INVESTOR BEHAVIOR AND RISK PERCEPTION: A GENDER PERSPECTIVE

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ABSTRACT

Financial literacy is explained as the cognitive understanding of financial indicators and risk aversion, risk perception and investor behavior. Perhaps the investor behavior may vary depending on several factors such as gender, age, income level, social status, education etc. This research aims to highlight the effect of gender on financial market perception among Turkish investors. The outputs of two surveys the first for the last quarter of 2022 and the second for the first quarter of 2023, are analysed and compared. Therefore, two consecutive quarters are compared by gender for investment behaviors. This reserach observes some factors such as stress level, portfolio holding times, investment decisions and expectations regarding cryptocurrency markets. The methodology follows the Cronbach Alpha, Kolmogorov-Smirnov and Shapiro-Wilk Normality, and Mann-Whitney U tests respectively. The findings support gender differences in perception and investment behavior.

***Keywords**: Gender difference, investor behavior, cryptocurrency market, Mann-Whitney U test*

INTRODUCTION

The term "financial behavior" refers to a variety of actions including saving, spending, borrowing, and investing (Sudindra & Naidu, 2018). The significance of financial information is influenced by a number of reasons including rising consumption and/or income without corresponding opportunities for investing, and the current financial conditions which require competent money management (Mittelstaedt & Wiepcke, 2014). Individuals have distinct habits, and these behaviors are influenced by a variety of factors including social pressure, ads, financial knowledge, economic standing, marital status, prospects, and income levels. Every individual, family or household makes financial choices that are relevant to its activities. Long before the development of gender equality concerns, a number of studies on gender differences in financial behavior was conducted (Herdjiono et al., 2018). Gender is a social factor that influences consumer behavior at the same time (Faber, 1992). There is a lot of literature supporting that men and women take different levels of financial risks. With a sample size of 288 respondents (in the first survey) and 250 respondents (in the second survey), this study addresses the role of gender in investment behavior. The normality and Mann-Whitney U tests are used to demonstrate the investment disparities between males and females in accordance with the research's objective of whether men and women make different investment decisions.

The differences between genders in behavioral finance have been the subject of many studies in the literature. It is generally acknowledged that the primary concerns fall under categories including gender-specific economic behavior, risk aversion, and investment decisions. The aim of Arti et al. (2011) study is to examine the disparities between male and female investors' investment decision-making processes. Chi-square test is used as a statistical method in this investigation. The results of this study show that males have a higher level of awareness of various investment opportunities than females do. Also, female investors tend to show less trust in the investments they make. With a focus on women, Jamil and Khan (2016) made an effort to examine and understand the variability of investment decisions with regard to gender behavior. The study puts an effort to understand how genders in Oman are affected by normative pressures. The study concluded that investors are sensitive to emotions and respond to their actions.

Gonzalez-Igual (2021) study focuses on 106 professional investors involved in the Spanish market who completed anonymous online surveys in February 2017. The survey contained twenty questions about the practitioner's perception of behavioral finance and control questions and seven questions about investors' emotion to develop a confidence index. The researchers discovered that while younger investors are more susceptible to cognitive and emotional biases, female investors consider themselves as being more driven by rational thinking and being more risk-averse. Data from the 2018 National Financial Capability Study,

an extensive and nationally representative survey of adults' financial behavior, knowledge, and beliefs, is used by Wagner & Walstad (2022) to examine gender differences in household financial activity. According to the findings, compared to males, single females were much more unlikely to participate in any of the financial conducts. In addition, compared to males, females in joint families had a much lower likelihood of participating in the financial activities. Literature on "financial aversion" also concerns the inclusion of comparative analyses by gender. For instance, Hibbert et al. (2013) used a survey of finance professors from colleges across the United States to examine the gender differences in financial risk aversion. It was discovered that female professors are noticeably more risk-averse than male professors among highly educated people. Over 200 participants in their sampling, Deo & Sundar's (2015) study examined how gender affects risk-taking and investment behavior. They used the Mann-Whitney U-test and Chi-square statistics for hypotheses evaluation. It was revealed that there is a significant difference in investment behavior between men and women.

Sharma & Lyall (2022) aimed to investigate the impact of gender differences on a preference for risk in investment decisions. 16 closed-ended questions about risk propensity and demographics are included in the behavioral finance questionnaire that participants completed. The chi-square test is applied for statistical analysis, and the results showed that the gender of the individual investors influences both their investment behavior and risk tolerance. Moreover, compared to male investors, female investors invest in the financial markets less frequently and have less experience.

METHODOLOGY

The aim of this study is to reveal investor behavior and risk perception in the Turkish financial markets. In this way, the outputs of two separate surveys in the last consecutive quarters are analysed and compared. Beyond various outputs, the study is mainly focued on the gender difference in risk perception and investor behavior. The surveys consist of three sections. In the first section, the demographic data is collected. In the second part, investment behavior indicators that trigger the level of financial stress and confidence in financial literacy are questioned. The final part examines the perception regarding cryptocurrency market.

Respondents of both surveys consist of around 58% male and 42% female. Almost half of the respondents are middle-aged between the ages of 36-50. The rate of young respondents (between 18-25 years age) is quite low, at 2.4% (in first survey) and 8.8% (in second survey). All respondents have at least a university degree while almost half of the respondents have a graduate degree in both surveys. About 35% of the sample of both surveys have a working experience for more than 20 years while only 1% (in first survey) and %8 (in second survey) has worked for less than 1 year. As a sum up, the respondents of the surveys are experienced and matured investors. Table 1 below indicates the summary statistics for the demographic data.

Table 1. Demographic Characteristics

2022 Q4														
Gender	Age category				Education Level				Working Experience					
	18-25	26-35	36-50	>50	High school	Undergraduate	Graduate	Ph.D	<1 year	1-5 years	6-10 years	11-15 years	16-20 years	>20 years
FEMALE	0%	30.53%	48.42%	21.74%	0%	19.35%	29.47%	57.89%	0%	14.74%	12.63%	17.89%	21.05%	33.68%
MALE	3.63%	22.79%	47.67%	25.91%	0%	15.03%	44.04%	40.93%	1.55%	10.36%	10.36%	17.62%	15.03%	45.08%
2023 Q1														
Gender	Age category				Education Level				Working Experience					
	18-25	26-35	36-50	>50	High school	Undergraduate	Graduate	Ph.D	<1 year	1-5 years	6-10 years	11-15 years	16-20 years	>20 years
FEMALE	9.68%	39.78%	37.63%	13.98%	0%	33.33%	33.33%	34.41%	9.68%	19.35%	15.05%	20.43%	12.90%	23.66%
MALE	8.28%	36.94%	38.85%	15.92%	0%	33.12%	38.85%	28.66%	3.82%	18.47%	23.57%	15.92%	7.64%	31.21%

In the study, Cronbach Alpha, Kolmogorov-Smirnov and Shapiro-Wilk Normality, and Mann-Whitney U tests are performed. Whether the set of individuals surveyed homogeneous or heterogeneous with respect to the characteristics evaluated is expected to affect whether the coefficient of reliability to be low or high. The reliability scale utilized for evaluating respondents' investment preferences is estimated using the Cronbach Alpha score, which is determined to be 0.701. If the Cronbach Alpha score is greater than 0.60 when a created variable's dependability is being tested, the variable is considered reliable (Ghazali, 2016).

Based on these findings, the reliability of the question construction may be inferred because the Cronbach Alpha score is > 0.60.

Kolmogorov (1933a, 1933b) initially proposed the Kolmogorov-Smirnov test and then it is later developed (Smirnov, 1939a, 1939b). The following is a definition of the test statistics:

$$D = |F_0(X) - S_n(X)|$$

Where, $F_0(X)$ is function of the random variable X (expected) and $S_n(X)$ is the observed frequency of the variable X from sample. The hypothesis that the sample comes from a population with a normally distributed population is rejected if the resulting D statistic is significant.

The Shapiro–Wilk test (1965) is based on the statistics:

$$W = \frac{(\sum_{i=1}^{n} \alpha_i X_{(i)})^2}{\sum_{i=1}^{n}(X_i - \bar{X})^2}$$

Where, $X_{(1)} \leq X_{(2)} \leq \ldots \leq X_{(n)}$ are the ordered values of the sample and α_i are tabulated constants. For low levels of W, normality is rejected. For the hypothesis that X, a random variable, is normally distributed with an unknown mean □ and variance σ^2, the W test is accepted to be especially powerful. Royston (1982) modified the Shapiro-Wilk test to include a restriction on the sample size of 2000 and algorithm AS181 was then offered. Later, Royston (1992) noted that Shapiro-Wilk's (1965) approximation for the algorithmic weights α was insufficient for n is bigger than 50.

FINDINGS

Cronbach Alpha Coefficient of 0.701 is computed to test the reliability of questions which is greater than 0.60. Then, Kolmogorov-Smirnov and Shapiro-Wilk Normality, and Mann-Whitney U tests are performed to measure the normality of data. According to the data processing results, the probability of test statistics of both tests is near zero. A value less than 0.05 level of significance refers to the data that is not normally distributed. Since the assumption of normality could not be validated, the differences between the groups in this study are analyzed using a non-parametric test of Mann-Whitney U. The outputs for two surveys that represent 4th quarter of 2022 and 1st quarter of 2023 are exhibited in table 2 below.

Table 2. Mann-Whitney U Test Results

Question/Variable	Gender	2022 Q4		2023 Q1	
		Mean Rank	Asym. Sig. (2-tailed)	Mean Rank	Asym. Sig. (2-tailed)
Portfolio Holding Period	Female	160.28	0.017**	131.77	0.259
	Male	136.73		121.79	
Rete of conversion of monthly income into investment	Female	130.26	0.032**	127.68	0.696
	Male	151.51		124.21	
Cryptocurrency investment behavior	Female	136.13	0.011**	117.94	0.013**
	Male	161.51		138.27	
The frequency that the portfolio financial status is checked	Female	132.81	0.000***	114.26	0.001***
	Male	168.26		144.48	
Stress of losing money	Female	157.96	0.000***	140.95	0.000***
	Male	117.16		99.42	
Self confidence in financial literacy and portfolio management	Female	127.46	0.000***	113.11	0.000***
	Male	179.12		146.42	

*, **,*** shows the variable is statistically significant at 10%, 5% and 1% significance level, respectively.

Furthermore, the respondents are also asked to rank financial securities if they were to create a portfolio today and questioned about the risk perception in cryptocurrency markets. The outputs highlight that

females are more tend to invest in gold, foreign currency and real estate while males consider to invest in foreign currency, stocks and gold in the first three rankings. This result may be inclined as females are more risk averse. Furthermore, the lead of Bitcoin is also asked to the respondents. The survey results represent that females have a higher expectation that some other cryptocurrency will take the lead of Bitcoin while both males and females expect a collapse in the cryptocurrency markets in the near future. The details are exhibited in table 3 below.

Table 3. Portfolio Preference and Cryptocurrency Risk Perception

	If you were to create a portfolio today, what would you primarily invest in?	**Do you think there will be another crypto currency that will take the lead of Bitcoin in the market?**	**Do you expect a collapse in crypto markets?**
Female	1. Gold 2. For. Cur. & Eurobond 3. Real estate 4. Stocks 5. Mutual Funds 6. Government Securities 7. Under the pillow 8. Cryptocurrency	Yes: %47	Yes: %43
		No: %17	No: %19
Male	1. For. Cur. & Eurobond 2. Stocks 3. Gold 4. Real estate 5. Mutual Funds 6. Cryptocurrrency 7. Government Securities 8. Under th pillow	Yes: %27	Yes: %50
		No: %41	No: %29

CONCLUSION

This research aims whether there exists gender differences in investor behavior, risk perception and expectations about cryptocurrency markets. The results indicate the differences and similarities within several factors. For instance, holding period is explained as the length of time an investment is held by an investor or the period between the purchase and sale of a financial security. In accordance with financial literacy risk aversion of investors effect the holding period. More risky assets push the investors to change their buy/sell action dynamically.

The output of the research indicates that females' portfolio holding period is longer than males. Male investors are keener on spending their monthly income for investments in financial markets. The data highlight that the rate of males who invest in cryptocurrency markets are greater than females. Males feel more confident to make portfolio management however they check their investments' financial status more frequently.

Females experience the feel of more stress of losing money compared to males. Although both males and females expect a collapse in cryptocurrency markets; females expect some other cryptocurrency to take the lead of Bitcoin. The outputs indicate differences in portfolio diversification behavior. Females are keener on investing in gold while males pick the investment in foreign currency as the first choice. As a result, the evidence is suggested that there is a gender difference in financial expectations that lead to different investment behavior..

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