IMPACT OF BEHAVIOR FACTORS ON INVESTMENT DECISION-MAKING IN PAKISTAN STOCK EXCHANGE: A MODERATED MEDIATION MODEL

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Abstract

The objective of this research project is to examine the impact of Behavioral factors on Investment decision-making with mediating effect of risk perception and moderating impact of Financial Literacy. Data was collected from 350 respondents from the investors of the Pakistan Stock Exchange. The advanced structural equation modelling technique was used to test the relationship between Behavioral Factors like Investor Overconfidence, Past Investment Experience, and Social Influence and Investment Decision Making. The structured model for Behavioral Factors and Investment Decision Making mediated by Risk Perception and moderated by Financial Literacy proposed empirical support for research objectives. The empirical results indicate that Behavioral Factors influenced Decision Making by the investors. The research concluded that Behavioral Factors are essential for the correct decision-making of investment in any stock/ bond, and it is guaranteed that Financial Literacy boosts the capacity of investors to handle ambiguities. Further, this research concluded that if Risk Perception is considered in making the decision, it will lead to greater accuracy. It has been confirmed is intensified by Behavioral Factors, which significantly mediate the relationships between Behavioral Factors and Investment Decision Making. Given the significant impact of Behavioral Factors on Investment Decision Making mediated by Risk Perception and moderated by Financial Literacy policymakers, practitioners could apply the findings to select the right setting to handle investment problems by the investors.

Keywords: Trade Credit, Free Cash Flow, Sale Growth, Regression Analysis

1. INTRODUCTION

Inconsistency/ Deviation in stock markets is of significant concern in finance and other sectors. These inconsistencies are due to behavioral and cognitive biases that create irrational decision-making in an individual. While investing in the stock market, behavioral biases have a significant impact on the behavior of individual rational decision-making (Kumar & Goyal, 2020). Some components like Cognitive, social and group psychology produce rich experiments and how psychological factors influence the decision making of individual decision-makers"(Dreman, 2011).Individuals have psychological factors influencing investment behavior, like overconfidence, which significantly positively impacts investment decision-making. In contrast, financial Literacy positively modifies decision-making (Hayat & Anwar, 2020). Evidence from previous studies shows that perceived risk attitude significantly affects the investment behavior of individual stock exchange investors (Spyrou, 2018). Overconfidence and past investment experience affect the investment decisions of the individual investor" (Hoffmann, Post, & Pennings, 2018). Behavioral factors like overconfidence and market factors like information on the stock market have the most decisive influence on the decision-making of an individual investor (Ngoc, 2014).

Investor feels overconfident based on their skills and abilities of investor and needs help seeing the risk associated with investment said by (Tan, Tan, & Teo, 2019). Overconfident investors trade more as non-overconfident investors, whereas overconfident investors have less likely investment behavior when they have information from friends and relatives; on the other hand, non-overconfident investors invest more when they have technical information like bank and accounts manager (Abreu & Mendes, 2019). Past investment experience, information availability and social influence play a crucial role in shaping individual investors' behavior; Financial Literacy and risk perception are also essential elements for influencing investor behavior. Social influence, past investment experience, and personality traits are essential when making financial decisions (Baddeley, Burke, Schultz, & Tobler, 2019).

Financial Literacy is skills, abilities and knowledge for logical decision-making (Altman, 2017). According to economists, Financial Literacy is needed to make investment decisions (Lusardi & Mitchelli, 2017). A connection between financial knowledge and behavior shows that well-informed, financially educated consumers take better decisions (Hilgert, Hogarth, & Beverly, 2013). This study shows that financial Literacy has no significant relationship or is unrelated to overconfidence, and they also discuss that increased financial experience creates overconfidence in investors' behavior. In contrast, financial educators impart financial education to individual investors (Baker, Kumar, Goyal, & Gaur, 2019).

Literature shows that cognitive factors like overconfidence and Risk Perception may influence investment decision-making "(Areiqat, Abu-Rumman, Al-Alani, & Alhorani, 2019)." In an uncertain financial market environment (Fernández, Garcia-Merino, Mayoral, Santos, & Vallelado, 2018). Risk perception is a subjective judgment in decision-making and enables individuals to assess an extremity of risk. Reaction to the information

("perception") shows precautionary measures, leading to better business decision-making by reducing risk. It also shows the risk-taking behaviour of an individual (Willebrands, Lammers, & Hartog, 2018). Perceived risk attitude significantly impacts investor decisions while making a stock market investment (Sarkar & Sahu, 2018).

2. LITERATURE REVIEW

"This study section presents the empirical and theoretical literature on behavioural biases and their impact on the stock market's investor decision-making. Behavioural finance assumes/supposes emotions, and cognitive biases can be behavioural biases that influence the behaviour of investors. Specifically, the effects of overconfidence, past investment experience, information availability and social influence investigate the impact on investment decision-making. In this study, we investigate the relationship of four behavioural biases with investment decision-making in the Pakistan Stock Exchange by using risk perception as a mediator and Financial Literacy as a moderator." This model is based on prospect theory and social learning theory. These theories explain that the cognitive factors of individuals affect their behaviour during decision-making.

2.1. Overconfidence and Investment Decision Making

According to Nevins (2020), overconfidence means investor overestimates their skills and abilities; on the other hand, they take higher risk. Another cause of overconfidence is overtrading, which result in poor investment decision and cause high transaction cost. Due to overconfidence, Chuang and Lee (2016) Found that investors use private information to decide rather than publically available information. A study on Saudi Stock Market shows that behavioural finance factors (Overconfidence) significantly affect stock market decision-making (Alquraan, Alqisie, & Al Shorafa, 2016). Behavioural bias, like overconfidence, positively impacts investment decisions more significantly (Hayat & Anwar, 2016).

Overconfidence is positively and significantly related to investment decision-making, and an individual with a high level of overconfidence has too many opportunities to allocate funds to high-risk assets (Ainia & Lutfi, 2019). Overconfidence significantly impacts investors' decision-making (Bakar & Yi, 2016). (Waseem-Ul-Hameed, Razzaq, & Humanyon, 2018). There is a significant relationship between overconfidence and investment decision-making (Ullah, Ullah, & Rehman, 2017); overconfidence significantly affects investment decision-making (Metawa, Hassan, Metawa, & Safa, 2019). Overconfidence bias influences the investment decision-making of an investor (Subramaniam & Velnampy, 2017).

Heuristic biases (overconfidence bias) have negatively affected individual investors 'investment decision-making (Shah, Ahmad, & Mahmood, 2018). There is no significant impact of overconfidence on investment decision-making said by (Jain, Jain, & Jain, 2015). Another exciting investigation shows that weather-related moods change the financial markets, affecting financial and economic decision-making (Kamstra, Kramer, & Levi, 2013).

H1: There is a significant positive relationship between investor overconfidence and the investment decision of individual investors.

2.2. Past Investment experience and Investment Decision Making

According to a physiologist, emotions play an integral role in making decisions. Social moods change with time, representing investment decisions and business affairs in "waves". In contrast, an investor's risk-taking attitude effect by the experience of an investor (Nofsinger, 2015). Investors in Malaysia are patriotic, and they make investment decisions by the feelings and, behaviour, experiences to resolve their problems; their thinking is that the best investment decisions have done through a comprehensive grip of financial and economic knowledge. (Jaiyeoba & Haron, 2016).

Investors who have experience face appropriately risky situations and solve it accurately. Investors with more knowledge and financial information and analyzing this information properly can move to risky investments for high returns by working efficiently and accurately on investment (Awais, Laber, Rasheed, & Khursheed, 2016). An Egyptian study has evidence that investment decision-making has no significant relation with experience (Metawa et al., 2019).

H2: There is a positive relationship between past investment experience and investment decisions of individual investors

2.3. Social influence and Investment Decision Making

Investors check the financial performance of an investment on the information they already have (Tauni, Fang, & Yousaf, 2015). "Social Influence is the factor most important for the investment decision of the individual investors. Social influence relates to the factors like Twitter, Facebook, and WhatsApp. This study will test social influence's relation with individual investment decision-making. The investment decision-making process is affected by social interaction with friends and family members" (Shive, 2020). Social influence, like media, plays a vital role in information gathering about market conditions (Davis, 2006; Shiller, 2020). Online Social Networks give strength to observers, seekers and advisors in the efficiency of the decision-making process (Sadovykh, Sundaram, & Piramuthu, 2021).

H3: There is a positive relationship between Social influence and the investment decisions of individual investors.

2.4. Overconfidence and Investment decision making mediated by Risk Perception

"Overconfidence is a well-established bias in which a person's subjective confidence in his or her judgments is reliably more significant than the factual accuracy of those judgments, especially when confidence is relatively high. Risk perception is a subjective judgment about the characteristics and severity of the risk. Overconfidence increases the trade volume and causes investors to take risks and diversify less (Merkle, 2017). An investor with more confidence invests with high risk. (Barber & Odean, 2021)."The relation between overconfidence and risk-taking is that the overconfidence bias shows that investors take risks without taking the required benefits. (Lovallo & Kahneman, 2003).

For smaller stocks, higher trading activity occurs due to investors' overconfidence. (Meier, 2018). Overconfidence bias is apparent bias, and investors have more overconfidence than loss aversion (Bouteska & Regaieg, 2018). The investor's overconfidence and risky investment decisions are significantly related, and risk perception is a mediator between overconfidence bias and risky investment decisions. (Ishfaq, Maqbool, Akram, Tariq, & Khurshid, 2017). Individuals with overconfidence are much more risk-taking; individuals who participate in more investments and are risk-loving show an escalating effect. (McCannon, Asaad, & Wilson, 2016). More studies clear that overconfidence bias results in more trading in Pakistan's financial market with limited portfolio diversification. (Zia, Ilyas Sindhu, & Haider Hashmi, 2017).

H4: There is a relationship between Overconfidence and Investment decision-making positively mediated by Risk Perception.

2.5 Past Investment Experience and Investment decision making mediated by Risk Perception

Investors with more past investment experience have more risk tolerance and prefer a risky investment with a high level of risk tolerance (Awais et al., 2016). Experienced investors could make risky investments more than inexperienced investors because they are more confident about their skills, experience, and knowledge about desired objectives with high-risk tolerance (Roszkowski & Davey, 2020). Past experience affects investor behaviour highlighted by (C.-P. Lin, Lyau, Tsai, Chen, & Chiu, 2020). An experienced investor is much more capable of choosing a risky portfolio because he has more experience and has gone through it. Investors with more investment experience are risk-tolerant than those with less investment experience and have a high-risk portfolio. (Corter & Chen, 2016). The above discussion concluded that the experienced investor could perceive the risk level more. So, we can hypothesize this statement as:

H5. There is a positive relationship between Past investment experience and Investment decision-making positively mediated by risk perception

2.6 Social Influences and Investment decision making mediated by Risk Perception

Social influence is the process in which individuals change their behaviour according to the needs of the social environment. Individuals with knowledge and information about social factors can perceive risk and make decisions efficiently. Investors' behavioural factors like age, race and sex, education level, and social and economic related primarily subject to the information presented and how much they take the risk for making investment decisions; this information as there is a mediating role of Risk perception between these behavioural factors and investment decisions (Riaz, Hunjra, & Azam, 2021). Social Media was positively related to public risk perception (Oh, Lee, & Han, 2020).

H6. There is a relationship between Social influences and Investment decision-making positively mediated by risk perception

2.7. Mediating Role of Perceived risk between behavioural biases and Investment Decision Making

The concept of "risk perception" is judgments in which investors view the risk of financial assets based on their experience and concerns. Risk is an inherent feature of investment decisions due to actual and expected return variations. When an individual decides on financial instruments, the process is to consider all possible behavioural and financial risks involved in the investment decision. According to behavioural finance scholars, risk is a subjective decision-making process to assess risk and uncertainty (Ricciardi, 2014).

Behavioural biases and risky investment decisions are significantly related, and risk perception intervenes in the relationship between behavioural biases and risky investment decisions. (Ishfaq et al., 2017). Risk perception is a way investors take decisions according to their understanding, and educated people make risky but sensible decisions (Rana, Murtaza, Noor, & Rehman, 2021). Perception of risk has a positive effect and creates a sense of how to deal with risk (Willebrands et al., 2022).

 Perception of risk leads to another perspective of the risk-taking attitude of investors, and it also provides a guideline to take the risk under precautionary measures (Willebrands et al., 2022). Investors make much more decisions about trade investment and high turnover, which are high-risk perceptions. (Hoffmann, Post, & Pennings, 2015). Risk perception, Financial Literacy, financial knowledge and Investment decision making related positively. (Khan, 2016).

H7: Risk Perception significantly mediates the relationship between behavioural biases and the investment decision of individual investors.

2.8. Moderating Role of Financial Literacy about Risk Perception and Investment Decision Making

Financial Literacy is the art and technique of investing properly (Giesler & Version, 2014). Financial Literacy improves decision-making regarding financial issues (Altman, 2022); psychological characteristics play an essential role in economic decisions or financial management (Hilgert et al., 2003). A study was conducted on developing countries' middle-class people to investigate the impact of financially literate people on investment. The results showed that people invest more in assets than in saving accounts and that financially educated people use more credit cards. In contrast, financial Literacy leads to better financial decision-making (Grohmann, 2018).

Risk perception, Financial Literacy, financial knowledge and Investment decision making related positively (Khan, 2016). Financial advisors provide their services and better understand the client's decision-making (Baker et al., 2019). Higher investment experience and financial Literacy result in more risk tolerance with a high level of risk related to know-how about factors such as inflation, compounding interest, diversification of risk and other financial information, which help in the correct investment decision (Awais et al., 2016). The investment decision-making process of the individual investor is affected mainly by investor behaviour controlled by financial Literacy (Raut Rajdeep, 2020). Financial Literacy affects risk perception; a financially literate investor creates a

portfolio or purchases equity, and less-literate investors prefer to deposit foreign currency (Aren & Zengin, 2016).

Financial literate individuals can perceive the risk time and judge more efficiently and effectively. So, he makes investment decisions timely. That is why there is a relationship between risk perception and decision makings which will strongly relate to financial Literacy. So, we hypothesize as;

H8: Financial Literacy significantly moderates the relationship between Risk Perception and investment decision-making.
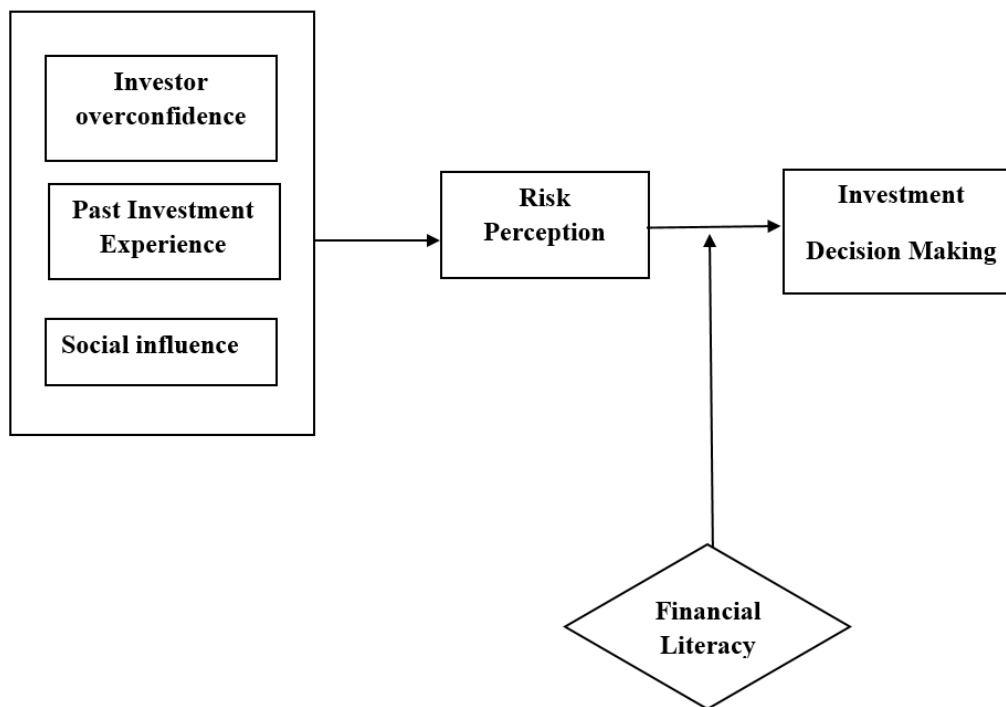
Figure 1: Theoretical Framework

3. DATA AND METHODOLOGY

Design of the study

The design of the study will be quantitative. Primary data will be used for the completion of this study. Data will be collected from the investors of the Pakistan Stock Exchange from the region of southern Punjab through questionnaires.

Population and Data and Sample

The targeted population of this investigation will be the investors of the Pakistan Stock Exchange. All levels of investors, like individual investors, will be asked for responses through questionnaires. Study the question variable; the data will be collected from southern Punjab, Pakistan investors. A sample size of 300 will be used to collect data.

Data Sampling Technique

Disproportionate Sampling Technique that is Convenience Sampling Technique will use to collect the data.

Instruments Measurements

The questionnaire is used as the research instrument in the current study. By reviewing different articles, scales will be used from these sources. In 'Over Confidence', there are 5 items (Abdallah & Hilu, 2015), 6 items are used in 'Risk perception' Mouna and Anis (2015), and in 'IDM', 17 items are used (Metawa, Hassan, Metawa, & Safa, 2019), 'Social Influence' used 7 items (Hsu & Lin, 2016), in 'Financial Literacy' used 16 items (Altman, 2012). In the last variable, 'Past Investment Experience,' there were used 3 items (Mouna & Anis, 2015). Every variable has different scale items. To ensure the scale reliability and validity most suitable items will be used. All items will be measured on a 5-point Likert scale (1= strongly disagree, 5= strongly agree).

Methods of Analysis

By analyzing the data, for univariate statistical analysis Statistical Package for the Social Sciences (SPSS) was used. Identify the data screening process; an attempt was made to assess whether the data is free of outliers, normally distributed, and ready to be used. In the next step, SEM was employed to ascertain confirmatory factor analysis (CFA). SEM is employed because it allows the analysis of models with multiple dependent and independent variables (Frazier, Tix, & Barron, 2004; Tabachnick, Fidell, & Osterlind, 2001). Analysis software, i.e., Analysis of Moment Structures (AMOS) and SPSS, was selected on methodological grounds. SPSS is a built-in graphic environment that further assists users through window menus and dialogue boxes (Karp, 1995). SPSS has three advantages: (1) it allows users to import or export data sets that can be viewed in rows and columns; (2) the window that presents the resulting output has edit options; and (3) the window showing charts and graphs can be customized (Karp, 1995). On the other hand, AMOS incorporates a user-friendly graphical interface with an optimal computing engine for SEM (Baruch & Holtom, 2008). Analysis of Moment Structure, an add-on to Statistical Package for the Social Sciences, is a well-accepted statistical analysis program (Hair, 2010).

4. RESULTS

Reliability Analysis

Before starting the validity analysis, the measurement model was checked for statistical reliability. The internal consistency of the research constructs was measured by assessing the reliability coefficients. Table 4.1 represents Cronbach's alpha coefficients of the 6 scales ranging from 0.767 to 0.933, significantly higher than the required cut-off point of 0.7 (Hair, 2010). "The reliability analysis results indicate good internal consistency among the construct items. The internal consistency was further validated by identifying the composite reliability. The composite reliability of each construct was measured using the formula (Fornell & Larcker, 1981). The composite reliability values ranged from 0.976

to 0.997, as shown in table 4.1, which is also significantly higher than the required value of 0.6 (Bagozzi & Yi, 1988). In this regard, the reliability of research constructs was further supported by the composite reliability coefficients."

Table 4.1: Reliability of Research Constructs

Construct	No. of Items	Cronbach alpha
Overconfidence	5	0.933
Social Influences	7	0.938
Risk perception	6	0.912
Investment Decision Making	17	0.767
Financial Literacy	16	0.910

Convergent Validity

"Convergent validity was assessed by examining the factor loading of the observed measurement model items. The convergent validity was evaluated by determining whether each indicator significantly loaded on its respective factor greater than twice its standard error (Anderson & Gerbing, 1988). First, it is evident from the pattern matrix shown in table 4.11 that the items were more strongly loading on their respective factors. Second, as seen in table 4.18, all estimation parameters were significantly loading on their posited constructs and were greater than twice their respective standard error, indicating that convergent validity was achieved."

Table 0-22: Measurement of Convergent Validity

Latent Construct	Item	Unstandardized Regression Weights	Standard Error	Squared Standard Error
Overconfidence	OC5	1.078***	Nil	Nil
	OC4	1.082***	.047	0.002
	OC3	1.012***	.041	0.002
	OC2	1.126***	.052	0.003
	OC1	1.028***	.051	0.003
Social Influences	SId4	1.080***	.042	0.003
	SId3	1.054***	.027	0.004
	SId2	1.026***	.048	.002
	SId1	1.031***	.041	0.002
	SN3	1.027***	.055	0.003
	SN22	1.033***	.057	0.003
	SN1	1.035***	.055	0.003
Risk Perception	RP6	1.029***	.045	0.002
	RP5	1.034***	.036	0.003
	RP4	1.037***	.043	0.002
	RP3	1.146***	.048	0.002
	RP2	1.153***	.050	0.003
	RP1	1.061***	.052	0.003
Investment Decision Making	IDM17	1.045***	.025	0.003
	IDM16	1.038***	.024	0.002
	IDM15	1.039***	.025	0.002
	IDM14	1.032***	.047	0.004
	IDM13	1.033***	.048	0.002

	IDM12	1.039***	.049	0.003
	IDM11	1.041***	.029	0.003
	IDM10	1.044***	.047	0.004
	IDM9	1.046***	.045	0.002
	IDM8	1.022***	.038	0.002
	IDM7	1.021***	.028	0.003
	IDM6	1.018***	.018	0.002
	IDM5	1.035***	.048	0.003
	IDM4	1.039***	Nil	Nil
	IDM3	1.031***	.059	0.003
	IDM2	1.100***	.063	0.009
	IDM1	1.125***	.060	0.008
Financial Literacy	FL16	.987***	.059	0.003
	FL15	.985***	.058	0.003
	FL14		.039	0.002
	FL13	.981***	.056	0.003
	FL12	.976***	.019	0.004
	FL11	.988***	.069	0.003
	FL10	1.022***	.029	0.004
	FL9	1.052***	.049	0.003
	FL8	1.027***	.029	0.002
	FL7	1.000	Nil	Nil
	FL6	.948***	.080	0.006
	FL5	.985***	.078	0.006
	FL4	.961***	.078	0.006
	FL3	1.000	Nil	Nil
	FL2	.678***	.083	0.007
	FL1	1.070***	.105	0.011
Note:***p<0.001				

Discriminant Validity

Discriminant validity was achieved by examining the correlation matrix of the measurement model. Discriminant validity is achieved when the correlation between the constructs is less than 1.0 and greater than twice their respective standard error (Bagozzi & Warshaw, 1990). That was the case here, shown in table 4.19; the correlations between the research construct pairs were less than 1.0 and greater than twice their standard error. Therefore, it can be said that discriminant validity was achieved among the research constructs.

Table 0-23: Correlation among the Research Constructs

Factor	OC	SIn	RP	IDM	FL
OC	1.000				
SIn	.231*** (.219)	1.000			
RP	.289*** (.267)	(.466)	1.000		
IDM	.300*** (.385)	.071 (.291)	.348*** (.429)	1.000	
FL	-.079 (-.088)	.038 (-.026)	-.099 (-.091)	(.015)	1.000
Note: ***p<0.001; values in parenthesis are standard errors; OC=Overconfidence, SIn=Social Influences, RP=Risk Perception, IDM= Investment Decision Making, FL=Financial Literacy					

Common Method Bias

As discussed in chapter 3 the "unmeasured latent factor method" was used to test common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). As such, an additional unmeasured CLF (common latent factor) was added to the measurement model of CFA (confirmatory factor analysis). This CLF allowed control of the variance, attributing to gathering all measures with the same method. In the next step, the confirmatory factor analysis model and expected latent factor results were compared with the 6-factor measurement model shown in table 4.20. "The result highlight that the addition of the CLF did not improve the measurement model fit. Also, all factor loadings remained significant. Researchers have proposed various remedies, but the CLF was retained in the consequent structural model (Lowry, Gaskin, Twyman, Hammer, & Roberts, 2013). The common latent factor is shown in figure 4.7." By doing so, this study effectively controlled the effect of common method bias on the results.

Table 0-24: Factor Loading with and without Common Latent Factor

Factor Loadings				
			Factor Loadings (without CLF)	Factor Loadings (with CLF)
OC5	<---	OC	0.864	0.821
OC4	<---	OC	0.88	0.851
OC3	<---	OC	0.904	0.913
OC2	<---	OC	0.851	0.825
OC1	<---	OC	0.809	0.757
SId4	<---	SIn	0.826	0.803
SId3	<---	SIn	0.817	0.785
SId2	<---	SIn	0.810	0.745
SId1	<---	SIn	0.719	0.741
SN3	<---	SIn	0.776	0.727
SN2	<---	SIn	0.785	0.795

SN1	<---	SIn	0.846	0.808
RP6	<---	RP	0.814	0.782
RP5	<---	RP	0.949	0.950
RP4	<---	RP	0.930	0.916
RP3	<---	RP	0.866	0.819
RP2	<---	RP	0.883	0.816
RP1	<---	RP	0.840	0.719
IDM17	<---	IDM	0.790	0.778
IDM16	<---	IDM	0.820	0.787
IDM15	<---	IDM	0.899	0.872
IDM14	<---	IDM	0.840	0.778
IDM13	<---	IDM	0.840	0.776
IDM12	<---	IDM	0.840	0.773
IDM11	<---	IDM	0.840	0.878
IDM10	<---	IDM	0.840	0.778
IDM9	<---	IDM	0.840	0.738
IDM8	<---	IDM	0.840	0.978
IDM7	<---	IDM	0.840	0.798
IDM6	<---	IDM	0.840	0.875
IDM5	<---	IDM	0.840	0.973
IDM4	<---	IDM	0.840	0.876
IDM3	<---	IDM	0.840	0.999
IDM2	<---	IDM	0.840	0.971
IDM1	<---	IDM	0.840	0.978
IDM	<---	IDM	0.822	0.795
FL16	<---	FL	0.716	0.649
FL15	<---	FL	0.705	0.686
FL14	<---	FL	0.754	0.742
FL13	<---	FL	0.730	0.733
FL12	<---	FL	0.661	0.651
FL11	<---	FL	0.489	0.475
FL10	<---	FL	0.671	0.667
FL9	<---	FL	0.682	0.582
FL8	<---	FL	0.482	0.478
FL7	<---	FL	0.749	0.775
FL6	<---	FL	0.782	0.675
FL5	<---	FL	0.792	0.474
FL4	<---	FL	0.722	0.578
FL3	<---	FL	0.782	0.675
FL2	<---	FL	0.842	0.779
FL1	<---	FL	0.852	0.578

Structural Equation Modeling

"SEM (structural equation modelling) was used to evaluate the relationship between the behavioural factors and Investment Decision making and the mediating role of Risk Perception. In this section, the structural model was used to develop the hypothesized model, shown in figure 4.8.

"In this figure, "the latent variables are shown as squares while circles represent the error terms associated with the estimations. The single-headed arrow indicates the impact of one variable on another. The estimation parameters of the corresponding variable and the values for the error terms associated with the estimation are shown beside the single-headed arrows. The initial goodness-of-fit indices for the structural model are shown in table 4.21."

Table Error! No text of specified style in document.**-1: The Summary of Goodness-of-fit Indices for Structural Model**

Goodness-of-fit Indices	Desirable Range	Measurement Model
Absolute Measure		
X^2	Nil	95.101
NC	≤ 5	47.550
GFI	≥ 0.80	.918
AGFA	≥ 0.80	.383
RMS	≥ 0.08	.350
Incremental fit indices		
NFI	≥ 0.80	.679
CFI	≥ 0.90	.675
TLI	≥ 0.90	-.624

The structural model was over-specified with 4 degrees of freedom. An examination of the goodness-of-fit indices shows poor fit. In the next step, the modification indices of the structural model were evaluated to improve the goodness-of-fit of the hypothesized model. The structural model was modified by adding the relevant error covariance path indicated by the modification indices. Furthermore, the modified structural model was tested, as shown in figure 4.9."

These established a better fit to the data than the original model, whereby the value decreased from 95.101 to 3.903. The normed value chi-square (NC) decreased from 47.550 to 3.903, while the root-mean-square error of approximation (RMSEA) improved by decreasing from 0.350 to 0.088. The goodness-of-fit index (GFI) value increased from 0.918 to 0.996. Subsequently, the adjusted goodness-of-fit index (AGFI) value increased from 0.383 to 0.939. Moreover, the value for the normed fit index (NFI) increased from 0.679 to 0.987, the comparative fit index (CFI) increased from 0.675 to 0.990, and the Tucker-Lewis index (TLI) value increased from -0.624 to 0.899. Consequently, the revised measurement model was used for future analysis."

Table Error! No text of specified style in document.**-2: The Summary of Goodness-of-fit Indices for Structural Model**

Goodness-of-fit Indices	Desirable Range	Measurement Model
Absolute Measure		
X^2	Nil	3.903
NC	≤ 5	3.903
GFI	≥ 0.80	0.996
AGFI	≥ 0.80	0.939
RMS	≥ 0.08	0.088
Incremental fit indices		
NFI	≥ 0.80	0.987
CFI	≥ 0.90	0.990
TLI	≥ 0.90	0.899

Additionally, "the revised measurement model was used for hypothesis testing. Table 4.23 shows the parameters estimates, standard error, critical ratio and corresponding p-values of the structural model of Behavioral Factors, Risk Perception and Investment Decision making. A detailed discussion of the hypothesis testing is provided in the next section."

Table Error! No text of specified style in document.**-3: Parameter Estimates for Finalized Structural Model**

Path			Unstandardized Estimates	Standard Error	Critical Ratio	P-value
RP	<---	OC	0.18	0.039	4.613	***
IDM	<---	OC	0.261	0.044	5.872	***
RP	<---	SIn	0.311	0.046	6.701	***
IDM	<---	SIn	0.061	0.041	2.483	***
RP	<---	PIE	0.095	0.066	3.446	***
IDM	<---	PIE	0.084	0.051	2.649	***
IDM	<---	RP	0.037	0.058	0.638	***
IDM	<---	RP*FL	0.400	0.058	6.931	***
Note: * p<0.05; ** p<0.01; *** p<0.001;						

OC= Overconfidence, RP= Risk Perception, IDM= Investment decision making, SIn= Social Influences, PIE = Past Investment Experience, FL= Financial Literacy.

Testing the Mediating Effects

As discussed in chapter 3, the significance of the mediation effects was measured by conducting a series of regression analyses. So the first structural model estimated the effect of Behavioral Factors (independent variable) on Risk Perception (mediators). "The second structural model examined the direct effect of Behavioral Factors (independent variable) on Investment Decision making (dependent variable). Even though Behavioral Factors affect Investment Decision making, theoretically, it is argued that it is quite

possible for the relationship between Behavioral Factors and Investment Decision making to be mediated by Risk Perception. Subsequently, the third structural model examined the relationship between Behavioral Factors and Investment Decision making and the mediating effect of Risk Perception." The indirect effects (table 4.24) were then measured using the bootstrapping technique (Cronbach, 1951).

Table Error! No text of specified style in document.-4: Parameter Estimates for Mediating Test

Relationship				Indirect effect
OC	→	RP	→ IDM	0.007
SIn	→	RP	→ IDM	0.003
PIE	→	RP	→ IDM	0.006
Note: ***p<0.001; values in parenthesis are standard errors; OC= Overconfidence, RP= Risk Perception, IDM= Investment decision making, SIn= Social Influences, and PIE = Past Investment Experience.				

Hence, from comparing the bootstrapping results, Risk Perception appears as a significant mediator between Behavioral Factors and Investment Decision making.

Table 5.2: Summary of Empirically supported Research Hypothesis of Moderation

Investment Decision Making (IDM)				
Variable	β	S.E	T	P
Constant	.0079	.0516	.1540	.8777
Financial Literacy (FL)	.2220	.0548	4.0531	.0001
Behavioural factors	.1259	.0580	2.1700	.0306
Interaction	-.0167	.0448	-.3717	.7104
R-square		.0921		

Hypothesis Testing

The hypothesis testing results are according to the finalized structural model shown in figure 4.10. It is essential to review the research objectives before making conclusions. This research is aimed at helping to understand, describe, and explain the phenomenon of Behavioral Factors and their relationship with Investment Decision making with the mediating effect of Risk Perception. "The 5 specific objectives of the study are as follows: (1) to investigate the relationships between behavioural factors like investor overconfidence, past investment experience, social influence and investment decision-making. (2) To investigate the relationship between Overconfidence and Investment decision-making positively mediated by Risk Perception. (3) To investigate the relationship between Past Investment experience and Investment decision-making positively mediated by Risk Perception. (4) To investigate the relationship between Social Influences and Investment decision-making positively mediated by Risk Perception. (5) To investigate the mediating role of risk perception between behavioural factors and investment decision-making. (6) To investigate the moderating role of Financial Literacy between behavioural factors and investment decision-making. Furthermore, hypotheses were developed based on the study objectives. A discussion and conclusion on these hypotheses are presented next.

5. CONCLUSION AND DISCUSSION

As pointed out in chapter 1, the current study objectives were to establish and validate a research model linking the multidimensional, mediating, and moderating relationships between behavioural factors, Risk perception, Investment decision making and Financial Literacy and to test the proposed hypotheses using structural equation modelling .The research model was supported by an extensive literature review, particularly the model of behavioural factors, Risk perception, Investment decision making and the financial Literacy of Investors.

Address the research's first, second, and third objectives; a measurement model was developed using the 6 constructs. The measurement results of CFA show that the selected measurements fit the data. Furthermore, structural equation modelling and mediation analysis were used for the fourth research objective. The structured model for behavioural factors, risk perception and Investment decision-making demonstrates an excellent fit to the data and provides empirical support for research hypotheses. In addition to SEM, MODMMED macro process was also used to meet the fifth objective of moderation. "The MODMED macro allowed us to determine whether a proposed mediation effect was contingent upon the level of a moderating variable by providing β (coefficients) for both the mediator and the dependent variable models and allowing us to examine whether or not the mediation exists at specified levels of the moderator. There is a significant moderation of financial Literacy between risk perception and Investment decision-making, as evidenced by a significant interaction in the moderated mediator models.

Theoretical Contributions

An essential contribution of the current study about manufacturing firms of the Punjab province in Pakistan is having developed a theoretical model comprising behavioural factors and Investment decision-making. The empirical link between the research constructs was a unique focal point in the study. "This study contributes to the behavioural factors literature to resolve the varying effects regarding the link between behavioural factors and Risk perception and behavioural factors and Investment decision-making. Consequently, another contribution of this research is having conceptualized and validated a research model that explains the adaptive and maladaptive nature, behavioural factors and investment decision-making with the mediating role of risk perception."

Limitations of the study

Although the work from the present study should enlighten practitioners and researchers with a thorough conceptualization of the relationships among behavioural factors, some limitations draw attention to the interpretation of results and findings.

Utilizing the Cross-Sectional Design

"The first limitation refers to utilizing a cross-sectional research design, limiting the causal inferences among the current study constructs. Although the cross-sectional research design is suitable for developing relationships among variables, it does not capture the transformation that might influence the hypothesized relationships. For example, a person harbouring behavioural factors with a low level of conviction may transform the activity, so it becomes in harmony with other activities and consequently, change one's self to harbour behavioural factors with a high level of conviction." Thus, the dynamics of such transformation are better investigated through a longitudinal study. Due to time and resource constraints, it was not easy to operationalize a longitudinal research design to a postgraduate study such as this.

Utilizing Self-reported Data

Using the self-reporting survey method often presents a respondent bias. For example, the observed relationships may be affected since respondents had to answer the related questions consistently. For this reason, this study's research questions and hypotheses were carefully analyzed to the utilized research method. Furthermore, the mediating effect in the research design delineates the expected influence of respondent bias (Rupp & Spencer, 2006).

Generalizability of Findings

This study is also limited in data collected and analyzed for a subset of manufacturing firms in the Punjab province of Pakistan. Generalizing findings for other provinces of Pakistan or other countries should be a modifier since behaviours may differ in various social and cultural contexts. Thus, to generalize the research model, further empirical studies in different provinces of Pakistan or countries and cultures are required.

Future Research

This research provides initial evidence for the validity and applicability of the behavioural factors in a limited context of the Punjab province of Pakistan. Future research could be reproduced in different provinces of Pakistan, influencing the effectiveness of behavioural factors in enhancing employee behaviour.

Conclusion

The need for behavioural factors has increased due to the increasing trends toward organizational ethics. So the current study addressed the significant gap to see the impact of Behavioral factors on Investment Decision Making with the mediating effect of Risk perception and the moderating effect of Financial Literacy. A cross-sectional survey of employees in different manufacturing firms in the Punjab province of Pakistan validated the hypotheses. The research concluded that behavioural factors are significant for the organization's success, and it is guaranteed that behavioural factors boost the capacity of employees to handle ambiguities.

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