IMPACT OF RATIONALITY AND BEHAVIOURAL FACTORS ON INVESTORS DECISION MAKING IN THE PAKISTAN STOCK EXCHANGE

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ABSTRACT

This study has explored the impact of rationality, behavioral and demographic factors on the investors decision making at Pakistan Stock Exchange (PSX). The present study has also investigated correlation between rationality and behavioral factors while making financial decision-making at stock exchanges. The study has used descriptive research design based on survey method to collect data and test the hypotheses. A structured questionnaire developed through literature review and validated through pre-testing and seeking experts' opinion, has been distributed through convenience sampling. The population framework is consisted of small individual investors making investments at the six floors of PSX. The collected data is analyzed using descriptive and inferential statistics in SPSS v23.0 in addition to structural equation modelling (SEM) through AMOS v22.0. The findings reveal that rationality (Problem identification, searching information and evaluating alternatives) and behavioral factors (overconfidence, herd behavior and anchoring) have statistically significant positive impact on the small investors' investment decision making. Correspondingly, the results of path analysis have confirmed a significant positive impact of the factors of rationality including "demand identification (β= 0.31), searching information (β=0.41) and evaluating alternatives (β=0.13)" on in investors' investment decision making at $p<0.001$. Similarly, the findings of path analysis have also exhibited a significant positive impact of behavioral factors including "overconfidence (β=0.32) herd behavior (β=0.31) and anchoring (β=0.49) on investors' investment decision making at $p<0.001$. Moreover, the results have also determined a significant negative impact of gender and a significant positive impact of education on the investors' investment decision making at $p<0.001$. The present study has also determined significant positive correlation between rationality (problem identification, searching information and evaluating

alternatives) and behavioral factors (overconfidence, herd behavior and anchoring). This is a baseline study in Pakistan to understand the rationality and behavioral factors involved in investment decision making of small investors at the floors of PSX. The findings may be helpful for the individual and institutional investors to be aware of different factors involved and develop “adaptive toolboxes” for making rational and consistent investment decisions at PSX.

Keywords: Rationality, behavioral biases, rational decision making, behavioral decision making, rational finance, traditional finance, behavioral finance, Pakistan Stock Exchange, investor’s decision-making

APPROVAL

This is to certify that this thesis conforms to acceptable standards of scholarly presentation and is fully adequate, in quality and scope, for the fulfilment of the requirements for the degree of Doctor of Business Administration

The student has been supervised by: **Professor Dr. Juhary Ali** and **Dr. Muhammad Khalid Rashid**

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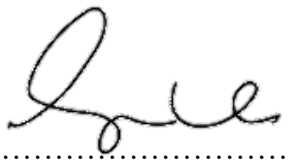

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DECLARATION

I hereby declare that the thesis submitted in fulfilment of the PhD degree is my own work and that all contributions from any other persons or sources are properly and duly cited. I further declare that the material has not been submitted either in whole or in part, for a degree at this or any other university. In making this declaration, I understand and acknowledge any breaches in this declaration constitute academic misconduct, which may result in my expulsion from the programme and/or exclusion from the award of the degree.

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Signature of Candidate: **Date**: 21 March 2023

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LIST OF ABBREVIATION

AeU	Asia e University
AMOS	Analysis of Moment Structure
ANOVA	Analysis of Variance
APT	Arbitrage Pricing Theory
BBs	Behavioral Biases
BF	Behavioral Finance
BFT	Behavioral Finance Theory
CAPM	Capital Asset Pricing Model
DGV	Demographic Variables
DVs	Dependent Variables
EMH	Efficient Market Hypothesis
HSE	Hyderabad Stock Exchange
ISE	Islamabad Stock Exchange
IVs	Independent Variables
KSE	Karachi Stock Exchange
LSE	Lahore Stock Exchange
MPT	Modern Portfolio Theory
PSE	Peshawar Stock Exchange
PSX	Pakistan Stock Exchanger
QSE	Quetta Stock Exchange
RBFs	Rationality and Behavioral Factors
RF	Rational Finance
RO	Research Objective
RQ	Research Question
SEM	Structura1 Equation Modeling
SPSS	Statistical Package for Social Sciences, IBM
TF	Traditional Finance
USA	United States of America

CHAPTER 1

INTRODUCTION

1.1 Background of the study

Stock exchange acts as a catalyst for the economic growth, poverty reduction and entrepreneur development in a country (Liu & Sinclair, 2008; Masoud, 2013). A stock market provides a controlled and regulated environment to individual as well as institutional investors to buy, sell and transact their financial instruments such as stocks, shares, equities, bonds and so forth (Zuravicky, 2004). The stock or exchange markets operate on the objective to facilitate the capital companies in gaining funds and expanding their businesses.

Correspondingly, individual investors are one of the major stakeholders that significantly contribute to generate funds for the success and growth of businesses. Individual investors make investment decisions in terms of allocating their capital for buying, selling and exchanging stocks/ shares of publicly-traded companies. These investments are made with the expectation of high return in future, long-term capital growth, financial savings, wealth protection from inflation and taxes and maximization of income (Ngoc, 2014; Zuravicky, 2004). Thus, the investors' investment decisions play an important role in the inflow and outflow of capital and defining the trends of stock market that influences the economy. Investment decision-making is a complex process due to anomaly and volatility of stock market that increase the risks associated with investments.

Taking into account, it is important to understand and investigate the determinants that can best predict and influence the investment decisions of individual investors. It may be useful for investors to understand common behaviors, from which justify their reactions for better returns (Jayanthi & Ethumathi, 2015).

Traditionally, the investors are simply assumed as rational, unbiased and unemotional in financial decision making. As they take decisions on account of gathered and evaluated essential information from market in order to select an optimal choice for gaining maximum profit. A primary objective of the investments made by rational investors is to maximize the utility or return from investments within an acceptable level of risk (Daniel & Titman, 2000; Lin, 2011b; Simon, 1979). Correspondingly, the traditional finance theory posits that being rational, investors have perfect market information, possess unlimited cognitive capabilities to analyze and evaluate unlimited knowledge in order to achieve complete rationality in financial decision making (Kumar & Goyal, 2016; Mushinada & Veluri, 2019; Simon, 1997).

Prior research supports and confirms the notion of traditional finance empirically. The researchers have found that investors act rationally and reflect upon all available information in decision-making process (Malkiel & Fama, 1970) that have yielded optimal results and wealth maximization (von Neumann & Morgenstern, 2007). Furthermore, the research asserts that individuals are not influenced by their emotions or biases (Statman, 1999) and they found systematic and logical (Robbins & Coulter, 2003) in order to give more importance to risk-return tradeoff (Robbins & Judge, 2010).

However, behavioral economists have challenged the assumption of traditional finance theory and recognized an array of psychological factors that influence financial decision-making (Camerer & Loewenstein, 2004; Tversky & Kahneman, 1974). Several research studies have documented that the investors do not follow full rationality in investment decision making due to the probability of limited cognitive capabilities, lack of information and memory errors (Kumar & Goyal, 2015). In addition to the incapability of cognitive process, excessive volatility and inefficacy of market lead to be

irrational in capital decision making at stock markets (Fama & French, 2004; Kahneman & Tversky, 1979; Shefrin, 2002; Shefrin & Statman, 1994). Resultantly, people are often failed to increase returns and update their beliefs appropriately due to deviation from the fundamental assumptions of rationality (Thaler, 1999).

There are several aspects including underlying assumptions on average market returns and behaviour of individual investors, market volatility and the most important emotional and psychological factors that the standard theories are failed to explain (Statman, 1995). Correspondingly, several empirical investigations discourage the absolute practice of traditional theory or rationality in financial decision-making (Shefrin, 2002; Shiller, 2003; Thaler, 1999). Besides, Awan and Arshad (2012) claim that traditional finance theory cannot adequately provide theoretical and practical underpinnings as it neglects the behavioral factors in financial decision making. Moreover, markets do not act exactly as specified by the theories of traditional finance as well as the investors do not show full rationality under market volatility. The researchers further indicate that behaviour of real investors diverge from rational one due to the different subjective factors including information, mood and expectations, awareness and assessment, risk tolerance, investor emotions and personal qualities (Bodie et al., 2015; Shefrin & Statman, 1985; Shiller, 2003; Shleifer, 2000). The inevitable limitations of traditional theory have caused to create a room for behavioral finance in economics.

Comparatively, behavioral finance deals with financial management in terms of how the individuals' psychological factors influence their investment decisions and how its outcomes affect the process of investing at stock market. This psychological oriented discipline explains the process of investment decisions made on the basis of emotional feelings or sentiments theoretically and experimentally (Bikas et al., 2013;

Tversky & Kahneman, 1974). Moreover, Belsky and Gilovich (2009) are in favor of behavioral finance to consider it as "behavioral economics". They advocate that behavioral finance integrates and balances two disciplines including psychology and finance to elucidate how and why individuals make investment decisions with irrational biases. Behavioral finance takes into account the role of psychology, emotions and cognitive errors in decision making and endeavors to explore how cognitive errors and emotions affect individual investors' behavior (Jain et al., 2020).

The research guided by behavioral finance theory provides numerous evidences that people are subject to biases on account of employing shortcuts in thinking, deviating from logic and reasoning, exhibiting biases in decision-making, intending to frame their decisions, exhibiting preference reversals and striving to commit to their past decisions as well as they are influenced by others' behaviors, etc. Therefore, individuals are led to unconventional behavior i.e., behavioral finance, due to following the untraditional beliefs, cognitive biases, non-standard preferences and irrational decision-making (Jain et al., 2021; Kumar & Goyal, 2016; Mushinada & Veluri, 2019; Peón & Antelo, 2021). Prior studies based on behavioural finance have identified several psychological elements involved in financial decision-making that predict investors' irrationality in investment decision-making. The research reports a variety of behaviors related to decision-making which are termed as behavioral biases. These biases influence the investors behaviors in terms of deviating from making rational or logical decisions and producing irrationality in investment decision-making (Kumar & Goyal, 2015; Tversky & Kahneman, 1974).

Previous empirical studies indicate several behavioral biases associated to investors' investment decision making in local as well as international stock markets. The study of Awan and Arshad (2012) reveals that the investors' decision-making is

influenced by the behavioral biases including overconfidence, risk aversion, representativeness, status quo and conservativeness. Similarly, Osmani (2017) have identified the impact of behavioral factors including "heuristics, risk aversion, use of financial tools and firm level corporate governance" on the decision -making of equity fund managers in Pakistan. Qadri and Shabbir (2014) have determined the key psychological variables that affect investors' decision-making at a Pakistan stock exchange. Another study focuses on measuring the effect of psychological factors on decision making of investors alongside mediating "role of financial literacy" in Pakistan. However, this study confirms that the investors are assumed to be rational due to making-decision upon the basis of available information to increase their profits (Hayat & Anwar, 2016). Besides, the study of Kengatharan and Kengatharan (2014) claims that the psychological biases including herding behavior and overconfidence significantly influence the investors' investment decision-making. Another study by Bakar and Yi (2016) has recognized that individuals do not appear to be rational as presumed in traditional finance and confirmed that behavioral biases including overconfidence, conservatism and availability biases have significant links and effects on investors' investment decision-making at the capital markets. The study Jain et al. (2020) of identified three most important biases including herding, loss aversion and overconfidence that influence the investment decision making of individual equity investors in India. There is plethora of empirical research that exhibits several types of behavioural biases among investors; however, this study focuses on four behavioral biases including overconfidence, herding, anchoring and disposition effect.

Although rational finance model has several limitations; however, its application cannot be ignored and avoided in investment decision-making. The rational finance model pivots around "Problem identification, searching for

information and evaluation of alternatives" that help in understanding and forecasting capital markets systematically. Whereas, behavioral finance model cannot explain and support rational decision-making (Jahanzeb & Saif-Ur-Rehman, 2012). Taking into account, the combined role of rationality and behavioral finance models is needed to be explored empirically in a single study alongside the incorporation of socio-cultural demographic factors. So far as the integrated role of rationality and behavioral factors is concerned, there are limited evidences that have addressed both the phenomena to determine the associations among the factors of rational and behavioral finance models.

In this regard, Kumar and Goyal (2015) have designed a study to explore links between rationality and behavioural biases of individual investors in India in addition to examine the role of demographic variables. The study asserts that the factors of rational and behavioral finance models are found closely associated and corresponding to each other in investment decision-making process while investing. The study also highlights the significant effects of demographic variables across rational and behavioral decision-making process. Similarly, the study of Lin (2012) has integrated distinct dimensions of rational and behavioral finance models and supported that rational (demand identification, evaluating alternatives) and behavioral biases (overconfidence) are correlated in decision making. This study has also identified the significant effects of investors' demographic characteristics on dimensions of both the financial models. A recent study by Mushinada and Veluri (2019) tests association between investors' rationality and behavioural biases and found a significant positive correlation between self-attribution and overconfidence and rational decision making alongside the impact of personal characteristics.

A great attention is paid in the literature to discuss the role of rational as well as behavioral biases in investors' investment decision making individually. However, a handful research studies have attempted to integrate and find interrelationships among the determinants of rational and behavioral finance models. The research highlights that behavioral biases exist alongside the rationality (Kumar & Goyal, 2016; Mushinada & Veluri, 2019; Subramaniam & Velnampy, 2017). Whereas, a limited number of research studies could not provide comprehensive and effective explanation of the phenomena involved. Thus, in-depth learning and extensive investigations are needed to be planned in order to examine the integrated role of rationality and behavioral biases in the decision-making of individual investors particularly at Pakistan stock exchange (PSX). Therefore, the present study is intended to investigate the relationships between individual investors' rationality and behavioral biases and explore the influence of demographic variables including gender, age, education, occupation, income and geographic location on the elements of rationality and behavioral factors in the context of investment decision making at Pakistan Stock Exchange (PSX).

1.2 Problem statement

The growth and acceleration of exchange market influence the progress of national economy and vice versa (Siami-Namini, 2017) as the previous research found positive and significant relationship between stock market efficiency and economic growth (Hossain & Abedin, 2017; Mumaraki & Nasieku, 2016). Whereas, individual investors play a key role in market business growth as well as for the inflow and outflow of capital through trading and making investments at stock market. Hence, the investment behavior of individual investors plays an instrumental role in determining the stock

market trend (Kumar & Goyal, 2015; Mehmet et al., 2015; Mumaraki & Nasieku, 2016).

Serval studies indicate that the investors act as rational and unemotional in financial decision making in order to achieve maximum return from their investments. They follow complete rationality through a systematic process of problem identification, searching for information and evaluation of alternatives during investment decision-making. On the other hand, investors are found irrational in investment decision making on account of incomplete information (Kumar & Goyal, 2016), market volatility and uncertainty (Fama & French, 2004; Shefrin, 2002; Shefrin & Statman, 1994; Tversky & Kahneman, 1974). Moreover, investors are subject to biases and psychological elements that influence their investment decisions (Kumar & Goyal, 2015). Thus, the research empirically confirms that there are several behavioral biases including overconfidence, risk aversion, heuristics, herding, availability biases, anchoring, disposition effect, etc. associated to investors' investment decision making at stock market (Akbar et al., 2016; Bashir, Javed, et al., 2013; Jain et al., 2020; Lin, 2012; Osmani, 2017; Peón & Antelo, 2021; Qadri & Shabbir, 2014; Tversky & Kahneman, 1974).

There is a great deal of scientific literature that has challenged the application of rationality and provoked the implications of behavioural finance model in financial decision making. However, a little research has highlighted that rationality also exists alongside the behavioral biases among individual investors (Kumar & Goyal, 2016; Lin, 2011b; Mushinada & Veluri, 2019; Subramaniam & Velnampy, 2017); however, this limited number of studies could not explain the phenomena involved comprehensively.

Furthermore, PSX is a huge securities market which is also influenced by anomalies, fluctuations and instable situations and affects investors behaviours. Correspondingly, there is scarcity of literature that have integrated theoretically two paradigms i.e., rational and behavioral finance models and applied practically for explaining investment decision-making of individual investors at PSX stock market. Therefore, to understand and provide solid evidence for the explanation of individual investors' behavior at a stock market, a comprehensive study is needed to explore how rationality and behavioral Factors impact the investors' investment decision-making of at the Pakistan Stock Exchange (PSX).

1.3 Objectives

The present study has addressed the following research objectives, research questions and hypotheses:

i. To examine the impact of rationality on investor's investment decision making at PSX.
ii. To investigate the impact of behavioral Factors on investor's decision making at PSX.
iii. To find out correlations between rationality and behavioral Factors in the context of investment decision making at PSX.
iv. To explore the impact of demographic variables (gender, age, education, income, occupation, geography) on rational decision making and how these differences stimulate behavioral biases for investor's decision making PSX.

1.4 Research questions

i. Do the rational biases have impact on the individual investor's investment decision making at PSX?

ii. Do the behavioral factors have impact on the small investor's investment decisions at PSX?

iii. Is there any correlation between rational and behavioral factors during investors' investment decision-making process at PSX?

iv. Is there any effect of demographic variables (gender, age, education, income, occupation, geography) on rational and behavioral factors during investors' decision-making at PSX?

1.5 Hypotheses

The present study has tested the following null hypotheses.

i. **H_{01}**: There is no significant impact of rationality on investor's investment decision-making at PSX.

ii. **H_{02}**: There is no significant impact of behavioral factors on investors' investment decision making at PSX.

iii. **H_{03}**: There is no correlation between rationality and behavioral factors during investors' investment decision-making process at PSX?

iv. **H_{04}**: There is no significant effect of demographic variables on investors' investment decision making at PSX.

1.6 Justifications and significance of the study

The investors are assumed to be rational while making investment decisions according to traditional finance (TF) theory going along with the expected utility theory (Subramaniam & Velnampy, 2017). Whereas, the experts of behavioral finance theory extremely make criticism on the TF by arguing that the investors tend to deviate from rationality while making investment decisions due to the influence of several behavioral biases on investment decision making. This has been studied and empirically tested over the history (Pompian, 2006). In the traditional financial theory,