

# The Mediating Role of Risk Perception in the Relationship between Financial Literacy and Investment Decision

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The purpose of this study is to evaluate the financial literacy and financial knowledge of the individual and professional investors investing in the stock market. The study aims to identify the mediating role of risk perception between investor's investment decisions and their financial literacy. The survey was conducted on several investors investing in Pakistan. Data was collected from 287 investors using adapted questionnaires consisting of measuring all variables on a five point Likert scale. Correlation and regression tests were applied for empirical tests of hypothesis. The findings show that financial literacy significantly causes the increase in investment decisions. Risk perception significantly mediates between financial literacy and investment decisions. Though demographic factors such as gender and age are negatively associated with investment decision. The current study is considered as the main type of its kind conducted in Pakistan.

**Key words:** *Financial Literacy, Risk perception, Investment Decisions, Pakistan Stock Exchange.*



## **Introduction**

The financial mechanisms of the world are becoming more complex and sophisticated in today's dynamic world. Financial institutions are launching new and innovative products in financial markets and more people are needed to obtain literacy to deal with the complex phenomena of these financial markets (Almenberg & Drerber, 2015). Investors in those financial markets come to make investment decisions about their funds. It is difficult for the people to decide on long-term savings (Murphy & Soutar, 2004).

Most of the investors learn from previous information which determines their investment decisions. This shows that investment decisions depend on the nature and behaviour of investors in market situations. The decision on investment in the market also depends on the market environment (Wiengarten, Pagell & Fynes, 2012). Shapira and Venezia (2001) describe two types of investors, individual investors and professional investors. Supporters argue for the expected utility theory that the behaviour of individual investors is less relevant than professional investors (Ross, 1998). When different investors are grouped according to their defined investment process, it seems that a small group of investors is very well informed about their investments.

Investment decision making is a critical process for investors and it depends upon numerous factors. These factors vary in respect of individual investors and they use them differently. Some provide judgment and consider most of the factors to act on appropriate decision. In this way, the decision-making process becomes easy when investors identify all the confusing outcomes. These outcomes guide them towards making a right decision and to avoid possible future losses. Investors face very complex factors such as an overload of opinions, ambiguity, perception and risk during investment decision making. These are the challenges for experienced investors, financial professionals and, in particular, for common private households. Investors should address the risks in their financial decisions. Alternatively, any decision made by investors on the basis of information provided may be deficient or misleading, or on the basis of information that has not been analysed well or has achieved imperfect results.

Investing as a cost can generate profits in the future. Investment costs to achieve profits are achieved and can be achieved through two routes. The first way is to arrange investments in assets such as buildings, machinery or plants. The latter may involve investments in terms of cash, such as stocks, bonds, etc. Financial education is valuable and information on the decision is paramount. A positive sign can make a good decision on the part of an investor. Investors must decide on the investment risk according to the advice. The information can have a significant effect to change the decision or if information cannot be found.



Informed decision makers always act like a person with knowledge who does not ignore the information provided. An experienced investor can make a good investment decision by building trust or using experience or managing risk appropriately. A good investment for people with little or no knowledge and experience is a major challenge as investment carries risks. A significant investment generates higher returns in the form of profits or losses. On the other hand, the investment risk is less likely to cause a minimum profit to neutralise the low investment risk. Information about different variables and investment experience has a great impact on the understanding of risk and subsequent investment decisions. Therefore, the experience of financial and financial investment are key factors that influence risk tolerance and investment decisions. Information that is used to make financial decisions is collected from various sources.

The sources were classified as follows: secondary sources, media and the World Wide Web, financial service providers, friends, families and many others to obtain information. The subjective knowledge and wealth of the investor intended to influence their decisions about the use of information sources. Previous studies have shown that seminars, written communication and website information are good methods to communicate financial education. Therefore, this document reveals that financial knowledge and investment experience helps to define risk tolerance, leading to investment and decision-making.

However, investors do not seem to have much knowledge of different strategies and investment financing. The making of a financial decision involves the personal characteristics and the behaviour of investors, which directly affects the investment decision of individual and professional investors. Past return on investment did not always predict future returns (Malkiel & Fama, 1970). Recent events in the global crisis that began in 2008 show that, when people and institutions make serious financial mistakes, there may be significant costs associated with poor financial decision-making, not only for individuals but also for countries.

Deficiencies in financial education are the most important reasons for making financial decisions. Most investors make involuntary investments without experience or interest in financial investments, and make decisions about the type of fund in which they will participate, and then select investment options to guide their retirement savings. Gallery et al. (2011) suggest that members of capital are making complex investment decisions, which have financial implications.

The study aims to examine the effect of financial literacy on investment decisions with a moderating role of risk perception. This increases the importance of financial literacy and financial knowledge for both individual and professional investors. There are two types of investors, individual investors and professional investors (Shapira & Venezia, 2001). In Pakistan, both individual and professional investors are not so independent. The main focus



is on the condition that explains why potential investors do not want to make investments. There is a risk perception about financial instruments in the stock market, which puzzles investors and prevents them from investing in volatile markets. Within this research it is important to see investor behaviour in risky environments. Though investors are financially literate, when they perceive risk associated with an investment, their behaviour around investing in the stock market is volatile. Financial literacy and investment reveal, risk tolerance that results in making better funding decisions.

### **Literature Review**

The literacy about financial instruments has a positive impact on investment decisions (Awais et al., 2016). Greater financial knowledge has a positive impact on pension planning and private pension fund investments (Klapper & Panos, 2011). The financial competence positively affects the investing decision with low cost finances. Even the utmost refined investors are actively targeted in managing their funds rather than cheaper ETFs (stock-traded funds) or alternative index fund options (Müller & Weber, 2010). Risk plays an important role in the investment decision-making process and changes in government policy have a significant influence on the perception of an investor's risks (Pak & Mahmood, 2015). Likewise, another study gives evidence of significantly positive impact of financial knowledge on investments decision in the real estate sector of Kenya (Musundi, 2014).

### **Financial Literacy and Investment Decisions**

Financial literacy is an important factor of decision-making processes. Financial literateness is the process of managing finance in terms of savings, investments, planning and insurance protection (Boyland & Warren, 2013). Individuals who are financially literate can manage their funds efficiently and effectively (Taft et al., 2013). It is the personal ability of investors to make good decisions regarding the use and managing of funds. It is a measure of the extent to which an individual can understand the basic concepts of finance and are able to manage their finance efficiently (Tamimi & Kalli, 2009; Nye & Hillyard, 2013). Individuals who are financially literate can make better decision than those who are not financially literate. These individuals understand short term and long term financial planning and can take care of different economic situations confidently. Financial competence is determined by a person's needs, knowledge and capability that have an impact in the involvement of the financial system (Johnson & Sherraden, 2007).

Literacy about finance is compulsory for investment decision making in financial instruments and numerous young people want to have financial qualifications (Calcagno & Monticone, 2015). Likewise, much of the previous research is mixed regarding the relationship between financial literacy and investment decision making based on gender (Kasalirwe, & Lokina,

2016). Many studies reported a broader gap in basic financial competence for females, who tend to show relatively lower basic financial knowledge compared to male counterparts. Financial education programs still provide less influence on improving consumer financial decision making (Fernandes et al., 2014).

Furthermore, the research shows that being insured and well informed in areas of investing, budgeting and financial savings are the most crucial elements of monetary literacy. The extent of finance information has to reflect on satisfactory lifestyles for people (Boyland & Warren, 2013). Finance literacy is seen as a response to economic struggles that individuals and families face (Huston, 2010). Literate individuals have an understanding of economics that leads them to control their cash flow, understand how stock markets work, have a broad variety of systems and logical skill (Landerretche, & Martinez, 2013). Furthermore, awareness about finance by individuals enables them to recognise and address their finance problems and how they should be more responsible financially.

### **Risk Perception and Investment Decision**

Perception about risk is a way investors think about the risk of good, based on their concerns and experiences. Risk perception is trust which could be rational or irrational and it plays an effective role in making decisions under risky situations (Sindhu & Kumar, 2014). Investor's perception shows the tremendous changes over loss, while risk tolerance and risk perception are less volatile than expectations. The choice to replace price range within a fund family is effected by investor's mindset toward risk. Many buyers want to put money into a mutual fund as a way to have excessive gain with a low degree of risk, protection liquidity (Rathnamani, 2013).

Intuitive hazard measures like subjective perception of risks can directly heighten the buyer's insight and monetary risk (Klos et al., 2005). Variations in chance that tackle distinctive content material domain names, which include the financial area (investment decisions) and the fitness domain (as an instance, the usage of safety), can specifically be defined by means of differences in perceptions of risk (Weber et al., 2002). These studies confirmed that perceptions of risk vary substantially among exclusive content domain names.

The level of risk perception of individuals affects their investment in shares. Chance's decision-making behaviour is prevented by risk perceptions (Riaz et al., 2012). Investors expected return is also regulated by their level of risk perception (Yang & Qiu, 2005). Investors' perceptions show important alterations on the course of disaster, with a less stable risk perception compared to the return prospects (Hoffmann & Pennings, 2013). The decision to change funds between the different routes is influenced by investors' attitudes towards risk (Lenard et al., 2003). Furthermore, high returns with a low level of risk, security and liquidity are important



considerations for investments in mutual funds by small investors (Rathnamani, 2013). Investment in risky assets such as mutual funds, people try to balance risks and returns (Fischer & Jordan, 2006). Furthermore, people try to avoid the risk for the same level of performance (Tversky & Kahneman, 1979).

People's understanding of investing in mutual funds is very complex. Even experienced investors can be wrong when evaluating mutual funds and ordinary shares (Walia & Kiran, 2012). The level of risk influences investment decisions in the stock market. Investing in mutual funds is an indirect investment in shares. Therefore, it is expected that investments in mutual funds will also be influenced by people's perception of risk. Mutual funds are perceived as less risky than equities. Mutual funds are preferred more by investors than by direct investment in shares (Deb & Singh, 2018). It is clear that investor's perception influences their behaviours with respect to investment in mutual funds. Risk perceptions always create difficulties for investors to invest in any security.

Financial decisions often seem more complex than they are. Financial language is unique but, when its meaning is understood, making financial decisions is not difficult. Getting the necessary financial knowledge can be as easy as asking for it. Many people at financial institutions and charitable groups who are available to help probably at minimal or no cost. Financial literacy should be pursued throughout life and must start early and continue to be progressively updated in order to pay dividends for a comfortable retirement (Alexander, 2011).

### **Financial Literacy and Risk Perception**

Financial knowledge is awareness of the stock market, as well as being linked to participation in the stock market. Investors abstain from the stock market simply because they have no proper knowledge about stocks or have no skills to invest in the stock exchange. Different factors might affect the investor's decisions but risk perception plays a significant role in decision making. Risk perception is the investor's judgment about risk in a situation (Sitkin & Pablo, 1992). It indicates the risk level in different situations that might affect the perception of investors.

Perception is the mental phenomenon that interpolates the external stimuli. Risk perception plays a subjective role in finding the best alternative among investment decisions (Rubaltelli et al., 2010). The difference between individual and situational preferences when making risky investment decisions is associated with risk perception. These differences are inclined toward avoidance or acceptance of best investment alternatives and are based on perceived risk (Riaz & Hunjra, 2015). Risk perception is the third most important element in behavioural choices

(Pennings & Wansink, 2004). Investors subjectively perceive the risk while predicting the actions related to investment.

Risk perception is beyond individual behaviour which reflects the cultural and social values like ideology, history and symbols. It follows the variability in social existence of human behavior which simply not presumes the ratings and scores of identical instruments in different contexts (Boholm, 1998). The starting point of risk theory identifies that everyone must willingly take risk. Risk perception is the communication source that enables the investors to take risk in accordance to psychological factors (Rana et al., 2011). Most of the individual investors make investments decisions differently but it depends upon their level of risk perception towards risk (Hallahan et al., 2004). Investor's decisions making behaviour is most probably affected by attitude towards risk. The investor perceives the risk in their investment which indicates that it mediates the investment decisions (Weber, Hsee & Sokolowska, 1998). The propensity of risk and risk perception most importantly determines the risk related behaviour.

Investment behaviour of an investor depends upon their risk perception. People with higher risk propensity perceive the risky situation as low risk and they have a higher tendency to take the risk, in comparison with people having low risk propensity (Sitkin & Weingart, 1995). Investors risk perception and their reaction depends upon returns, confidence and personality traits. They require more returns but high systematic risk would have to be borne by them i.e high perceived risk. Taking this into consideration it is said that risk perception is directly related to risk propensity of investment decision makers (Shafi et al., 2011). This argument suggests the positive framed problems that realm of gains are related to risk perception positively. Rather, risky decisions are more inclined to avoid or take the risk.

The difference between the perception of financial risk of experience and inexperienced investors are different (Diacon, 2004). For that purpose they conduct a study about the individual investor of Germany (Sample Size = 171) in addition to use the psychometrics pattern. They proved the evidence for both the decision theory variable and the behavior variable i.e risk perception related to investment. Furthermore, risky factors are important factors during investment in each product (Sachse et al., 2012). These studies suggested that the chance of loss in investment is an important predictor in most of the products. Over again, this study involved the combination variables of decision theory and behavioral variables, but the investor was inexperience.

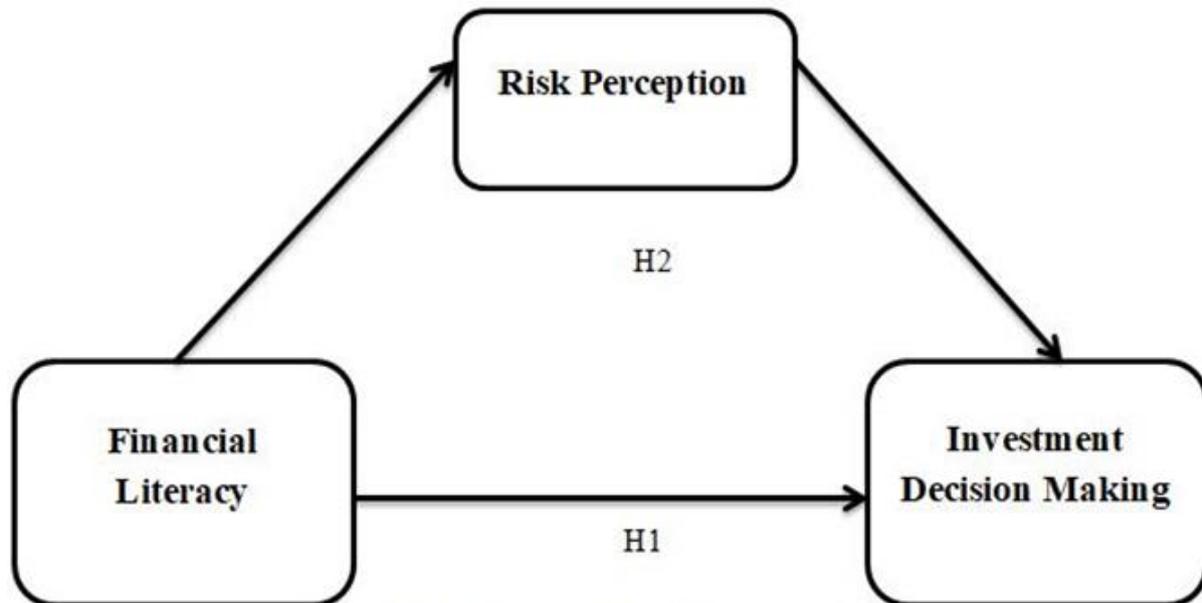
## **Hypothesis**

**H1:** Financial literacy is significantly and positively related with investment decisions making.

**H2:** Risk perception mediates between financial literacy and investment decision making.

## Research Model

Figure 2.1. Conceptual Framework



Financial literacy is dependent variable, investment decision making is independent variable while risk perception variable acts as a mediating variable. The core purpose of this research was to examine that either financial literacy has an impact on investment decision making and risk perception mediates between these two variables. According to decision theory, the normative decision theory concerns the identification of the best decisions finding an ideal decision-maker who is able to predict with perfect accuracy and is completely rational which means financial literate person (H1).

Financial literacy directly impacts investment decision making. Based on the empirical evidence, financial literacy has a positive impact on investment decision (Garang, 2016). There is mediating role of risk perception between financial literacy and investment decision making (Sitkin & Weingart, 1995). The perception of financial risk is placed as a variable interposed in the relationship between investment decisions and financial literacy. According to decision theory, psychological factors of the investor impact on their decision making process. Risk perception is used as psychological factor that moderates the correlation among two variables, financial literacy and investment decision in a conceptual model. Based on this, it is hypothesised that risk perception influences financial literacy and investment decision (H2).

## **Research Methodology**

### ***Procedure and Sample***

Random sampling technique is used and data was collected from a random sample in the population. The present research is a transversal study with a descriptive character, since research has already been conducted in this area. The participants in this study were individual investors in the stock exchange of Pakistan. Data was collected through a questionnaire using the technique called sampling convenience, from the Pakistan stock exchange, Lahore. Initially, 385 questionnaires were distributed and 287 were returned. Therefore, 287 questionnaires were used for the study, which represent the response rate of 74.5%.

### ***Sample Size***

A total of 385 investors were selected from the Stock Exchange of Pakistan, Lahore. During the data gathering, due attention was paid to gathering data so as to cover the entire stock exchange of Pakistan. The justification for determining the sample size is given below. The following method was used to determine the sample size (Nargundkar, 2003).

$$n = p(1-p) \left(\frac{z}{e}\right)^2$$
$$n = 0.50(1-0.50) \left(\frac{1.96}{0.05}\right)^2$$
$$\mathbf{n = 385}$$

Where,

**N** = Size of Sample

**Z** = Z value from the same old regular distribution for the level of confidence preferred by means of the researcher. For this, the researcher assumed a 95 % confidence level. So from the standard distribution tables, the z value is 1.96.

**P** = Frequency of occurrence of something expressed as proportion (0.50)

**E** = This is the tolerance error which was decided by researcher. For this study the tolerance error is 0.05.

This formula was used to select the sample size of 385. Thus, primary data collected from 385 respondents with the help of a questionnaire. Out of 385 respondents only 287 respondents provide satisfactory data.



### ***Sample Characteristics***

The sample includes 68.5% of males and 31.5% of females. The sample consists of participants belonging to different age groups. 35.4% were aged between 25 and under, 47.1% between 26 and 33 years, 16.7% between 34 and 41 years.

In the period of qualification, 58% of the candidates were bachelors, 23% of the candidates were masters and 19% had MS / M.Phil. The sample consists of participants with different years of experiences in their field. 79.8% had an experience of between 5 and less, 16.7% between 6 and 13 years, 3.5% between 14 and 21 years.

### ***Data Collection***

Primary data was used from investors in stock exchange and a detailed questionnaire was prepared. A total of 385 investors were selected from the stock exchange of Pakistan. Questionnaires were distributed amongst the investors in the area of the stock exchange, Lahore. The questionnaires were managed via giving it to the respondents by hand and briefly explaining the importance and motivation for collecting data for this research. The questions were short and precise, so the respondent would not have difficulty with answering and filling them in. After collecting the primary data, it was observed that some investors were not giving data properly or some of them were not able to complete the questionnaire correctly. Some participants were also not providing answers to all questions. These questionnaires were rejected. The total correctly filled questionnaires were 287 out of 387.

### ***Research Instrument***

The questionnaire was developed to investigate the impact of financial literacy on investment decision with mediating effect of risk perception. To serve this objective, questions were prepared for each variable to measure the effect of variables on each other. The details of research instrument are given below.

**Financial Literacy:** Financial literacy in Pakistan was measured with the help of a five dimensional scale (1=Strongly Disagree to 5=Strongly Agree). Some of the items are: *I know how the stock market works, I have knowledge about the activities in PSX, I was somehow attend the conferences, seminars and workshop arranged by PSX at least three time in a year, most of the time I will visit the website of PSX (at least every 3 months), I believed that the investor personal knowledge about investment and stocks will help them to make secure financial investment.* ( $\alpha = 0.94$ )

**Risk Perception:** Perception of risk was also measured with the help of five dimensions (from 1=Strongly Disagree till 5=Strongly Agree). Some of the questions are associated with risk and idea of opportunity. The responses were; *In investment decision making I view the risk situation to be avoid, mostly I was shown my willingness about taking risk during investment decision making, and I will invest in risky securities for gaining more profit.* ( $\alpha = 0.87$ )

**Investment Decision:** Investment decision making process was measured by using five dimensional questionnaire (1=Strongly Disagree to 5=Strongly Agree). Some of the responses are: *A fluctuation in stock exchange markets do not concerns me, I put up my half of investments money in the stock exchange of Pakistan, I wisely allocate my income for making investment decisions, and I think the benefit of choosing risky investments was influence the decision making.* ( $\alpha = 0.83$ ).

## Results and Discussions

### Correlation Analysis

Correlation analysis is a method of statistical evaluation which is used to study the strength or direction of relationship between two continuous variables. The results related to this correlation analysis are presented in Table 1. Financial literacy is positively and significantly correlated to investment decisions (0.428\*\*). The correlation analysis shows a positive and important correlation between financial literacy and risk perception at (0.358\*\*). Investment decisions are positively correlated with risk perception (0.405\*\*). All these results indicated that all variables are significantly and positively correlated with each other.

**Table 1:** Person Correlation Test for Correlation

	FL		ID	RP
FL	1			
ID	0.428***		1	
RP	0.358**		0.405**	1

**Note:** This table presents the correlation matrix between the dependent variable and the independent variables. \*\*Correlation is significant at the 0.01 level (2-tailed). FL: Financial Literacy, ID: Investment Decision, RP: Risk Perception.

### Test of Hypotheses

Mplus 8.1 to test all of the hypotheses of this study. In the final sample, the data collected from the respondents was nested in nature, therefore, OLS regression in these situations could

underestimate standard error; and there could also be issues of interdependence among variables for the data with nested nature (Bauer & Curran, 2004). Scholars recommended random coefficient modelling in these situations (Scherbaum & Ferrer, 2009). For all of the analyses, the variables were operated at individual levels of analysis; thus, random coefficient analyses technique was used with Mplus operated at individual level of analysis. Additionally, with random coefficients, output of the model fit indicators cannot be used in a regular way, therefore, we have to perform a Satorra-Bentler difference test for chi-square (Muthén & Muthén, 1998-2010). We also, grand mean centered all the study variables and control variables (Hofmann & Gavin, 1998).

**Table 2:** Dependent Variable Regressed on Independent Variables

Variables	X <sup>2</sup> (df)	R <sup>2</sup>	Estimate	S.E.
<b>Dependent Variable: Investment Decision Making</b>	48.11(7)***	0.215		
Financial Literacy			0.416***	0.129
<b>Control Variables:</b>				
Gender			0.056	0.151
Age			-0.036***	0.012
Education			0.346***	0.127
Working Experience			0.087**	0.036

Note. Observations = 287. Gender was coded as 0 = Female, 1 = Male. Age was measured in years. Education was coded as 1= College Graduate, 2 = Bachelor Degree, 3=Master Degree, 4=Doctoral Degree. Working Experience was measured in years.

\*p < .10; \*\*p < .05; \*\*\*p < .01;

Due to random coefficient modelling, indirect effects for random models cannot be measured. Therefore, we have to follow the conventional three step procedure of mediation analysis. Following three step mediation procedure, we first regressed the financial literacy with investment decision making along with control variables. The results related to this analysis are presented in Table 2. In the presence of control variables we found significant positive coefficient of financial literacy which shows that it has a direct effect on investment decision making ( $\beta = 0.416, p < .05$ ). Financial knowledge and financial literacy is an important factor in the decision-making process. The findings of this study suggested that literacy about financial instruments have a positive impact on investment decision and influence the decision making (Awais et al., 2016). A greater financial knowledge tends to have better impact on financial planning and individuals investment decisions (Klapper & Panos, 2011). Individuals who are financially literate can make a better decision than those who were not financially literate. Literacy about finance is compulsory for investment decision making in financial instruments

(Calcagno & Monticone, 2015). Likewise, another study gives evidence of significantly positive impact of financial knowledge on investment decisions (Musundi, 2014).

Before, regressing for the second step, we first checked the significance of control variables in first model. Among control variables, age ( $\beta = -0.036, p < .01$ ), education ( $\beta = 0.346, p < .05$ ), and working experience ( $\beta = 0.087, p < .10$ ) had significant coefficients.

**Table 3:** Mediator Regressed on Independent Variables

Mediator and Variables	$X^2(df)$	$R^2$	Estimate	S.E.
<b>Mediator: Risk Perception</b>	67.23 (7)***	0.351		
Financial Literacy			0.721***	0.128
<b>Control Variables</b>				
Gender			-0.031	0.117
Age			-0.017	0.012
Education			-0.079	0.061
Working Experience			0.009	0.029

Note. Observations = 287.

\* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ ;

As a second step of mediation, we regressed independent variable (Financial literacy) on mediator (Risk Perception) and presented the results in Table 3. The results indicated that financial literacy has a significant positive association with investor's risk perception in Pakistan ( $\beta = 0.721, p < .01$ ). Risk perception is the judgment of investor about risk in a particular situation (Sitkin & Pablo, 1992). It is among the most important determinant of choice behaviour i.e investment choice decisions (Pennings & Wansink, 2004). Among the control variables, we found insignificant coefficients.

In the next step of mediation analyses, we regressed risk perception on investment decision making along with control variables and presented the results in Table 4. We found a significant positive coefficient of risk perception which indicates a better risk perception leads to better investment decision making ( $\beta = 0.362, p < .01$ ). The risk perception is the trust that can either be rational or irrational and it plays an effective role in decision making under risky situations (Sindhu & Kumar, 2014). The study indicates that risk plays an important role in investment decision-making process and changes in government policy have a significant influence on the perception of an investor's risks (Pak & Mahmood, 2015). The level of risk perception of individuals affects their investment in shares. Chance's decision-making behaviour is prevented by risk perceptions (Riaz et al., 2012). Among the control variables, education ( $\beta = 0.028, p < .10$ ) and working experience ( $\beta = 0.406, p < .01$ ) had significant coefficients.

**Table 4:** Depend Variables Regressed on Mediators

Mediators and Variables	X <sup>2</sup> (df)	R <sup>2</sup>	Estimate	S.E.
<b>Dependent Variable: Investment Decision Making</b>	51.21 (7)***	0.149		
Risk Perception			0.362***	0.081
<b>Control Variables:</b>				
Gender				
Age			0.015	0.137
Education			0.028*	0.014
Working Experience			0.406***	0.114

Note. Observations = 287

\*p < .10; \*\*p < .05; \*\*\*p < .01;

As a final step of mediation analyses, we confirmed the pattern of mediation. We regressed financial literacy along with control variables on investment decision making in presence of risk perception. The results related to these relationships are presented in Table 5. The insignificance of risk perception showed full mediation between financial literacy and investment decision making ( $\beta = 0.225, p > .10$ ). However, risk perception significantly causes the increase in investment decision making. Risk perception is the mediating factor in the way of investment decision making as either threats or opportunities. It plays a mediating role in framing the investor's behaviour. The theoretical reason for risk perception is that it directly affects the investment intentions. The evidence supports the decision theory that behaviour is the risk perception that positively related with investment decisions. Furthermore, risky factors are important factors during investment in each product (SachsE, Jungermann, & Belting, 2012). According to decision theory, investment decisions are made according to financial literacy of the investor and psychology factor of risk perception moderate or influence the output decision in uncertain environment. Risk perception as a psychological factor affects the strength of the relationship between finance literacy and investment decision making. However, the results identified that financial literacy has a significant positive association with investment decisions making of investors in Pakistan.

**Table 5:** Depend Variables Regressed on Independent Variables (Mediators Included)

Mediators and Variables	X <sup>2</sup> (df)	R <sup>2</sup>	Estimate	S.E.
<b>Dependent Variable: Investment Decision Making</b>	47.56 (10)***	0.153		
Financial Literacy			0.225**	0.104
<b>Control Variables:</b>				
Gender			-0.046	0.151
Age			-0.030***	0.011

Education			0.376**	0.120
Working Experience			0.084*	0.038
<b>Mediator Variable:</b>				
Risk Perception			0.038	0.107

Note. Observations = 287.

\* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ ;

Individual risk perception has a clear relationship to investment decisions. Gambling opportunities, financial investments, business decisions and personal decisions determine what decisions are taken by respondents which show the degree of risk (MacCrimmon & Wehrung, 1986, 1990). Risk is the main financial factor and investors have different types of risky behaviour which affects their investment decision making. The perception of different investors regarding risk is different; some of them are subject to risk and risk aversion. Risk seeking behaviour or risk aversion behaviour affects investors investment decisions. Financial literacy and knowledge tends to have a significant positive impact on investment decision making. The perception of risk also affects the investment decision.

## Conclusion

The study investigated the mediating role of risk perception between financial literacy and investment decision making of investors in the Pakistan Stock Exchange. The target population was the individual investors who are investing in stocks listed on Pakistan Stock Exchange. Data was collected through questionnaires and the sample size consisted of 287 respondents. The study concluded the significant relationship between financial literacy, risk perception and investment decisions. Having literacy about finance has a positive impact upon the investor's investment decision making. Greater financial knowledge helps the investors while making investment decisions. Investors with low financial knowledge cannot make better decisions because the investment decision is risky and technical, financial knowledge is necessary for investors to make investment decisions. Risk perception is a significant factor that can affect all investment decisions even in the presence of financial knowledge and knowledge. The study concluded that risk perception fully mediates between financial literacy and investment decision making. The study is helpful for the investors who are fundamentally engaged in investment making process. The study further can be expanded with economic and personal traits in the relationship between financial knowledge and investments of investors. Human capital and behavioural factors can also be utilised in this particular context.



## REFERENCES

- Alexander, S. (2011). Looking backward from the year 2099: Ecozoic reflections on the future. *Earth Jurisprudence & Env'tl*, 1, 25-40.
- Almenberg, J., & Dreber, A. (2015). Gender, stock market participation and financial literacy. *Economics Letters*, 137, 140-142.
- Al-Tamimi, H. A. H., & Kalli, A. A. B. (2009). Financial literacy and investment decisions of UAE investors. *The Journal of Risk Finance*, 10(5), 500-518.
- Awais, M., Laber, M. F., Rasheed, N., & Khursheed, A. (2016). Impact of financial literacy and investment experience on risk tolerance and investment decisions: Empirical evidence from Pakistan. *International Journal of Economics and Financial*, 6(1). 111-114.
- Bauer, D. J., & Curran, P. J. (2004). The integration of continuous and discrete latent variable models: Potential problems and promising opportunities. *Psychological Methods*, 9(1). 147-152.
- Boholm, A. (1998). Comparative studies of risk perception: A review of twenty years of research. *Journal of Risk Research*, 1(2), 135-163.
- Boyland, J., & Warren, R. (2013). Assessing the financial literacy of domestic and international college students.
- Calcagno, R., & Monticone, C. (2015). Financial literacy and the demand for financial advice. *Journal of Banking & Finance*, 50, 363-380.
- Clark-Murphy, M., & Soutar, G. N. (2004). What individual investor's value? Some Australian evidence. *Journal of Economic Psychology*, 25(4), 539-555.
- Deb, S., & Singh, R. (2018). Dynamics of risk perception towards mutual fund investment decisions. *Iranian Journal of Management Studies*, 11(2), 407-424.
- Diacon, S. (2004). Investment risk perceptions. *International Journal of Bank Marketing*. 147-149.
- Fernandes, D., Lynch, J. G., & Netemeyer, R. G. (2014). Financial literacy, financial education, and downstream financial behaviors. *Management Science*, 60(8), 1861-1883.



- Gallery, N., Newton, C., & Palm, C. (2011). Framework for assessing financial literacy and superannuation investment choice decisions. *Australasian Accounting, Business and Finance Journal*, 5(2), 3-22.
- Garang, M. (2016). The effect of financial literacy on investment decisions in the Juba City South Sudan. *University of Nairobi*.
- Hallahan, T. A., Faff, R. W., & McKenzie, M. D. (2004). An empirical investigation of personal financial risk tolerance. *Financial Services Review Greenwich*, 13(1), 57-78.
- Hofmann, D. A., & Gavin, M. B. (1998). Centering decisions in hierarchical linear models: Implications for research in organizations. *Journal of Management*, 24(5), 623-641.
- Hoffmann, A. O., Post, T., & Pennings, J. M. (2013). Individual investor perceptions and behavior during the financial crisis. *Journal of Banking and Finance*, 37(1), 60-74.
- Huston, S. J. (2010). Measuring financial literacy. *Journal of Consumer Affairs*, 44(2), 296-316.
- Johnson, E., & Sherraden, M. S. (2007). From financial literacy to financial capability among youth. *J. Soc. & Soc. Welfare*, 34, 119-132.
- Kasalirwe, F., & Lokina, R. (2016). Financial literacy and household investment choices in Uganda.
- Klapper, L., & Panos, G. A. (2011). Financial literacy and retirement planning: the Russian case. *Journal of Pension Economics and Finance*, 10(4), 599-618.
- Klos, A., Weber, E. U., & Weber, M. (2005). Investment decisions and time horizon: Risk perception and risk behavior in repeated gambles. *Management Science*, 51(12), 1777-1790.
- Landerretche, O. M., & Martinez, C. (2013). Voluntary savings, financial behavior, and pension finance literacy: Evidence from Chile. *Journal of Pension Economics and Finance*, 12(3), 251-297.
- MacCrimmon, K. R., & Wehrung, D. A. (1990). Characteristics of risk taking executives. *Management Science*, 36(4), 422-435.
- 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.



- Müller, S., & Weber, M. (2010). Financial literacy and mutual fund investments: who buys actively managed funds? *Schmalenbach Business Review*, 62(2), 126-153.
- Musundi, K. M. (2014). The Effects of Financial Literacy on Personal Investment Decisions in Real Estate in Nairobi County (Doctoral dissertation, Doctoral dissertation, School Of Business, University Of Nairobi).
- Muthén, L. K., & Muthén, B. O. (2010). 1998–2010 Mplus user's guide. *Muthén and Muthén*, 39-49.
- Nargundkar, R. (2003). *Marketing research-Text & cases 2E*. Tata McGraw-Hill Education.
- Nye, P., & Hillyard, C. (2013). Personal financial behavior: The influence of quantitative literacy and material values. *Numeracy*, 6(1), 111-112.
- Pak, O., & Mahmood, M. (2015). Impact of personality on risk tolerance and investment decisions. *International Journal of Commerce and Management*. 188-196.
- Pennings, J. M., & Wansink, B. (2004). Channel contract behavior: The role of risk attitudes, risk perceptions, and channel members' market structures. *The Journal of Business*, 77(4), 697-724.
- Rana, M. H., Murtaza, S., Noor, F., & Rehman, K. (2011). Effects of demographic factors on risky decision making behavior. *European Journal of Social Sciences*, 25(3), 69-76.
- Rathnamani, V. (2013). Investor's preferences towards mutual fund industry in Trichy. *IOSR Journal of Business and Management*, 6(6), 48-55.
- Riaz, L., & Hunjra, A. I. (2015). Relationship between psychological factors and investment decision making: The mediating role of risk perception. *Pakistan Journal of Commerce and Social Sciences*, 9(3), 968-981.
- Riaz, L., Hunjra, A. I., & Azam, R. I. (2012). Impact of psychological factors on investment decision making mediating by risk perception: A conceptual study. *Middle-East Journal of Scientific Research*, 12(6), 789-795.
- Rubaltelli, E., Pasini, G., Rumiati, R., Olsen, R. A., & Slovic, P. (2010). The influence of affective reactions on investment decisions. *Journal of Behavioral Finance*, 11(3), 168-176.
- Sachse, K., Jungermann, H., & Belting, J. M. (2012). Investment risk—The perspective of individual investors. *Journal of Economic Psychology*, 33(3), 437-447.



- Scherbaum, C. A., & Ferreter, J. M. (2009). Estimating statistical power and required sample sizes for organizational research using multilevel modeling. *Organizational Research Methods, 12*(2), 347-367.
- Shafi, H., Hussain, M., Sajjad, S. I., & Rehman, K. U. (2011). Relationship between risk perception and employee investment behavior. *Journal of Economics and Behavioral Studies, 3*(6), 345-351.
- Shapira, Z. and Venezia, I. (2001). Patterns of behavior of professionally managed and independent investors". *Journal of Banking & Finance, 25*(8), 1573-1587.
- Sindhu, K. P., & Kumar, S. R. (2014). Influence of risk perception of investors on investment decisions: An empirical analysis. *Journal of Finance and Bank Management, 2*(2), 15-25.
- Sitkin, S. B., & Pablo, A. L. (1992). Reconceptualizing 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.
- Taft, M. K., Hosein, Z. Z., Mehrizi, S. M. T., & Roshan, A. (2013). The relation between financial literacy, financial wellbeing and financial concerns. *International Journal of Business and Management, 8*(11), 63-76.
- Tversky, A., & Kahneman, D. (1979). Prospect theory: An analysis of decision under risk. *Econometrica, 47*(2), 263-291.
- Walia, N., & Kiran, R. (2012). Understanding the risk anatomy of experienced mutual fund investors. *Journal of Behavioral Finance, 13*(2), 119-125.
- 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.
- Weber, E. U., Hsee, C. K., & Sokolowska, J. (1998). What folklore tells us about risk and risk taking: Cross-cultural comparisons of American, German, and Chinese proverbs. *Organizational Behavior and Human Decision Processes, 75*(2), 170-186.
- Wiengarten, F., Pagell, M., & Fynes, B. (2012). Supply chain environmental investments in dynamic industries: Comparing investment and performance differences with static industries. *International Journal of Production Economics, 135*(2), 541-551.



Yang, J., & Qiu, W. (2005). A measure of risk and a decision-making model based on expected utility and entropy. *European Journal of Operational Research*, 164(3), 792-799.