An Emerging Need of Introducing Behavioral Finance in Pakistan: Evidence from Investor's Sentiments and Actions

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ABSTRACT

The basic objective of this research is to study the behavior of stock market investors in Karachi, Pakistan. There are numerous factors that affect investment behavior of an on investment behavior. The study first presents the theoretical background and a deep insight of behavioral finance. Thereafter, a quantitative analysis is presented that shows the impact of demographic and behavioral factors (i.e. age, market experience, qualification, information source, risk capacity) on the investment decisions, in order to understand the investors' sentiments. Primary data was collected through questionnaires. Because of the nature of variables "Multinomial logistic regression" was performed to find the individual. This paper aims at studying the demographic and behavioral factors, and finding the impact of these factors impact of investment decisions on equity returns. It was found that the demographic and behavioral factors are having significant impact on the investor sentiments that affect their investment decisions. Thus, it is concluded that there is an utmost need of introducing the concept of behavioral finance in Pakistan to make the people be able to control over their emotions to improve their decisions.

Keywords: *Behavioral Finance, Investment Decisions, Investor's Sentiments, Demographic Factors.*

INTRODUCTION

Background

Investment is an asset that an individual or a firm purchased for generating income in future. In economics investments are those goods that will be used in creating future wealth. In finance investments are considered as monetary assets that provide future inflows either in terms of income or in terms of appreciation in intrinsic value. Investment options in Pakistan commonly known to individuals include Fix deposits / Saving deposits, Investment certificates by Banks, Government Securities, Corporate Securities, Insurance, Mutual Funds, Gold, Real Estate etc.

Investment in financial markets is one of the most common phenomena. Financial markets play a vital role in the economy. It also provides a mechanism to all the managers or individual investors about investment decisions. (Samuel, 1996). Generally in an economy financial market serves the aim of growth in dividend, capital gain, and hedge against inflation; especially in long run, for the investors (Teweles & Bradley, 1998).

In Pakistan there are thirty four Banks; five public sector banks, twenty one specialized banks and four foreign banks (SBP, 2016), twenty Asset Management Companies (AMCs) offering variety of mutual funds (mufap, n.d), and 559 listed companies in Pakistan Stock Exchange (PSX), (PSX, n.d.).

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Performance of banking sector from 2008 to 2017 shows a decline in fix deposits as a percentage of total deposits and a growing gap is found between longer term assets and liabilities (maturing after 5 years) (SBP, 2017). Mutual funds industry has shown an increasing trend in past five years. Average growth rate total net assets of mutual fund industry from 2013-2017 is 10.19%. (mufap n.d.). Stock market of Pakistan is now listed in secondary emerging markets (FTSE, 2017). Performance of stock exchange is influenced by numerous factors. Pakistan Stock Exchange (PSX) has shown outstanding performance in 2016 but in 2017 the performance of PSX was worst. According to an analyst at The Express Tribune one of the factors affecting the performance of PSX was political condition of the country (Siddiqui, 2018 January 1)

Due to events like financial global crisis held in 2008, or the exceptionally bad performance of PSX in 2017, the investors specially individuals are continued to be cautious of geo political activities and uncertainties, unprecedented quantitative facilitation, mounting unemployment and the threat by traders of high frequency for manipulating the market. Behavioral finance can be a way to study out all the possible ways of making economic decisions by individuals. Due to behavioral finance, the understanding of individuals' reactions under different circumstances becomes easy than before. So investors may get their behaviors modified to the right ways in order to make rational decisions for having greater profit contained outcomes. It is because, weak or wrong investment decisions usually lead to the high costs, taxes and losses.

The rational behavior of investors has been debatable since many times as many financial theories and arguments could not provide a sufficient detailed explanation for the market anomalies of stock. The most seeming example of such anomaly is "Stock market bubbles" (e.g. in 1990, the dot com bubble and in 2006, real estate bubble were created). The bubble is usually created when security prices are driven way above from their real or fair prices by market player or participants. During such phase, people usually disdain the fundamental valuation and attract to the overpriced securities that cause mispricing to the greatest level.

The essence or key note of financial theories captures four basic blocks: a) market is efficient b) investor is rational c) investor design the portfolio accordance with the mean-variance rules d) The expected return is a function of a risk. Behavioral finance proposes the alternatives for each of the blocks mentioned.

Behavioral finance emerges as a study of social psychology which covers up the human side in decision making. Many researches have been started in the century of eighteen which came up with some significant works for instance, Adam Smith was come up with two worthy studies namely "Theory of Moral sentiments" in 1959 and "Wealth of Nations" in 1776.These studies of Smith suggested the individuals' morality or invisible hand that helps them in taking economic, social and financial decisions.

Problem statement

It is stated in previous studies that there is a positive correlation between stock market and economy (Jaswani, 2008). Hence, investors' decisions play a vital role in influencing as well as determining the trends of stock market that ultimately influences the economy. In order to provide appropriate explanation of decisions of investors it is of utmost importance to

understand and evaluate those behavioral factors that are influencing there decisions. It will be beneficial for investors to understand common behavior in order to earn better returns. Also this information will help managers to give better recommendations and only after the analysis of these factors it will be possible to device such programs and policies that can influence investors' decisions. Hence, this research is undertaken to analyze the impact of investors' sentiments on investment decisions. This research will also highlight the impact of behavioral and demographic factors on investment decisions.

Research Questions

Following questions will be answered in this research.

- Is there any influence or impact of investor's sentiments on their investment decisions?
- Do the demographic and behavioral factors (i.e. experience, age, qualification, private information, risk tolerance) affect decision making on investment?

Significance of the study

The lack of understanding behavioral finance is one of those factors that cause baffled decision making in investment, inconsiderable and small earnings and poor cognitive control. Consequently, better control on sentiments and decision making is utterly important to work on in order to get the optimum utilization of investment. Because the greater understandings of behavioral finance will lead to the better investment decisions to realize the expected returns.

Limitations

- The entire study is limited to the one country specifically. Thus, the findings will only be generalized to the Pakistan.
- The sample size is relatively small which may cause difficulty in finding the significant relationships and results.
- In Pakistan, there is a lack of prior researches on behavioral finance which may limit the findings of this study due to the information constraints related to the Pakistani investors.

Behavioral finance theories

Theory of Regret

This theory is stated that the individuals assess their anticipated reactions to the future situations or events. Bell (1982) defined regret as a feeling or emotion that is caused by comparing state of situations or events with the certain or given outcomes. For example, when a choice has to be made between a familiar and an unfamiliar brand, the consumer might ponder upon the regret of a finding that an unfamiliar brand may perform vilest or more poorly than the familiar brand. Hence, he will be unlikely to select the unfamiliar brand.

The theory of regret is also applied on the investor psychology area within a stock market. An investor usually purchases an intended security that causes him to experience a sensitive and emotional reaction. Investors an avoid selling those stocks that are declining in value to avoid the regret of making a bad investment decision or choice and a distress of having a loss. Additionally, the stock investors finds easier to buy the popular or hot stocks of a week.

Principally, they are just following up the crowd. However, the investors have to make a rational investment choice by looking onto the stock's value. They have to buy the stocks when the stocks decline significantly in value in order to reduce the emotional reactions (lesser anxiety or regret).

Prospect Theory

The prospect theory was developed by Kahneman (1979). It states that people cannot behave rationally always. The theory holds points that some persistent biases exist which are motivated or influenced by psychological factors. Such biases further influence the choices made by people under the circumstances of uncertainty. For instance, consider the investment selection between:

Investment option 1: A confirm or sure gain (profit) of $ 6,000 or
Investment option 2: 80% probability of gaining $ 8,000 with a 25% chance of getting nothing ($ 0).

Question: Which investment option would provide you the best chance to accelerate or maximize your gain or profit?

Most of the investors opt for the first investment option which is definitely a sure bet or gain. Kahneman (1979) proposed that most of the people are risk averse when encountered with the anticipation of a financial gain. The prospect theory describes that when the investors face the probability of losing money, they usually take on or make riskier decisions intended to loss aversion. They often tend to alter their disposition towards risk. Thus, such error in thinking is relative to the investing which can result in significant losses within the investment portfolio.

LITERATURE REVIEW

Academic Scholars and Behavioral finance

Shleifer and Vishny (1997) identified that the behavioral biasness do exist among majority of the investors which is the key element of behavioral finance and the limits to arbitrage is another vital strand. According to the traditional finance, when some investors misallocate the asset's prices, the misallocation of prices can be corrected through the rational investors' trading actions who are also named as arbitrageurs. Because the profitable opportunities are spotted, cheap assets are bought and expensive ones are sold by arbitrageurs. The theory of behavioral finance stands that the mispricing may keep going on because arbitraging is quite costly and risky which results into limiting the demand of arbitrageurs to keep the trading with fair-value restoration.

Barberis, Shleifer and Vishny (1998) uncovered two different families or groups of pervasive regularities by studying all the empirical researches that had been done recently. Such families are: (1) Under-reaction of share prices to the news like announcements of earnings (2) Over-reaction of share prices to the bad or good series of news. In such study, the parsimonious model is presented related to the sentiments of investors as well as investor beliefs are also been discussed that remained consistent with all the empirical findings. Such model is all based on the sentimental evidences and generates both families (under-reaction & over-reaction) for a broad range of the parameter values.

Olsen (1998) studied a more vivid and complicated picture of the content, basis and rationale behind such evolving area of behavioral finance compare to the previous studies. This study discussed the traditional economic concepts (in finance) that explain the subjective estimated utility and prudence. Moreover, the fresher theories related to adaptive decision making and chaos are also been argued which can better help in explaining the dilemma stock price variability. In addition, he described a school of thought or a new paradigm in order to comprehend and predict a systematic behavior. Through such paradigm or school of thought, the stock investors can make correct and more accurate decisions related to investments. He further made an important point that the cohesive theories related to the behavioral fiancé are not existed yet. But the researchers have tried to develop various sub theories and different themes for the behavioral finance.

Shefrin and Statman (2000) pointed out that practitioners must learn behavioral finance by recognizing their own mistakes as well as other's mistakes. By doing this they can be able to avoid such mistakes by taking meaningful steps. He gave a beginning of this journey. In the traditional finance, the models that were used assume that the economic agents are rational, unbiased and efficient which means that their investment decisions are consistent with the maximization of utility which are derived from the unbiased relevant information.Whereas, behavioral finance challenges the utility functions used in the conventional theories under the idea of risk tolerance or aversion. For instance, Kahneman proposed a prospected theory in 1979 related to different decision making processes under the risky situations and the outcomes were assessed against the reference points on a subjective manner (such as the stock purchasing price). The research was also come across with a conclusion that most of the investors are averse to risk. In the case of gains, investors exhibit a risk averse behavior whereas, a risk seeking behavior is observed in the case of losses.

Barberis and Thaler (2003) put considerable light on financial phenomenon of behavioral finance by discussing some models. The study highlighted two main parts or blocks of such area that are limited to the arbitrage and psychology which are discussed in detail. After that, the number of applications, related to behavioral finance, are presented (i.e. cross-section of returns, total stock market, trading behavior of individuals and corporations). In the end, the expected progress in the future is assessed. They also discussed that "unluckily, after the years of effort, it is clear that fundamental facts about the summative stock market, the cross-section of returns (on average), and individual trading behavior are not easily understood in a single framework." For that, Behavioral finance is used as an alternative notion that investors are subjected to behavioral biases that can make their financial decisions less than fully rational. The evidences of such biases are usually come from cognitive psychology literature and have then been practically applied in financial context. For instance:

- Over-optimism or Over-confidence: Investors overrate their abilities and the accurateness of information they have.
- Representativeness: Investors assess all the situations based on its apparent properties rather than the underlying probabilities.
- Conservatism: Forecasters adhere to the prior beliefs even in the presence of new available information.
- Availability bias: Investors usually overemphasize on the probabilities of recently experienced or observed events because of the recent or fresh memory.

- Anchoring and Frame dependence: The structure of the presentation of any relevant information can easily affect the decisions that are made.
- Cognitive accounting: The individuals usually allocate wealth in order to separate the cognitive compartments and ignore its correlation and fungibility effects.
- Regret aversion: The individuals usually make their decisions in a manner or way that permits them to evade feeling emotional distress or pain in the events of adverse outcomes.

Kumar and Lee (2006) worked on the stock returns and people's behavior tends towards different scenarios. 1.85 million (Or even more) retail investors are used as database over the period 1991 to 1996. In the study, the trades are showed as systematically correlated. In addition, by having consistency with the models of noise trader, it is found that the stock return with greater retail concentration (i.e. small cap, lesser institutional ownership, value and lesser priced stock) elaborates the retail (systematic) trading. Moreover, the stocks are costly to arbitrage as well. But, such results are not explained by the earnings prediction of macroeconomic analyst. Collectively, the study's findings will help in understanding the investor's sentiments in terms of investment and returns.

Amromin and Sharpe (2008) conducted a detailed survey in which the data was obtained from the "Michigan Survey"- University of Michigan. The collected data was based on the investor's attitudes in order to evaluate their beliefs and perceptions related to the stock market and their choices of portfolio over the years. The found data indicated that the expected return are extrapolated from the past generated returns (realized ones). In addition, the expected returns and risks are strongly swayed by the economic prospects. When the investors start believing on macroeconomics more expansionary, both the lower volatility and greater return are expected by them. Moreover, the risks (perceived) in equity returns are tend to be strongly swayed by the ordinary/household investor's properties and their behavioral biases. Such expectations are reported by the respondents. Finally, the findings are brought up with a conclusion that the pro-cyclical expected returns realizes when the investors put a condition on the proxies of traditional business cycle, for instance, CAY and dividend yield.

Demirer, Kutan and Chen (2010) presented new evidence on the sway of false information (rumors) by taking Taiwan stock market as a base. The outcomes indicated considerable patterns of irregular or abnormal returns and trading volume is affected immensely after dissemination of rumor in the stock market before appearing in the newspaper. If the rumor is supposed to be positive then the investors tend to buy stocks in a good volume and price goes up promptly until the rumor goes away or expires. It is closely observed that the negative rumors have stronger and longer impacts on the stock market than the positive rumors usually do. So, it can be said and seen that the volume of the abnormal returns and trading volume are negatively correlated to the price limit (daily).

Shefrin and Statman (2011) discovered some lessons from the behavioral finance related to the origins of crisis and likelihood of avoiding the other net ones. Such crisis or situations highlight the intensive need to introduce and incorporate the essence of behavioral finance into the economic theories as well as financial theories. Psychology has a greater impact in decision making which reflects in behavior and actions of people whether households, corporate bodies, markets and government. The discussions in the study is encompassed by the

Keynes's view that psychology is the one that drives the economic busts and booms and the Minskys' view that the crisis are uncontrollable or inevitable in the capitalistic system. The discussion has also encompassed free and efficient markets, links between real economy and financial markets, bubbles; war tugs over the government policies and regulations, innovations, debt financing and the culture in which the home ownership is almost prized beyond the economic benefits.

Chandra and Kumar (2011) studied that how the behavior of investors get influenced by the psychological factors that bring impact on the decision making process during the time of buying and selling of securities in the market. For elaborating the various irrational behaviors of investors in the financial markets, behavioral economists have drawn different behavioral theories that are derived from sociology, psychology and anthropology. There are some different factors that affect investor's sentiments. This paper had tried to find out those factors to assess the influence of such factors over investor's sentiments in the stock market of India. The data analysis has revealed that a significant relationship exists between the gender of stock investors and the factors that are risk, herd behavior, performance factors and confidence etc. The other factors that also bring impact on investor's sentiments are age, educational status, marital status, socio economic background, occupation, experience and source of information. Such factors have to be studied also to get a better and vivid understanding of investor's sentiments.

Birău (2012) presented an approach in the assessment of capital market named "Behavioral finance" which is a study of sway of the various psychological factors on the evolution of financial markets. This study discussed market anomalies which explain the irrational behavior of financial investors and the variety of reasons for such behavior. Whereas, classical finance theory says that the investors have rational behavior and they select most efficient portfolios which shows that asset classes are selected or opted in a sound manner to ensure the greatest possibility of high returns under the endurable risk level over the considerable time period. So, behavioral finance recommends that the large proportion of investment decisions are swayed by various psychological factors and sentiments.

Huang and Kisgen (2013) consolidated and analyzed all the papers of past twenty years related to the field of behavioral finance and provided the possible sufficient introduction and details to the professional and scholars who might have interest in the behavioral finance in the near future. For this purpose, the study used the database from ISI WOS (Web of Science) which covers the period of 1995-2013 with 347 articles and 124 journals in which majority papers were found as theory based or empirical. Moreover, it is also suggested in the paper that the degree of analysts' contribution must be increased in the area of behavioral finance in order to make its concept and applications more understandable.

Hammond (2015) explained the field of behavioral finance by elaborating all the considerable enumeration of biases, inefficiencies exist in financial markets and heuristics. Such paper is included a comprehensive review of the field of behavioral finance and both the recent papers as well as seminal works. The other sub-topics are analyzed too which comprises of momentum investing, loss aversion and corporate finance. In addition, some meaningful conclusions are drawn across the field of behavioral finance as well as some more areas are also discussed onto which the work can be done in future.

Haritha and Uchal (2016) presented a conceptual framework of market factors that affect the sentiments of investors and the impact of behavioral downsides on investment. They investigated and elaborated the multidisciplinary field of sociology and psychology of financial behavior. In a market, psychological factors affect the investor's decisions while stock's buying and selling that is influenced by price. Investors usually become pessimistic and optimistic in their decisions due to some familiarity biases or some other sensation seeking. It is very important to recognize the behavioral factors and their implications on investment related decisions. Such behavioral factors include risks, costs, herd behavior and economic factors.

Investment managers and Behavioral finance

Various professional investment and portfolio managers are adopting the essence or crux of the behavioral finance through establishing behaviorally centered trading approaches and strategies. This is an interesting and stimulating phenomenon that has begun. Russell Fuller is a portfolio manager who manages three mutual funds of behavioral finance that are Behavioral Value Fund (BVF), Behavioral Growth Fund (BGF) and Behavioral Short/Long Fund (BSLF).

Fuller (1998) explained his belief and viewpoints related to the behavioral finance that cognitive errors and misjudgments are systematically made by people when they are involved in investing their money. The portfolio managers recognize the cognitive mistakes of the other investors.The mispriced securities either stock or bond can give an opportunity to create a greater investment return (i.e. a case of arbitrage).

Wood (1995) is an asset manager at Martingale Asset Management presented his viewpoints on behavioral finance that money managers are rarely living up to the expectations. Practitioners and academics are now turning to the behavioral finance. It is the study of human psychology as they cannot be rational always. Financial markets are arena of greed and fear. Thus, the prices are not consistent always so it is very important for humans to make a rational decision.

Demographic and Behavioral factors in Behavioral finance

Investors usually do not make rational decisions especially when such decisions are related to the investment because they are affected by various biases that obstruct their decisions. Such biases vary from emotional to mental biases. Thus, one of the factors that influence the biases is the factor of demographic. Following are the few demographic factors that influence the behavior of investors.

- Age plays a critical role in the individual's decision process because as a person grows, his sentiments and psychological factors start to strengthen up. That is why; age is an important factor to be included in a behavioral study. Charles and Kasilingam (2013) have conducted a study on age factor to see its influence on the investment behavior of investors.
- Educational Qualification is also a vital factor in a behavioral study. If the individual possess some education, his decisions will be reflected by logical reasoning as education gives a better understanding and a broad exposure towards the things. Shinde and Zanvar (2015) had contributed in the behavioral study by examining the impact of education, gender, age and other factors on the individual's investment decisions.
- Experience (Market experience) has a strong impact on the two particular bases that are

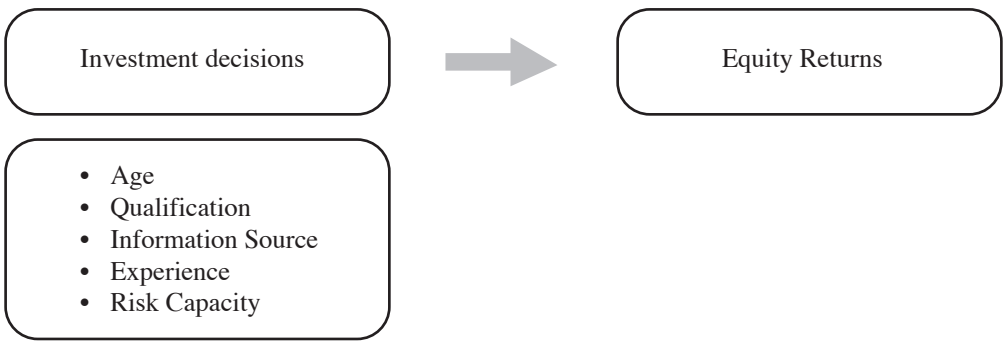
self-attribution and confidence. Mishra and Metilda (2015) studied it that how an investment experience and some other demographic and behavioral factors influence on the decision making process. Various studies showed that overconfidence rises with the market experience and education. So, for conducting a detailed study on investor's behavior, the factor of investment experience is also needed to study.

- Information source and Risk are one of the key elements to be taken into an account. The rational decisions can only be made when the right information is available and the amount of risks is known. Nofsinger (2001) had presented a study in which he showed the influence of market information and risks over the investor's decision making.

Theoretical Framework

Investment decisions of individuals depend on numerous factors. For the current study selected variables are age, qualification, information source and experience (Charles & Kasilingam 2013; Shinde & Zanvar 2015). These decisions affect the amount or percentage of return an individual gets (De Bond, 1998).

The diagrammatical presentation of the framework is given below:



(Charles & Kasilingam 2013; Shinde & Zanvar 2015)

Hypothesis

1) H^0:There is no relationship between investment decisions and equity returns.
H^1: There is a relationship between investment decisions and equity returns.
1-1 There is a relationship between age and equity returns.
1-2 There is a relationship between stock market experience and equity returns.
1-3 There is a relationship between source of information and equity returns.
1-4 There is a relationship between educational qualification and equity returns.
1-5 There is a relationship between risk capacity and equity returns.

Methodology

The study was conducted by using a non-probability sampling technique i.e. Snowball sampling. The data has been collected from 125 respondents by using google form.

Statistical tests

For testing the hypothesis, multinomial logistic regression or multinomial logit regression is used. Such statistical test is selected on the basis of the nature of the variables. In this study there is one dependent variable and five predictor variables with the following logistic regression equation or model.

Stock returns = Age + Qualification + Information source + Risk capacity + Experience

This regression model is multinomial logistic regression model as the dependent variable is of non-metric (nominal) in nature as well as it has more than two responses or categories (i.e. multi classes) and independent or predictor variables include the combination of metric and non-metric variables (nominal and interval) (Norris, Qureshi, Howitt, & Cramer, 2013). The dependent variable (stock returns) is having four categories that are near to expectations, full to expectations, greater than expectations and lastly, less than expectations. And in the independent variables, age and experience are interval variables. Whereas, qualification, information source and risk capacity are the variables that are nominal in nature.

ANALYSIS

Table I: Correlations

Control Variables			Age	Qualification	Information source	Risk capacity	Experience
-none-[a]	Age	Correlation	1.000	-.141	-.003	.025	.204
		Significance (2-tailed)	.	.155	.973	.799	.039
		Df	0	123	123	123	123
	Qualification	Correlation	-.141	1.000	.262	.103	-.186
		Significance (2-tailed)	.155	.	.007	.301	.060
		Df	123	0	123	123	123
	Information source	Correlation	-.003	.262	1.000	.035	.097
		Significance (2-tailed)	.973	.007	.	.724	.327
		Df	123	123	0	123	123
	Risk capacity	Correlation	.025	.103	.035	1.000	.057
		Significance (2-tailed)	.799	.301	.724	.	.570
		Df	123	123	123	0	123
	Experience	orrelation	.204	-.186	.097	.057	1.000
		Significance (2-tailed)	.039	.060	.327	.570	.
		Df	123	123	123	123	0
		Significate (sig. 2-tailed)	.812	.003	.	.765	
		Df (degree of freedom)	100	100	0	100	

a. Cells contain zero-order (Pearson) correlations.

A partial correlation is run to find out the relationship of all the independent variables with each to address the multicollinearity problem. According to the correlation table, only two independent variables are found statistically related to each other (i.e. age and qualification).

- **Age**

Age is having a significant relationship with experience as its p-value which is .039 is smaller than .05 (p-value < $\alpha = 0.05$). The correlation between age and experience is 0.204 which is less than 0.7 that shows a weak relationship.

- **Qualification**

Qualification is having a significant relationship with information source as its p-value which is .007 is smaller than .05 (p-value < $\alpha = 0.05$). The correlation between qualification and information source is 0.262 which is less than 0.7 that shows a weak relationship.

Hence, the independent variables are free from the multicollinearity as the correlation among them is so weak.

Multinomial logistic regression analysis

For running the multinomial logistic regression, this is very important to have a nominal predicted or dependent variable which is "Equity Returns" in this case as it has four categories (i.e. near to expectations, full to expectations, greater than expectations and lastly, less than expectations).

Before running the multinomial logit regression, the frequency of dependent variable is obtained which gives the information about the selection of the reference group or category.

Table III: Goodness-of-Fit

	Chi-Square	Df	Sig.
Pearson	106.256	159	.788
Deviance	107.127	159	.543

According to the frequency table I, near to expectations is most frequently opted or preferred equity returns with the frequency of 60 out of 125. So, the reference category will be near to expectations which is represented by the "1" number (full to expectations is 2, Less than expectations is 3 and greater than expectations is 4).

Table III: Goodness-of-Fit

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	1.00 Near to expectations	60	48	48	48
	2.00 Full to expectations	35	28	28	76;
	3.00 Less than expectations	4	3.2	3.2	79.2
	4.00 Greater than expectations	26	20.8	20.8	100.0
	Total	**125**	**100.0**	**100.0**	

The goodness of data is the first step to evaluate the data fitness. For this, there are two measures that are goodness of fit and model fitting information. According to Table II, first row is labelled as Pearson which presents "Pearson Chi-square statistics". Larger the chi-square value, poorer the model fitness is. Moreover, the "Sig" columns gives the

statistically significant result that if the $p < 0.05$ then the model is not fit the data. So, in the table I, the p-value is .788 which is greater than the 0.05 ($p = .788 > \alpha = 0.05$) which means the model fits the data statistically well. Another row of Table II presents "Deviance Chi-square statistic" which also gives the same result as the p-value is .543 which is also greater than 0.05 ($p = .543 > \alpha = 0.05$).

Table IV: Fitting Information Model

Model	**Model Fitting Criteria**	**Likelihood Ratio Tests**		
	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	184.449			
Final	129.717	54.732	30	.004

Table III gives the information about the overall fitness of the model. The second row is labelled as "Final" which provides the information about all the coefficients, included in the model, related to their statistical significance. Likewise, this result can also be evaluated by considering the statistical significance of added variables compared to the intercept alone. As the p-value is .004 which is less than the .05 ($p = .004 < \alpha = 0.05$) shows that the whole model is statistically significant which predicts the predicted or dependent variable far better than the intercept model alone.

Moreover, the p-value of 0.004 which is smaller than 0.05 also shows that the null hypothesis is rejected which means that there is a significant relationship between the investment decisions and equity returns.

Table V: Pseudo R-Square

Cox and Snell	.712
Nagelkerke	.769
McFadden	.751

Table IV gives the measures that are similar to the R-square used in Ordinary Least-Square (OLS) linear regression that explain the proportion of variation in the dependent variable. In the multinomial logistic regression, this variation explaining measures are given in the "Pseudo R-square". According to the Nagelerke measure, 76.9% of the variation is explained by the predictors/ independent variables (age, source of information, risk capacity, qualification & stock experience) in the dependent variable (Equity returns). Though, such proportion is sound enough to explain the model but, nonetheless, this is less than 0.80 ($p <$ .80). So, such proportion can be increased by adding more number of variables in order to better explain the dependent variable.

Table VI: Likelihood Ratio Tests

	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of	Chi-Square	df	Sig.
Effect	Reduced Model			
Intercept	129.717a	.000	0	.
Age	131.286b	1.569	3	.666
Exp	137.441b	7.724	3	.032
Qual	138.560b	8.844	6	.013
IS	142.562	12.845	12	.010
RC	136.492b	6.775	6	.105

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.
a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.
b. Unexpected singularities in the Hessian matrix are encountered. This indicates that either some predictor variables should be excluded or some categories should be merged.
Exp = Experience, Qual = Qualification, IS = Information source, RC = Risk capacity

Table V gives the information related to the statistical significance of all the independent variables individually. It is seen that only three variables are statistical significant. Stock experience is having p-value of .032, Information source is having p-value of .010 and Qualification with the p-value of .013 that are smaller than the 0.05 (p-value $< \alpha = 0.05$). Whereas, the other two independent variables (Age and Risk capacity) are having p-values of .666 and .105 respectively that are greater than $\alpha = 0.05$ which presents the statistically insignificance of such variables. In addition, the likelihood ratio table is the only table which considers the overall effect of the nominal independent variables.

The table of "Parameter estimates" is also known as the coefficients of the model as it gives the parameter estimates. Each dummy variable has a coefficient for the qualification, information source and risk capacity. As the categories of a dependent variable were four so there are three sets of logit regression coefficients. The first set of coefficient is seem in the "Full to expectations" row which represents the comparison of the full to expectations category to the reference category of near to expectations. The second set of coefficient is seen in the "Less than expectations" row which, this time, represents the comparison of the less than expectations category to the reference category of near to expectations. Similarly, the third set of coefficient is seen in the "Greater than expectations" row which represents the comparison of the greater than expectations category to the reference category of near to expectations. The standard analysis or interpretation of this model is that for every single unit change in the independent or predictor variable, the m (logit of outcome) is anticipated to be changed relative to the reference category by its respective parameter estimate, given the other variables included in the model held constant.

Table VII: Parameter Estimates

Returna		B	Std. Error	Wald	df	Sig
2.00 Full to	Intercept	2.733	1.322	4.269	1	.039
expectations	Age	-.052	.116	.198	1	.656
Exp	.091	.228	5.129	1	.010	
[Qual=1.00]	3.191	1.318	.863	1	.466	
[Qual=2.00]	.449	.616	5.320	1	.015	
[Qual=3.00]	0b	.	.	0	.	
[IS=1.00]	-19.191	.000	.	1	.	
[IS=2.00]	16.748	2631.385	.000	1	.995	
[IS=3.00]	1.165	.816	2.037	1	.153	
[IS=4.00]	.072	.841	.007	1	.932	
[IS=5.00]	0b	.	.	0	.	
[RC=1.00]	1.548	1.255	1.521	1	.217	
[RC=2.00]	1.252	1.011	1.535	1	.215	
[RC=3.00]	0b	.	.	0	.	
3.00 Less than	Intercept	57.328	1283.250	.002	1	.964
expectations	Age	.703	72.541	.000	1	.992
Exp	-23.667	486.530	.002	1	.961	
[Qual=1.00]	27.828	2862.785	.000	1	.992	
[Qual=2.00]	-3.284	1935.431	.000	1	.999	
[Qual=3.00]	0b	.	.	0	.	
[IS=1.00]	27.204	2189.568	.000	1	.990	
[IS=2.00]	18.172	.000	.	1	.	
[IS=3.00]	-37.429	3897.904	.000	1	.992	
[IS=4.00]	-13.828	3851.261	.000	1	.997	
[IS=5.00]	0b	.	.	0	.	
[RC=1.00]	-75.714	6320.947	.000	1	.990	
[RC=2.00]	-7.374	2446.206	.000	1	.998	
[RC=3.00]	0b	.	.	0	.	
4.00 Greater than	Intercept	-2.153	1.235	3.038	1	.081
expectations	Age	-.344	.372	.855	1	.355
Exp	.536	.381	1.980	1	.159	
[Qual=1.00]	1.404	1.426	.969	1	.325	
[Qual=2.00]	.581	.661	.772	1	.380	
[Qual=3.00]	0b	.	.	0	.	
[IS=1.00]	-18.473	.000	.	1	.	
[IS=2.00]	1.321	5327.329	.000	1	1.000	
[IS=3.00]	1.705	.821	1.319	1	.096	
[IS=4.00]	1.259	.762	4.731	1	.038	
[IS=5.00]	0b	.	.	0	.	
[RC=1.00]	-.732	1.102	.441	1	.506	
[RC=2.00]	-1.078	.725	2.211	1	.137	
[RC=3.00]	0b	.	.	0	.	

a. The reference category is: Near to expectations.
b. This parameter is set to zero because it is redundant.
c. Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.
Exp = Experience, Qual = Qualification, IS = Information source, RC = Risk capacity

Full to expectations relative to the Near to expectations

There are only three coefficients are statistical significant at 0.05 level.

- **Intercep**

This is the estimate of multinomial logit for full to expectations relative to near to expectations when the independent variables included in the model are made at zero which is 2.733. When all the variables are kept constant, the equity returns meeting full expectations will be 2.733 times on average.

Moreover, it has the Wald statistic of 4.269 with an associated p-value of .039. With an alpha level of 0.05, the null hypothesis is rejected (p-value $< \alpha = 0.05$).

- **Experience**

This is the estimate of multinomial logit for one unit increase in experience for full to expectations relative to near to expectations, given the other variables included in the model held constant. If the experience increases by one year, the equity returns preferring full to expectations over near to expectations increases by .091 times.

Moreover, it has the Wald statistic of 5.129 with an associated p-value of .010. With an alpha level of 0.05, the null hypothesis is rejected (p-value $< \alpha = 0.05$) with the conclusion that the stock experience is found statistically significant for full to expectations relative to near to expectations. In other words, stock experience has a statistical relationship with equity returns.

- **Qualification**

This multinomial logit compares graduates with the under-graduates and post-graduates forfull to expectations relative to near to expectations, given the other variables included in the model held constant. The multinomial logit for graduates to under-graduates and post-graduates is .449 times greater for preferring full to expectations relative to near to expectations, given the other variables included in the model held constant. In the other words, graduates are more likely than the under-graduates and post-graduates to prefer full to expectations rather near to expectations.

Moreover, it has the Wald statistic of 5.320 with an associated p-value of .015. With an alpha level of 0.05, the null hypothesis is rejected (p-value $< \alpha = 0.05$) with the conclusion that the graduates are found statistically significant for full to expectations relative to near to expectations. In other words, qualification has a statistical relationship with equity returns and graduates are more likely to have equity returns full to expectations over near to expectations.

Less than expectations relative to the Near to expectations

There is none of any coefficients statistical significant at 0.05 level (i.e. p-value $> \alpha = 0.05$) which means none of the predictors variable has a statistical relationship with equity returns preferring less than expectations to the near to expectations.

Greater than expectations relative to the Near to expectations

There is only one coefficient statistically significant at 0.05 significance level.

- **Source of information**

This multinomial logit compares friends/relatives with the print media, television, internet and brokers forgreater than expectations relative to near to expectations, given the other variables included in the model held constant. The multinomial logit for friends/relatives to print media, television, internet and brokersis 1.259 times greater for preferring greater than expectations relative to near to expectations, given the other variables included in the model held constant. In the other words, the investors who get the information from friends/relativesrather than theprint media, television, internet and brokers are more likely to get equity returns greater than expectations rather near to expectations.

Moreover, it has the Wald statistic of 4.731 with an associated p-value of .038. With an alpha level of 0.05, the null hypothesis is rejected (p-value < $\alpha = 0.05$) with the conclusion that the friends/relatives are found statistically significant for greater than expectations relative to near to expectations. In other words, source of information has a statistical relationship with equity returns and the source of friends/relatives is more likely to give equity returns greater than expectations over near to expectations.

CONCLUSION AND RECOMMENDATIONS

Conclusion

After the quantitative discussion, qualification, stock market experience and source of information bring an impact on the investment related decisions making of the individuals (stock investors) and these decisions effect the equity returns to realize.

In addition, the stock investors, in Pakistan, are of different age group from 20 years till 80 years. So, it cannot be summed up to a single particular age group or category as well as it has no impact on the equity returns to make it increase or decrease. Hence, from both discussions either quantitative or qualitative, it is concluded that age and risk capacities of the individuals (stock investors) have no impact on their equity returns.

Adding to the conclusive ending, it is also been got to know that the people of Pakistan are unaware about the term or concept of Behavioral finance as they do not have any single knowledge about such concept. That is the reason; they have a very little control over their emotions or on their psychological actions.

Areas for Future Research

- There is a crucial need of qualitative research based study to identify factors that affects investors' behavior in Pakistan.
- Impact of other demographic variables like gender, income etc. on investment decisions in Pakistan should be analyzed.
- Role of women in financial decisions should also be analyzed in Pakistani culture.

Recommendations

It is recommended that:

- Behavioral finance should be included in the curriculum of business graduates.
- Investment awareness sessions should be organized for individuals / employees of small and large firms.
- SECP has taken an initiative in creating investment awareness by launching JAMA PUNJI portal as well as organizing various seminars and workshops on the same. Such types of initiatives must be taken by other financial institutions as well starting from grass root level.
- It is observed that number of working women is increasing in Pakistan. So it is recommended that investor awareness program specifically for women should be organized to cater that market as well.

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