Investor and Inherent Risk towards Potential Returns

Ahmed Imran Hunjra[1] Haroon Bakari[2] Asad Mehmood[3]

Abstract

We aim to determine the impact of risk propensity and market information on expected returns mediated by risk perception. We collected the data from institutional investors through a questionnaire. There were 441 financial investment registered firms and 271 stock market brokers as the population. We distributed 181 questionnaires among the financial officers of Islamabad and Lahore stock exchanges, and 162 responses were received. We found a positive impact of risk propensity and market information on expected returns. Furthermore, risk perception partially mediated risk propensity, market information and expected returns.

Keywords: Market information, Risk propensity, Risk perception, Expected return, Institutional investors

JEL: G11 & G17

Introduction

Developing economies make consistent efforts to boost investors' confidence to increase investment and provide support for economic development. Literature suggests that psychological factors contribute more to investors' decision making as compared to economic factors (Sarwar & Afaf, 2016). The rapid growth in business and technology has increased the concern and attention for the minimization of risk. Financial crises lead to financial turmoil, which results in the meticulous attitude of investors towards investment. This not only affects investors' attitudes but also impacts their potential returns while investing in financial assets. According to Malkiel and Fama (1970), rational investors change their investment commitment based on market information. Rapid decision making maximizes the value of the assets held by the investors and adjusts its deviations through arbitrage to reasonable values. Several studies identified that the Efficient Market Hypothesis (EMH) failed to support efficient markets, as it often ignored the psychological attributes of investors' process of decision making and the unavailability of the right information. When people face uncertainty and doubt in the existing information, they draw their conclusions based on their intention, attention, memory process and interpretation (Sitkin & Pablo, 1992). Self-reported information is important to measure the risk attitude to judge their abilities to explain risky behavior and to also provide behavioral validity (Dohmen *et al.*, 2011).

The Value-Function suggests that facing a gain or loss causes a difference in the risk attitude among investors (Kahneman & Tversky, 1979). Economic fluctuations shape

[1] Arid Agriculture University, Rawalpindi, Email: ahmedhunjra@gmail.com
[2] University of Sindh Campus, Thatta, Email: haroon.bakari@usindh.edu.pk
[3] Arid Agriculture University Rawalpindi, Email: asadmehmoodd@gmail.com

individuals' behavior in deciding the level of risk and affects their attitude. Empirical results suggest that individuals differ in their levels of risk, based upon personal experiences in their lives and use this experience for higher expected returns (Malmendier & Nagel, 2011). The expectation for returns is increased when past performance and information is produced on the same level as in the past. The historical outcomes are the main predictor variables, as positive experiences lead to a high-risk propensity (Byrne, 2005). Chou, Huang, and Hsu (2010) suggest that investors who suffer a loss in the past, keep it in mind while making a new investment, in addition to the other sources of information for risk assessment. Investors classify past experiences as an anchor and record them to form a frame for the interpretation of their perspective behavior. Two concepts of risk propensity are highlighted in the literature. The first concept relates to prospect theory, which suggests that risk is asymmetric about some reference point. Prospect theory has initiated many research studies conducted into risk-taking and risk preference, but the major area of the theory is concerned with the individual level risk-taking.

Pakistan's economy is articulated as having a high degree of uncertainty due to political, economic, social and institutional changes during the last decade. The financial crisis of 2008-2009 caused serious losses to investors. Risk related to financial products, recession, and current economic turmoil affects the attitude of investors towards investment. Non-familiarity and insufficient experience with financial products further deteriorate the situation. No proper educational programs or training institutes are available that can provide guidelines and direction to the investors to assess the market information for rational decisions. Lack of technical skills to interpret information, and high expectation for returns are the common problems of Pakistani investors, which influence the expected return. Apart from common problems, there is a need to develop an understanding of the mechanism to attract investors towards financial markets and to make rational decisions to improve their confidence. From the government's reports, publications and literature, it is not evident that such investigation has been carried out in Pakistan. In addition, decision making with financial products has not attained much attention to investors' understanding of financial products. Furthermore, risk propensity and market information are the determinants of expected return, while using risk perception as a mediator is yet to be established in the Pakistani market. Thus, it is necessary to consider the factors which affect the investors' rational decisions to maximize the expected returns. Therefore, this study is an attempt to bridge this gap. To deal with this problem, we relate investor psychology theories of learning, processing, and getting knowledge with the ability to acquire, understand, and use financial information and financial concepts.

This study investigates the influence of risk propensity and market information on expected returns. Furthermore, we aim to determine the mediating role of risk propensity between financial information, risk propensity and expected returns. We use a questionnaire to collect the data. We apply frequency distribution tests for demographic analysis and to test the hypotheses, we apply Structural Equation Modeling (SEM). We find that risk propensity and market information positively influence expected returns whereas risk perception partially mediates risk propensity, market information and expected returns. The findings contribute to the investors' context that while making an investment, it is necessary for the investors to perceive the risks associated with the investment opportunity and they should have knowledge about their respective market and their attitude should be risk-taking in order to earn high returns on their investment. However, if they do not consider these factors while making the investment, either they will have lower returns or they will suffer a loss.

The remaining part of the paper explains the literature review, methodology, and analysis section, followed by the conclusion section.

Literature Review

Risk is the probability of the actual returns on the investment being different than expected (Van Horne & Wachowicz, 2005). It is comprised of the possibility of losing some portion, or all of the actual investment (Hue *et al.*, 2019). Markowitz (1952) evaluated investment portfolios in terms of potential risk and expected returns. Malkiel and Fama (1970) described that rational investors updated their investment commitment based on market information. Risk perception is a result of the change in the level of knowledge about a specific situation or activity (Koonce, McAnally, & Mercer, 2001). Experience is effective when it helps individuals differentiate between financial literacy and capacity (Alba & Hutchinson, 2000).

Historically, financial proficiency numeracy is raised from two interconnected constructs: financial capacity (ability to process information) and financial literacy (past knowledge of financial concepts) (Harrison & Estelami, 2014). Both “financial literacy” and “financial capability” are interrelated terms which include the following: prior knowledge, cognitive capacity, expertise and expected outcomes (Hu *et al.*, 2007). Financial ability is directly concerned with the financial management of the outcomes of an individual investor’s issues related to savings, borrowing, and taxes. It indirectly involves higher expected returns (Huhmann & McQuitty, 2009). Atkinson *et al.* (2007) described financial capabilities as managing, future planning and selecting using familiarity and financial literacy to stay informed. Both terms are interrelated, often interchangeably used, but capacity is the process to obtain knowledge regarding financial concepts, whereas financial literacy is memory-based.

Risk propensity is the tendency of decision-makers to make a choice of risk-taking (Sitkin & Weingart, 1995). The frequency with which an individual takes or avoids various kinds of risks is known as risk propensity (Sitkin & Pablo, 1992). The most comprehensive research carried out by Sitkin and Pablo (1992) suggests two major inputs for risk-taking, which are risk propensity and risk perception. Risk propensity is conceptualized as dispositional tendencies, past experience, and cognitive inputs. It has vital implications on individual-level risk behavior. From an organizational perspective, a superior understanding of risk can contribute to considerably better risk management (Bernstein, 1996).

Most business decisions are taken under risky conditions, where outcomes are more probabilistic than deterministic. Risk propensity is the extent to which it influences decision-makers in determining potential outcomes (Keil *et al.*, 2000; Martinez & Artz, 2006; Sitkin & Weingart, 1995). Decisions under risk are situationally dependent, and these risky decisions are not necessarily evaluated on a rational basis but are affected by the person's stance towards a particular risk. Risk propensity is the vital factor that takes all issues into account collectively, while making decisions, and is pertinent to personality traits (Ghosh & Ray, 1997; Keinan *et al*., 1984).

Kraus and Slovic (1988) suggest that risk propensity varies across different decision activities and contexts with multi-facets of risk. Weber *et al*. (2002) investigated risk-propensity in financial decision making and found context-specific results; inconsistently risk-seeking or consistently risk-averse. He measured risk propensity using an eight-item scale and found that individuals hold different tendencies to different risk facets and confine to a particular decision context.

Perception is a basic topic in behavioral sciences but it has not essentially been adopted or implemented by finance scholars. Gooding (1976), for the first time, discussed perception with a behavioral perspective, while only a few economists like Schwartz (1987) and Weber (2003) considerably addressed perception. Perception is the ability or acts to perceive. It is the quality of interpreting objects mentally and with senses; comprehension; awareness. Psychological perspective states that perception is the process by which the brain classifies and construes sensory information (Wade & Tavris, 1996). Risk perception is defined as the evaluation of risk in uncertainty (Sitkin & Pablo, 1992). However, perception's exact concept was worked out mainly by Allport (1955), Schiffman (1976), McBurney and Collings (1984), and Faust (1984). Perceived risk is an individual's judgment in terms of statistic estimates of the extent of situational uncertainty, the confidence in these estimates and the methods to control uncertainty (Sitkin & Weingart, 1995). Shanmugasundaram and Dubey (2016) found a strong

relationship between the investors' risk-bearing capacity and the sources of funds for their investments.

Sitkin and Pablo (1992) highlighted five new determinants of risk perception that affected decision-makers: individuals with high success (savings, incomes) took risks; aged, mature and experienced individuals took low or small risks. Risk decisions are context-based; there is a difference in risk-taking decisions when personal and business affairs are concerned. Risk-taking is also situational; willingness for risk is high in a threatening situation rather than an opportunistic situation. Research shows a high propensity of risk aversion among experienced individuals; experienced investors simplify and use part of the information required to make a decision. The study revealed evidence of high risk-taking among individuals with limited finances. Previous researches describe risk perception as the degree of risk associated with a situation. Risk propensity is the tendency to take risky actions, whereas risk perception is how an individual perceives a particular risk. High-risk perception leads to less risky behavior. Sitkin and Weingart (1995) indicated comprehensive mediation between risk perception, risk propensity, and decision-making behavior. Based on the literature, we propose the following theoretical framework.

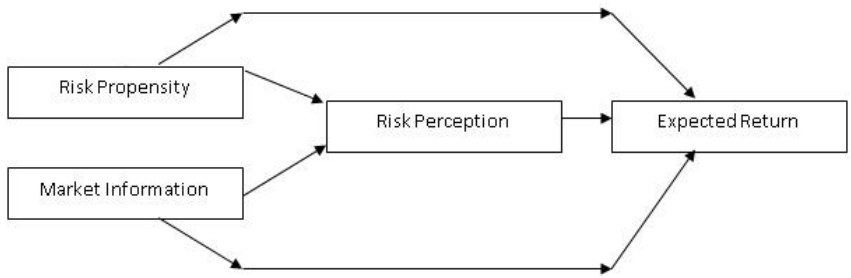

Fig. 1: *Conceptual Framework*

Huhmann and McQuitty (2009) described that consumers only seek and process information when they have the capacity to process it. Comprehension suffers when demand for the processing of information exceeds cognitive capacity (Hu *et al.*, 2007). Therefore, the following hypotheses are presented:

H_1: Risk propensity has a positive impact on expected returns
H_2: Market information has a positive impact on expected returns
H_3: Risk propensity has a negative impact on risk perception
H_4: Market information has a positive impact on risk perception
H_5: Risk perception has a positive impact on expected returns
H_6: Risk perception positively mediates risk propensity and expected returns
H_7: Risk perception positively mediates market information and expected returns

Methodology

Investment firms in Islamabad and Lahore were selected as the target population. The target respondents were the higher management of financial investment registered firms and stock market brokers. The population comprised of 441 financial investment registered firms and 271 stock market brokers. The total size of the population was 712. We used purposive sampling for data collection.

Table 1: *Population of the Study*

Cities	Investment Firms	Stock Market Brokers	Total
Lahore	338	151	489
Rawalpindi/Islamabad	103	120	223
Total	441	271	712

Data was collected through a questionnaire and the instrument was adapted from the literature, details of which are given in Table 5. We distributed 181 questionnaires among the investment firms and the stock market brokerage houses of Lahore and Islamabad, from which 162 were received. The city-wise detail of the target sample and sample response are summarized in Table 2. We used a 5-point Likert scale to measure the responses of study variables.

Table 2: *Sample Size & Sample Response*

Cities	Sample Size			Sample Response		
	Investment	Stock Market	Total	Investment Firms	Stock Market	Total
Lahore	85	26	111	76	23	99
Islamabad	40	30	70	36	27	63
Total	125	56	181	112	50	162

The validity of the instrument is checked through the Confirmatory Factor Analysis (CFA) for the constructs of market information, risk propensity, risk perception and expected returns. CFA confirms the internal consistency and reliability of the instrument in accordance with the hypothesis of the variable in the model. The usual parameters are the chi-square, goodness-of-fit statistic (CMIN/DF), the Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Tucker-Lewis-coefficient (TLI), Comparative Fit Index (CFI) and the Root Mean Square Error of Approximation (RMSEA). The literature states the threshold values of the model fit when the value of CMIN/DF is between 3 and 5, GFI, AGFI, TLI, and CFI are more than .9 and RMSEA .05 or less (Bentler & Bonett, 1980; Hu & Bentler, 1999). The chi-square is used to test the model and the GFI is called the absolute fit measure, CFI an incremental fit measure, and AGFI a parsimonious fit measure and Normed Chi-square (Keramati *et al.*, 2010).

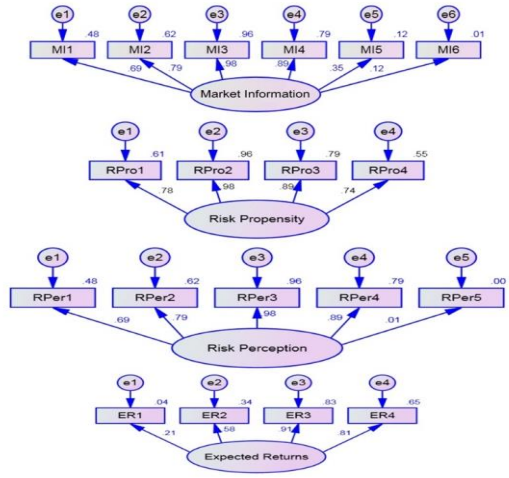

Fig. 2: *Confirmatory Factor Analysis Model (Path Diagram)*

Table 3: *Convergent Validity*

Market Information		Risk Propensity	
Items	Standard Estimate (λ≥0.50)	Items	Standard Estimate (λ≥0.50)
MI1	.69 (valid)	RPro1	.78 (valid)
MI2	.79 (valid)	RPro2	.98 (valid)
MI3	.98 (valid)	RPro3	.89 (valid)
MI4	.89 (valid)	RPro4	.74 (valid)
MI5	.35 (invalid)	AVE = 2.91 / 4 = .73	
MI6	.12 (invalid)	CR = 11.49 / (11.49 + 1.09) = .91	
AVE = 2.85 / 4 = .71		Expected Return	
CR = 11.22 / (11.22 + 1.15) = .91		Items	Standard Estimate (λ≥0.50)
Risk Perception		ER1	.21 (invalid)
Items	Standard Estimate (λ≥0.50)	ER2	.58 (valid)
RPer1	.69 (valid)	ER3	.91 (valid)
RPer2	.79 (valid)	ER4	.81 (valid)
RPer3	.98 (valid)	AVE = 1.82 / 3 = .61	
RPer4	.89 (valid)	CR = 5.29 / (5.29 + 1.18) = .82	
RPer5	.01 (invalid)		
AVE = 2.85 / 4 = .71			
CR = 11.22 / (11.22 + 1.15) = .91			

Note: AVE $= \sum \lambda i^2 / n$ *& CR* $= (\sum \lambda_i)^2 / (\sum \lambda_i)^2 + \sum \delta_i$

The results of convergent validity are presented in Table 3. Convergent validity is used to determine the valid or invalid items for each variable. If the factor loading is greater than or equal to .5, the item is considered valid (Cua *et al.*, 2001). The results indicate that the maximum questions of the instrument are valid in measuring the theoretical framework of the investment firms of Islamabad/Rawalpindi and Lahore. The threshold value of the Average Variance Extracted (AVE) .5 is stated by Fornell and

Larker (1981). Therefore, AVE values in the above table prove the construct's validity. Furthermore, Construct Reliability (CR) of all variables is greater than .7, which validates the instrument of Netemeyer *et al*. (2003). The values in Table 4 indicate the fitness indices of the constructs and meet the threshold level as proposed by McAulay *et al*. (2006), Roh *et al*. (2005) and Hair *et al*. (1998).

Table 4: *Model fit Index for Study Constructs*

Factors	Market Information	Risk Propensity	Risk Perception	Expected Returns
Chi-square	27.969	5.798	16.546	5.532
Df	9	2	5	2
Chi-square/df	3.108	2.899	3.309	2.776
AGFI	.704	.813	.670	.742
TLI	.806	.924	.846	.872
RMSEA	.021	.020	.022	.019
GFI	.873	.943	.879	.948
CFI	.884	.924	.923	.937

Table 5: *Variable Sources & Reliability Analysis*

Sr. #	Variables	Source	Items	Valid Items	Cronbach's Alpha
1.	Market Information	Liang and Dunn (2010)	6	4	.832
2.	Risk Perception	Weber *et al*. (2002)	5	4	.742
3.	Risk Propensity	Weber *et al*. (2002)	4	4	.902
4.	Expected Returns	Weber *et al*. (2002)	4	3	.733

A detailed description of the study variables is given in Table 5. We adapted the instrument for the data collection from the previous studies and sources, which are mentioned in the table above. Furthermore, the number of questions for each variable is mentioned and Cronbach's alpha is used to check the reliability of the data collected through the refined instrument the value of Cronbach Alpha of all variables is greater than .7, which states that the instrument is reliable. This criterion is proposed by Hair *et al.* (1998).

Analysis

This section is related to results and discussion. Different tests are used after the data collection. Data frequency distribution tests have been carried out for the demographic analysis and the results are presented in Table 6.

Table 6: *Frequency-distribution and Descriptive-statistics of Demographic Variables*

Demographic	Frequency	Percent	Demographic	Frequency	Percent
Gender			Age		
Male	157	96.9	Less Than 40	64	39.5
Female	5	3.1	41-50	67	41.4
Total	162	100.0	Over 50	31	19.1
Experience			Total	162	100.0
Experienced	102	63.0	Level of Education		
Non-Experienced	60	37.0	Matric	2	1.2
Total	162	100.0	Intermediate	73	45.1
Marital Status			Graduate	34	21.0
Married	120	74.1	Master	45	27.8
Unmarried	42	25.9	Professional	8	4.9
Total	162	100.0	Total	162	100.0

The results in Table 6 show that almost 97% are male respondents, due to two reasons. The first reason is that Pakistan is a male-dominated society and females are normally discouraged from entering the public and the private sector. Secondly, financial firms hire only experienced candidates; females are new in this field, and with the passage of time their presence may increase. The majority of the respondents are experienced persons which indicate that as the size of the organization increases in terms of investment, there are more requirements for experienced managers because the less experienced investor hesitates to invest in financial products. The results further indicate that most of the respondents are married. This shows that the majority of the top-level employees of investment firms are married.

Table 7: *Independent-sample t-test with respect to Experience, Gender and Marital Status*

Variables	Group	N	Mean	F-value	Sig.
MI	Experienced	102	2.418	16.195	.000
	Non-Experienced	60	3.161		
RPer	Experienced	102	2.722	4.471	.036
	Non-Experienced	60	3.407		
RPen	Experienced	102	3.446	10.972	.001
	Non-Experienced	60	2.308		
ER	Experienced	102	3.123	13.898	.000
	Non-Experienced	60	2.221		
MI	Male	157	2.667	5.566	.020
	Female	5	3.533		
RPer	Male	157	2.954	3.048	.083
	Female	5	3.640		

RPen	Male	157	3.048	10.398	.002
	Female	5	2.300		
ER	Male	157	2.814	14.932	.000
	Female	5	2.000		
Variables	Marital Status	N	Mean	F-value	Sig.
MI	Married	120	2.560	2.654	.105
	Unmarried	42	3.075		
RPer	Married	120	2.865	.032	.858
	Unmarried	42	3.291		
RPen	Married	120	3.171	9.889	.002
	Unmarried	42	2.607		
ER	Married	120	2.860	9.527	.002
	Unmarried	42	2.583		

Note: is Risk Propensity, MI is Market Information, RPer is Risk Perception, ER is Expected Returns

The results in Table 7 show that there is a significant difference between the perception of experienced and non-experienced investors and between the perception of male and female investors, related to market information, risk perception, risk propensity and expected returns. The results reveal that non-experienced investors have better market information and risk perception as compared to experienced investors whereas experienced investors are dominating in risk propensity and expected return. Further, the results indicate that female investors have better market information and risk perception as compared to male investors, whereas male investors dominate in risk propensity and expected returns. However, in the case of marital status, there is a significant difference between the perception of married and unmarried investors relating to risk propensity and expected returns. The results reveal that married investors have a better perception of risk propensity and expected returns as compared to unmarried investors.

Table 8: *Measures Differences with respect to the Age of the Investor*

Variables	Age	N	Mean	F-value	Sig.
Market	Less Than 40	63	3.013	21.135	.000
Information	41-50	68	2.615		
	Over 50	31	2.215		
	Total	162	2.693		
Risk Perception	Less Than 40	63	3.269	14.352	.000
	41-50	68	2.879		
	Over 50	31	2.587		
	Total	162	2.975		
Risk Propensity	Less Than 40	63	2.532	28.013	.000
	41-50	68	3.206		
	Over 50	31	3.629		
	Total	162	3.025		
Expected Return	Less Than 40	63	2.421	28.682	.000

41-50	68	2.923
Over 50	31	3.242
Total	162	2.789

The table above represents that there is a significant difference between the perception of the different age groups of investors. Investors in the age group below 40 years have better market information and risk perception, whereas investors in the age group of over 50 years have a better perception of risk propensity and expected returns as compared to the other age group investors.

Table 9: *Measures Differences with respect to the Education Level of Investor*

Variables	Education	N	Mean	F-value	Sig.
Market	Matric	2	2.500	2.482	.046
Information	Intermediate	73	2.582		
	Graduate	34	2.706		
	Master	45	2.922		
	Professional	8	2.417		
	Total	162	2.693		
Risk Perception	Matric	2	3.000	2.676	.034
	Intermediate	73	2.918		
	Graduate	34	3.059		
	Master	45	3.116		
	Professional	8	2.350		
	Total	162	2.975		
Risk Propensity	Matric	2	3.250	1.931	.108
	Intermediate	73	3.130		
	Graduate	34	3.059		
	Master	45	2.756		
	Professional	8	3.375		
	Total	162	3.025		
Expected Return	Matric	2	2.750	4.979	.001
	Intermediate	73	2.938		
	Graduate	34	2.927		
	Master	45	2.494		
	Professional	8	2.500		
	Total	162	2.789		

Table 9 indicates that there is a significant difference between the perception of investors having different qualifications. Investors having a Master's education have better market information and risk perception. The mean values state that there is a significant difference among the perceptions of investors towards the study variables with respect to qualification. It means the qualification of investors does matter in their decision making towards their investment.

Table 10: *Model Fit Indices*

Indexes of Fit	Direct Effects	Indirect Effects
Chi-square	3.934	13.725
Df	2	3
Chi-square/df	2.668	4.575
AGFI	.862	0.811
TLI	.895	.788
RMSEA	.073	.065
GFI	.924	.822
CFI	.914	.936

Table 10 presents the results of the Model Fit Indices for direct and indirect effects. The Fitness Index values use the desired model fitness suggested by McAulay *et al*. (2006). After this, we apply the mediation analysis and follow the two-step process proposed by Prabhu (2007) and Hoyle and Smith (1994). We measure the direct effect of the independent variables on the dependent variable in the first step, and in the second step, the indirect effect of the independent variables on the dependent through the mediator is checked. Figure 3 follows the first step to check the effect of risk propensity and market information on expected returns.

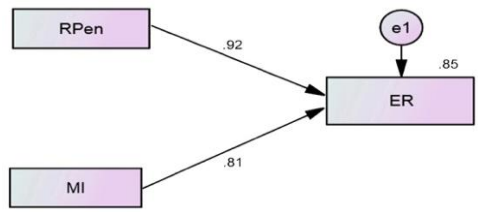

Fig. 3: *Direct Effect*
Note: RPen is Risk Propensity, MI is Market Information, ER is Expected Return

Table 11: *Regression Weights: (Direct Effects)*

Variables			Estimates	S.E.	P-value	Hypothesis Support
Expected Returns	<---	Risk Propensity	.922	.026	.000	H_1 is supported.
Expected Returns	<---	Market Information	.806	.046	.000	H_2 is supported.

The results in Table 11 suggest that risk propensity and market information have a significant positive relationship with expected returns, which supports hypotheses H_1 and H_2. The results indicate that when investors engage themselves in risk propensity and are willing to take chances and invest, they can expect to get more returns on their investment. Similarly, the results further indicate that when investors get relevant market information, it enables them to invest, which results in high returns as they have market

information. After investigating the direct effect, a two-step procedure is used to check the mediating effect of risk perception.

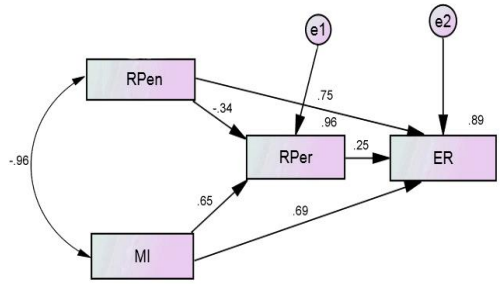

Fig. 4: *Indirect Effects with Mediator (Risk Perception)*

Note: RPen is Risk Propensity, MI is Market Information, RPer is Risk Perception, ER is Expected Returns

Table 12: *Regression Weights-Indirect Effects*

Variables			Estimates	S.E.	P-value	Hypothesis Support
Risk Perception	<---	Risk Propensity	-.340	.048	.000	H_3 is supported.
Risk Perception	<---	Market Information	.653	.055	.000	H_4 is supported.
Expected Returns	<---	Risk Perception	.249	.116	.045	H_5 is supported.

The results in Table 12 indicate that risk propensity has a significant negative relationship with risk perception. This supports hypothesis H_3. The table further shows that market information has a positive significant relationship with risk perception, and risk perception has a significant positive relationship with expected returns, which proves H_4 and H_5.

Table 13: *Comparison of Direct and Indirect Effects (Risk Perception)*

Variables			Direct Effects		Indirect Effects		Hypothesis Status
			Coef.	Sig.	Coef.	Sig.	
Expected Returns	<---	Risk Propensity	.922	.000	.753	.000	H_6 is accepted.
Expected Returns	<---	Market Information	.806	.000	.692	.000	H_7 is accepted.

In Table 13, the relationship between risk propensity, market information and expected return, with the inclusion of risk perception as a mediating variable, shows that the value of risk propensity is significantly reduced. It confirms the partial mediation and proves H_6. Further, it indicates that the value of market information is also significantly reduced. This confirms the partial mediation and supports hypothesis H_7. The result

indicates that the ability of the investors to take risks and become aware related to investment options enables them to achieve high returns. The findings are in line with the results of Koonce, McAnally, and Mercer (2005). We find that the relationship of risk propensity and market information with expected returns is significant. The relationship of risk propensity and market information with risk perception is significant and the relationship between risk perception and expected returns is also significant. Therefore, it is observed that investors who take risks while investing are likely to earn more return on their investments, as compared to those investors who avoid risk.

Conclusion

The objective of this study is to check the mediating role of risk perception between risk propensity, market information and expected returns. We find that risk propensity and market information have a positive significant impact on expected returns. Further, it shows that risk propensity has a negative significant impact on risk perception, while market information has a positive significant impact on risk perception and risk perception also has a positive significant impact on expected returns. Moreover, the results of the mediation analysis revealed that risk perception partially mediates the relationship between risk propensity and expected returns, as well as between market information and expected returns. In Pakistan, most of the investment firms are self-owned and have a small structure. It is recommended that investment firms should be registered with stock exchanges, having separate operational management bodies. This will not only strengthen the firm's reputation but also provide healthy competition. It will also create an opportunity for the less experienced investors in obtaining experience. Moreover, in the private sector, financial organizations will hire only highly experienced managers to achieve high profits while securing their principal investment. To build a comprehensive understanding of the risk behavior of Pakistani investors, it would be required to test the risk-model on a wider scale, with a large group of investors to observe whether results are applicable. In future, the relationship could be re-examined with the increased sample size to get a more generalized view about the population. The impact of risk propensity and market information with a mediating effect for higher expected returns may be considered for future studies.

References

Alba, J. W., & Hutchinson, J. W. (2000). Knowledge calibration: What consumers know and what they think they know. *Journal of Consumer Research, 27*(2), 123-156.

Allport, G. W. (1955). *Becoming; Basic Considerations for a Psychology of Personality* (Vol. 20). Yale University Press.

Atkinson, A., McKay, S., Collard, S., & Kempson, E. (2007). Levels of financial capability in the UK. *Public Money and Management, 27*(1), 29-36.

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88*(3), 588-606.

Bernstein, P. L. (1996). The new religion of risk management. *Harvard Business Review, 74*(2), 47-51.

Byrne, K. (2005). How do consumers evaluate risk in financial products? *Journal of Financial Services Marketing*, *10*(1), 21-36.

Chou, S. R., Huang, G. L., & Hsu, H. L. (2010). Investor attitudes and behavior towards inherent risk and potential returns in financial products. *International Research Journal of Finance and Economics*, *44*(1), 16-30.

Cua, K. O., McKone, K. E., & Schroeder, R. G. (2001). Relationships between implementation of TQM, JIT, and TPM and manufacturing performance. *Journal of Operations Management*, *19*(6), 675-694.

Dohmen, T., Falk, A., Huffman, D., & Sunde, U. (2011). The intergenerational transmission of risk and trust attitudes. *The Review of Economic Studies*, *79*(2), 645-677.

Faust, D. (1984). *The limits of scientific reasoning*. Minneapolis: University of Minnesota Press.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39-50.

Fornell, C., & Larker, D. (1981). Structural equation modeling and regression: guidelines for research practice. *Journal of Marketing Research*, *18*(1), 39-50.

Ghosh, D., & Ray, M. R. (1997). Risk, ambiguity, and decision choice: Some additional evidence. *Decision Sciences*, *28*(1), 81-104.

Gooding, A. E. (1976). Some preliminary findings regarding the nature of investment risk. *Financial Review*, *11*(1), 21-35.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate Data Analysis*. 5th ed. Prentice-Hall International, Inc.

Harrison, T., & Estelami, H. (Eds.). (2014). *The Routledge companion to financial services marketing*. Routledge.

Hoyle, R. H., & Smith, G. T. (1994). Formulating clinical research hypotheses as structural equation models: A conceptual overview. *Journal of Consulting and Clinical Psychology*, *62*(3), 429-440.

Hu, J., Huhmann, B. A., & Hyman, M. R. (2007). The Relationship between task complexity and information search: The role of self-efficacy. *Psychology & Marketing*, *24*(3), 253-270.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: a Multidisciplinary Journal*, *6*(1), 1-55.

Hue, B., Jinks, A., Spain, J., Bora, M., & Siew, S. (2019). Investment risk for long-term investors: risk measurement approaches: Considerations for pension funds and insurers. *British Actuarial Journal*, *24*(16), 1-52.

Huhmann, B. A., & McQuitty, S. (2009). A model of consumer financial numeracy. *International Journal of Bank Marketing*, *27*(4), 270-293.

Kahneman, D., & Tversky, A. (1979). *Prospect theory: an analysis of decision under risk*. *Econometrica*, *47*(2), 263-292.

Keil, M., Wallace, L., Turk, D., Dixon-Randall, G., & Nulden, U. (2000). An investigation of risk perception and risk propensity on the decision to continue a software development project. *Journal of Systems and Software*, *53*(2), 145-157.

Keinan, G., Meir, E., & Gome-Nemirovsky, T. (1984). Measurement of risk-takers' personality. *Psychological Reports*, *55*(1), 163-167.

Keramati, A., Mehrabi, H., & Mojir, N. (2010). A process-oriented perspective on customer relationship management and organizational performance: An empirical investigation. *Industrial Marketing Management*, *39*(7), 1170-1185.

Koonce, L., McAnally, M. L., & Mercer, M. (2001). How Do Investors Judge the Risk of Derivative and Non-Derivative Financial Items?. *Available at SSRN 271990*.

Koonce, L., McAnally, M. L., & Mercer, M. (2005). How do investors judge the risk of financial items? *The Accounting Review*, *80*(1), 221-241.

Kraus, N. N., & Slovic, P. (1988). Taxonomic analysis of perceived risk: Modeling individual and group perceptions within homogeneous hazard domains. *Risk Analysis*, *8*(3), 435-455.

Liang, C. L., & Dunn, P. (2010). Entrepreneurial characteristics, optimism, pessimism, and realism–correlation or collision. *Journal of Business and Entrepreneurship*, *22*(1), 1-22.

Malkiel, B. G., & Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, *25*(2), 383-417.

Malmendier, U., & Nagel, S. (2011). Depression babies: Do macroeconomic experiences affect risk-taking? *The Quarterly Journal of Economics*, *126*(1), 373-416.

Markowitz, H. (1952). Portfolio selection. *The Journal of Finance*, *7*(1), 77-91.

Martinez, R. J., & Artz, K. (2006). An examination of firm slack and risk-taking in regulated and deregulated airlines. *Journal of Managerial Issues*, 11-31.

McAulay, B. J., Zeitz, G., & Blau, G. (2006). Testing a "push-pull" theory of work commitment among organizational professionals. *The Social Science Journal*, *43*(4), 571-596.

McBurney, D. H., & Collings, V. B. (1984). *Introduction to sensation/perception (2nd ed.)*. Englewood Cliffs: NJ Prentice-Hall.

Nachtigall, C., Kroehne, U., Funke, F., & Steyer, R. (2003). Pros and cons of structural equation modeling. *Methods Psychological Research Online*, *8*(2), 1-22.

Netemeyer, R. G., Bearden, W. O., & Sharma, S. (2003). *Scaling procedures: Issues and applications*. Thousand Oaks: Sage Publications.

Prabhu, N. U. (2007). *Stochastic processes: basic theory and its applications*. World Scientific Publishing Company.

Roh, T. H., Ahn, C. K., & Han, I. (2005). The priority factor model for customer relationship management system success. *Expert Systems with Applications*, *28*(4), 641-654.

Sarwar, A., & Afaf, G. (2016). A comparison between psychological and economic factors affecting individual investor's decision-making behavior. *Cogent Business & Management*, *3*(1), 1-18.

Schiffman, H. (1976). *Sensation and perception: An integrated approach*. New York: Wiley.

Schwartz, H. H. (1987). Perception, judgment, and motivation in manufacturing enterprises: findings and preliminary hypotheses from in-depth interviews. *Journal of Economic Behavior & Organization*, *8*(4), 543-565.

Sitkin, S. B., & Pablo, A. L. (1992). Conceptualizing the determinants of risk behavior. *Academy of Management Review*, *17*(1), 9-38.

Sitkin, S. B., & Weingart, L. R. (1995). Determinants of risky decision-making behavior: A test of the mediating role of risk perceptions and propensity. *Academy of Management Journal*, *38*(6), 1573-1592.

Van Horne, J. C., & Wachowicz, J. M. (2005). *Fundamentals of financial management, 12th edition*. Pearson Education.

Wade, C., & Tavris, C. (1996). *Psychology* (4th ed.). New York: HarperCollins.

Weber, E. U. (2003). Origins and functions of perceptions of risk. In *Proceedings of the Paper Presented at NCI Workshop on Conceptualizing and Measuring Risk Perceptions* (pp. 13-14).

Weber, E. U., Blais, A. R., & Betz, N. E. (2002). A domain-specific risk-attitude scale: Measuring risk perceptions and risk behaviors. *Journal of Behavioral Decision Making*, *15*(4), 263-290.