



Multivariate analysis of risk perception and investment decision with the influence of demographic factor

P Nagalakshmi^{1*}, M Selvakumar²

¹ Research Scholar, PG and Research Department of Commerce, Ayya Nadar Janaki Ammal College, (Affiliated Madurai Kamaraj University, Madurai) Sivakasi, Tamil Nadu, India

² Associate Professor and Guide, PG and Research Department of Commerce, Ayya Nadar Janaki Ammal College, (Affiliated Madurai Kamaraj University, Madurai) Sivakasi, Tamil Nadu, India

Abstract

The study shows a clear difference in how risk perception and investment choice are affected by age group. Convenient sampling, a non-probability approach, was used in the investigation. The socio-demographic characteristics of the 70 respondents in the sample who were used in this study led to the selection of this methodology. Multivariate Analysis (MANOVA), a statistic tool, was used to test the hypothesis, before test the hypothesis full fill the given assumption for the MANOVA analysis, for that we test the multivariate normality attains the mahal Nobis value is less than the 5.99 it confirmations that the data were normally distribute and multicollinearity variance express that correlation between the group should be less than 0.9, hence the assumption were full fill the thumb rule and to do a further analysis for testing the hypothesis framed for the study. The result found that through the analysis, the null hypothesis was accepted. Therefore, the age element has no bearing on investing decisions or perceptions of risk.

Keywords: Risk aversion, decision making, demographic factor and age

Introduction

Since investors vary in their risk aversion and investment choices, the composite phenomenon known as "investor risk perception" is influenced by a wide range of characteristics that fall under the categories of demography (personality traits, age, gender, and income). The study examines the relationships between risk propensity and investment choice among different investor age groups.

Literature review

Savage (1992) investigated the effects of demographics on risk perception; risk attitudes were measured using three criteria: dread or terror, known risk, and personal exposure to risk. The study assessed the connection between perceptions of unsafe circumstances and demographic characteristics (age, education, gender, race, and income). It concluded that women, young people with lower levels of education, individuals of lower income, and people of colour were more scared because they were less informed about dangerous situations and, as a result, had significantly lower tolerance levels for dangerous scenarios.

Athira and kakkakunnan (2020) discovered that an investor's ability to bear risk is significantly influenced by their demographic characteristics, including gender, occupation, and monthly income. Purkayastha (2008) [2] pointed out that an investor's risk appetite is influenced by their age, pay, and position. Independent of their risk tolerance and demography, investors often invest in mutual funds with an average level of risk. Trang and tho's (2017) [3] Results indicated that perceived risks have beneficial direct effects on performance and investment intention as well as indirect effects on investment intention through the performance of investments.

Research methodology

This empirical investigation aims to better understand the elements that affect investors' risk perception and investing decisions, as well as the underlying relationships between these aspects. Convenient sampling, a non-probability approach, was used in the investigation. The socio-demographic characteristics of the 70 investors led to the selection of this technique. This sample technique has also been widely applied in research on behavioural finance (Tamimi and Kalli, 2018; Baker *et al.*, 2018) [5].

Objectives

- To analyse the relationship between the age group's risk perception and investment decisions,

Hypothesis

- **Ho:** There are no notable variations across age groups in terms of risk perception or investment decisions.

Result and discussion

1. Multivariate Normality of Data

The first assumption is establishing the normality of data. Most of the statistical test rest upon the firm pillars of the assumption of the multivariate normality of dependent variable.

Table 1: Multivariate normality of data

Dependent variables	Mahalanobis minimum value	Mahalanobis maximum value	Critical value of chi-square
Investment decision	0.034	5.729	5.991
Risk perception			

Source: Computed data

The Mahalanobis maximum value is less than the critical value. Hence Multivariate Normality is existing between variable.

2. Homogeneity of variance-covariance matrices

The following assumption is that all the criteria variables in the Covariance matrix have equal variance in each group. To test this assumption, the Box's M test and the Levene's test were used.

Table 2: (i) Box's M test

Box's test of equality of covariance		
S. No	Box's M Test	18.124
1	F	1.227
2	df1	12
3	df2	521.054
4	P value	0.261

Source: Computed data

The Box's M Test value of 18.124, F=1.227 was associated with a p-value of 0.261, which means is more than 0.05. Hence, the null hypothesis was accepted; as a result, the observed covariance matrices of the dependent variable are equal across the group.

Table 3: (ii) Levene's test

Levene's test of equality of error variances ^a				
	F	df1	df2	Sig.
IDM	1.419	4	65	.238
RP	2.005	4	65	.104

Source: Computed data

4. No multicollinearity

Regarding the Pearson Correlation, the third supposition is made. To test the multicollinearity assumption that the variables risk perception and investment choice are not associated with one another, Pearson correlation was conducted between all the criterion variables.

Table 4: Multicollinearity test

Correlation		RP
IDM	Pearson correlation	.456**
	Sig. (2-tailed)	.000
	N	70

Source: Computed data

4. Descriptive statistics

Table 5

Descriptive Statistics				
DV/ IV	Age	Mean	Std. Deviation	N
IDM	Below 20	17.0000	2.64575	3
	21-30	15.2000	.83666	5
	31-41	16.6154	2.81480	13
	40- 50	16.5294	2.42687	17
	ABOVE 50	16.2813	2.39939	32
	Total	16.3571	2.38981	70
RP	Below 20	18.6667	1.52753	3
	21-30	19.2000	.44721	5
	31-41	19.1538	2.91108	13
	40- 50	19.7059	2.46892	17
	ABOVE 50	19.4688	2.74725	32
	Total	19.4143	2.53379	70

Source: Computed data

The mean investment decision values for each age group. The average age-related investment decision-making is 17.000, 15.200, 16.615, 16.529, and 16.2813, correspondingly. It indicates that among those under the age of 20, investment decision-making is prevalent. The age groups' median values do not differ significantly from one another. Every age group adapts the investment decision in a similar way.

The mean risk perception values for each age group The average age-related investment choice value is 18.667, followed by 19.200, 19.150, 19.705, and 19.468. It indicates that people in the 40–50 age range are more risk-averse. The age groups' median values do not differ significantly from one another.

4. Testing of hypothesis

The data had fulfilled all the assumption to be essentials for the application of Multivariate analysis for testing the hypotheses in the following table.

Ho: No significant exist in Risk Perception and Investment Decision among the age group.

Table 6: MANOVA test

Tests of between-subjects effects							
Source	Dependent variable	Type III sum of squares	df	Mean square	F	Sig.	Partial eta squared
Corrected model	IDM	9.490 ^a	4	2.373	.401	.807	.024
	RP	4.329 ^b	4	1.082	.160	.958	.010
Intercept	IDM	9513.818	1	9513.818	1607.979	.000	.961
	RP	13213.066	1	13213.066	1957.906	.000	.968
AGE	IDM	9.490	4	2.373	.401	.807	.024
	RP	4.329	4	1.082	.160	.958	.010
Error	IDM	384.581	65	5.917			
	RP	438.657	65	6.749			
Total	IDM	19123.000	70				
	RP	26827.000	70				
Corrected total	IDM	394.071	69				
	RP	442.986	69				

a. R squared = .024 (Adjusted R squared = -.036)

b. R squared = .010 (Adjusted R squared = -.051)

Source: Computed data

MANOVA was used to determine whether the age of the respondent had an impact on investment decisions and risk perception. For investment choice and risk perception, the independent variable age shows p values of 0.807 and 0.958, both of which are greater than 0.05. Null hypothesis is therefore accepted. It concludes that the respondent's age has no bearing on their risk assessment or investment decision.

Conclusion

According to the study's findings, there is no discernible difference in the age group between investment decisions and risk perception. The decision-making process and risk aversion in investing are not influenced by age group. The respondent's age has no bearing on the type of investment they undertake or the level of risk they are willing to take, as each group has different risk perception.

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Conflicts of interest

The authors declare no conflict of interest.

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