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GENDER EFFECT ON FINANCIAL RISK TOLERANCE: THE CASE OF SAUDI ARABIA

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ABSTRACT

This study was done to examine the relationship between gender and financial risk-taking behavior among professionals in Saudi Arabia. Additionally, the study has examined if demographic variables namely, age, income, education and marital status interact with gender to determine differences in risk preferences. This work was done based on quantitative method. Questionnaire based on Grable & Lytton 13-item scale was used for survey data collection. The sample population of this work comprised of 244 professionals in banking and financial sector in Saudi Arabia. An independent sample t-test, chi-square test and two-way ANOVA was used to examine the data obtained. The key outcome of this work has shown that impact of gender on financial risk tolerance was insignificant between professionals in Saudi Arabia. The results also determined that the demographic factors, age, income, education and marital status do not significantly affect financial risk tolerance among genders. This study indicates that understanding risk tolerance is a complex process that goes beyond the exclusive use of demographic factors.

INTRODUCTION

Risk attitudes in financial matters are generally termed financial risk tolerance (FRT) or risk aversion (RA). The two terms are antithetical, where the decrease in financial risk tolerance is an increase in risk aversion [1]. Knowledge of individuals' characteristics and the risk preference trends among the society is vital for developing the financial market as well as policy-making and educational purposes [2]. Moreover, the nature of each market needs to be informed by the characteristics of its participants in order

to be the best reflection of their needs, rather than being a reflection of the design and procedure of a different market [3].

Risk perception is the subjective interpretation of expected loss and it depends on the decision maker's own view, which differs from one person to another [4]. It is crucial to include risk perception and risk propensity as key mediators in the models of risk behaviors as they significantly influence the risk-taking behaviors of individuals [5].

Risk and return are the major aspects in valuating an investment opportunity [6]. Accordingly, when financial risk is viewed as the "probability that an investment will fail to generate the return that it was expected to generate" understanding differences in risk tolerance in relation to gender and other demographics as age, education and income can be of a great importance to comprehend differences in valuating investments [7]. Furthermore, differences in risk perception and evaluation among genders must be taken into consideration in order to adequately understand the gender differences in risk taking behaviors [8]. In addition, gender is considered one of the top three determinants of investing along with age and income [9]. Similarly, it was stated by Jamil et al. [10] that gender is the third most significant determinant of investing style.

Various works has been carried out in analyzing gender differences and risk-taking behavior in financial matters. Bannier et al. [11] investigated the gender orientation contrasts in money related risk taking, and found that monetary proficiency and hazard resilience shifted among men and women. Lemaster et al. [12] analyzed the gender contrasts in monetary peril resilience in terms of psychological mechanism and found that gender orientation anticipated more prominent financial risk resistance in females and less resistance in males. Fisher et al. [13] investigated gender contrasts in money related risk resilience utilizing decomposition technique and found that singular factors influence budgetary risk resistance distinctively for men and women. Montford et al. [14] analyzed the connection among gender orientation and investment habit and found that ladies make less perilous investment ventures than men do. Marlow et al. [15] examined the association between risk, finance investment and gender, and found that men tend to perform and indulge in riskier investment decision compared to woman, which was due to the physiological nature of male. Kannadhasan et al. [16] investigated whether statistic factors, for example, gender orientation can be utilized to separate investors trend for financial hazard resilience, and observed that gender to be valuable in separating between dimensions of speculators' finance related risk resistance. Burke et al. [17] examined the gender consequences for casual endeavor of money related investment, and found that the impact of budgetary venture is more grounded for men than women. Sarin et al. [18] evaluated the impacts of gender contrasts on risk avoidance choices, and found that for choices under vulnerability, both male and female perform the investment choice correspondingly. Chavali et al. [19] analyzed investment trend and monetary commitment of individuals, and found that gender orientation affects the investment trend and financial commitment.

Concerns and questions regarding gender differences in investment behavior were raised; their investment patterns, financial portfolio formation and maintenance, and their financial risk tolerance were addressed [20]. Nevertheless, to date few aspects remain unclear, especially in settings like, Saudi Arabia where the financial markets remain largely dominated by male investors. Hence, examining the differences in financial risk tolerance among individuals and the factors that influence these differences was the aim of this study. Therefore, this work has evaluated the relationship between gender and financial risk-taking behavior among professionals in Saudi Arabia. Furthermore, this work has also analyzed the relationship between risk tolerance among genders and other demographic characteristics namely, age, income, education and marital status.

METHODOLOGY

For this work, quantitative method was used, where the authors have examined the relationship between financial risk tolerance to each of the demographic variables namely, gender, age, marital status, education and income. Online survey was used to obtain the data on the variables from the representative group. The Grable & Lytton 13-item scale [21] was used in the online survey to collect the data. The sample population comprised of 244 Saudi banks and financial institutions employees. Sample selection was done based on purposive sampling. Statistical analysis was performed on the collected data. An independent sample t-test and chi-square test of independence was used to investigate differences between males and females in terms of their financial risk tolerance levels. In addition, two-way ANOVA was conducted to simultaneously test for the effect of each of the independent variables namely, gender, age, education, marital status, and income on the dependent variable financial risk tolerance, and to identify any interaction effect between the independent variables that may affect the dependent variable. The following hypothesis was analyzed. H_{10}: There is not significant difference in the risk preference between males and females. H_{11}: There is significant difference in the risk preference between males and females. H_{20}: Demographic variables does not interact with gender to determine differences in risk preference. H_{21}: Demographic variables interact with gender to determine differences in risk preference.

RESULT AND DISCUSSION

Descriptive Statistics

The results of risk tolerance levels of the samples are shown in Table 1. Based on Table 1, results showed that the majority of the samples have moderate risk tolerance level by 41.8% of the total sample. While 40.8% of the male sample had moderate risk tolerance, and 43.1% of the female sample was in the average-risk tolerance category. From the male sample, 20.4% and 14.7% from the female sample were in the high-risk tolerance category.

Table 1. Levels of Risk Tolerance in The Sample

Risk level of the sample	All sample	Male sample	Female sample
Low risk tolerance	13(5.3%)	8(6.5%)	5(4.9%)
Below-average risk tolerance	34(13.9%)	17(12%)	17(16.7%)
Average/moderate risk tolerance	102(41.8%)	58(40.8%)	44(43.1%)
Above-average risk tolerance	51(20.9%)	30(21.1%)	21(20.6%)
High risk tolerance	44(18%)	29(20.4%)	15(14.7%)
Total	244	142	102

The results of descriptive analysis and data screening are presented in Table 2. Based on Table 2, the average of the dependent variable financial risk tolerance is 27.27. While the average of the independent variable, age is 33 years (SD = 6.82). The spread of the variables from the mean is described by the standard deviation. The standard deviation of the dependent variable financial risk tolerance is (SD = 5.3). On the other hand, based on Table 2, the skewness of both variables is near zero and are in the acceptable range of (-1 and 1). In addition, the kurtosis of the variables is also in the acceptable range of (-2 and 2), which indicates the symmetric distribution of the variables.

Based on Table 2, the mode of the categorical variables indicated that the majority of the samples are males, where in the second variable, marital status the majority of the samples are married. The mode of the education variable indicates that the majority of the sample holds bachelor degree, where for the variable income most of the sample received 61,000 – 120,000 RS per annum. Reliability analysis of the financial risk tolerance scale is presented in the last column of Table 2. Reliability for only risk tolerance level was computed, as it was the only numeric variable measured using multiple items. The risk tolerance scale showed acceptable reliability ($\alpha = 0.664$) as stated by Kuzniak et al. [21]

Table 2. Descriptive Statistics, Normality and Reliability.

Variable	Min	Max	Mean/ Mode	Std. Dev	Skewness	Kurtosis	Reliability
financial risk tolerance	16	44	27.27	5.306	0.176	-0.316	0.664
Age	18.00	56.00	33.12	6.828	0.577	0.079	
Gender	1	2	1*				
Marital status	1	3	2*				
Education	2	5	4*				
annual gross income	1	5	2*				

Note: *Mode Was Reported as A Measure of Central Tendency for Categorical Variables Such as Gender, Marital Status, Education and Annual Gross Income.

Hypothesis Testing

The objective of first hypothesis was to test the gender difference in risk tolerance levels. H_{10} = There is no significant difference in the risk preference between male and female. The results showed that there was no significant effect of gender [$t(242) = 1.377$, $p = 0.162$] on financial risk tolerance level. Thus, the null hypotheses cannot be rejected based on the findings of independent sample t-test. Thus, in the test sample, there was no statistically significant difference between males and females in terms of their financial risk tolerance.

Secondly, as a robustness test, a chi-square test of independence was used to investigate the association between gender and the levels of financial risk tolerance, where financial risk tolerance was categorized into five levels namely, low, below-average, average, above-average, high risk tolerance. The second variable gender was measured as a dichotomous variable on a nominal scale. The results indicate that there was no significant association between gender and financial risk tolerance levels [χ^2 (4, N =244) = 2.16, p =0.71] as measured by the Grable & Lytton risk tolerance scale. Based on this analysis, the null hypothesis is not rejected. Thus, in the test sample, there is no significant association between gender and financial risk tolerance levels.

The objective of the second hypothesis in the study was to examine if the demographic variables interact with gender to formulate different risk preferences. H_{20}; Demographic variables namely, age, marital status, education and income interact with gender to determine difference in the risk preference. Table 3 shows the results of the two-way ANOVA for the impact of age and gender on financial risk tolerance. Based on Table 3, there is no significant main effect of gender [F=0.292, p= 0.59] on financial risk tolerance, nor age [F= 3.0, p= 0.05] independently has a significant main effect on financial risk tolerance. The interaction effect of "Gender *Age" [F = 1.311, p= 0.271] indicates that there is no significant difference affected by age on financial risk tolerance among genders.

Table 3. ANOVA For Between Subjects Effects - Gender and Age

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	271.146	5	54.229	1.964	0.085
Intercept	24489.872	1	24489.872	887.079	0.000
Gender	8.051	1	8.051	0.292	0.590
Age	166.013	2	83.007	3.007	0.051
Gender * Age	72.391	2	36.196	1.311	0.271

Table 4 shows the results of the two-way ANOVA for the impact of education and gender on financial risk tolerance. Based on Table 4, results showed that There is not significant main effect of gender [F =2.506, p= .115] or education level [F (3, 236) = 1.5, p= .22] independently on financial risk tolerance. This

means that males and females do not differ in terms of their financial risk tolerance level whether they were high school graduates, bachelor degree holders or graduate or professional degree holders. The interaction effect "Gender * Education" [F = 0.247, p= 0.86] did not reach statistical significance, which indicates that there is no significant effect of education on financial risk tolerance for males and females.

Table 4. ANOVA For Between Subjects Effects - Gender and Education

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	229.494	7	32.785	1.170	0.321
Intercept	43355.147	1	43355.147	1547.417	0.000
Gender	70.199	1	70.199	2.506	0.115
Education	126.044	3	42.015	1.500	0.215
Gender * Education	20.787	3	6.929	0.247	0.863

Table 5 shows the results of the two-way ANOVA results for the impact of marital status and gender on financial risk tolerance. Based on Table 5, there is not significant main effect of gender [F=0.59, p= 0.44] or marital status [F=2.43, p=0.09] independently on financial risk tolerance. This means that males and females do not differ in terms of their financial risk tolerance score whether they were never married, married, divorced or separated. The interaction effect "Gender * marital status" [F= 0.59, p= 0.55] indicates that there is no significant difference in the effect of marital status on financial risk tolerance for males and females

Table 5. ANOVA For Between Subjects Effects - Gender and Marital Status

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	205.622	5	41.124	1.475	0.199
Intercept	81803.634	1	81803.634	2933.858	0.000
Gender	16.696	1	16.696	0.599	0.440
Marital Status	135.386	2	67.693	2.428	0.090
Gender * marital status	33.110	2	16.555	0.594	0.553

Table 6 shows the results of the two-way ANOVA results for the impact of income and gender on financial risk tolerance. Based on Table 6, the result showed that there is not significant main effect of gender [F= 0.256, p= 0.61] or income level [F= 1.072, p= 0.37] independently on financial risk tolerance. This means that males and females do not differ in terms of their financial risk tolerance level irrespective to their annual gross income. The interaction effect "Gender * Income" [F =1.001, p= .408] indicates that there is no significant difference in the effect of income on financial risk tolerance for males and females. These results suggest that differences in financial risk tolerance are not significantly affected by the gender of neither the individual nor their annual gross income level. Taking together and based on the analysis, the null

hypothesis which stated that demographic variables namely, age, marital status, education and income does not interact with gender to determine difference in the risk preference is not rejected.

OVERALL DISCUSSION

Based on the analysis done, the results have shown that for the first hypothesis, there is no significant association between gender and financial risk tolerance levels. This outcome is consistent with the work of Gerrans et al. [22] and Adhikari et al. [23] where it was reported that there is no relationship between gender and financial risk tolerance levels. In addition, the demographic factors, namely, age, education, marital status and income, did not have a main effect on financial risk tolerance or an interaction effect with gender to influence the level of financial risk tolerance. This outcome is consistent with the work of Kumar et al. [24] and Montford et al. [14] where it was reported that demographic factors does not affect financial risk tolerance level. These results indicate the complex nature of risk that goes beyond the influence of the demographic characteristics where it can be used only as starting point in assessing investors risk tolerance. Furthermore, Grable et al. [25] has reported that risk tolerance consists of two parts: the first part is the ability to take risk where the personal demographic factors as age, income and education are present. The second part is the willingness to take risk where the psychological factors are present. Thus, it is deduced that the personal demographic factors count only for a part of financial risk tolerance.

CONCLUSION

This work was done to analyze which of the demographic factors are connected to financial risk tolerance. The main result of this study is that the influence of gender on financial risk attitude appeared to be insignificant between professionals in Saudi Arabia. The outcome of this work has shown that the demographics, namely, age, education, marital status and income did not have a main effect on financial risk tolerance nor an interaction effect with gender to influence the level of financial risk tolerance. In addition, it was found that males and females in this work sample do not significantly differ in terms of their financial risk tolerance. The non-significance of gender effect on financial risk tolerance among professionals in Saudi reflects the shared financial experiences and knowledge between the professionals in the financial sector. For future work, the authors recommend to study the actual behavior in the Saudi financial market by assessing the differences in the level of portfolio volatility among genders.

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