Individual Investors' Risk Behaviour and Share Trading Frequency: Evidence from Dar es Salaam Stock Exchange

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Abstract

Objective – This paper examines the risk behaviour of individual investors in the Dar es Salaam Stock Exchange (DSE), Tanzania. Furthermore, it aims to analyse how risk behaviour variables influence individuals' trading frequency of shares at the DSE.

Design/methodology –The study uses cross-section data from a structured questionnaire distributed to 200 individual investors selected with a snowball sampling procedure. It further used descriptive statistics and multinomial logistic regression (MLR) to analyse the risk behaviour of individual investors and their impact on share trading frequency.

Results – The study reveals that share prices, investment experience, and amount of funds invested depict the risk aversion behaviour of individual investors and thus influence their share trading frequency at DSE. However, individuals' risk perception did not significantly influence share trading frequency.

Research limitations/implications –The study used individual investors to assess risk behaviour in trading frequency. However, individuals have limited risk awareness and analysis knowledge and use brokers and financial analysts.

Novelty/Originality –Individual investors' risk behaviour in relation to share trading at DSE received attention for the first time in this paper. The study proposes to DSE improve policies and training programs relating to individuals trading and risk management to stimulate active share trading among individual participants in exchange for improved liquidity and contribution to economic growth.

Keywords: DSE, individual, investors, risk, trade

1. Introduction

Stock markets play a significant role in bringing together buyers and sellers of equities, bonds and other securities. The debate on risk and investment decisions in global stock markets raises questions on how it affects Tanzania's stock market. According to Cheng (2019), economic changes tend to influence individuals' financial risk, thus affecting individual investment intentions. Economic changes touching on individual stock market involvement include a drop in wealth, negative company returns, a drop in market capitalisation and number of investors (Bucciol & Miniaci, 2017). The consequences associated with the economic changes affect the expected returns, investment decisions and trading behaviour of individual investors, whereby the past trading experience influences it (Vidanalage & Shantha, 2019; Rossi, 2016).

The willingness of an individual to take risks in making financial decisions is among the economic factors highlighted to affect investment (Svetlova & Thielmann, 2020). Therefore, risk behaviour is considered an influential factor in investment decisions as investors strive to reduce risk in making investment decisions. (Shehata et al., 2021; Ngadino, 2019). Consequently, share trading, whether done manually or electronically (Cardoza, 2019), both mean contains different kinds of risk, although risk relating to electronic trading seems to increase. Impliedly, risk behaviour is not the only

factor affecting trade in the world, it is also associated with information, price change, and market trend. However, investors' risk behaviour is crucial in investing in stock markets.

Efforts to explain risk behaviour and how it affects trading in the stock market worldwide have been highlighted by different authors. Cheng (2019) and Mishra (2018) have explained how individual investors' risk behaviour affects trading in the stock market by arguing that low risk-taking behaviour towards shares can lead to stock holding. Stock holding occurs because risk takers perceive that high-risk investments yield a high expected return (Trang & Tho, 2017). Ainia and Lutfi (2019), on the other hand, explained that high-risk behaviour toward share trading could negatively influence individuals' fear of risk in investment intentions. Hence, risk-averse individuals constrain their ability to trade due to fear, and they may move out of the markets (Huber, 2019). Regarding stock trading and risk, Lee et al. (2015) argue further that if the risk probability rises, the expectation of a positive return from the market decreases. Impliedly, a risk-averse individual solely interested in making a profit will not trade in any situation with a probability of incurring a loss (Bilsen & Laeven, 2020). Hence, some individuals are willing to take risks while others avoid risk, but there is no clear explanation of how it influences the trading of shares.

Gumbo and Sandada (2018) identified risk behaviour as one of the determinants of stock market individuals' participation in Zimbabwe by pointing out that willingness to take risk can lead to a share acquisition where an investor expects few participants and, therefore, a high-expected return. According to Maziriri et al. (2019), individual equity investors in Zimbabwe are more likely to invest if they perceive more benefits because the return on investment affects risk appetite and investment behaviour. Grimbeek (2016), on the contrary,) argues that high-risk behaviour leads to increased risk aversion and, therefore, negatively impacts share trading by individuals. Thus, individuals perceiving share business as risky will not invest for fear of associated perceived loss. Muiruri (2014), in his study in Kenya, concluded that individuals differ in willingness to take the risk for greater returns. As a result, an investor will invest in shares with high risk having expected better returns in future and not otherwise. The reviewed studies focused on how expected return on assets influences investment intentions. However, they did not consider how individuals' risk behaviour affects the continuous trading of shares in stock markets, which is the core of this paper, drawing evidence from the Dar es Salaam Stock Exchange (DSE) in Tanzania.

The DSE started to operate in 1998 under the Capital Markets and Security (CMS) Act of 1994. Since then, it has grown from 5 to 27 publicly traded companies and currently trading five (5) corporate bonds and twenty (20) government bonds. Domestic market capitalisation grew from TZS 1,669.45 billion to TZS 9,157.19 billion in 2020 (DSE statistics, 2021). However, growth in terms of direct individual participation has been marginal at one per cent of the total population (Clavery, 2018) compared to institutional investors. Epaphra and Kiwia (2021) describe share trading among Tanzanians as challenging and influenced by social aspects, risk attitudes, and economic factors such as income. Individual investors' stock trading decisions connect to psychological elements like get-rich-quick mentalities, cognitive bias, and irrational thinking (Barayandema & Ndizeye, 2018). Apart from the decision to acquire shares in the stock market, small volume of shares traded (constant buying and selling) is another identified challenge (DSE statistics, 2021). Ozenbas et al. (2022) attribute low stock trading activity by individuals to a lack of understanding of financial markets and technology applications, economic considerations, social factors, and fear of incurring loss owing to equities market frictions.

Economic and social crises are also among the identified factors affecting DSE trading. In times of crisis and disaster, stocks react significantly negatively as people become more risk cautious (Werema, 2020). The change was evident during the Covid-19 outbreak when DSE turnover dropped dramatically and reached its lowest level with a median turnover of TZS 3.66 million per month (Werema, 2020). The heightening of

the Covid-19 crisis in June 2020 caused DSE to transact zero equity in the market due to a drop in demand and a price mismatch between offer and bid (Christopher, 2020). The Covid-19 global health crisis led to an economic crisis and very adverse effects in many markets. Share trading in stock markets plummeted in Romania (Hatmanu & Cautisanu, 2021) and Ghana and Kenya (Takyi & Ennin, 2021). In those times, risk appetite was virtually non-existent as people focused on life-saving endeavours than investment activities.

Besides the Covid-19 pandemic and social crisis, pricing as an economic factor is among the elements influencing trading in DSE. According to DSE (2022), trading deals for Tanga Cement (TCCL), NICO, and CRDB Bank shares increased due to price increases; for example, the share price for TCCL was TZS 500 in December 2020 and rose to TZS 1,100 in December 2021. DSE is a market for international and domestic individual investors, so global financial and economic crises affect both; thus, it is time to analyse how individuals' risk behaviour affects stock market trading from a Tanzanian perspective. In addition, knowledge of individual risk behaviour at DSE is sparingly low given that DSE is one of the emerging markets with individuals who have a limited understanding of stock market issues (Mboma & Reuben, 2013), including risk. Thus, it was crucial to use basic factors such as share price consideration to examine people's risk behaviour in share trading.

Authors have used several variables to measure the risk behaviour of investors of individual investors, namely; financial knowledge, intention to invest, attitude toward risk, types of shares traded, and investment performance (Maziriri et al., 2019; Trang & Tho, 2017). This study gives attention to individual investors' risk behaviour in relation to share trading at DSE, which is different from prior studies. Furthermore, it measures individual investors' risk behaviour using financial variables, namely the type of assets held, risk perception (risk-taking and aversion), and price consideration. Furthermore, the study included the value of funds invested in share acquisition and investors' experience in trading/years of trading (drawn from field experience and theories). Apart from variables used, in Tanzania, reviewed literature (Kasoga, 2021; Epaphra & Kiwia, 2021; Alliy, 2015) limitedly addressed risk perception and investment decisions. They did not consider individual investors' risk behaviour and how it affects share trading frequency on DSE.

2. Literature Review, Theoretical Framework, and Hypothesis Development

2.1 Theoretical Review

Two theories guide the study; firstly, behavioural finance theory considers irrational and behavioural factors affecting decision-making. Second is the prospect theory which captures risk behaviour and decision-making for gain and loss situations.

Behavioural Finance Theory

Behavioural finance theory explains the risk behaviour of individual investors. It originated from Moral Sentiments (1759) and Wealth of Nations (1776), and Statman (2008) improved it. It states that investors are normal, not rational, the market is inefficient, investors do not design portfolios on mean-variance, and the expected return is measured by more than risk. Prosad et al. (2015) added that behavioural finance takes investors' psychology into account and leads to behavioural biases, such as overconfidence, excess optimism, herd behaviour and the disposition effect. They added that volume, past success experience and frequency of trading for an individual are among the indicators of overconfidence and optimism. Therefore, individuals allocate their portfolios not only basing their irrational behaviour but also focus on experience and confidence. The theory considers the human side of an investor (behavioural factors) and experience in trading decisions. Thus, it does not consider risk behaviour, gains and losses in making an investment decision. Apart from that,

individuals use the rule of thumb in making decisions in uncertain situations as per behavioural finance, and behavioural biases may lead to poor decision-making. Therefore, it is more appropriate to use prospect theory in trading decisions.

Prospect Theory

In explaining risk and investment decision-making, the study used the prospect theory. It was developed by Kahneman and Tversky (1979), stating that people decide based on the potential value of gains and losses. It adds that outcomes obtained with certainty are overweight relative to uncertainty outcomes. It includes an individual's expectations, asset integration and loss aversion in making decisions. Barberis *et al.* (2021) argued that prospect theory sheds light on asset price and investor behaviour and assigns value to gains and losses than to net final assets. Apart from individuals' risk-taking behaviour, price changes cause investors to focus on gain and loss. Prospect theory is an appropriate measure of an individual's potential gains and losses in shareholding as it helps manage stock market anomalies.

The theory considers individual investors to be conscious of different risks, focusing on potential gain and loss (Barberis et al., 2021). It assumes that with an assurance of a positive outcome in trading, investors will choose to trade as the outcome exceeds its origin. On the contrary, an investor who is risk averse will prefer holding a share at a low price (loss) and selling when the price increases (gain). Price consideration relates to Ebert and Strack (2018), who argued that an agent does not gamble any gamble, meaning that an investor cannot trade in unsure gain. Bilsen and Laeven (2020) also noted that individuals with prospect theory preference favour a conservative portfolio strategy indicating a low-risk investment preference.

2.2 Hypotheses Development
Risk perception of Individual Investors

Depending on how an individual perceives risk, any firm, whether sole proprietorship, partnership, or corporation, may face different risks and make different decisions. Diverse people have different risk perceptions; according to Lee et al. (2015), some are risk takers, while others are risk averse. Individuals' willingness to accept risks is higher during an economic boom and lower during a recession (Bucciol & Miniaci, 2017). Gumbo and Sandada (2018) assert that investors who perceive high levels of uncertainty are more likely to refrain from investing in stock markets due to negative impressions. Impliedly, high-risk perceptions have an impact on investment intentions.

According to Trang and Tho (2017), the higher the investors' perceived risk in investing, the more they intend to invest. It means that an increase in risk does not affect an individual's trading or investment behaviour. The results contradict Bilsen and Laeven (2020), who found that no investor prefers risky investments. As a result, authors found that perceived risk detracts people from investing, while others found that it did not affect their investment plans. Besides contradicting results, Lee et al. (2015) used secondary data, while Gumbo and Sandada (2018) focused on managers, brokers and financial analysts, not individuals. Thus, as one of the emerging and developing markets, DSE's baseline risk perception of individuals toward shared business must be established.

Price of Share and Trading Frequency

Based on simple rules applied to beat the stock market facilitate share trading, which generates a better return than the market average (Gunnlaugsson, 2018). Because selling at a high price leads to profit, hence better return. Ozenbas et al. (2022) observed that prices are affected by market information, and demand and supply link to the decision to trade or not. Huber (2019) added that the price and volatility of markets affect buying and selling of shares. Therefore, trading is affected by price changes and market friction because prices cover costs and may lead to profit.

Ma et al. (2017), who assessed liquidity and trading in stock markets in China, found that trading does not consider price alone but also when to trade; because trade declines during holidays and weekends. This decline is because markets are closed during weekends and holidays, and trading starts on working days. Besides, price manipulation can occur, leading to a loss for small individual shareholders (Fox et al., 2018). Cardoza (2019), on the other hand, viewed trading frequency as associated with whether an individual investor treats financial assets as a trading or investment strategy. The trading frequency can be associated with price change or other factors such as information or an individual's investment strategy. The proposed hypothesis is thus:

HO1: The price of shares in the market has no significant influence on the trading frequency of individual investors in DSE.

Experience and Trading Frequency

Knowledge of markets and strategies to beat the market seem to be contributing factors in the trading decisions of individual investors. Malmendier et al. (2020) assessed how investors' experiences influence market financial dynamics. Authors noted that experience generates an asset pricing puzzle and produces a testable price and asset holding prediction. This implies that experience enables investors to predict whether they will hold or trade shares. Alternatively, Liivamägi (2016) argued that trading experience in the form of trading activity contributes to higher returns in trading. Thus investment experience does not only lead to trading but also contributes to a higher return. However, Malmendier (2021) indicated that long-lasting experience triggers bias, but it also requires more research to update new events. As an emerging market, DSE contains experienced and inexperienced individual investors who learn trading from their peers, financial analysts, and other financial advisors. Thus found it worthwhile to examine the influence of investment experience on share trading frequency. The relevant study hypothesis states that:

HO2: Experience in share business has no significant influences trading frequency of individual investors

Amount Invested and Trading Frequency.

Investment in stock markets involves an exchange of equity and money because listed companies seek capital while investors seek future economic returns. Plieger et al. (2020) noted that investing more money in stocks indicates risk-taking behaviour. Barber and Odean (2013) supported that transaction costs in trading require funds, so trading in stock markets requires financial resources to generate a return. On the other hand, Yochim and Davis (2021) pointed out that due to too much volatility, an individual should invest an affordable amount of money to lose, and it should not exceed 10% of an individual's portfolio. The volatility is associated with changes in share price, being highly influenced by share demand and supply (Ozenbas et al., 2022). As Tanzania grows into a middle-income economy, listing companies on DSE expects to increase capital accumulation. Therefore, it is necessary to analyse whether the amount someone invests in shares influences the continuous buying and selling (trading) of shares in DSE to observe its impact on firms' liquidity. Apart from that, studies did not analyse the extent to which individuals' invested amount influences trading frequency. Thus, it led to the development of the third hypothesis:

HO3: Amount invested in shares business does not influence trade frequency of shares.

Risk Perception and Trading Frequency

Individual investors are recognised for being conscious of changes in their wealth. As per Lee et al. (2015), risk aversion links to lower market expectations, which in turn connects to the willingness to take risks (Sivaramakrishnan et al., 2017;

Grimbeek, 2016). As a result, investors who perceive lower risk associated with assets are net buyers in markets, while those who perceive higher risk relating to assets trade out (Huber, 2019). Thus, studies deduce that individual traders' risk perceptions tie directly to their risk tolerance, not just a positive return.

In their study in Indonesia, Yuliani et al. (2017) added psychological aspects to risk perception by claiming that individuals' psychological ability to manage risk primarily limits individual's ability to purchase and sell shares. Brown et al. (2017) also claimed that the risk premium could change the decision to invest, suggesting that risk perception may be one of the elements influencing trading decisions. The difference in opinions from previous studies on risk perception and share trading prompted the need to examine the effect of individual investors' risk perception on share trading frequency at DSE, and the study investigation was guided by hypothesis 4:

H04: Risk perception does not influence the shares' trading frequency among individual DSE investors.

3. Research Method
3.1 Data Selection and Collection Approach
The study adopted a cross-sectional research design because it simultaneously measures the exposure and outcome in the study population and facilitates studying the association between them (Setia, 2016). Likewise, it facilitates the use of a survey strategy employed in the study to explain how risk behaviour influences the trade frequency of individuals, as narrated by Saunders (2007). The study used mixed research approaches whereby qualitative and quantitative data facilitate triangulation between interviews with brokers and data collected from questionnaires. Data collection was from 200 individual investors in the Dar es Salaam Region because its the location of DSE and the main offices of 14 brokers. The respondents' selection involved a population of 540,000 individual investors recorded in the DSE through the depository at DSE (DSE, 2020).

An exponential non-discriminative snowball sampling procedure was applied to access individual investors due to limited accessibility, as per Kumar (2011). Furthermore, snowballing was appropriate because the individuals' physical locations are not identifiable from the DSE repository. Tanzania started introducing the GIS postal codes in 2021/2022; at the time of data collection, the exercise was under development. The procedure first involved a few respondents selected randomly from the annual general meeting booklet of one of the listed companies, who later provided contacts of multiple referral participants. In addition, a few participants created a social group (WhatsApp social group) which the researcher was referred to by one of the participants leading to the accessibility of other participants. The study identified a sample of 200 individual investors in the listed companies in the DSE using Slovin's (1960) formula for the finite population (Equation 1).

$n = N/ (1+ Ne2)$ .... Equation 1
$n = 540,000/1+540,000(0.07) = 204$ respondents

The study used a 93% Confidence Interval (<0.1 error term or >90% CI) as proposed by Dean & Pagano (2015), and the questionnaires collected were 200, equivalent to a 98 per cent response rate.

Data were collected using a structured questionnaire pre-tested to 15 individual participants to ensure the validity of the questionnaire. Problems observed relating to responses to questions and terminologies used that respondents did not understand were improved for final data collection. The study's internal consistency of the questionnaire used Cronbach's alpha coefficient, which resulted in an alpha coefficient of 0.8, which is greater than 0.7 (Livingston, 2018); thus, it confirmed the consistency. The researchers distributed the questionnaires directly to respondents, and participants were requested to complete the questionnaire. Apart from the

questionnaire, the study interviewed key informants (KII) to collect qualitative data from four (4) brokers and one (1) DSE informant.

3.2 Data Processing and Analysis

Trading frequency as the dependent variable was measured by an indicator of the number of trades, grouped into often trading, rarely trading and not trading (Chong et al., 2020; Du & Zhu, 2017). In the model (equation 2), (P (Yi) = j/(P (Yi =J) represent the trading of shares as adopted and improved from Ari (2016). The independent variables were operationalised variably. In measuring risk behaviour, the study used perceived risk, the amount invested, experience in share trading, and price consideration. Perceived risk had two constructs, risk-taking and risk aversion, while the TZS value invested measures the amount used in share acquisition. The length of the period since an individual bought shares for the first time at the DSE denotes experience and factors individual investors considered before trading shares led to price consideration (Epaphra & Kiwia, 2021; Kasoga, 2021; Maziriri et al., 2019; Trang & Tho, 2017; Prosad et al. (2015).

Data analysis included descriptive statistics whereby the computation of frequencies, percentages, median, and Standard Deviation (SD) facilitated descriptions of the type of assets owned, amounts invested, experience, and trading frequency. A 5-point Likert scale was adopted from Kasoga (2021) and improved to measure risk perception. Five (5) points indicated a high-risk perception, while one (1) point indicated a low-risk perception of the share trading business. The Multinomial Logistic Regression model (MLR) was used to measure probabilities of share trading frequency influenced by individual investors' risk behaviour. Choice of the MLR based on three reasons; (i)the dependent variables had more than one outcome (often trade, rarely trade and not trade); (ii)the variables had no order in the outcome; (iii) independent variables that predict the outcome are both categorical and continuous (Ari, 2016). The model facilitated testing of the four hypotheses as follows:

$$\frac{P(Yi=j)}{P(Yi=J)} = exp\ [\alpha j\ +\ \beta j_1 Amo\ +\ \beta j_2 Yrs\ +\ \beta j_3 Rpe\ + \beta j_4 Pri]...................\text{Equation 2}$$

Where by:
P = Probability of trading shares at DSE;
j = 3 for often trade,
j = 2 for rarely trade, and
j = 1 for holding.
βjs = are estimated, 1 for each explanatory variable as defined in Table 1

Table 1.
Variable matrix

	Variables	Description of Variables and Measurements
P (Yi= j)/ P (Yi = J)	Trading Frequency	Number of times per year that individual investors trade shares adopted from Chong *et al.* (2020). Measured; 3=Probability of; Frequent trading (>10 times per year) trading (Pj); 2=Probability of Rarely trading (<10 times per year) trading (PJ) 1=Probability of holding for dividend (Reference group -Ref).
Amo	Amount Invested	Amount of TZS invested through share acquisition; 3= TZS 50,000 – TZS 5,000,000 2= TZS 5,010,000 – TZS 10,000,000 1= >TZS 10,010,000
Yrs	Years of Trading (Experience	1= Less experienced: 1-5 years of trading 2= Experienced: 5-25 years of trading
Rpe	Risk perception	Individual Investors' perception of risk measured: <45 points = Risk taker > 45 points = Risk Averse
Pri	Price Consideration	2 = Consider price before trading; 1 = Do not consider price before trading

Multinomial Logistic Regression (MLR) assumptions were addressed, including one category that was not related to the choice of another category. Apart from that, a study had mutually exclusive and exhaustive categories for the dependent variable and the independence of observations, continuous variables portraying graphical linear with minimal outliers and influential points. VIF was lower than 10 (ranges 1.021-1.224), so no multicollinearity was observed, and no pair of continuous variables were highly correlated (r <0.7), as advised by Schober et al. (2018) (See Appendix I).

3.3 Hypotheses Testing

P-value was used in testing hypotheses and, therefore, to determine the significance of individual variables on the outcome variable at a five (5) per cent significance level. Hence with a P-value less than 0.05, the null hypothesis is rejected, and the alternative hypothesis is accepted (Cooper et al., 2012).

4. Results

4.1 Descriptive Analysis of risk variables

Risk Perception of Individual Investors

Although individual investors do not directly trade at the DSE; but use brokers to trade their shares, they set the decisions on the price and amount to trade. Therefore, individual investors evaluate even risk in consultation with financial analysts and brokers. As a result, it is necessary to examine individuals' perceptions towards share business. The presentation of a summary of findings (median scores) is in Table 2.

Variable of Risk measurement per Dimension	Median (IQR)
Investment in different assets reduces associated risks	3 (3 - 3)
Access to training encourages share trading	3.5 (3-4)
Investing in corporate and Government bonds has low risk compared to shares	3 (3 - 3)
Shareholding through mutual funds has low risk than individual direct investment	3 (3 – 3)
Buying shares through brokers enables the selection of safer assets	4 (3 - 4)
Continuous change in price limit trading among individual investors	3.5 (3-4)
DSE regulates transaction costs, therefore, reducing risk	4 (4 - 4)
Young people invest in riskier assets	2 (2 - 2)
Shares can be traded through brokers at any time after assessing the price.	4 (4-4)
Older people invest in safer assets	3 (3 - 3)
The lower the transaction costs, the less the risk	4 (3 - 4)
Risk business is preferred because it is associated with a high-expected return	3 (2 - 4)
A company with a high dividend payout has a low associated risk	3 (3 - 4)
With limited cash, investors may lose money in shares	3 (3 - 4)
Experience in the stock market increases efficiency in trading	4 (4- 4)
Overall Median Score	**3.5(3.4-3.7)**

Source: Data Collected   **IQR**= Interquartile Range

Results in Table 2 show median (Interquartile range-IQR) score ranges between 1 and 5 (minimum scale range 1 and maximum 5). IQR is an unbiased estimator of the population, which is not normally distributed, and it bases on extreme data values compared to standard deviation (Samuels, 2014; Whaley, 2005). The overall average median score for all variables was 3.5, which is> 3, indicating that individual investors perceive share business as highly risky and, therefore, most are risk averse. Table 3 presents the Likert scale results, leading to the formulation of a risk perception index.

Table 3.
Risk perception of investors

Risk Behaviour	Frequency (n/200)	Per cent (%)
Low-risk perception (Risk taker)	65	32.5
High-risk perception (Risk Averse)	135	67.5
Total	**200**	**100.0**

Source: Data collected

It can be deduced that individual investors in DSE have a high-risk perception associated with share business. Because the median, as per table 2, was greater than 3, indicating high-risk perception hence depicting risk aversion behaviour. Table 3 also indicated that 67.5% of individual investors in DSE perceive share business as high risk (risk averse). Descriptive statistics support that individual investors in DSE perceive share business as high risk. They are thus more risk averse than risk takers, which is in line with prospect theory whereby investors prefer small but certain returns to probable higher returns.

Other Risk Variables
The amount (TZS) invested in shares, trading experience, and trading frequency as among the variables indicating the risk behaviour of individuals were also analysed. The amount invested as an ordinal variable was measured using median value to avoid biases. Results are presented in Table 4 as follows;

Table 4.
Amount invested in shares and experience in trading

Variable	Mean	Median	Std. Deviation	Minimum	Maximum
Experience (No. of years trading)	6.7	6	3.4	1	21
Number of trades	8.5	8	5.365	1	25
Amount Invested (TZS)	11,826,600	7,600,000	12,549,767.99	50,000	76,000,000

Source: Data Collected

Experience means years of trading shares by individual investors, as presented in Table 4, confirming that they have been trading in the stock market for more than six years, shown by a Mean value of 6.7 years. The number of trades, volume and amount show that individual investors of DSE have a good experience in trading shares and therefore know the challenges and opportunities associated with stock trading (Nicolosi et al., 2004). Malmendier et al. (2020) noted that agents or traders could update their future expectations due to experiences related to stock market shocks. Individual investors, on average, have been trading eight times and above per year, as shown in Table 4. Findings imply that they not only buy and hold shares but also trade and increase their experience.

The study examined the amount of money invested in shares by individual investors to determine the risk behaviour of individuals. Results in Table 4 show median amount invested by individual investors in DSE shares was TZS 7,600,000. Impliedly, individual investors in DSE invest an average of TZS 7.6 million in share acquisition, except for a few investors who invested up to TZS 76,000,000. Higher-value investment in shares shows an individual's risk-taking behaviour as expected to invest what he/she is willing to lose. Plieger et al. (2020) support the findings by noting that investing more money in shares indicates risk-taking behaviour.

Individual investors choose different investment options based on the type of assets held, expecting a positive return on their investment like dividends, capital gain for shares and return on assets. Study results show that, although individuals

participate in the stock market through share trading, they also prefer to invest in other less risky assets. Fifty per cent (50%) of individuals prefer to invest in government bonds, while forty-one per cent (41%) prefer investing in mutual funds. Individuals perceive government bonds as safe investment modes (Huang & Chang, 2021). Apart from shares traded by DSE, only 9% of individual participants preferred investing in non-current assets.

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4.2 Risk Behaviour and Trading Frequency

The study used the Multinomial Logistic Regression (MLR) model to measure risk behaviour variables and the trading frequency of individual investors in DSE. Trading frequency options included: (1) often trading, (2) rarely trading and (3) holding shares. The model test results showed that it is highly significant, having a P-value=0.000 and Pseudo R-square tests, the Cox & Snell = R square of 0.266 and Nagelkerke R square of 0.318. R-square results indicate the model's moderate explanatory power in explaining the influence of risk behaviour variables on the trading frequency of individuals. Presentations of results are in Table 5.

Table 5.
Risk Behaviour and Trading Frequency of individual investors in DSE

Trading frequency	B-OT	Wald OT	Sig. OT	Exp(B) OT	B-RT	Wald RT	Sig. RT	Exp(B) RT
Amount Invested "000"								
TZS 50-TZS 5,000	-3.636	11.988	0.000	2.143	-0.762	1.355	0.000	1.467
>TZS 5,010-TZS 10,000	-1.012	1.663	0.001	1.364	-2.526	5.507	0.019	1.283
>TZS 10,010	Ref.							
Experience								
>5 years (Experienced)	0.855	3.261	0.021	2.352	0.894	2.979	0.034	2.446
1-5 years (Less experienced)	Ref				Ref			
Risk perception								
<45 (Risk Taker)	1.561	1.877	0.332	4.762	0.990	0.691	0.501	2.692
>45 Risk-averse	Ref				Ref			
Price consideration								
Consider price before trading	0.771	1.479	0.024	2.163	0.325	0.225	0.015	1.383
Do not Consider the price.	Ref				Ref			

Source: Field Results
Note(s): Ref=reference group; B=Coefficient, S.E=Standard Error; df=degree of freedom.
OT= Often Trading
RT= Rarely Trading
Model Fit: chi-square 61.718, df 16, P-value = 0.000; Goodness of fit Pearson: Chi-square 69.613, df 68, P=0.479 Pseudo R-square: Cox & Snell 0.266 and Nagelkerke 0.318

Amount Invested and Trading Frequency

The findings in Table 5 indicate a negative influence of the amount invested on often trading (P-value = 0.000 and 0.001< 0.05) and rarely trading (P-value = 0.000 and 0.019< 0.05) of shares in the DSE. Hence, the null hypothesis is rejected, and it is concluded that the amount invested influences individual trading frequency. Results imply that the probability of individuals who invested TZS 50,000 to TZS 5,000,000 and those who invested TZS 5,010,000 to TZS 10,000,000 in shares to often or rarely trade decreases with a decrease in amount by 2.143 and 1.364 for often trading; 1.467 and 1.283 for rarely trading compared to holding shares. Because trading is associated with costs and risk-taking, the amount invested signifies opportunities for an individual

to take higher risks. The findings align with Nadeem et al. (2020) and Barber & Odean (2013), who noted that the relationship between money attitude and stock market participation reflects the risk attitude of investors.

Risk Perception and Trading Frequency

Findings in Table 5 reveal that risk-taking and risk aversion have no significant influence on individual share trading (P-values = 0.332 and 0.501 >0.05) for often and rare trading. The null hypothesis is therefore accepted and concludes that risk perception does not influence the trading frequency of individuals. Hence, the probability of risk-averse individuals to often or rarely trading at the DSE, compared to risk-taking individuals, is positive but insignificant. Therefore, risk perception is essential but not decisive because trading at DSE is through brokers after considering the price and other risks. The results are in line with Ozenbas et al. (2022) that trading is a matter of price, transaction cost and timely market access and not necessarily how an individual perceives risk. Thus, brokers cover risk-taking or management at an affordable commission before trading.

Experience and Trading Frequency

Results in Table 5 show a significant influence of experience on individuals' share trading frequency. Thus, experience positively influences the often and rarely trading shares in the stock market as P-value = 0.021 and 0.034< 0.05. Consequently, we reject the null hypothesis and conclude that an individual's experience significantly influences the trading frequency of individual investors in DSE. The results show the probability of experienced individual investors in DSE to often and rarely trade than holding shares is 2.979 and 2.446, higher than those without experience. These results align with Liivamägi (2016) and behavioural finance theory that the confidence to trade increases as individual investors' experience increases.

Price Consideration and Trading Frequency

Price, among key factors in trading shares, was found to influence often and rarely trading of shares in the stock market positively as P-value = 0.024 and 0.015, which is < 0.05 (Table 5). As a result, the null hypothesis is rejected, and we conclude that the price of shares influences the trading frequency of individual investors in DSE. Hence, individual investors who consider price before trading have a high probability of often or rarely trading in DSE than holding shares by 2.163 and 1.383 more than individual investors who do not consider the price. Results relate to prospect theory and findings from Ozenbas et al. (2022) and Huber (2019), who noted that price affects buying and selling shares. The finding aligns with the practice that individual investors do not directly trade at the DSE but indirectly through brokers, and the main decision factor is price.

5. Conclusion, Implication and Limitations

The study assessed individual investors' risk behaviours and share trading frequency on DSE. The behavioural theory of finance and prospect theory guide the study to determine the relationships. Results depicted that individual investors of DSE vary in risk behaviours towards share business. Even though individuals are mostly risk-averse and a few are risk-takers, their trading options are not linked directly to their risk perception. Individuals' trading frequency is driven by price changes, thus targeting capital gain. Individual investors are unfamiliar with risk analysis factors, and their primary key indicator to attaining targeted return is share price. Furthermore, experienced traders could predict outcomes associated with share trading, decide on the price and volume of shares to trade, and influence trading frequency.

Theoretically, findings show that the risk aversion behaviour of individual investors relates to prospect theory because they trade shares when they are sure that

share prices generate a positive return, expecting a positive outcome. The experience in investment or trading and TZS investment value in shares point to the overconfidence of individual investors, hence recounts behavioural finance theory. Thus, we conclude that share trading is not affected by risk perception but rather by behavioural and economic factors. Practically, individual investors at DSE avoid risk and tend to prefer to invest in low-risk assets such as government bonds or mutual funds like collective schemes such as Umoja Unit Trust Fund. As individual investors focus on price as the main decision criterion for trading, DSE, financial analysts and brokers should enlighten them on risk assessment and analysis and how the same affect share price and the economy in general.

The DSE and its regulator, the Capital Market and Securities Authority (CMSA), are urged to develop and promote policies requiring the listed companies and DSE to increase investors' knowledge of risk management strategies, specifically financial risk analysis, and enlighten investors on share trading. Risk management knowledge on equity investment can be a mind-opener to new and prospective investors.

This paper has focused on individual investors' risk behaviour and share trading decisions and thus examined only one market player in the DSE, which is thus limited in scope. Future studies can examine the perception of brokers towards shares trading of individual and institutional investors to facilitate broad-based policy and regulations. Assessment of factors affecting individual trading behaviour can broaden the perspective and improve trading in DSE.

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