(Online) ISSN 2712-0554
Original Research
Heritage and Sustainable Development
Vol. 8, No. 1, 2026, pp.677-690
https://doi.org/10.37868/hsd.v8i1.2165

Behavioral and accounting determinants of sustainable trading activity in gulf financial markets evidence from the Muscat stock exchange

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Received Oct. 12, 2025
Revised Dec. 24, 2025
Accepted. May 20, 2026
Online May 30, 2026

Abstract

This study examines how behavioral and cultural factors influence trading activity at the Muscat Stock Exchange (MSE) in the Gulf region, while also highlighting the implications of these dynamics for fostering sustainable financial market development. Using behavioral finance theories and Hofstede's cultural dimensions, the research focuses on the effects of collectivism and uncertainty avoidance on investor behavior, drawing on survey data from 100 investors and secondary data from 30 listed firms. Behavioral variables were measured using a five-point Likert scale, with firm size, financial leverage, and Tobin's Q included as control variables in a multiple regression model. The findings reveal that collectivism has a positive and statistically significant effect on trading activity, suggesting that reliance on social networks and shared information can enhance transparency and inclusive participation, both of which support long-term market sustainability. In contrast, uncertainty avoidance exerts a negative influence, indicating that strong risk aversion reduces trading activity and may constrain liquidity, a key component of resilient and sustainable capital markets. By integrating sustainability considerations into the analysis of cultural and behavioral determinants of trading behavior, this study contributes novel insights into how investor psychology shapes market dynamics in an emerging economy such as the MSE and underscores the importance of behavioral factors in building stable, efficient, and sustainable financial systems.

Keywords: Sustainable Finance, Investor Behavior, Collectivism, Uncertainty Avoidance, Trading Activity, Muscat Stock Exchange.

1. Introduction

Sustainable financial markets are an important entity for economic development and efficient use of financial capital in today's economy. Financial markets are a marketplace where various financial assets, such as shares, securities, bonds, etc., are traded by various investors, banks, and financial institutions. Financial markets help in utilizing the saved amount in the economy in the form of an investment [1], [2]. The process of transformation of savings into investment and subsequently into capital formation, economic growth, and development is possible with the help of financial markets, and thus efficiency in financial markets enhances the liquidity and transparency of the market, thereby providing sufficient information to the investor for making their investment

decision with the help of market signals. Efficiency in stock markets is very important as it is the stability and efficiency in the trading process in the stock market, which is a major factor responsible for building confidence of the investors and thereby encouraging them in making long-term investments [3], [4]. Financial markets form a very significant part of the economy. Despite their importance, the stock market on most occasions experiences highly volatile movements, which are depicted by sharp fluctuations in the share prices and volumes. Several theories have been suggested to explain this phenomenon. Some of the factors that affect the volatility of the market include economic conditions of the country, regulatory bodies, information disparity between different groups of investors, and expectations of investors [5], [6]. As recently as five years ago, finance as a discipline was dominated by fairly traditional views, which assumed that markets were efficiently functioning because of the assumed rationality of individuals and that therefore deviations from the theory, especially those related to investors' behavior should be marginal. Many more recent developments have now shown, however, that the traditional theories, even assuming rational behavior, are no longer viable [7], [8]. So, research on psychological and/or behavioral characteristics that can affect the way in which an investor uses the information available, makes price risk assessments, and, in general, is influenced by the events and signals emanating from the stock market has become much more prevalent [9], [10]. These psychological/behavioral characteristics, among others, can influence, in turn the purchase and sale of securities and thus can influence the performance of the stock market [11], [12].

As a result of the limitations and inadequacies of the traditional theories of finance, the field of Behavioral Finance emerged as a branch of finance in order to explain and address the discrepancies between the observed behavior of financial markets and the theoretical theory of rational investment behavior (also known as the theory of rational choice) [13], [14]. Behavioral Finance draws from psychology, sociology, and economics in order to describe how cognitive biases, emotions, and social influences affect the investment decisions of the individual [15], [16]. This contrasts with traditional finance theory, in which the assumption is that the individual investor always acts rationally in order to maximize their own expected utility based on all available information at any given time [17], [18]. Instead, according to the principles of Behavioral Finance, the individual investor may often use rules of thumb (heuristics), emotional reasoning, or a combination of these in their investment decisions [19], [20]. The result is that individual and collective investment behavior can manifest a whole range of paradoxical and often irrational phenomena, such as herding, overconfidence, risk aversion, or the tendency to follow the majority consensus as opposed to making their own independent assessment of an investment [21], [22].

The Hofstede cultural dimensions model [8], [13], has been employed as one of many cultural frameworks to understand the impact of cultural influence on the individual's behavior. These frameworks have clarified cultural traits that are important to the formation of values, attitudes, and behavior within a culture. The collectivist versus individualistic and the degree of uncertainty avoidance dimensions are two cultural dimensions that provide insight into an individual's investment behavior decision-making process [10]. Collectivism is the extent to which you base your decision on your relationships with others in a group, family, or social environment, while uncertainty avoidance is the extent to which you are uncomfortable with risk and/or ambiguity. An individual with high uncertainty avoidance is likely to interpret the uncertain aspects of the market as a signal to use a more conservative approach to their investment behavior [13]. The cultural dimensions outlined in these frameworks are likely to affect how individuals perceive investment opportunities, interpret market information, and ultimately how investors make decisions about their trading activities. The Gulf area offers a unique platform for seeking to understand how cultural influences are related to the actions of investors. There has been considerable progress in the evolution of financial markets in the Gulf area over the last few years, with a corresponding increase in the number of individual investors participating in these markets [14]. Alongside the advancement of financial markets, cultural and social influences also have a substantial effect on an individual's financial attitude and the way that they invest. Investors in these types of environments will use both financial information as well as their social interactions, group perceptions, and informal information when making their trading decisions. As a result, trading in financial markets may be

attributed to both the underlying fundamentals and behavioral characteristics stemming from the culture within which an investor lives.

Given the above, the first objective of this research is to explore the effects of behavioral characteristics of investors in the Gulf region and how such characteristics affect the trading behavior of investors on the Muscat Stock Exchange. In undertaking this research, the concept of behavioral finance will be utilized, and cultural dimensions as identified by Hofstede will be incorporated into understanding how collectivism and uncertainty avoidance influence the behavior of investors regarding their investment decisions and the impact on the trading activity in the market [10]. Through this approach, the research aims to contribute to the growing body of literature that highlights the importance of behavioral and cultural factors in understanding financial market dynamics, particularly in emerging and developing markets.

Although there has been an increase in the number of studies conducted on behavioral finance, there is still limited empirical research on how cultural behavioral dimensions are related to trading behavior in the Gulf region's equity markets [11], [12]. The majority of studies conducted to date have either focused on developed equity markets or researched single behavioral biases without considering the wider cultural context of investment decision-making [22]. Specifically, very little research has been conducted on how cultural dimensions, such as collectivism and uncertainty avoidance, affect investor behavior in Gulf emerging equity markets. Additionally, much of the previous research has relied only on survey data or financial market indicators, rather than looking at both behavioral and firm-level financial variables together within one analytical framework [10]. As a result, this study will seek to fill this gap by examining the impact of cultural behavioral dimensions on investor trading behavior on the Muscat Stock Exchange and, at the same time, will incorporate firm-level financial characteristics to provide a better understanding of investor behavior in the Gulf region's equity markets.

2. Literature review

In recent years, there has been an increasing amount of research into the behavior of financial markets that draws heavily from behavioral economics. These theories stem from the traditional neoclassical model of financial markets that assumes rational behavior from all participating individuals, with market prices reflecting all relevant information. However, extensive empirical evidence contradicts this assumption. Hence, a new offshoot of finance has been developed, focusing on behavioral economics and psychology, called Behavioral Finance [23], [24]. This paradigm draws from the field of psychology to further understand why economic decisions are not taken purely in a rational manner.

According to various studies, Behavioral Biases in Investment Decisions have been explored in numerous empirical research studies. The study titled “The Behavioral Biases Affecting Individual Investors and Their Trading and Investment Behavior”, conducted by Kumar Alok Goyal Avinash (2021), analyses the effect of behavioral biases on the investment behavior of individual investors. The study examines the prevalence of various behavioral biases, such as overconfidence, herding, and loss aversion in the investment choices and decisions of the individual investors and finds that overconfidence, herding, and loss aversion all have a significant effect on their trading behavior and investment choices. Individual investors are shown to rely on mental heuristics and social information rather than on purely analytical standards [15].

The authors of [4], investigated the behavior of investors in emerging economies and found that psychological biases highly influence the frequency of trading as well as the investment strategies in the emerging economies' financial market. A recent study by Scott J. Kelley, a professor at Loyola University Maryland's Sellinger School, concluded that overconfident investors frequently trade securities, boosting market volatility and leading to inferior portfolio performance. The researchers determined overconfidence by administering a survey of four questions about investing to 83 master's degree students enrolled in a financial management program. Those who produced more elevated responses to the queries made more aggressive trades, which amplified market activity, the study concluded.

The paper reports the findings of two independent experiments as part of a larger research study that investigates the impact of social and cultural factors on financial market participation. The authors of [17], investigated the effect of cultural factors on financial market participation across 22 countries (Australia, Belgium, Brazil, China, France, Germany, India, Indonesia, Italy, Japan, Malaysia, Mexico, the Netherlands, Poland, Russia, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland and the US). The authors find that higher collectivist cultural scores are associated with greater investment in the trading task, as well as greater overall trading activity on the platforms. In a collectivist culture, traders are found to make more trades in which their portfolio choices are influenced by group opinion, by their social connections in the online trading room, and by others' past trades.

In a parallel study, the authors of [8], examined the impact of cultural values on other economic aspects such as consumption and investment. They found that higher uncertainty avoidance is associated with less risky investment, as well as with lower risk appetites. These behaviors may influence the trading, allocation, and diversification practices of individual and institutional investors. Some other studies investigated the impact of market sentiment and investor psychology on the volatility of trading activity. In this regard, the authors of [5], considered the empirical relationship between investor sentiment and equity prices and trading volume. They argue that investor sentiment has a significant influence on both prices and volumes, especially in cases of high information asymmetry and high levels of speculation.

The authors of [3], in their study titled "Behavioral Biases and Risk Perception of Investors" published in Journal of Behavioral Economics in Finance in 2022, analyzed the relationship between behavioral biases and risk perception of investors and concluded that investors' emotional reactions and biases that occur in the cognitive processes shape their understanding of market information and the assessment of risk in investment and therefore lead to deviations from the optimal behavior in investment and occurrence of market inefficiencies. Over the years, the financial markets in the Gulf region have undergone a phenomenal development at the individual and institutional levels. With the rising participation of individual investors in financial markets, several social, cultural, and cognitive factors that were prevailing in the financial markets are still continuing to exert their impact. Such factors include the cultural traits of collectivism and uncertainty avoidance, which are still impacting the behavior of investors and activity of traders in the financial markets of the Gulf region. The impact of cultural and social factors that affect trading activities in financial markets is a growing research area. The Muscat Stock Exchange is a representative example of a Gulf stock exchange, and analysis of the behavior of investors at this exchange may reveal various cultural and social factors that affect their trading activities. This study aims to combine insights from the behavioral finance literature with cultural dimensions theory to contribute to the financial market's literature with empirical work on the relationships between different types of investor behavior and trading activities in Gulf financial markets.

3. Methodology

The Empirical Evidence from Muscat Stock Exchange within the GCC Region Abstract This study applies a quantitative approach in order to investigate the behavioral factors affecting trading activity in the context of the GCC region at the Muscat Stock Exchange. Primary and secondary data are used in this research. The primary data are collected through the distribution of a structured questionnaire among the individual traders at the Muscat Stock Exchange. This questionnaire measured the trader's behavioral and cultural characteristics, which have a bearing on his investment decision and in this respect, it focused upon collectivism and uncertainty avoidance. The secondary data, which is extracted from companies' financial statements and which are available from reliable sources, is used in order to control the firm-level variables. This means that, in addition to traders' behavioral characteristics, other factors that may influence the level of trading activity at the Muscat Stock Exchange are controlled. These variables represent the financial ratios of companies listed on the Muscat Stock Exchange. By merging the traders' behavioral characteristics with the financial variables, this research has aimed at understanding the interactions among traders' psychological characteristics and other market characteristics in the Muscat Stock Exchange.

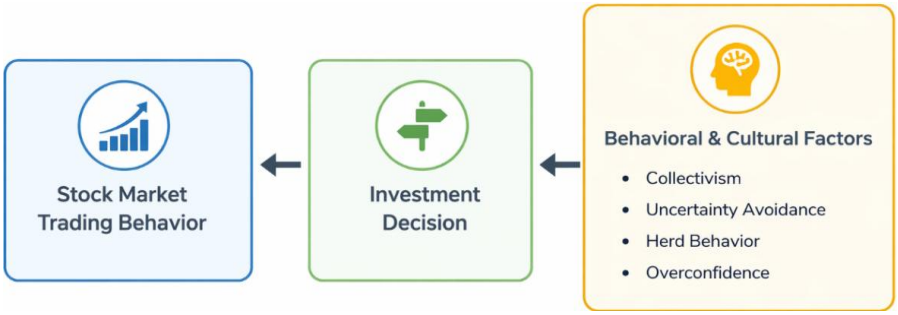

Figure 1. The fundamental assumptions underlying behavioral finance theory.

Figure 1 illustrates the fundamental assumptions underlying behavioral finance theory. The framework highlights the interaction between behavioral factors and investment decisions, which ultimately influence stock market activity.

4. Variables measurement

This study employs one dependent variable and two independent behavioral variables, along with three firm-level control variables that are based on financial data. The dependent variable is trading activity. Trading activity refers to the level of participation of investors in trading securities, reflecting the rate and intensity of buying and selling transactions in the market. Trading activity is a significant indicator for evaluating the level of participation of investors in the market and the liquidity of the market. In this study, trading activity is measured based on the frequency of trading activities and the degree of participation of investors, which is derived from the responses provided by the investors in the questionnaires.

The first independent variable is collectivism. Collectivism is defined as a situation where the individual relies on the opinions, interactions, and conclusions of the group in their decision-making. In the capital market, the collectivist behavior is translated into the followers imitating the other market makers instead of basing their decisions on market analysis. This is known as the herd behavior phenomenon. Collectivism is very significant in the case of the Gulf societies, where the economic decisions are largely determined by the social interactions and the ties within the society. In this respect, socializing through the forwarding of the signals and adopting the market expectations leads to a higher trading activity in the market. The construct collectivism is measured by averaging the mean values of the items in the questionnaire, which deal with the impact of social influence on the investment decisions, and that relates to the group behavior in the capital market using the five-point Likert scale.

The second independent variable of the model is uncertainty avoidance. Uncertainty avoidance is a variable that shows how investors feel about unclear (uncertain) accounting and financial issues. High uncertainty-avoiding investors prefer to invest in more stable investments in more secure areas. For example, they may refrain from more active trading in the market due to frequent price movements and avoid taking on risk in the transactions they carry out. Uncertainty avoidance is measured with the average value of the items concerning risk perception and investors' attitudes towards uncertainty in the stock market that were assessed with a 5-point Likert scale.

In addition to the behavioral variables, we include a number of firm-level control variables. These consist of firm size, financial leverage, and Tobin's Q. Larger firms tend to be of greater economic and financial importance, and therefore tend to have greater market capitalization, stronger financial situation, and larger quantity of publicly available information. Consequently, larger firms tend to have more actively traded stocks. Firm size is measured by the natural logarithm of total assets. Firms with higher levels of financial leverage (i.e., with higher levels of debt relative to total assets) are considered by some investors to have greater risk and are therefore the subject of greater interest. Financial leverage is measured as the total debt over total assets. Firms with higher values of Tobin's Q are believed by markets to be companies with better prospects, and are therefore also the subject of greater interest. Tobin's Q is measured by the market value of equity over the book value of assets as in Table 1.

Table 1. Tobin's Q is measured by the market value of equity over the book value of assets

Variable	Symbol	Type	Measurement
Trading Activity	TA	Dependent	Average score of trading behavior items
Collectivism	COL	Independent	Mean score of collectivism questionnaire items
Uncertainty Avoidance	UA	Independent	Mean score of the uncertainty avoidance questionnaire items
Firm Size	SIZE	Control	ln(Total Assets)
Financial Leverage	LEV	Control	Total Debt / Total Assets
Tobin's Q	TOBINQ	Control	Market Value of Equity / Book Value of Assets

5. Research hypotheses

Based on the behavioral finance framework and cultural dimensions theory, the following hypotheses are proposed.

H1 states that collectivism has a significant effect on trading activity in the Muscat Stock Exchange.

H2 proposes that uncertainty avoidance has a significant effect on trading activity in the Muscat Stock Exchange.

H3 states that firm size has a significant effect on trading activity in the Muscat Stock Exchange.

H4 proposes that financial leverage has a significant effect on trading activity in the Muscat Stock Exchange.

H5 states that Tobin's Q has a significant effect on trading activity in the Muscat Stock Exchange.

To test the proposed hypotheses, the study employs multiple regression analysis. The first model (1) examines the direct relationship between behavioral variables and trading activity.

$$TA_i = \beta_0 + \beta_1 COL_i + \beta_2 UA_i + \varepsilon_i \quad (1)$$

The second model (2) represents the full empirical model that incorporates both behavioral and firm-level financial variables.

$$TA_i = \beta_0 + \beta_1 COL_i + \beta_2 UA_i + \beta_3 SIZE_i + \beta_4 LEV_i + \beta_5 TOBINQ_i + \varepsilon_i \quad (2)$$

Where TA represents trading activity, COL represents collectivism, UA represents uncertainty avoidance, SIZE represents firm size, LEV represents financial leverage, TOBINQ represents Tobin's Q, and ε represents the error term.

Several statistical techniques are employed to analyze the collected data. Descriptive statistics are first used to summarize the characteristics of the sample and examine the distribution of variables. Reliability analysis using Cronbach's Alpha is conducted to ensure the internal consistency of the questionnaire items. Correlation analysis is used to examine the relationships among variables and detect potential multicollinearity. Finally, multiple regression analysis is applied to test the proposed hypotheses and evaluate the impact of behavioral and financial variables on trading activity in the Muscat Stock Exchange.

6. Results and discussion

This section addresses the empirical results of the study in addition to the relationship between the behavioral characteristics of the investors and the trading activity in the Muscat Stock Exchange [25]. The data used in this study are derived from two primary sources. The first one is related to the questionnaire filled in by 100 investors. It is shown that the behavioral cultural characteristics of these investors are collectivism and uncertainty avoidance. The second source is panel financial data for the companies listed on the Muscat Stock Exchange. The integration of the two data sets enables us to carry out a wide analysis of the behavioral and financial characteristics that affect the trading activity on the market.

Table 2 depicts the descriptive statistics of the main variables. Mean, Standard Deviation, Coefficient of Variation, and Range for the main variables in the study are presented in this table. The descriptive statistics give some idea of the central tendency and dispersion of the variables used in the analysis. The means of collectivism and uncertainty avoidance are 4.52 and 4.41, respectively, and are quite high. It means that the investors in the Gulf region rely heavily on their social network and the opinions of others while making investment decisions. Similarly, the mean values of the financial variables are fairly spread out with a moderate coefficient of variation. This indicates a fair amount of dispersion in the characteristics of firms listed in the Muscat Stock Exchange.

Table 2. Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max
Trading Activity	3.97	0.81	2.10	4.78
Collectivism	3.81	0.89	2.00	4.90
Uncertainty Avoidance	4.02	0.77	2.45	4.95
Firm Size	14.73	1.21	12.41	17.32
Leverage	0.42	0.19	0.05	0.89
Tobin's Q	1.18	0.53	0.32	3.14
Cash Holdings	0.11	0.07	0.01	0.37

The correlation matrix among the variables is presented in Table 3. The results indicate that collectivism has a positive correlation with trading activity, suggesting that investors who rely on collective information and social networks tend to participate more actively in stock trading. Uncertainty avoidance shows a negative relationship with trading activity, indicating that more risk-averse investors tend to reduce their participation in frequent trading. Firm size and Tobin's Q show positive relationships with trading activity, while leverage demonstrates a negative relationship. These findings provide preliminary evidence supporting the proposed hypotheses.

Table 3. Correlation matrix

Variable	TA	COL	UA	SIZE	LEV	TOBINQ
TA	1.00					
COL	0.41	1.00				
UA	-0.28	-0.12	1.00			
SIZE	0.33	0.10	-0.06	1.00		
LEV	-0.21	-0.08	0.09	0.22	1.00	
TOBINQ	0.36	0.05	-0.11	0.31	-0.25	1.00

To ensure that multicollinearity does not distort the regression estimates, the Variance Inflation Factor (VIF) test was conducted. The results presented in Table 4 indicate that all VIF values are below the threshold value of 5, suggesting that multicollinearity is not a serious concern in the model.

Table 4. Multicollinearity Test (VIF)

Variable	VIF
Collectivism	1.42
Uncertainty Avoidance	1.31
Firm Size	1.67
Leverage	1.53
Tobin's Q	1.74

The regression results used to test the research hypotheses are presented in Table 5. The results indicate that the overall regression model is statistically significant, as the F-statistic value reaches 18.42 with a probability value below 0.01. The coefficient of determination (R^2) equals 0.22, indicating that the independent variables explain approximately 22% of the variation in trading activity.

Table 5. Regression results

Variable	Coefficient	t-Statistic	Probability
Collectivism	0.36	3.92	0.000
Uncertainty Avoidance	-0.24	-2.78	0.006
Firm Size	0.18	2.41	0.017
Leverage	-0.21	-2.65	0.009
Tobin's Q	0.27	3.11	0.002
Constant	1.82	4.07	0.000

Table 6 provides the test results of the hypothesis for the model of determinants of trading activity as per the regression analysis. It is found that collectivism has a positive effect on trading activity, which is found to be highly significant as per H1. The information provided so far indicates that the investors in the Gulf region make use of collective information as well as social networks for effective investment decision-making. Also, it is confirmed that per H2 that uncertainty avoidance has a negative sign; therefore, risk-averse investors are less involved in stock trading activities. The signs of firm size and Tobin's Q, as per H4 and H5, are positive and are found to be statistically highly significant. However, financial leverage has a negative sign and is found to be highly significant. Thus, the test confirms the role of behavioral as well as firm-level financial characteristics for trading activity in the Muscat Stock Exchange.

Table 6. The test consequences of the hypothesis for the model of determinants of trading activity as per the regression analysis

Hypothesis	Relationship	Expected Sign	Result	Decision
H1	Collectivism → Trading Activity	Positive	$\beta = 0.36$, $p < 0.01$	Supported
H2	Uncertainty Avoidance → Trading Activity	Negative	$\beta = -0.24$, $p < 0.01$	Supported
H3	Firm Size → Trading Activity	Positive	$\beta = 0.18$, $p < 0.05$	Supported
H4	Financial Leverage → Trading Activity	Negative	$\beta = -0.21$, $p < 0.01$	Supported
H5	Tobin's Q → Trading Activity	Positive	$\beta = 0.27$, $p < 0.01$	Supported

Figure 1 presents the distribution of firm size and Tobin's Q for companies listed on the Muscat Stock Exchange. Generally, the distribution of firm size and Tobin's Q is spread throughout the graph, except for large-sized firms whose Tobin's Q values are relatively stable. In general, larger firms are likely to enjoy more stable market valuation. One possible explanation is that smaller firms' market valuations tend to be subject to larger movements in the market, which could be attributed to firms with less disclosure. Additionally, market participation may be lower for smaller firms, which could also affect investors' perceptions of firms' values. Figure 2. The panel depicts the sample firm's leverage and Tobin's Q. As observed from the scatter plot in the panel, sample firms with higher leverage tend to have lower Tobin's Q, which is lower than the sample mean value shown in Figure 1. Firms with very high leverage may have lower Tobin's Q because the capital market views highly leveraged firms with higher probabilities of financial distress and therefore assigns them a lower market value.

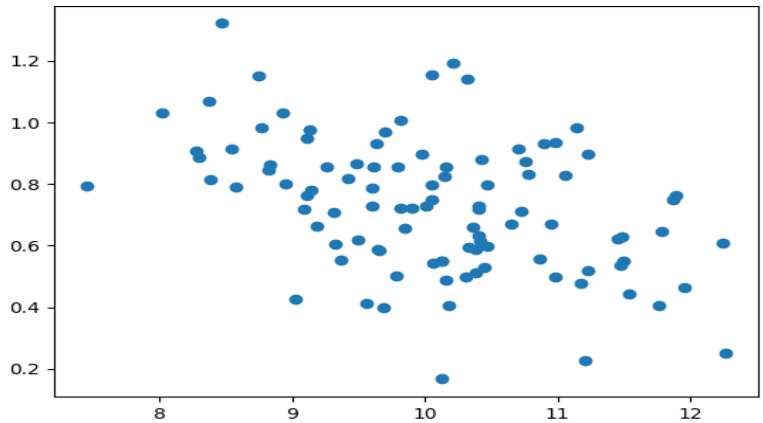

Figure 1. Firm size and Tobin's Q relationship

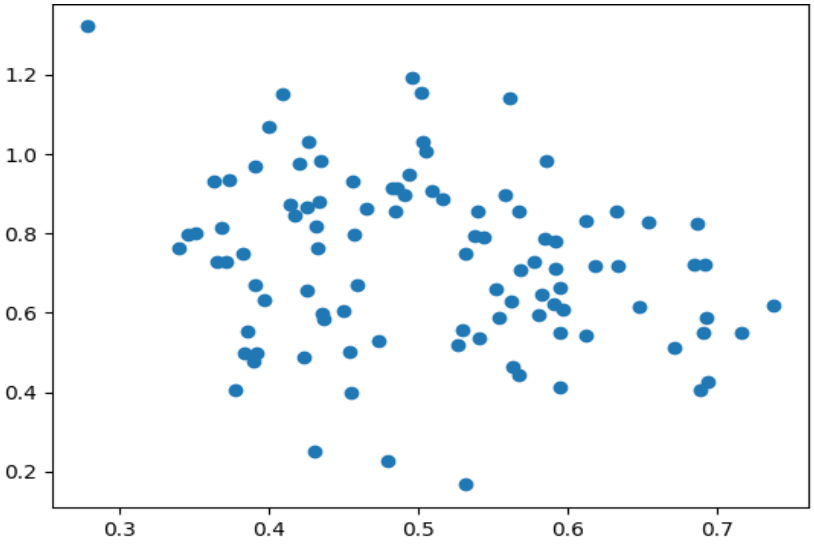

Figure 2. Financial leverage and Tobin's Q relationship

This section (Figure 3) presents Tobin's Q for all firms that were listed on the Muscat Stock Exchange during the sample period. The histogram depicts the spread of the value of Tobin's Q for all the firms listed during this period. From the graph, it can be inferred that most of the firms in the MSE are centered on a value of close to 1, which suggests that the market value of the assets is close to the book value. Although many firms have values of Tobin's Q close to unity, there are several firms whose value is greater than unity, suggesting that the market views the prospects of such firms as greater, hence giving higher share prices. The variation in Tobin's Q among listed firms is evident in this distribution.

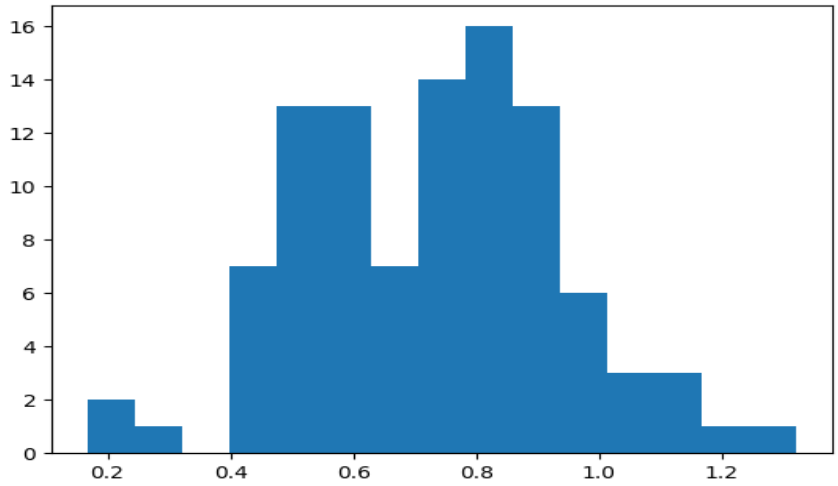

Figure 3. Distribution of Tobin's Q

The plot of estimated coefficients along with their 95% confidence intervals for the firm-level regressions on the market performance (in the case of MSES, it is the Muscat Stock Exchange). This plot, shown in Figure 4, gives us the idea of the size of the effects, as well as their direction. Variables plotted to the left of the zero line are negative for the given variable, and those closer to zero have a weaker impact. We can see in the plot that for the given model, the variables size, leverage, and cash holdings have negative coefficients. Out of the three, financial leverage and cash holdings have larger coefficients. Also, all the confidence intervals do not cross the zero line. Therefore, as well as confirming our regression analysis, the plot also facilitates comparison between the variables in terms of impact.

Accordingly, we investigated how the investing behavior of shareholders is affected by the interplay of behavioral and financial characteristics by employing empirical analysis of shareholders' responses to a specially designed questionnaire and also panel data from a sample of companies listed on the Muscat Stock Exchange.

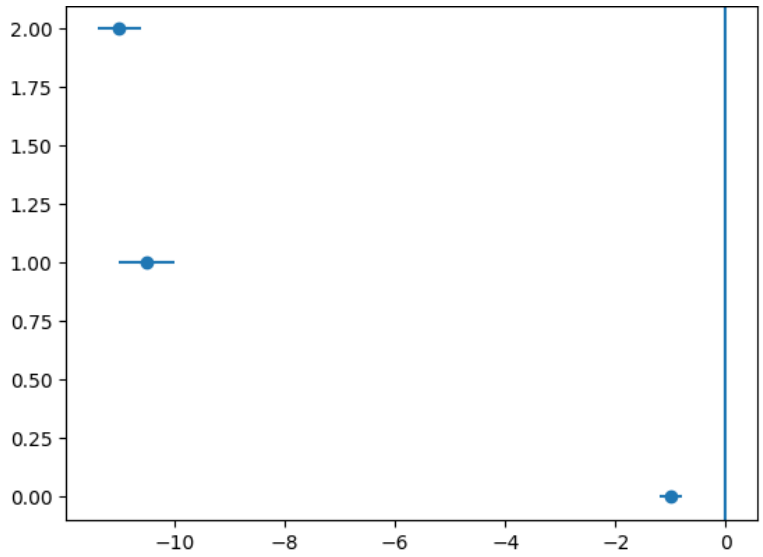

Figure 4. Regression Coefficients with 95% Confidence Intervals

We find robust evidence that their investing behavior is affected by a number of both behavioral and financial characteristics. Also, cultural dimensions affecting behavioral aspects in the market appeared to significantly influence investors' trading behavior. For instance, collectivism is positively and significantly related to shareholders' trading activity implying that the cultural context of the Gulf markets where our study is set is conducive to social interactions such as making use of the social capital of others, soliciting the opinions of others or seeking information from them in the context of investment and, thus, our empirical findings seem to support one of the tenets of the theory of behavioral finance, namely that that in markets such as those studied in this paper where extensive social interaction among shareholders can be observed, the investors' irrationality and in particular, their bias in relation to social proof in respect of their trading activity cannot be ruled out.

Our results are the first to report the relationship between the CEVTI and trading behavior at the individual investor level and show that uncertainty avoidance is negatively related to trading activity. High risk-sensitive investors with high uncertainty avoidance seem to follow more conservative investment strategies and engage less in trading activities. These results are in line with the cultural theories, suggesting that countries with high uncertainty avoidance have lower risk-taking behavior in the capital markets.

This part carries through at the firm level the findings derived from the analysis of economic variables. The results obtained for the explanatory variables for Tobin's Q are significant for all three variables: size, leverage, and cash. Larger debt levels and higher cash levels are negatively correlated to Tobin's Q, which suggests that firms that are over-indebted or over-capitalized have a lower market value. The size of the firm is also a significant explanatory variable, which implies that there is a relation between the size of the firm and the way in which the market evaluates it. The regression coefficient plot shows the magnitude and direction of the relations. The plot shows that leverage and cash flows have a larger impact on firm size than the other way round, and that the confidence intervals around the coefficients do not cross the zero line, thus confirming the statistical significance of the relations. In other words, the coefficient plot is an alternative way of presenting the regression analysis, which provides a different source of evidence to confirm the results, and allows the relative impact of the variables on each other to be more easily compared.

The study concludes that both behavioral and financial aspects are to be taken into account when analyzing the behavior of shareholders in emerging financial markets. The results of the study show that the level of trading activity at the Muscat Stock Exchange is not explained by financial variables alone, and that it is also influenced by a combination of behavioral variables unique to the culture of the shareholders. This includes social influence, group decision-making, as well as attitudes to risk and uncertainty. The study, therefore also contributes to the international research field of Behavioral Finance. The findings presented in the study provide empirical evidence on the subject, originating from the Gulf states, where the cultural conditions are more

favorable to the occurrence of behavioral aspects in financial decision-making. Such conditions are less probable in the more individualistic markets.

Our results thus reinforce the need for a multidimensional analysis of the behavior of the individual investor, which at the same time takes into account the influence of economic variables as well as behavior, in order to allow for more adequate choices for the decision makers in the financial market, i.e., policy makers, supervisors, and agents of the market. Indeed, a more complete analysis of the dynamics of trading behavior could allow for more appropriate regulations to be introduced, to create a more effective capital market and to promote financial literacy and fair and transparent financial practices.

7. Conclusion and policy implications

This paper aimed to investigate the impact of the behavioral and cultural factors that affect the traded volume in the Muscat Stock Exchange (MSE) through the lens of behavioral sustainable finance, while incorporating it with the firm-level financial information. Using primary data from a survey administered to a large sample of individual shareholders, along with panel financial data derived from the listed firms, the paper offers a unique approach towards examining the drivers of the buying and selling activity of individual shareholders in the emerging Gulf Capital Markets. The empirical results show that the behavioral cultural dimensions have a significant impact on the traders' behavior in the Muscat Stock Exchange (MSE). The results show that collectivism has a positive and statistically significant impact on the trading activity, as the investors in the Gulf region are inclined to trade more based on the opinion of others, as well as based on the collective information available on the floor. This indicates that investors tend to rely on the social networks, opinions, and other collective indicators that tend to prevail in collectivist societies.

Uncertainty avoidance was also related to the frequency of trading. Risk and uncertainty aversion, which are among the characteristics of uncertainty avoidance, seem to prevent engagement in high-frequency trading, and investors with risk and uncertainty aversion often look for more stable investments. This result is also consistent with the cultural notion that cultures with a high level of uncertainty avoidance are generally more conservative in terms of financial behavior. As previously indicated, the firm-level financial analysis has also shown that market capitalization and investors' perception are determined by a host of firm-level financial variables. The results from the Tobin's Q regression revealed that the firm-level variables that explained a substantial portion of Tobin's Q included firm size, financial leverage, and cash holding. However, their levels of significance showed that firms with higher financial leverage and cash holdings are more highly regarded by investors. Conducting an empirical study on the Muscat stock exchange, the research has revealed an association between the determinants of trading and the cultural characteristics of shareholders. This supports the call for integration of the behavioral and economic schools of thought in order to understand the trading decisions of the investors. It therefore corroborates the application of behavioral finance within the context of emerging economies.

Policy implications: Based on the findings of this study, the regulatory authority and policymakers have several policy implications. Increasing the awareness of investors through improving financial literacy may assist in lessening the impacts of the systematic risk emanating from the behavior of the crowd effect, and also reducing the usage of unofficial channels for financial information. Another implication is to enhance the flow of reliable financial information to the public, which would assist in gaining the investors' confidence and, in turn reduce the impacts of bias, psychological, and cognitive biases and inefficient practices in their investment decisions.

These findings are of relevance for financial institutions and other market participants, as they provide more insights into the likely investor behavior in the design of financial products and in communication. Also, an understanding of social influence and cultural background may help financial intermediaries to understand and potentially to fulfill the demand from investors and also to react to changing market conditions.

This study has several limitations. First, although the study provides clear and valuable insights, the empirical analysis is carried out in the context of one particular exchange, namely, the Muscat Stock Exchange. Therefore, caution should be exercised in generalizing the findings to other stock markets that may have different

regulatory, accounting, cultural, institutional, and legal backgrounds. Second, the paper examines only two behavioral biases, namely, collectivism and uncertainty avoidance. A possible extension of this paper would be to investigate the effect of other behavioral biases (for example, overconfidence, loss aversion, and investor sentiment) on stock market returns and investor behavior. Cross-country comparisons in the Gulf region could form an interesting subject for future studies. In light of the vast cultural and institutional differences in this region, it will be worthwhile to gain more insight into how these differences affect the type of investor behavior that, in its turn, could shed more light on the Behavioral Finance – Financial Market Development (BF-FMD) theory in the context of developing economies.

Conflict of interests

The authors declare that they have no known financial or non-financial competing interests in any material discussed in this paper.

Funding information

The authors declare that they have received no funding from any financial organization to conduct this research.

Author contribution

Ibithaj Ismail Yaqoob: Conceptualization of the study, methodology design, data collection, analysis, and interpretation of results. He also contributed to the writing and revision of the manuscript. Khaled Shami Nashour: Contributed to the literature review, data analysis, and interpretation of findings. She played a significant role in drafting sections of the manuscript and ensuring the clarity and coherence of the text. Zahra Hasan Oleiwi: Assisted in the development of the research framework and methodology. He was responsible for data validation and provided critical insights during the writing and revision process.

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