Their work underscores the importance of integrating considerations of risk perception into decision-making processes, asserting that historical risk perception data serves as a valuable tool in enhancing the precision of forecasting investment outcomes. In essence, their findings highlight the practical implications of incorporating comprehensive risk perception assessments in the pursuit of more informed and accurate investment decisions.

Expanding upon this foundational knowledge, Worawachtanakul et al., (2018) contribute to a deeper understanding of these dynamics by exploring the influence of environmental risk perception on investment decisions. Their research unveils a noteworthy association wherein heightened environmental risk perception correlates with a decrease in the frequency of investment decisions. This suggests that individuals who are more attuned to and concerned about environmental risks tend to exercise caution in their investment activities, potentially leading to a more conservative and risk-averse approach. Moreover, Samsuri et al., (2019) identify a positive relationship between risk tolerance and investment decisions, underscoring the pertinence of risk perception in shaping investor behavior. In light of these collective insights, the study posits the hypothesis:

H18. There a positive relationship between risk perception and investment decisions.

In light of the proposed hypotheses, we have constructed the hypothetical model depicted in Figure 1. The model illustrates the impact of herding, disposition effect, biases towards blue chip stocks, and overconfidence on investment decisions, considering the mediating factors of risk perception and financial literacy. Investors inclined to take risks demonstrate a greater willingness to acquire stocks. Furthermore, an elevation in the financial literacy levels of individuals is associated with a mitigation of herding biases, thereby exerting a positive influence on investment decisions made by investors.

Figure 1. Hypothesized model



Source: Authors' calculation

3. METHOD

3. 1. POPULATION AND SAMPLE AND PROCEDURE

Precise demographic targeting is a critical aspect of research methodology, serving as the foundation for determining the specific group from which data will be gathered (Sarstedt et al., 2019). Failure to adequately consider the inherent characteristics of the targeted population can introduce biases into the analyses, potentially compromising the validity of research findings (Fama, 1998).

In the context of this study, the focus is directed towards investors actively participating in the Saudi stock market. The aim is to comprehensively assess their investment behavior and identify prevalent behavioral biases within this specific financial landscape. To achieve this, a total of 350 questionnaires were distributed, and an impressive 90% response rate was achieved, resulting in 315 responses deemed suitable for thorough analysis. The selection of respondents through purposive sampling was deliberate, aligning with the specific goals of the research. Informed consent for participation in the study was obtained, and participants were explicitly informed about the research objectives and procedures. Written consent was obtained from each participant. This deliberate sampling strategy enhances the reliability and trustworthiness of the collected data (Campbell et al., 2020).

Moreover, the data collection process was inclusive, involving both male and female investors, and was facilitated through collaboration with stock market brokers. This comprehensive approach is designed to capture a diverse range of perspectives and experiences within the investor community. The overarching objective of the research is to delve into the intricate dynamics

of investment decision-making. Specifically, the study aims to explore how behavioral factors interact with and influence investment choices. A key focus is placed on investigating the mediating role of risk perception and financial literacy in shaping the relationship between these behavioral factors and the ultimate decisions made by investors.

3. 2. INSTRUMENTS

The survey instrument utilized in this research, comprising 48 inquiries, was designed to comprehensively capture a range of factors that exert influence on investment decisions. The questionnaire was structured into two main sections: demographic information and factors related to investment behavior. The former encompassed inquiries pertaining to gender, age, education, and experience, as detailed in Table 1. The latter section included questions addressing various aspects such as risk perception, financial literacy, herding tendencies, disposition effect, bias towards blue-chip stocks, and overconfidence.

Of the total questions, 24 were dedicated to probing specific behavioral factors, delving into the psychological and emotional elements that impact decision-making. Additionally, seven questions were targeted at exploring aspects related to investment decisions and risk perception, while ten questions were designed to assess financial literacy. The respondents provided their responses on a scale ranging from 1 (strongly disagree) to 5 (strongly agree), as outlined by (Pompian, 2011).

The collected data underwent refinement using SPSS, and subsequent to confirming normality, Structural Equation Modeling (SEM) with AMOS software was employed for advanced statistical analysis. This analytical approach was chosen to align with the conceptual framework of the study and rigorously test the formulated hypotheses.

Table 1. Profiles of individuals engaged in the Saudi equity market: demographics and experience

Criteria		N	%
Gender	Male	276	88%
	Female	39	12%
Total		315	100%
Age	less than 30 years	86	27%
	From 30 - 40	129	41%
	From 41 - 50	88	28%
	More than 50 years	12	4%
Total		315	100%
Education Level	Secondary School	38	12%
	Bachelor Degree	241	77%
	Master Degree	26	8%
	PhD Degree	10	3%
Total		315	100%
Experience	less than 5 years	197	63%
	From 5 - less than 15 years	98	31%
	From 16 - less than 25 years	20	6%
Total		315	100%

Source: Primary data

Table 1 presents a detailed breakdown of the demographic and experience profiles of individuals engaged in the Saudi Equity Market, offering valuable insights into the composition of the study participants. Firstly, the gender distribution reveals a significant predominance of male

participants, constituting 88% of the total sample. In contrast, female participants make up 12% of the overall population, indicating a gender imbalance within the Saudi Equity Market. Turning to the age distribution, participants under 30 years old account for 27% of the sample, suggesting a diverse representation across different age groups. The age bracket of 30 to 40 years old emerges as the largest group, encompassing 41% of the participants. Meanwhile, individuals aged between 41 and 50 years constitute 28% of the sample. Notably, participants over 50 years old form the smallest group, comprising just 4% of the total. This diverse age distribution provides a nuanced perspective on the age demographics of individuals actively involved in the Saudi Equity Market.

Examining the education level of participants, a significant proportion holds a Bachelor's degree, representing 77% of the sample. Those with a Master's degree make up 8%, and participants with a PhD degree constitute 3%. The inclusion of individuals with a secondary school education, comprising 12% of the sample, further enriches the educational diversity within the study. The experience profile of participants is delineated based on the number of years engaged in the Saudi Equity Market. Individuals with less than 5 years of experience constitute the majority at 63%, suggesting a considerable influx of relatively new participants. Participants with 5 to less than 15 years of experience represent 31% of the sample, while those with 16 to less than 25 years of experience form the smallest group at 6%. This distribution underscores the varying levels of experience among participants, contributing to a comprehensive understanding of the Saudi Equity Market landscape.

3. 3. MEASUREMENTS

The examination of behavioral finance factors and investment decisions in this study was informed by prior research employing analogous questionnaires to assess the variables of interest. Specifically, the inquiries related to investment decisions were adapted from studies conducted by [Almansour et al., \(2023\)](#), [Khawaja and Alharbi, \(2021\)](#) and [Liang and Reiner, \(2009\)](#). To gauge herding behavior, questions were drawn from research conducted by [Kumari et al., \(2022\)](#), [Marjerison et al., \(2023\)](#), and [Almansour et al., \(2023\)](#). Questions assessing the disposition effect were adapted from studies by [Adil et al., \(2022\)](#), [Ballis and Verousis, \(2022\)](#), and [Paraboni and da Costa., \(2021\)](#).

For the evaluation of blue chip stocks, five items were employed, adapted from research conducted by [Ahmed et al., \(2022\)](#), [Shiva and Singh, \(2020\)](#), and [Almansour et al., \(2023\)](#). The measurement of overconfidence was derived from studies by [Adil et al., \(2022\)](#), [Liang and Reiner, \(2009\)](#) and [Mushinada and Veluri, \(2019\)](#) comprising a total of seven items. The assessment of risk perception drew upon items from research by [Hossain and Siddiqua, \(2022\)](#), [Oyekale, \(2022\)](#) and [Almansour et al., \(2023\)](#), comprising seven items in total. Lastly, the measurement of financial literacy was drawn from a study conducted by [Rapina et al., \(2023\)](#).

4. DATA ANALYSIS

4. 1. PRELIMINARY ANALYSIS

The preliminary analysis focused on two main aspects: Results of Measurement Testing and Descriptive Statistics. These analyses were conducted to ensure the reliability of the measured variables and to provide a comprehensive overview of the key dimensions under investigation in the context of the Saudi Stock Market.

Table 2 summarizes the results of measurement testing, demonstrating that all dimensions assessed in the study exceeded the commonly accepted Cronbach's Alpha threshold of 0.70 ([Shojaei, 2024](#)). This indicates strong reliability and consistency across the measurement tools used,

providing robust evidence of their effectiveness in capturing the intended constructs without bias. These findings underscore the validity of the employed dimensions in the study framework.

Table 2. Results of measurement testing

Dimensions	Cronbach's Alpha	Number of Items
Herding	0.780	7
Disposition Effect	0.765	5
Blue Chips Stocks	0.891	5
Overconfidence Bias	0.801	7
Risk Perception	0.870	7
Financial literacy	0.775	10
Investment Decisions	0.754	7

Source: Authors' calculation

Table 3 provides a comprehensive overview of descriptive statistics for each dimension under investigation. The table includes key statistical measures for each dimension: the number of observations (N), skewness (skew), kurtosis, mean, standard deviation (Std.), tolerance, and variance inflation factor (VIF). Commencing with the dimension exhibiting the highest average, risk perception emerges prominently with an elevated mean value of 3.92. This average signifies that, on the whole, respondents tend to perceive a heightened level of risk. This observation holds particular significance in deciphering how investors interpret prevailing market conditions or specific investment scenarios, underscoring the perceived uncertainties or precariousness inherent in the Saudi Stock Market.

Conversely, directing attention to the dimension with the lowest average, financial literacy takes precedence, registering a mean value of 3.35. This implies that, on average, respondents display a comparatively lower level of financial literacy. This discovery prompts inquiries into the depth of knowledge and accessibility to information among investors in the Saudi Stock Market, with potential ramifications for decision-making processes. Transitioning to the realm of standard deviation, the dimension of overconfidence bias stands out with the highest value recorded at 0.954. This value indicates a noteworthy degree of variability in respondents' levels of overconfidence. The elevated standard deviation suggests a spectrum of opinions or behaviors related to overconfidence, reflecting diverse perspectives within the surveyed sample. Conversely, the dimension of risk perception exhibits the lowest standard deviation, registering at 0.640. This implies diminished variability in how respondents perceive risk, indicating a more consistent or homogenous viewpoint regarding risk among the surveyed participants. The uniformity in risk perception may suggest a shared understanding or consensus prevailing among investors in the Saudi Stock Market.

Table 3. Descriptive statistics

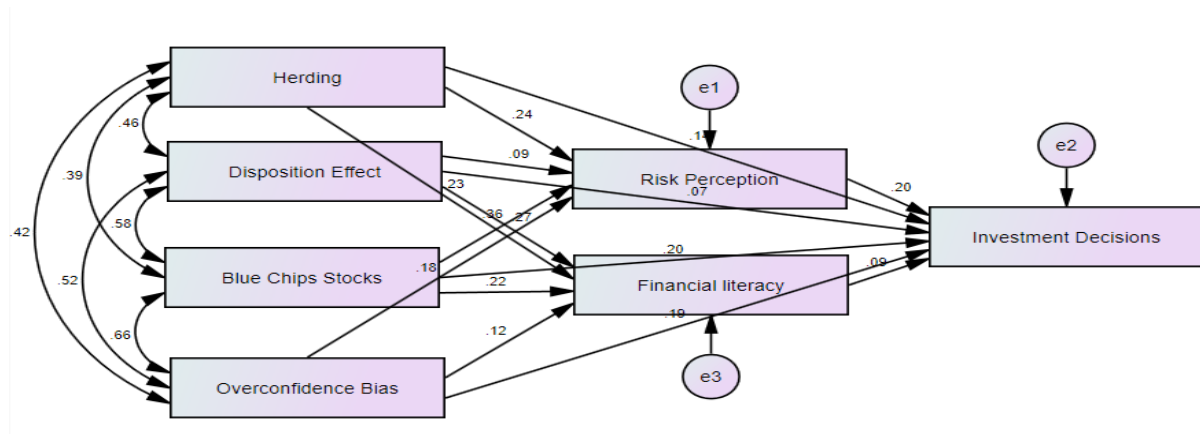
Dimensions	N	skew	kurtosis	Mean	Std.	Tolerance	VIF
Herding	315	-0.675	-0.189	3.75	0.685	0.641	1.559
Disposition Effect	315	-0.230	-0.607	3.43	0.856	0.539	1.856
Blue Chips Stocks	315	-0.547	-0.195	3.57	0.866	0.422	2.370
Overconfidence Bias	315	-0.579	-0.413	3.61	0.954	0.495	2.018
Risk Perception	315	-0.859	1.065	3.92	0.640	0.502	1.994
Financial literacy	315	-0.439	-0.217	3.35	0.779	0.557	1.794
Investment Decisions	315	-0.506	-0.050	3.48	0.834	-	-

Source: Authors' calculation

4. 2. STRUCTURAL MODEL

Subsequent to establishing the robustness of the employed measures, the study proceeds to assess the hypothesized relationships through the examination of a structural model (depicted in Figure 2). The evaluation of the goodness-of-fit indices, as detailed in Table 4, aligns with the stipulated guidelines recommended by Wang and Wang (2019). The model fit indices—Comparative Fit Index (CFI), Incremental Fit Index (IFI), Goodness of Fit Index (GFI), Normed Fit Index (NFI), and Root Mean Square Error of Approximation (RMSEA)—all meet the threshold criteria, with values exceeding the recommended cutoff of 0.900 for CFI, IFI, GFI, and NFI, and the RMSEA value being below the acceptable limit of 0.060. These results confirm that the structural model adequately fits the data, substantiating the validity of the hypothesized relationships under investigation.

Figure 2. Structural model



Source: Authors' calculation

Table 4. Testing model fit

Description of model	Model fit indices				
	CFI	IFI	GFI	NFI	RMSEA
Threshold	≥0.900	≥0.900	≥0.900	≥0.900	≤0.060

Source: Authors' calculation

4. 3. HYPOTHESES TESTING AND DISCUSSION

In the hypotheses testing and discussion section, the investigation delves into the direct and indirect effects of behavioral finance factors on investment decisions. Table 5 is instrumental in revealing the statistical significance and magnitudes of these effects, shedding light on the nuanced relationships among the variables. The table provides a thorough examination of the standardized regression weights, offering precise estimates of the significance of direct effects from various behavioral finance factors on risk perception, financial literacy, and investment decisions. The significance levels are denoted as *** $p < 0.001$, ** $p < 0.05$, and * $p < 0.10$. Notably, all direct effects demonstrate statistical significance, underscoring the pivotal role of these factors in influencing investor decision-making.

In the context of Saudi investors, this study examined the herding behavior and found substantial and statistically significant direct effects on several key dimensions. Herding behavior showed a strong influence on risk perception (0.241), financial literacy (0.230), and investment decisions (0.138). These findings suggest that Saudi investors who exhibit herding tendencies are more likely to perceive elevated levels of risk in their investment environment. This heightened risk perception could be attributed to the collective nature of herding, where investors base their decisions on the actions of others rather than independent analysis. Moreover, the study reveals that herding tendencies correlate with a higher level of financial literacy among Saudi investors, possibly due to the shared information flow within the investor community. As a result, these investors make more pronounced investment decisions, which are shaped not only by objective market factors but also by the prevailing sentiments of the broader investor group. This finding is consistent with prior studies (Kasoga, 2021; Ahmed et al., 2022; Zhang et al., 2022; Almansour et al., 2023a), confirming the significant role of herding in influencing investor behavior.

Similarly, the disposition effect characterized by investors holding onto losing investments while prematurely selling winning ones exhibits notable direct effects among Saudi investors. The impact of the disposition effect on risk perception (0.092), financial literacy (0.269), and investment decisions (0.069) highlights the distinct decision-making patterns within this group. Investors showing a disposition effect display a unique approach to risk, often demonstrating either heightened caution or bias, and this behavior is associated with elevated levels of financial literacy. These investors' investment choices are significantly shaped by their perceptions of risk and the information available to them. The results align closely with findings from earlier studies (Kasoga, 2021; Ahmed et al., 2022; Zhang et al., 2022; Almansour et al., 2023a), reinforcing the disposition effect's critical influence on investor decision-making in the Saudi context.

The behavioral factor associated with focusing on blue-chip stocks reveals significant direct effects on key dimensions of investment behavior. Specifically, it has a notable impact on risk perception (0.363), financial literacy (0.218), and investment decisions (0.200). These findings suggest that Saudi investors who concentrate on blue-chip stocks typically large-cap, well-established companies demonstrate distinct patterns in assessing risk and managing financial knowledge. The preference for blue-chip stocks reflects a conservative investment strategy, where the perceived stability of these firms influences both risk perception and the level of financial literacy. Investors focusing on blue-chip stocks are likely to feel more secure, perceiving lower levels of risk, while maintaining higher financial literacy, as these investments often require deeper market understanding and knowledge of fundamental analysis. The clear impact on their investment decisions reinforces the importance of stock selection in shaping investor behavior in the Saudi market, these results align with the findings of previous research (Kasoga, 2021; Almansour et al., 2023b; Shiva & Singh, 2020).

Furthermore, the analysis of overconfidence bias shows significant direct effects, particularly on risk perception (0.180) and financial literacy (0.119). Saudi investors characterized by overconfidence tend to approach risk differently, often underestimating the uncertainty present in the market. This cognitive bias leads them to misjudge the true level of risk, which can have implications for their investment decisions. Overconfidence is also associated with a distinct level of financial literacy, indicating that these investors process information differently. Their tendency to overestimate their own knowledge and predictive abilities contributes to unique decision-making patterns when compared to less overconfident investors. These results align with the findings of previous research (Kasoga, 2021; Almansour et al., 2023b; Shiva & Singh, 2020), further solidifying the role of cognitive biases, such as overconfidence, in influencing investment behavior within the Saudi Arabian context.

Table 5. Direct and indirect effects of behavior finance factors on investment decision

	Direct Effects			Indirect Effects	
	Risk Perception	Financial literacy	Investment Decisions	Via Risk Perception	Via Financial literacy
Herding	0.241***	0.230***	0.138***	0.048***	0.020***
Disposition Effect	0.092*	0.269***	0.069	0.018***	0.023***
Blue Chips Stocks	0.363***	0.218***	0.200***	0.072***	0.018***
Overconfidence Bias	0.180***	0.119**	0.191***	0.036***	0.010***
Risk Perception	-	-	0.201***	-	-
Financial literacy	-	-	0.087	-	-

Source: Authors' calculation

Table 6 provides a comprehensive analysis of the total effects of various behavioral finance factors on investment decisions among Saudi investors. Herding behavior is shown to have substantial cumulative effects on investment decisions, mediated through both risk perception (0.186) and financial literacy (0.158). These findings emphasize the significant influence of collective sentiment in shaping individual investment choices. Specifically, the results suggest that Saudi investors are strongly impacted by the mood and actions within the broader investment community, with herding creating a ripple effect that influences both individual risk perception and financial knowledge, ultimately guiding investment decisions. The significance levels for these effects are denoted as *** $p < 0.001$, ** $p < 0.05$, and * $p < 0.10$.

The disposition effect also demonstrates noteworthy cumulative effects on investment decisions, primarily through the pathways of risk perception (0.087) and financial literacy (0.092). Saudi investors who exhibit the disposition effect; characterized by the tendency to hold onto losing investments while selling winners, show a persistent influence of this behavior on their overall decision-making process. The results suggest that this bias impacts investment decisions not only by altering how investors perceive risks but also through the level of financial acumen they bring to their choices. Investors with a disposition effect tend to see risks differently, which, combined with their financial literacy, shapes a distinct pattern of decision-making.

The analysis of blue-chip stock preferences among Saudi investors reveals significant total effects on their investment decisions. These effects are mediated through risk perception (0.272) and financial literacy (0.218), suggesting that investors focusing on well-established, large-cap stocks are influenced not only in terms of how they assess risks but also in the financial knowledge they apply in decision-making. This preference for blue-chip stocks demonstrates a considerable impact on investment behavior within the Saudi Arabian market, highlighting that

these investors' decisions are shaped by both their perceived stability of such stocks and their informed approach to financial choices.

In a similar vein, overconfidence bias also exerts substantial total effects on investment decisions, mediated by risk perception (0.227) and financial literacy (0.201). Saudi investors displaying overconfidence bias tend to perceive risks differently, often underestimating the uncertainty in the market, and exhibit specific levels of financial literacy. The combination of these factors suggests that overconfidence plays a critical role in influencing investment decisions, with overconfident investors relying on their perceived knowledge and risk tolerance, despite potential overestimation of their abilities. These findings are in alignment with prior studies (Ahmed et al., 2022; Zhang et al., 2022; Kasoga, 2021; Almansour et al., 2023a), which also emphasize the enduring influence of overconfidence on investor behavior.

Table 6. Total effects of behavior finance factors on investment decision

	Investment Decision Via Risk Perception	Investment Decision Via Financial literacy
Herding	0.186***	0.158***
Disposition Effect	0.087**	0.092*
Blue Chips Stocks	0.272***	0.218***
Overconfidence Bias	0.227***	0.201***

Source: Authors' calculation

5. CONCLUSION AND RECOMMENDATIONS

This study provides valuable insights into the direct and indirect effects of behavioral finance factors on investment decisions, particularly within the context of Saudi investors. The hypotheses testing and discussion revealed the significant influence of these factors, with herding behavior, the disposition effect, and overconfidence bias playing pivotal roles in shaping investor behavior. Specifically, herding behavior among Saudi investors demonstrated a strong impact on risk perception, financial literacy, and investment decisions. Investors displaying herding tendencies tend to perceive higher levels of risk, possess enhanced financial knowledge, and make decisions shaped by both market conditions and the actions of the broader investor community. Similarly, the disposition effect, particularly regarding blue-chip stocks, and overconfidence bias have notable effects on investor behavior, further emphasizing the distinct decision-making patterns observed within the Saudi context. The cumulative effects of these factors, as explored through risk perception and financial literacy, provide a comprehensive understanding of how behavioral finance influences Saudi investors' decisions.

The implications of these findings are substantial both academically and practically. From a theoretical standpoint, this research enhances our understanding of the significant role behavioral finance factors play in financial decision-making. Practically, the study offers crucial insights for financial institutions, policymakers, and market participants in Saudi Arabia. By recognizing the influence of behavioral biases, these stakeholders can develop targeted interventions to improve investor outcomes. Educational initiatives focused on increasing financial literacy could mitigate the effects of biases like herding and overconfidence, fostering more rational and informed investment decisions. Market regulators could also incorporate behavioral finance principles into regulatory frameworks, promoting a more resilient and stable market environment. Financial institutions are encouraged to offer advisory services that consider these behavioral tendencies, improving the quality of financial advice and supporting more prudent investment strategies.

This study opens several avenues for future research. Investigating how cultural and contextual factors unique to Saudi Arabia interact with behavioral biases could provide a more nuanced understanding of investor behavior. Longitudinal studies may reveal how these behaviors evolve over time, offering insights into emerging trends. Additionally, comparative studies across global markets could identify universal and culture-specific aspects of behavioral finance. Further exploration into the effectiveness of interventions, such as financial education programs, in reducing behavioral biases would also be a valuable contribution.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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