THE RELATIONSHIP BETWEEN BEHAVIORAL BIASES AND FINANCIAL WELLBEING: EXPLORING CHANNELS AND CONDITIONS IN PAKISTAN

PhD Thesis

Researcher: Khalil-Ur-Rehman
REG NO.40-FMS/PHDFIN/F11

Supervisor:
Dr. Hameeda Akhtar

Co-Supervisor:
Dr. Syed Zulfiqar Ali Shah

Faculty of Management Sciences
International Islamic University,
Islamabad

THE RELATIONSHIP BETWEEN BEHAVIORAL BIASES AND FINANCIAL WELLBEING: EXPLORING CHANNELS AND CONDITIONS IN PAKISTAN

(PhD Thesis)

Khalil-Ur-Rehman

REG NO.40-FMS/PHDFIN/F11

Submitted in partial fulfillment of the requirements for the

PhD degree with the specialization in Finance

at the Faculty of Management Sciences,

International Islamic University,

Islamabad.

In the name of Allah, the most merciful and beneficent.

And whosoever disbelieves in Faith then, fruitless is his work and in the Hereafter he will be among the losers." (Soorah 5:5)

DEDICATION

I dedicate this work to my parents, wife and my supervisors, whose support enabled me to complete this research study successfully.

COPYRIGHTS

DECLARATION

I hereby declare that this thesis, neither as a whole nor as a part thereof, has been copied out from any source. It is further declared that I have prepared this thesis entirely on the basis of my personal effort made under the sincere guidance of my supervisors and colleagues. No portion of work, presented in this thesis has been submitted in support of any application for any degree or qualification of this or any other university or institute of learning.

Mr. Khalil-Ur-Rehman

PhD (Finance)

Faculty of Management Sciences

APPRECIATION AND GRATITUDE

No words of gratitude will ever be sufficient for the Allah Almighty who made me capable of learning, blessed me with the knowledge & intellect and facilitated me with the finest of the mentors all through my academic career.

Dr. Hameeda Akhtar, Assistant Professor, IIU and Dr. Zulfiqar Ali Shah, Associate Professor / Deputy Dean of Faculty of Management Sciences, IIU Islamabad enabled me to achieve this remarkable milestone of my life. I submit my deep gratitude to them, for the unconditional guidance and support granted throughout this study.

I am also thankful to Dr. Mazhar Chaudhary, Assistant Professor IIU Islamabad, Dr. Allah Baksh Khan, Assistant Professor, BZU Multan and Dr. Mehboob Iftikhar, Director (PPP), NHA Islamabad for the knowledge, motivation and encouragement extended by them throughout my PhD studies.

And finally, to my father (late), and to my mother, who brought me up and who made me aware to recognize my inner, my sincere wife, affectionate brothers and sisters for the continuous support throughout my studies.

Mr. Khalil-Ur-Rehman

(Acceptance by the Viva Voce Committee)

Title of Thesis: "The Relationship between Behavioral Biases and Financial Wellbeing: Exploring Channels and Conditions in Pakistan".

Name of Student: Mr. Khalil ur Rehman

Registration No: 40-FMS/PHDFIN/F11

Accepted by the Faculty of Management Sciences INTERNATIONAL ISLAMIC UNIVERSITY ISLAMABAD, in partial fulfillment of the requirements for the Doctor of Philosophy Degree in Management Sciences with specialization in Finance.

Viva Voce Committee

Dr. Hameeda Akhtar
(Supervisor)

Dr. Syed Zulfiqar Ali Shah
(Co-Supervisor)

Prof. Dr. Attiya Yasmin
(External Examiner)

Dr. Habib Ahmed
(External Examiner)

Dr. Sumayya Chughtai
(Internal Examiner)

Chairman Higher Studies & Research

Dean, FMS

Date: 9th August, 2019

FORWARDING SHEET

The thesis entitled "The Relationship Between Behavioral Biases and Financial Wellbeing: Exploring Channels and Conditions in Pakistan" submitted by Mr. Khalil-Ur-Rehman as partial fulfillment of PhD degree in Management Sciences with specialization in Finance, has completed under my guidance and supervision. The changes advised by the external and the internal examiners hava also been incorporated. I am satisfied with the quality of student's research work and allow her to submit this thesis for further process as per IIU rules & regulations.

Date: 06-09-2019

Signature:

Name : Dr. Hameeda Akhtar

Abstract:

This study is aimed to investigate the moderating role of financial literacy and mediating role of financial behaviors on the relationship between behavioral biases and financial wellbeing by collecting evidence from Pakistan. The study is carried out on the presumption that human beings are not rational agents and they make decisions based on heuristics and mental shortcuts. It was believed that such heuristics, which are referred to as behavioral biases, could have implications towards the financial wellbeing of the individuals. A gap in existing literature was felt regarding the interrelationships of behavioral biases, financial behaviors, financial literacy and financial wellbeing. This study has filled this gap by following an explanatory sequential design through which a quantitative analysis followed by a qualitative analysis is carried out. During the quantitative phase, data collected through an online survey questionnaire (n=344) was analyzed through descriptive statistics, correlation analysis, multicollinearity diagnostics and structural equation modelling (SEM) etc. Whereas, in qualitative phase, the findings of quantitative analysis were interpreted in the light of feedback of financial management experts, collected through in-depth interviews (n=16). From these results, it is found that framing effect have significant implications towards the financial wellbeing of the individuals. Moreover, higher income level increases financial wellbeing; having a big family decreases financial wellbeing. Moreover, the way the information is framed significantly affect the financial behaviors. It is less likely that individuals having exponential growth bias exercise negative investment behaviors. Mental budgeting results in healthy financial behaviors. However, the negative impact of mental budgeting cannot be ignored as the human beings have restricted ability to understand and absorb the information. The study also found that people behave differently towards investments, depending upon whether they do job or business. The level of education affects the investment behaviors. There exists a relationship between investment behaviors and financial wellbeing. People exercising positive investment behaviors could have better financial wellbeing and vice versa. Therefore, investment behaviors play a mediating role between framing effect, exponential growth bias and mental budgeting and financial wellbeing. Moreover, a moderating role of actual financial literacy between exponential growth bias and financial wellbeing is also found, however, it needs further investigation. Recommendations are made based on the findings of both quantitative and qualitative analysis; limitations of the study and future research directions are also discussed.

Keywords: *Behavioral Biases, Financial Literacy, Financial Behaviors, Financial Wellbeing*

JEL Classifications: G40, G41

Contents

Chapter 1 : Introduction 1
1.1. Background of the Study: 1
1.2. Research Gap: 3
1.3. Research Problem: 5
1.4. Research Questions: 7
1.5. Aim of the Study: 8
1.6. Objectives of the Study: 8
1.7. Rationale of the Study: 9
1.8. Significance of the Study: 10
1.9. Theoretical Support: 11
1.9.1. Bounded Rationality: 11
1.10. Contribution of the Study: 13
Chapter 2 : A Review of Existing Literature 16
2.1. Overview - Behavioral Finance: 16
2.1.1. Bounded Rationality: 18
2.1.2. Cognitive Factors: 19
2.1.3. Emotions and Detecting Patterns: 20
2.1.4. Prospect Theory: 21
2.1.5. Framing Effect: 23
2.1.6. Overconfidence: 23
2.1.7. Exponential Growth Bias: 25
2.1.8. Mental Accounting and Mental Budgeting: 27
2.2. Overview - Financial Literacy: 31
2.2.1. Household Finance: 33
2.2.2. Defining Financial Literacy: 35
2.2.3. Financial Literacy and Gender: 39
2.2.4. Financial Literacy and Age: 40
2.2.5. The Life-Cycle Model of Consumption: 42
2.2.6. Financial literacy Themes: 44
2.2.6.1. Knowledge about Inflation: 46
2.2.6.2. Knowledge about Risk and Risk Diversification: 46
2.2.6.3. Knowledge about Consumer Credit: 47
2.2.7. Actual and Perceived Financial Literacy: 48

2.2.8. Do Financially Literate Make Rational Decisions? 49
2.3. Existence of Market Inefficiency and Market Participants' Irrationality: 49
2.4. Defining Financial Wellbeing: 51
2.5. Developing Theoretical Framework and Hypothesis of the Study: 54
2.5.1. Behavioral Biases and Financial Wellbeing: 56
2.5.2. Behavioral Biases and Financial Behavior: 57
2.5.3. Financial Behaviors and Financial Wellbeing: 58
2.5.4. Mediating Role of Financial Behaviors in the Relationship of Behavioral Biases and Financial Wellbeing: 60
2.5.5. Moderating Role of Financial Literacy in the Relationship of Behavioral Biases and Financial Wellbeing: 60
2.6. Theoretical Framework: 62
Chapter 3 : Research Methodology 63
3.1. Type of Study: 63
3.2. Steps involved in a Research: 63
3.3. Philosophy of the Study: 64
3.4. Research Methods: 64
3.5. Quantitative Phase: 67
3.5.1. Research Strategy: 67
3.5.2. Data Collection: 67
3.5.3. Sampling Technique and Sample: 67
3.5.4. Research Instrument: 67
3.5.5. Variables: 69
3.5.5.1. Independent Variables - Behavioral Biases: 69
Framing Effect: 69
Overconfidence: 71
Exponential Growth Bias: 72
Mental Budgeting: 74
3.5.5.2. Dependent Variable – Financial Wellbeing: 74
3.5.5.3. Mediating Variable - Financial Behaviors: 76
Credit Card Behaviors: 76
Investment Behaviors: 77
Loan Behaviors: 78
3.5.5.4. Moderating Variables – Financial Literacy: 79
Actual Financial Literacy: 79

Understanding of Inflation: 79
Knowledge about Risk and Risk Diversification: 79
Knowledge about Consumer Credit: 80
Time Value of Money: 80
Perceived Financial Knowledge: 81
3.5.6. Validity and Reliability: 81
3.5.7. Pilot Testing: 81
3.5.8. Data Analysis: 82
3.6. Qualitative Phase: 84
3.6.1. Semi Structured In-depth Interviews: 85
3.6.2. Participants: 86
3.6.3. Sample: 87
3.6.4. Procedure: 87
3.6.5. Material: 88
3.6.5.1. Opening Remarks: 88
3.6.5.2. Background: 88
3.6.5.3. Thoughts about the Relationships of Behavioral Biases and Financial Wellbeing: 88
3.6.5.4. Thoughts about the Relationships of Behavioral Biases and Financial Behaviors: 89
3.6.5.5. Thoughts about Financial Behaviors and Financial Wellbeing: 89
3.6.5.6. Thoughts about interrelationships of Behavioral Biases, Financial Behaviors and Financial Wellbeing: 89
3.6.5.7. Thoughts about interrelationships of Financial Literacy, Behavioral Biases and Financial Wellbeing: 89
3.6.5.8. Other Issues and Concluding Remarks: 90
3.6.6. Data Analysis: 90
3.7. Ethical Considerations: 90
Chapter 4 : Results of Quantitative Phase 91
4.1. Quantitative Analysis: 91
4.1.1. Descriptive Statistics: 91
4.1.1.1. Dependent Variable: Financial Wellbeing: 91
4.1.1.2. Independent Variables: Behavioral Biases: 92
4.1.1.3. Mediating Variables: Financial Behaviors: 94
4.1.1.4. Moderating Variables: Financial literacy: 96
4.1.1.5. Control Variables: Demographics and others: 98

4.1.2. Reliability Statistics: 101
4.1.3. Correlation Analysis: 102
4.1.4. Multicollinearity Diagnostics: 108
4.1.5. Hypothesis Testing: 109
4.1.5.1. Model-1: Behavioral biases and Financial Wellbeing: 110
4.1.5.2. Model-2: Behavioral biases and Financial Behaviors: 113
4.1.5.3. Model-3: Financial Behaviors and Financial Wellbeing: 122
4.1.5.4. Model-4: Financial Behaviors - A Mediator between Behavioral Biases and Financial Wellbeing: 125
4.1.5.5. Model- 5: Financial Literacy – A Moderator between Behavioral Biases and Financial Wellbeing: 138
4.1.6. Key Findings Based on Quantitative Data Analysis: 145
Chapter 5 : Results of Qualitative Phase and Integration of Quant + Qual Results 148
5.1. Qualitative Analysis: 148
5.1.1. Attribute Analysis of Interviewees: 148
5.1.2. Thematic Analysis: 152
5.1.2.1. Framing Effect and Financial Wellbeing: 152
5.1.2.2. Monthly Income and Financial Wellbeing: 156
5.1.2.3. Dependent Children and Financial Wellbeing: 158
5.1.2.4. Framing Effect and Investment Behaviors: 160
5.1.2.5. Exponential Growth Bias and Investment Behaviors: 162
5.1.2.6. Mental Budgeting and Investment Behaviors: 164
5.1.2.7. Profession and Investment Behaviors: 167
5.1.2.8. Level of Education and Investment Behaviors: 170
5.1.2.9. Investment Behaviors and Financial Wellbeing: 173
5.1.2.10. Mediating role of investment behaviors between framing effect and Financial Wellbeing: 175
5.1.2.11. Mediating role of investment behaviors between Exponential Growth Bias and Financial Wellbeing: 175
5.1.2.12. Mediating role of investment behaviors between Mental Budgeting and Financial Wellbeing: 176
5.1.2.13. Moderating Role of Financial Literacy between Exponential Growth Bias and Financial Wellbeing: 176
5.1.2.14. High Financial Literacy can weaken the positive relationship of Exponential Growth and Financial Wellbeing: 178

5.1.2.15. Low Financial Literacy can strengthen the positive relationship of Exponential Growth and Financial Wellbeing: 181

5.2. Integration of Findings of Quantitative Analysis and Qualitative Analysis: 184

Chapter 6 : Discussion on Results and Conclusion 198

6.1. Framing Effect and Financial Wellbeing: 198

6.2. Monthly Income and Financial Wellbeing: 199

6.3. Dependent Children and Financial Wellbeing: 200

6.4. Framing Effect and Investment Behaviors: 201

6.5. Exponential Growth Bias and Investment Behaviors: 202

6.6. Mental Budgeting and Investment Behaviors: 202

6.7. Profession and Investment Behaviors: 203

6.8. Level of Education and Investment Behaviors: 204

6.9. Investment Behaviors and Financial Wellbeing: 204

6.10. Mediating Role of Investment Behaviors between Behavioral Biases and Financial Wellbeing: 205

6.11. Moderating Role of Financial Literacy between Exponential Growth Bias and Financial Wellbeing: 206

6.12. Conclusion: 207

6.13. Recommendations: 213

6.14. Limitations and Future Research Directions: 214

References 216

Appendix-A: Invitation for Interview through Email 229

Appendix-B: Invitation for Interview 230

Appendix-C: Consent Form for Interview 231

Appendix-D: Interview Layout 233

Appendix-E: Interview Transcript 244

Appendix-F: NVivo Codebook 248

Appendix-G: Future Research Direction 254

Appendix-H: Future Research Direction 255

List of Figures

Figure 2.1: A Hypothetical Function in Prospect Theory by Kahneman & Tversky (1979) 21
Figure 2.2: A Hypothetical Weighting Function in Prospect Theory by Kahneman & Tversky (1979) 22
Figure 2.3: The Nature of Financial Literacy (Finke & Huston, 2014) 32
Figure 2.4: Concept of Financial Literacy (Huston, 2010) 38
Figure 2.5: Conceptual model of Young Adults' Financial Capability (Serido, Shim, & Tang, 2013) 39
Figure 2.6: Financial Literacy by Age (Source: 2004 Health and Retirement Study of USA) – Adopted from (Lusardi, 2015a) 41
Figure 2.7: Financial Literacy and Age (Derived from the findings of (Bucher-Koenen & Lusardi, 2011) 42
Figure 2.8: Theoretical Framework of the Study 62
Figure 3.1: Mixed Methods Sequential Explanatory Research Design 66
Figure 4.1: Financial Wellbeing Score Histogram 92
Figure 4.2: Mental Budgeting Score Histogram 93
Figure 4.3: Credit Card Score Histogram 95
Figure 4.4: Investment Score Histogram 95
Figure 4.5: Loan Score Histogram 96
Figure 4.6: Financial Literacy Subjective Histogram 97
Figure 4.7: Financial Literacy Objective Histogram 98
Figure 4.8: Model-1: Behavioral biases and Financial Wellbeing (BB → FWB) 111
Figure 4.9: Model 2-1 Behavioral Biases and Credit Card Behaviors (BB → CC_Score) 114
Figure 4.10: Model 2-2 Behavioral Biases and Investment Behaviors (BB → Inv_Score) 117
Figure 4.11: Model 2-3 Behavioral Biases and Loan Behaviors (BB → Loan_Score) 120
Figure 4.12: Model-3: Financial Behaviors and Financial Wellbeing (FB → FWB) . 123
Figure 4.13: Model 4-1 Credit Card Behaviors as Mediator (BB → CC_Score → FWB) 126
Figure 4.14: Model 4-2 Investment Behaviors as Mediator (BB → Inv_Score → FWB) 129
Figure 4.15: Model 4-3 Loan Behaviors as Mediators (BB → Loan_Score → FWB) 136
Figure 4.16: FLO as moderator (EG → FWB – FLO Moderator) 143
Figure 4.17: Interaction Plot 145
Figure 5.1: Participant's Gender 149
Figure 5.2: participant's Education 150
Figure 5.3: Teaching / Non-Teaching Experience 150
Figure 5.4: Years of Experience 151
Figure 5.5: Area of Expertise 152
Figure 5.6: Framing Effect and Financial Wellbeing 153
Figure 5.7: Income Level and Financial Wellbeing 157
Figure 5.8: Number of Dependent Children and Financial Wellbeing 159
Figure 5.9: Framing Effect and Investment Behaviors 161
Figure 5.10: Exponential Growth Bias and Investment Behaviors 163

Figure 5.11: Mental Budgeting and Investment Behaviors 165
Figure 5.12: Profession and Investment Behaviors 167
Figure 5.13: Level of Education and Investment Behaviors 171
Figure 5.14: Investment Behaviors and Financial Wellbeing 174
Figure 5.15: Financial literacy Moderates the Relationship of Exponential Growth Bias and Financial Wellbeing 177
Figure 5.16: High Financial Literacy can weaken the positive relationship of Exponential Growth and Financial Wellbeing 179
Figure 5.17: Low Financial Literacy can strengthen the positive relationship of Exponential Growth and Financial Wellbeing 182

List of Tables

Table 2.1: Summary of Research Paper Reviewed for Behavioral Finance and its sub-topics 31
Table 2.2: Summary of Research Papers Reviewed for Financial Literacy and Financials Wellbeing 54
Table 3.1: Summary of Responses 69
Table 4.1: Descriptive Statistics of Dependent Variable 91
Table 4.2: Descriptive Statistics of Independent Variables 93
Table 4.3: Descriptive Statistics of Mediating Variables 94
Table 4.4: Descriptive Statistics of Moderating Variables 96
Table 4.5: Descriptive statistics of Demographic Variables 101
Table 4.6: Reliability Statistics 102
Table 4.7: Correlation Analysis 107
Table 4.8: Multicollinearity Diagnostics 109
Table 4.9: Overall Goodness of Fit Test Results 111
Table 4.10: Model-1: Behavioral biases and Financial Wellbeing (BB → FWB) 112
Table 4.11: Overall Goodness of Fit Test Results 115
Table 4.12: Model 2-1 Behavioral Biases and Credit Card Behaviors (BB → CC_Score) 116
Table 4.13: Overall Goodness of Fit Test Results 118
Table 4.14: Model 2-2 Behavioral Biases and Investment Behaviors (BB → Inv_Score) 119
Table 4.15: Overall Goodness of Fit Test Results 120
Table 4.16: Model 2-3 Behavioral Biases and Loan Behaviors (BB → Loan_Score) 122
Table 4.17: Overall Goodness of Fit Test Results 123
Table 4.18: Model-3: Financial Behaviors and Financial Wellbeing (FB → FWB) 125
Table 4.19: Overall Goodness of Fit Test Results 126
Table 4.20: Model 4-1 Credit Card Behaviors as Mediator (BB → CC_Score → FWB) 128
Table 4.21: Overall Goodness of Fit Test Results 129
Table 4.22: Model 4-2 Investment Behaviors as Mediator (BB → Inv_Score → FWB) 131
Table 4.23: Direct Affects (BB → Inv_Score → FWB) 132
Table 4.24: Indirect Affects (BB → Inv_Score → FWB) 133
Table 4.25: Total Affects (BB → Inv_Score → FWB) 135
Table 4.26: Overall Goodness of Fit Test Results 136
Table 4.27: Model 4-3 Loan Behaviors as Mediators (BB → Loan_Score → FWB) 138
Table 4.28: Financial Literacy – A Moderator between Behavioral Biases and Financial Wellbeing (BB → FWB – FLO & FLS Moderators) 140
Table 4.29: Variance Inflation Factor 141
Table 4.30: FLO as moderator (EG → FWB – FLO Moderator) 144
Table 5.1: Summarized background of the Interviewees 149
Table 5.2: Integration of Findings of Quantitative and Qualitative Phases and Overall Findings 197

Chapter 1 : Introduction

1.1. Background of the Study:

Neoclassical finance assumed that individuals are utility maximizers with rational expectations (Neumann & Morgenstern, 1944). The idea of human beings as rational agents was employed by Markowitz (1952) in portfolio theory, where portfolio selection decisions taken by the rational agents were based on two parameters consisting of risk and reward along with diversification strategy to optimize the portfolios. Efficient market hypothesis proposed by Fama (1970) was also valid under the assumption of rational decision making i.e. the current price of a security "fully reflects" all available information. However, these assumptions and theories are questioned by various psychologists such as Tversky & Kahneman (1971), Tversky & Kahneman (1974), DeBondt & Thaler (1985), Thaler (1985), Mehra & Prescot (1985), Kahneman & Tversky (1979), Thaler (1990), Benartzi & Thaler (1995), Chan, et al. (1996), Camerer & Lovallo (1999), Jagadeesh & Titman (1993), Rabin (1998), Thaler (1999), Shefrin (2000), Barber & Odean (2001), Shiller (2003), Glaser & Weber (2007), Bernéus, et al. (2008), Grinblatt & Keloharju (2009), Almenberg & Gerdes (2012) and Statman (2014). For instance, Mehra & Prescot (1985) highlighted various market imperfections and called it equity premium puzzle i.e. returns on stocks are considerably higher than returns on government owned bonds over the past century. This led to a discussion that changed the idea of an agent being rational in its behavior to an idea where he / she is expected to exhibit irrational, bounded rationale and heuristics-based behavior in making financial decisions.

Kahneman & Tversky (1979), in their seminal work rigorously challenged the idea of human being as rational agents in making financial decisions. They proposed “Prospect Theory” as an alternative model to expected utility theory of Neumann & Morgenstern (1944), in which they explained how the human beings make decisions under risk. People are considered as risk-averse (Kahneman & Tversky, 1979). They become risk averse in case of gains and risk seekers in case of losses. The phenomenon called as “reflection affect”, where loss aversion is considered as a phenomenon which explains that losses are more painful than pleasure of gains of same magnitude.

The deviations from the optimal choice has led to the birth of a new field known as “Behavioral Finance”, which studies biases in investor’s judgment and their tendency to take heuristic choices and to remain frame dependent (Otuteye & Siddiquee, 2014; Howard, 2012; Slovic, 2001). The emergence of behavioral finance was the clear manifestation of this contradictory belief that individuals are not rational when making investment decisions as they make decisions based on heuristics (Kahneman & Tversky, 1979). According to Statman (2014), behavioral finance has substituted the rational people of standard finance to normal people. It has given the opportunity to find out the behavior of managers and investors in both direct and indirect ways. It has employed questionnaires, field surveys and experiments to explore human wants, mental errors, preferences and behavior involved in financial decision making. Thus, Sewel (2010) defined behavioral finance as:

“The study of the influence of psychology on the behavior of financial practitioners and the subsequent effect on markets”.

Here the question arises that how human beings can avoid irrational decisions? How emotions, heuristics and cognitions which affects their financial decisions negatively, could be avoided? Is there a need to bring more awareness regarding financial affairs of the individuals to improve their financial wellbeing? Is there a need to raise the level of financial literacy among the masses, who are involved in day to day financial decisions? Is there a need to make the individuals understand about the working mechanism of financial markets? Center for Experimental Research in Management and Economics (CERME) at Ca'Foscari University of Venice claims that tendency to behave in an irrational and heuristics based way could be amplified by a generalized financial illiteracy due to the reason that it does not allow the individuals to pursue their financial welfare consciously (CERME - Ca'Foscari University of Venice, 2016). This study is motivated to respond to the above-mentioned questions through extensive research to be carried out in Pakistani settings. The following section identified the gap in the existing literature regarding these various phenomena.

1.2. Research Gap:

To gain insights regarding the topic being researched, the researchers have reviewed the literature from the perspective of behavioral finance, financial literacy, financial behaviors and financial wellbeing. During review of literature, it is found that financial wellbeing could be affected by behavioral biases and financial behaviors of the individuals. It is also found that financial literacy can moderate the relationship of behavioral biases and financial wellbeing. There exists a bulk amount of literature regarding these interrelationships, however it is challenging to interpret its implications. For instance, in many studies, higher

level of financial literacy i.e. having better understanding of financial concepts such as inflation, time value of money or interest compounding is correlated with better financial decisions (Meier & Sprenger, 2008; Hung, Parker, & Yoong, 2009; Lusardi & Mitchell, 2006). There are studies in which it is found that having financial education could not necessarily result in improved financial knowledge (Fernandes, Lynch, & Netemeyer, 2014; Mandell & Klein, 2009). While financial education programs initiated for the sake of improved financial literacy have explained only 0.1% of the variance in financial behaviors (Fernandes, Lynch, & Netemeyer, 2014), however, number of years attended for college education are correlated with improved financial knowledge (Yates & Ward, 2011). Contrary to these findings, Drexler, Fischer, & Schoar (2014) suggested that financial behaviors can be improved through financial training based on rules of thumb which are called as heuristics by Tversky & Kahneman (1974). Research regarding financial knowledge, financial education and financial behavior is mostly published in the field of household finance.

However, there is least research regarding the interrelationships of behavioral biases identified by the virtue of behavioral finance and financial behaviors and financial literacy. The relationships between behavioral biases, financial behaviors, financial literacy and the ultimate outcome i.e. financial wellbeing are found as not well researched and well explained. This study has researched these interrelationships to fill this gap in the existing body of knowledge. Secondly, there exist contradictory measurement tools and definitions of financial literacy, financial behaviors and financial wellbeing.

The preliminary review of literature has not found any study which can endorse the moderating role of financial literacy and mediating role of financial behaviors on the relationship between behavioral biases and financial wellbeing. The moderating role of financial literacy on the relationship between access to finance and firm growth has been studied recently by Adomako, et al. (2016). However, a gap was perceived in research regarding the moderating role of financial literacy which can either strengthen or weaken the impact of behavioral biases on financial wellbeing. Moreover, there exist a lack of research regarding mediating role of financial behaviors on the relationship of behavioral biases and financial wellbeing. This study has filled this gap by executing an in-depth study of the interrelationships of these variables. Hypothesis were developed to find out the relationships of these variables of interest and quantitative analysis followed by a qualitative analysis is carried out on the data collected through an online survey and interviews.

1.3. Research Problem:

It is normally believed that people don't take optimal financial decisions with regards to investment or savings or they keep themselves away from formal financial sector. This might be due to lack of knowledge of financial products and services in a more complex financial market which exist today (Garcia, 2013). Governments in developed world assumed that financial behavior and subsequent financial decision making of the individuals can be improved by providing financial education and enhancing financial literacy to improve the overall financial wellbeing of the individuals. So, they introduced various public programs for financial education on the assumption that people can make more

informed and better financial decisions if they are aware of the financial knowledge. Lack of planning for post-retirement time, little knowledge about pension and governing rules on social security benefits are found in individuals who are near their retirement. In addition, individuals involved in financial decision making showed lack of knowledge about basic concepts of finance such as how to work out the compound interest, what is the difference in nominal and real values and how to diversify the risks (Lusardi, 2008). Financial illiteracy among the masses specifically in various demographic groups such as women (Lusardi & Mitchell, 2008) and in low income individuals (Lyons, Chang, & Scherpf, 2006) is also a matter of concern. Due to financial illiteracy, individuals do not engage themselves in planning their financial decisions. They also lack the basics of financial knowledge and numeracy as argued by Bernheim (1998). In addition, as highlighted by Garcia (2013); research in the field of behavioral finance found that people have limited capacity to absorb financial information and they pay little attention to such financial information.

It is also imperative that financial education and financial literacy enhance the financial knowledge, but it cannot consider education only; as the factor, which affect the financial decision making (Hite, Slocombe, Railsback, & Miller, 2011). Garcia (2013) found that there are various psychological factors as identified by researchers which can affect the acquisition of information by the individuals and subsequently their financial decision making. Moreover, human beings use shortcuts due to limited ability to absorb all available information as claimed by Simon (1957). These shortcuts are named as biases and heuristics by Tversky & Kahneman (1974). It can be argued that financial literacy may affect the

relationship of behavioral biases and financial decision making in a moderating way. It can be perceived that although human beings make their financial decisions based on irrational choices but having a better level of financial literacy can bring more informed decision making which could be more near to rational choices. Human beings might be vulnerable to biases and cognitive errors while making financial decisions, but existence of financial literacy and positive financial behaviors may safeguard them by avoiding those biases and cognitive errors. Therefore, the research problem of this study is to identify such weaknesses and gaps in traditional finance with the help of behavioral finance by assuming a moderating role of financial literacy and mediating role of financial behaviors.

1.4. Research Questions:

Based upon preliminary literature review and identified research gap, following broader research questions are required to be answered by employing most suitable research tools and techniques. These research questions are:

1. Do behavioral biases impact the financial wellbeing of the individuals?
2. Do demographic attributes impact the financial wellbeing of the individuals?
3. Do behavioral biases impact the financial behaviors of the individuals?
4. Do financial behaviors impact the financial wellbeing of the individuals?
5. Do financial behaviors play any mediating role between the relationship of behavioral biases and financial wellbeing?
6. Does financial literacy play any significant role to moderate the effect of behavioral biases on financial wellbeing?

1.5. Aim of the Study:

The research gap as identified above requires researching the moderating role of financial literacy and mediating role of financial behaviors in making rational financial decisions which could enhance the overall financial wellbeing of the individuals. Therefore, this thesis is aimed to investigate the moderating role of financial literacy and mediating role of financial behaviors on the relationship between behavioral biases and financial wellbeing by collecting evidence from Pakistan.

1.6. Objectives of the Study:

To fulfill the aim of the study and to enable this study to respond to the research questions as highlighted above, following objectives of the study are planned to achieve:

1. To investigate the impact of behavioral biases on financial wellbeing.
2. To investigate the impact of behavioral biases on financial behaviors.
3. To investigate the impact of financial behaviors on financial wellbeing.
4. To investigate the mediating role of financial behaviors on the relationship of behavioral biases and financial wellbeing.
5. To investigate the moderating role of financial literacy on the relationship of behavioral biases and financial wellbeing.
6. To find out the significance of demographic factors in explaining overall financial wellbeing.

1.7. Rationale of the Study:

The research issue is to investigate the moderating role of financial literacy and mediating role of financial behaviors on the impact of behavioral biases on financial wellbeing. This study enabled the researcher to ascertain whether the presence of financial literacy and positive financial behaviors can strengthen the financial wellbeing of the individual. Moreover, taking an optimal financial decision is a choice that every individual would wish to take in its lifetime to save for the retirement and to plan expenditures in such a way to meet their individual goals. That is why, it is important for individuals to understand the financial implication of their decision-making due to which it urges the need for financial literacy.

Recently, the increase in life expectancy, inflation, changes in pension plans, emergence of new financial products, which are both complex in nature and difficult to understand, new opportunities and various other factors has led to a need for individuals to have a minimum level of financial literacy and to develop positive financial behaviors. Although, it has been proposed that financial decision making has been improved by financial literacy and by having positive financial behaviors, but the validity of this claim is something that should be tested by this research.

Therefore, this research has enabled the researcher to ascertain the importance of financial education and literacy for individuals in making optimal financial decision by avoiding behavioral biases and developing positive financial behaviors, to increase their financial wellbeing. Furthermore, it shed light on the importance of a good financial decision-making that led to the

achievement of various financial goals of individuals and its link with financial literacy.

1.8. Significance of the Study:

Every individual wish to be financially stable for which they strive. Financial decision-making is the process that requires an individual to evaluate and decide on an investment plan, which helps him/her to increase his financial wealth for retirement and other purposes. However, financial literacy is the main issue that shed light on the ability of those individuals to take an optimal financial decision (Behrman, Mitchell, Soo, & Bravo, 2012). That is why, it is imperative to consider the impact of financial education and literacy on the financial decision making of the individuals.

Keeping in view the bounded rationale behavior, it can be proposed that lack of education has led to various problems comprising of inability to save enough for retirement, retaining costly mortgages instead of refinancing them, too much investment in risky assets, failure to take advantage of tax saving opportunities and having no knowledge about financial sector opportunities that increases financial wealth (Garcia, 2013).

Research to date does not demonstrate a causal chain from financial education to higher financial literacy to better financial behavior to improved financial outcomes, yet the search for effective financial education continues (Willis, 2011). Therefore, this study is an effort to seek the rational decision making in individuals who are considered as better financially literate. This is a contribution to the body of knowledge in the local settings, as financial literacy

in Pakistan is one of the major issues due to low education, lack of awareness and least government support. As per South Asian Federation of Exchanges (2009), financial illiteracy is widespread among the women, the elderly, and those with low education in Pakistan. This is a food for thought for policy makers of Pakistan, where only 14% of Pakistani population uses a financial product or service from any financial institution. Where, only 50.5% of Pakistani population has access to finance and around 50% of Pakistanis have either no access or does not engage in either the formal or the informal financial institutions. Out of the 50%, 19% are those who voluntarily excluded themselves due to lack of financial education and literacy. This thesis has provided guidelines for developing a strategy by the policy makers for better financial education system which would also take care of behavioral aspects of the individuals.

1.9. Theoretical Support:

The study is executed based on the following theory:

1.9.1. Bounded Rationality:

Theory of bounded rationality proposed by Simon (1957; 1999; 2000) provides theoretical support to this study. This theory propounds on the restricted ability of human beings to adjust themselves in complex learning environment due to which they find difficulty in taking optimal financial decisions. Since individuals have limited information / mental capacity to process and evaluate information and time, so, while opting choice from given alternatives, they just satisfice instead of attaining maximum or optimum. For example, an investor may accept a satisfactory investment alternative, rather than making the optimal choice.

Existing literature supports the argument that the information available for solving a problem or making a decision could be excessive and complicated and individuals could not process it completely (Malhotra, Jain, & Lagakos, 1982; Rubinstein, 1998; Fasolo, McClelland, & Todd, 2007). While facing such circumstances, individuals try to use “shortcuts” as argued by Simon (1957). These shortcuts could be advantageous in some cases but could also result in significant and systematic errors. Tversky & Kahneman (1974) and (Kahneman & Tversky, 1984) referred these shortcuts as biases and heuristics. The researchers considered that the framing effect (Kahneman & Tversky, 1984), overconfidence (Allgood & Walstad, 2016), exponential growth (Almenberg & Gerdes, 2012) and mental accounting (Antonides, Groot, & Raaij, 2011) are the biases which could affect the financial wellbeing of the individuals due to their restricted ability to process the available information within limited time.

The researchers further considered that the behavioral biases such as overconfidence, exponential growth bias, mental accounting / budgeting and the way the financial information is framed could affect the financial behaviors which in turn affect the financial wellbeing of the individuals. It is also argued that financial literacy could enhance the restricted ability of the individuals to process the financial information without any biasness, which could have a significant impact on the financial wellbeing of the individuals. Financially literate individuals could find it more comfortable to adjust in complex learning environment. They could avoid shortcuts and process the information in a systematic way which could contribute towards their financial wellbeing.

Studying the above behavioral phenomenon in the context of Bounded Rationality Theory of Simon (1957; 1999; 2000) has enabled the researcher to better understand the financial behaviors, which could have implications towards the financial wellbeing of the individuals, keeping in view the existence of biases in their behaviors and their financial literacy level.

1.10. Contribution of the Study:

This research has the following contributions to the body of knowledge and policy making:

i. With regards to **academic contribution**, the research has contributed to the theory of bounded rationality theory. Bounded rationality theory claims that individuals only satisfice, instead of attaining maximum or optimum, while opting a choice from the given alternatives, due to their restricted ability to process the available information. The current study has contributed to the bounded rationality theory in a way that it claims that the restricted ability of the individuals can be enhanced through financial literacy. The financially literate individuals would have extended ability to process the available information in a rationale way by avoiding biases such as framing, overconfidence, exponential growth and mental accounting.

ii. With regards to **practical contribution**, it became helpful to policy makers, in designing better financial education programs keeping in view the various behavioral aspects. This could promote the financial literacy level among masses. It could provide baseline to the policy

makers in promoting financial inclusion and to encourage people to make better financial decisions. The research is also beneficial to the practitioners to identify the behavioral and psychological dilemmas come through in their financial decision making. This could pave the way for the financial institutions to develop such kind of financial instruments which could not only improve their profitability but also the financial wellbeing of the users of their financial instruments. The research has provided insights to the investors by highlighting the significance of financial literacy and positive financial behaviors. It suggests that attaining higher level of financial literacy by the investors could bring more awareness and better understanding of financial markets, which could enhance their financial wellbeing.

The research project is outlined into six chapters. In Chapter 1, an introduction of the study has been given. It has identified the research gap and research problems. Based on that the aim and objectives of the study are specified. The rationale and significance of the study are also explained in Chapter 1 in addition to the theoretical support and potential contribution of the study.

In Chapter 2, we have reviewed the related literature in detail with regards to behavioral finance, financial literacy, financial behaviors and financial wellbeing. Based on the review of the literature, hypothesis are developed and theoretical framework of the study is defined. In Chapter 3, the methodology adopted for the study is explained and justified. It includes research design specified for both quantitative and qualitative phased of the study.

Chapter 4 consisted of results of quantitative phase, whereas Chapter 5 consisted of results of qualitative phase. The integration of both quantitative and qualitative phases is also carried out in Chapter 5. In Chapter 6, critical discussion on results is carried out and the study is concluded. Based on that, recommendations are made, and limitations and future research directions are also set.

Chapter 2 : A Review of Existing Literature

2.1. Overview - Behavioral Finance:

Over the past few decades, research in numerous academic disciplines has documented the imperfection and inconsistency in human behavior. From psychology and biology to finance and economics, empirical and theoretical studies illustrate a lack of pure rationality in decision-making. Traditional finance is based on the assumptions of utility maximization and rational expectations. It believes on efficient market and no-arbitrage hypothesis. Identification of various anomalous behaviors of the market such as “the equity premium puzzle”, bubbles and other market imperfections questioned the traditional view. This paved the way to a stream of research, which is recognized as “Behavioral Finance”. It proposes that the rationality of human beings is hampered by their own attitudes, psychological condition and biases, which result in suboptimal behavior. Individuals tend to follow bounded rational and simplified mechanism of choice while making decisions. These simplified mechanisms of choice are called heuristics or in other words mental shortcuts / mistakes (Tversky & Kahneman, 1974; Thaler & Sunstein, 2008; Kahneman & Tversky, 1979). Individuals are subject to biases in judgment and with this claim they are viewed as frame dependent, who use various heuristics to cause anomalies not only at individual level but also at market level as well (Otuteye & Siddiquee, 2014; Howard, 2012; Slovic, 2001). Moreover, Jain et al. (2015), claims that mental shortcuts are used by investors in making investment decision, therefore both individual and institutional investors are influenced by psychological biases.

Individuals have different temperament due to which there are great number of convictions, biases and cognitive errors that exist in different individuals. These heuristics and biases result in behaviors which are not in line with the traditional finance wisdom of rational choice. For instance, efficient market hypothesis assumes that the prices in stock market is the reflection of all information available in the market. Therefore, investors are not allowed to earn the return above average unless they accept more risk (DeBondt, Forbes, Hamalainen, & Muradoglu, 2010). However, this is not true in reality due to the existence of semi-efficient markets, which is why arbitrage opportunities exist for earning return above average in the market. It is evident that the theories of expected utility, rational expectations and Bayesian learning process are clearly challenged by the behavioral finance approach (Malkiel, 2003; Lo A. W., 2007).

Behavioral Finance stands on psychology and limits to arbitrage. Psychology provided the idea about possible deviations in behavior from rationality while the limits to arbitrage claims that rational investors may not exploit opportunities created by irrational investors. In addition, irrational investors are referred to as noise traders as they tend to cause anomalies in the market, while on the other hand, rational investors are considered as arbitrageurs. These arbitrageurs can make correction in asset prices, which are distorted by the noise traders (Barberis & Thaler, 2003).

According to Barberis & Thaler (2003), behavioral finance:

> *argues that some financial phenomena can be better understood using models in which some agents are not fully rational. More specifically, it analyzes what happens when we relax one, or both, of the two tenets*

that underlie individual rationality. In some behavioral finance models, agents fail to update their beliefs correctly. In other models, agents apply ***Bayes' law*** *properly but make choices that are normatively questionable…*

2.1.1. Bounded Rationality:

Bounded rationality focuses on the restricted ability of human beings to adjust themselves in complex learning environment due to which they find difficulty in taking optimal financial decisions (Simon, 1999; Simon, 2000). Individuals have limited information, mental capacity to process and evaluate information and time. So, while opting choice from given alternatives, they just satisfice instead of attaining maximum or optimum. For example, an individual may accept a satisfactory investment alternative, rather than making the optimal choice. Sulphey (2014) propounded that bounded rationality describe decision making under three separate mechanisms:

Step-by-step selection of alternatives: It is assumed that people examine possible solutions to any problem in a step by step manner. Alternatives are identified and evaluated one after another. If the first alternative is not satisfactory, it is rejected, and other possible alternatives are considered one by one. When an acceptable solution is arrived at, the search is discontinued.

Heuristics: Individuals have an innate tendency to make judgments and decisions quickly. Heuristics are decision processes in which humans attempt to make mental "shortcuts". These shortcuts are indispensable when decisions

are to be made within a limited time. There is always the possibility that heuristics can result in poor decisions.

Tversky & Kahneman (1974) found the impact of heuristics on investment decisions. They defined heuristics as:

> *A strategy that can be applied to a variety of problems and that usually but not always yield to a correct solution. People often use heuristics (or shortcuts) that reduce complex problem solving to more simple judgmental operations.*

This shows that individuals approach complex problems by simplifying them. They may not go in for further explanatory information. For instance, individuals may develop investment decisions by a trial and error method. In the process, they also tend to develop rules of thumb. This may lead to emotional and cognitive errors while making decisions. The outcomes of heuristics can range from anything between favorable to unfavorable, and disastrous.

2.1.2. Cognitive Factors:

Why sub-optimal decisions are made by financially educated individuals? It is shown by behavioral economists that people are not completely logical, but rather they are subjective towards cognitive and social biases. There is a presence of bounded rationality in humans and due to this reason; individuals often make intuitions while making decisions (Simon, 2000; Kahneman D. , 2003). Due to the lack of processing ability of elaborating on options, individuals use rule of thumb or heuristics for filtering information and facilitating process of decision making (Petty & Cacioppo, 1986; Chen & Chaiken, 1999). In

addition to this, there is an interaction of emotions with intellectual processing, that introduces more illogical behavior (Loewenstein, Weber, Hsee, & Welch, 2001). Thus, opposing to traditional finance theory, individuals in behavioral finance have limited capacity for exhausting many options involved in difficult decision making and so they use shortcuts.

2.1.3. Emotions and Detecting Patterns:

There is a strong use of human brain for detecting patterns. The process of detecting patterns usually helps in the process of decision making, giving instincts that assist in making tough decisions. In contrast to this, there is a negative impact of this process of pattern detection in case when a brain makes efforts for forming patterns from random procedures. It is summarized by Lehrer (2009) that how emotional brain can cause harmful effects, detecting financial patterns that have no existence as under;

> *Think about the stock market, which is a classic example of a random system. This means that the past movement of any particular stock cannot be used to predict its future movement…The danger of the stock market, however, is that sometimes its erratic fluctuations can actually look predictable, at least in the short term. Dopamine neurons are determined to solve the flux, but most of the time there is nothing to solve. And so, brain cells fail against the stochasticity, searching for lucrative patterns. Instead of seeing randomness, we come up with imagined systems and see meaningful trends where there are only meaningless streaks.*

Gilovich et al., (1985) find that basketball players can get 'hot hands' and go on a 'shooting streak.' Through forming different baskets in a roll, a hot streak is implied according to which there is a higher possibility by an individual to make the next shot rather than missing. However, Gilovich et al., (1985) depict that 'hot hands' are not got by players but rather than this the process is "*a general misperception of the laws of chance associated with the belief that small as well as large sequences are representative of their generating process*". It is an outcome of people who want to look at patterns.

2.1.4. Prospect Theory:

There are different details and theories related to reasons of "irrational" financial decisions taken by financially literate persons. Kahneman & Tversky (1979) introduced a concept named as Prospect theory and in that theory, decisions are modeled with respect to value, in opposite to wealth. Prospect theory compares difference in value between gains and losses evaluated from a point of reference, whereby loss aversion is experienced by people or in case of losses, a steeper value. Figure 2.1 below illustrated the hypothetical function.

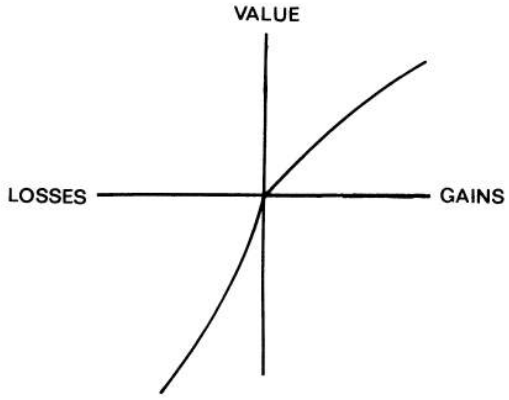


Figure 2.1: A Hypothetical Function in Prospect Theory by Kahneman & Tversky (1979)

A Nobel Prize in Economics was received by Daniel Kahneman who was famous as cognitive psychologist for the work and knowledge he had related to the field of economics. They posed different questions to respondents who took part in the study and Kahneman & Tversky (1979) found that individuals experience systematic deviations from rational responses. Particularly, gains and losses were not treated in a same way. Figure 2.2 shows the ways through which small probabilities are over-weighted and large probabilities are underweighted by people.

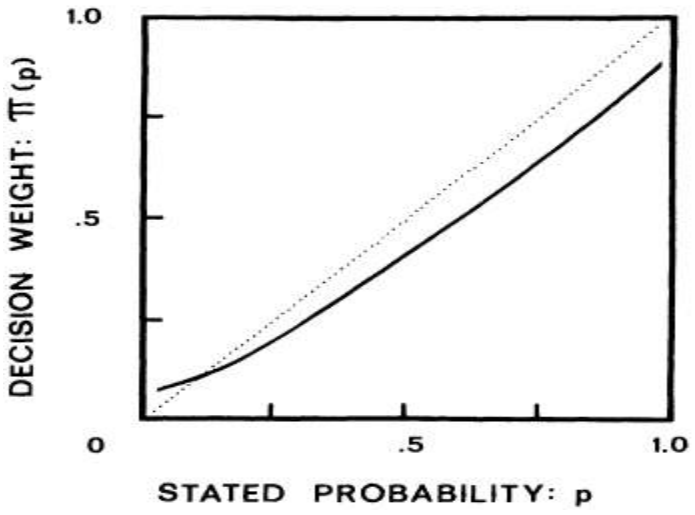


Figure 2.2: A Hypothetical Weighting Function in Prospect Theory by Kahneman & Tversky (1979)

According to traditional theory, it is assumed that people are rational and can also be called as calculating agents. In accordance with traditional theory, people are considered to be utility maximizers, who get involved in calculation of expected utility of unpredictable options. After calculating this, they decide depending on the highest expected utility that can be gained from a choice. Traditional economic theory is altered by prospect theory in two ways. First, it is stated by Tversky & Kahneman (1971) that reference point is used by people for making choices. Thus, in case of prospect theory utility is modeled as value

changes whereas evaluation of gains and losses is done based on some starting reference point. Secondly, people do not do treatment of gains and losses on same basis, there are different shapes taken by utility curve: like there is a concave shape of utility curve in case of gains and shape is convex in case of losses. Therefore, risk aversion is modeled by prospect theory with respect to gains and risk-seeking is modeled by people in case of losses. Moreover, because of steeper convex curve, loss-aversion of people is captured by model.

2.1.5. Framing Effect:

Kahneman & Tversky (1984) demonstrate the cognitive and psychological determinants of choice in risky and riskless contexts. They find that decisions can be influenced by farming same information in difference ways. This phenomenon evidenced against rational choice mechanism and Kahneman & Tversky (1984) call it framing effect. Literature suggest that framing same information with emphasis on gains or with emphasis on losses can influence the decisions of the individuals. People can be risk averse or risk seeker, based on the way the information is framed. Framing effect, while contradicting rational choice, could influence the financial decisions of the individuals (Kahneman & Tversky, 1984), which could further impact their overall financial wellbeing. The way the information is framed have also implications on defining individuals' financial behaviors (Frydman & Camerer, 2016).

2.1.6. Overconfidence:

Overconfidence is referred to as a propensity of an individual for overestimating the accuracy of their predictions (Glaser & Weber, 2007; Grinblatt & Keloharju,

2009). People rely heavily on their individual experience while taking decisions related to investment. Choi et al., (2009) find that individuals tend to show over confidence with respect to their skills and capabilities. For example, people mostly make investment in their employer stock in case if it performed well in last years (Choi, Laibson, Madrian, & Metrick, 2003). In case of financial decision-making, overconfidence is linked with excessive trading (Glaser & Weber, 2007; Grinblatt & Keloharju, 2009). Barber & Odean (2000) claim that "*trading is hazardous to your wealth*." Overconfidence is documented by Barber & Odean (2000) in online trading, confronting that people progression to online trading fall quested to illusions of knowledge as well as control. It is demonstrated by experimental proofs that there is a popularity of overconfidence in marketplace where there are approximately 40% overconfident bids placed by individuals (Allen & Evans, 2005).

Cheng (2007) highlighted the link between social interaction and overconfidence and find higher level of overconfidence and low performance in traders who trade in socially interacted environment. OECD (2005) reports that 65% students of high school state that *"they are somewhat sure or very sure of their ability to manage their own finances".* However, their scores were not much more than their peers who had less confidence. It is illuminated from above example that the information is not evaluated objectively by individuals and past experience is used for garnering overweight information and personal values also help in motivating.

In finance literature, overconfidence is manifested in different forms such as miscalibration, better than average affect and too high volatility estimates

(Glaser & Weber, 2007). The miscalibration manifestation of overconfidence is referred to as the phenomenon of too tight probability distributions of uncertain quantities when people use fractile method. Glaser & Weber (2007) also found that investors prone to overconfidence underestimate the variance of the risky assets or overestimate its precision. Olsson (2014) considered these manifestations as three distinctive types of overconfidence, which he referred to as overestimation, over placement and calibration of subjective probabilities.

In Pakistani context, Zia, Sindhu, & Hashmi (2017) have linked the stocks turnover with stock returns and found that investors are overconfident. Over confidence is also linked with exponential growth bias. Levy & Tasoff (2017), in a laboratory experiment, found that people exhibit overconfidence while calculating exponential growth.

Furthermore, overconfidence is linked with financial literacy and financial advice seeking. Kramer (2016) found that individuals having higher level of confidence in their financial literacy are less likely to seek financial advice. They found a negative relation between overconfidence and advice seeking in wealthy households in Netherland.

2.1.7. Exponential Growth Bias:

Eisenstein & Hoch (2007) highlihgted the importance of compound interest for financial planning by individuals who estimate the compound interest by anchoring on simple interest and insufficiently adjust upward. Precision errors arise when the time frame is long or when the interest rate is high, due to exponential growth of compund interest. Subsequently, Stango & Zinman

(2009) have identified exponential growth bias to household financial decision making. They defined it “the pervasive tendency to linearize exponential functions when assessing them intuitively”. They found two stylized facts in household finance with regards to exponential growth bias. Firstly, the tendency to underestimate an interest rate given other loan terms and secondly, the tendency to underestimate a future value given other investment terms. Individuals having higher level of exponential growth bias tend to borrow more, save less, favor shorter maturities, and use and benefit more from financial advice, conditional on a rich set of household characteristics.

Further, Almenberg & Gerdes (2012) explored the links between exponential growth bias and standard measures of financial literacy. They found a negative correlation between both, when tested on a sample data of Swedish adults. They opined that investigating the links between exponential growth bias and household financial decisions could have biased results, if financial literacy is not controlled adequately. The authors measured basic and advanced level of financial literacy with two distinct sets of questions. Each set contains six questions employed in studies conducted by Steel, et al. (2003), Bank & Oldfield (2007), Lusardi & Mitchell (2006), Lusardi & Mitchell (2007) and McArdle, et al (2009). Exponential growth bias is also linked with overconfidence. In a laboratory experiment, Levy & Tasoff (2017) found that people exhibit overconfidence while calculating exponential growth.

The existence of exponential growth bias can be varied in individuals having debt or savings. Foltice & Langer (2015) found that exponential growth bias has implications towards savings and debt decisions. They identified exponential

growth bias by asking questions pertaining to prospective savings and retrospective savings. Moreover, exponential growth bias is also estimated by using questions pertaining to debt.

2.1.8. Mental Accounting and Mental Budgeting:

Based on Prospect theory presented by Kahneman & Tversky (1979), Thaler (1985) shows that how behaviors are described by mental accounting. This description results in deviation of mental accounting concept from traditional economic theory. Mental accounting deals with ways used by individuals for managing his or her finances through categories separated by psychological aspects. Mental accounting is explained by Thaler (1999) as;

> *'the system of recording and summarizing business and financial transactions in books, and analyzing, verifying, and reporting the results'. It is obvious that there is a need of recording, summarizing, analyzing and reporting all transactions as well as financial events by individuals and households. This is done by them for the similar reason for which organizations are motivated for using managerial accounting like for keeping trace of money movement and keeping control over their spending. Mental accounting is used to explain the ways through which these things are done; this can be learnt through noticing behavior and theorizing the rules.*

According to Thaler (1999), three components of mental accounting are outlined, related to the perception of events, categorizing and assigning events to particular accounts. It also reveals the frequency of evaluating accounts,

explaining violation of traditional economic theory in three components and one of the major aspects of mental accounting is that it affects decision making.

Mental accounting is related to the decision making of consumers. Particularly, initiating with value function of prospect theory, price is used by individuals as a point of reference; thus, transaction utility is referred as a two-pronged procedure in which judgments are made by individuals related to transactions and they make relevant decisions. Moreover, there is a relaxation in assumption of fungibility that depicts that “money has no labels” (Thaler R. H., 1990). From combined perspective, segregate gains and aggregate losses are preferred by individuals and they might be persuaded by positive utility of transaction made by suggested retail price that is higher than market price.

Mental budgeting is analyzed by Antonides et al. (2011) and it has been stated by them that it is a process whereby “*money is labeled for particular spending or saving categories, and the budgets reserved for expenditure or saving are considered binding”* and it is emphasized by them that how overspending or under-spending is led through mental budgeting. The authors find that evaluation of assumption that mental budgeting is used as a mechanism of self-controlling is “*not a naïve type of financial management*”. It has been found by authors that mental budgeting is a financial knowledge and there is a positive relationship between long term orientation and mental budgeting. However, there is a negative relationship between mental budgeting and higher education in contrast to intermediate education.

Shefrin & Thaler (1988) provide evidence about the behavioral life cycle hypothesis which presumes that household’s wealth is non-fungible. They

apply mental accounting to the life-cycle theory of saving. The authors argue that households do not view wealth as a single account, instead, they create separate accounts for current income, current assets and future income.

There are several aspects of mental accounting theory base on mental separation of economic categories, range from hedonic editing, classification of gains and losses, income and assets accounts, borrowing and savings accounts and mental budgeting (Antonides, Groot, & Raaij, 2011). In mental budgeting, money is labeled for particular spending or saving categories and the budgets reserved for expenditure or saving are considered binding i.e. spending is tracked against the budgets. Base on the evidence that money is fungible, Antonides, et al. (2011) argue that mental budgeting may be classified as a behavior deviating from the rational economic model.

A summary of literature review carried out on behavioral finance and its sub domains is presented in Table 2.1 below.

S#	Topic	Number of Papers	References
1	Behavioural Finance	11	Tversky & Kahneman (1974), Thaler & Sunstein (2008), Kahneman & Tversky (1979), Otuteye & Siddiquee (2014), Howard (2012), Slovic (2001), Jain et al. (2015), DeBondt, Forbes, Hamalainen & Muradoglu (2010), Malkiel (2003), Lo A. W. (2007), Barberis & Thaler (2003)
2	Bounded Rationality	4	Simon (1999), Simon (2000), Sulphey (2014), Tversky & Kahneman (1974)
3	Adaptive Market Hypothesis	6	Fama (1970), Shiller (2003), Shleifer (2000), Sulphey (2014), Lo (2004), Lo (2005)
4	Cognitive Factors	5	Simon (2000), Kahneman D. (2003), Petty & Cacioppo (1986), Chen & Chaiken (1999), Loewenstein, Weber, Hsee, & Welch, (2001),

5	Dual processing Theories	12	Cherry (1953), Broadbent (1958), Moray (1959), Treisman (1960), Johnston & Heinz (1978), McCann & Johnston (1992), Chabris & Simons (2011), Pinker (2009), Logan (1988), Bargh & Chartrand (1999), Nisbett & Wilson (1977), Kahneman (2012)
6	Emotions and Detecting Patterns	2	Lehrer (2009), Gilovich et al., (1985)
7	Consumer Competence	1	Lai & Xiao (2010)
8	Prospect Theory	2	Kahneman & Tversky (1979), Tversky & Kahneman (1971)
9	Framing Effect	2	Kahneman & Tversky (1984), Frydman & Camerer (2016)
10	Anchoring	5	Simonsohn & Loewenstein (2006), Ariely et al (2003), Wonder et al., (2008), Loibl & Schraff (2010), Baker & Ricciardi (2014)
11	Overconfidence	14	Glaser & Weber (2007), Grinblatt & Keloharju (2009), Choi et al., (2009), Choi, Laibson, Madrian, & Metrick (2003), Glaser & Weber (2007), Grinblatt & Keloharju (2009), Barber & Odean (2000), Allen & Evans (2005), Cheng (2007), OECD (2005), Olsson (2014), Zia, Sindhu, & Hashmi (2017), Levy & Tasoff (2017), Kramer (2016)
12	Exponential Growth Bias	10	Eisenstein & Hoch (2007), Stango & Zinman (2009), Almenberg & Gerdes (2012), Steel, et al. (2003), Bank & Oldfield (2007), Lusardi & Mitchell (2006), Lusardi & Mitchell (2007), McArdle, et al (2009), Levy & Tasoff (2017), Foltice & Langer (2015)
13	Mental Accounting and Mental Budgeting	6	Kahneman & Tversky (1979), Thaler (1985), Thaler (1999), Thaler R. H. (1990), Antonides et al. (2011), Shefrin & Thaler (1988),
14	Disposition Effect	13	Shefrin (2000), Shapira & Venezia (2001), Feng & Seasholes (2005), Garvey & Wu (2007), (Locke & Mann, 2005), Barber & Odean (2000), Glaser & Weber (2007), Grinblatt & Keloharju (2009), Kumar (2009), Baker & Wurgler (2006), Cheng (2007), Olsen &

			Troughton (2000), Griffin & Tversky (1992)
Total Papers Reviewed		93	

Table 2.1: Summary of Research Paper Reviewed for Behavioral Finance and its sub-topics

2.2. Overview - Financial Literacy:

Financial literacy is considered as a moderator in the current study. The moderating role of financial literacy has been studied by Adomako, et al. (2016) in the context of access to finance and firm growth and it has been observed that financial literacy relationship between access to finance and firm growth. However, no such moderating evidence of financial literacy is found in literature in the context of behavioral biases and financial wellbeing. In this section, literature on financial literacy is extensively reviewed.

Lusardi (2008) found that financial literacy predicts the financial behavior of the individuals significantly. Relying on several survey results, she argues, who is financially literate and what is the level of financial literacy based on demographics such as gender, age and race. She found that older individuals and women have lower level of financial literacy comparative to their counterparts. With regards to race, she found that Hispanic and African-American exhibit lower financial literacy levels than whites.

Financial literacy is considered as “human capital” (Mitchell & Lusardi, 2014). Human capital is the knowledge, cognitive skills and physical abilities hold by an individual. Financial literacy is a kind of human capital, a person is considered as financially literate if he could have knowledge and skills to

manage his / her financial matters in a better way (Huston, 2010). The nature of financial literacy defined by Finke & Huston (2014) is presented in Figure 2.3, which shows the interrelationship of financial literacy, financial decisions, financial behavior, outcomes, education and experience. Financial literacy can be enhanced through education and experience.

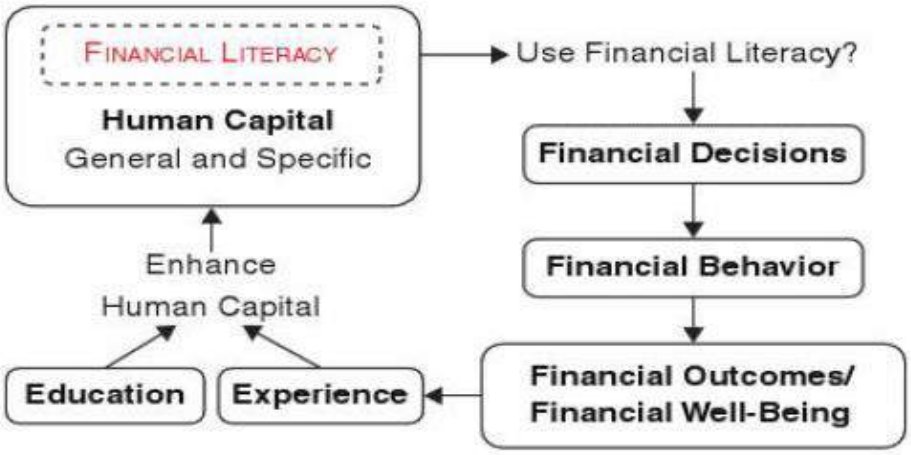


Figure 2.3: The Nature of Financial Literacy (Finke & Huston, 2014)

Garcia (2013) finds that financial literacy could have following potential benefits for the financial wellbeing of the individuals:

1. Good knowledge of pension system and social security has positively affected retirement saving decisions.
2. Individuals who attended credit-counseling program for 3 years were able to reduce their debt and to improve their credit card handling accordingly.
3. Individuals who received credit counselling incurs less defaults on household loan products as compared to those who did not receive it.
4. The survey of consumer finances provided the positive correlation between financial knowledge and financial behavior.

5. Various theoretical models have proven that financial education has resulted in optimal financial behavior.

The author also points out that financial education should be simple as the complexity of the course could prevent the individual from taking optimal financial decision making. Furthermore, financial education alone is not sufficient for making good financial decisions, it also depends more on psychological factors, which is why not every researcher agrees that financial education results in good financial decision-making (Garcia, 2013).

The study by Hibbert, et al. (2012) shows that financial literacy is essential to optimal financial decision making by making a comparison between English professors and Finance professors. The result of this study shows that finance professors allocate larger share of their retirement savings to equities and manage their retirement portfolio much effectively as compared to English teachers who were less optimal in their financial decision-making.

2.2.1. Household Finance:

John Campbell coined the term “Household Finance” in his 2006 Presidential address to the American Financial Association. It is a field of financial economics *that studies how households use financial information and markets to achieve their objectives.* Although, the filed had been attracting substantial academic attention, at the time of address, it had not yet earned its own title and identity. However, household finance is a thriving, vibrant and self-standing field today (Guiso & Sodini, 2013). A similarity in making decisions about the use of financial instruments both in the field of corporate finance and household

finance was observed by Campbell (2006). However, he also recognizes the difficulty in studying household finance as:

> *"The study of household finance is challenging because household behavior is difficult to measure, and households face constraints not captured by textbook models. Evidence on participation, diversification, and mortgage refinancing suggests that many households invest effectively, but a minority make significant mistakes. This minority appears to be poorer and less well educated than the majority of more successful investors. There is some evidence that households understand their own limitations and avoid financial strategies for which they feel unqualified. Some financial products involve a cross-subsidy from naive to sophisticated households, and this can inhibit welfare-improving financial innovation".*

Normative financial research tackles what *should be* done while positive financial research tackles what *is actually* done. By comparing positive financial research to normative financial research, Campbell (2006) concludes that households make "mistakes." Specifically, households with lower income and education levels are likely to make more mistakes, including: "nonparticipation in risky asset markets, under diversification of risky portfolios, and failure to exercise options to refinance mortgages".

Due to the increased complexity in household decision-making and the increased proportion of the population that is aging, the field of "household finance" has received recent attention (Christelis, Georgarakos, & Haliassos, 2013). Many household finance studies find that psychological and social

factors influence financial decision-making. For example, religion influences factors such as risk preferences, thrift, responsibility, social capital and planning horizons which in turn influence household financial decisions (Renneboog & Spaenjers, 2009). Sociability of a household, including community relations, is a determinant of participation in the stock market (Hong, Kubik, & Stein, 2004); Social interaction plays an important role in transmitting relevant information to potential investors. By collecting data from 8000 Chinese households, Liang & Guo (2015) demonstrate that social interaction alone positively affects the household stock market participation, but internet access mitigates the influence of social interaction. Georgarakos & Pasini (2011) finds that trust and sociability are related to stock market participation and for differences in stockholding across Europe. Trusting behavior also affects the portfolio choice between risk free and risky assets. El-Attar & Poschke (2011) by analyzing data from the European Social Survey find that households with less trust invest more in housing and less in financial assets, especially risky ones. Therefore, trust is a factor that drive the stock market participation. Balloch, et al. (2015) study the importance of stock market literacy and trust for stock market participation. They find that sociability is no longer significant for stock market participation, once the stock market literacy is account for. So, they view that literacy matters than sociability.

2.2.2. Defining Financial Literacy:

Researchers differentiate financial education from financial literacy. Both the concepts are distinctive from each other but at the same time quite interrelated as well. Financial education is considered as a systematic process of acquiring

knowledge related to finance. Whereas, financial literacy is outcome of financial education process which helps in making appropriate financial decisions that helps to improve the wellbeing of the individuals. Organization for Economic Cooperation and Development (OECD) took considerable initiatives to promote financial education, so that to respond to the concerns of its member states to handle the possible consequences of low level of financial literacy. OECD (2005), in its "Recommendation on Principles and Good Practices for Financial Education and Awareness" defined Financial Education as:

> *"The process by which financial consumers / investors improve their understanding of financial products, concepts and risk and, through information, instruction and / or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices to know where to go for help, and to take other effective actions to improve their financial well-being".*

Thus, the emphasis of financial education is on undersetting and acquiring skills related to financial products and risks and opportunities associated with those with a view to apply the understanding and acquired skills in an effective manner. However, as defined above, it found that financial education is a process, not an outcome. Keeping this in view, OECD (2013) defined financial literacy as:

> *"Financial literacy is knowledge and understanding of financial concepts and risk, and the skills, motivation and confidence to apply such knowledge and understanding in order to make effective decisions*

across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life".

Allgood & Walstad (2016) viewed the research on financial literacy as challenging due to the difficulty in measuring financial literacy in a best way as there exist no standard measure. There exists a lack of consensus on not only definition of financial literacy but also on the operationalization of the definition (Finke & Huston, 2014). Huston (2010) argues that although the terms financial literacy, financial knowledge and financial education are being used in various researches interchangeably, however, these are conceptually difference constructs. The author argues that financial literacy and financial knowledge are both human capital but different concepts. Although financial knowledge is an integral dimension, but it cannot be considered as equivalent to financial literacy. The application dimension of financial knowledge i.e. the ability and confidence of an individual to use his / her financial knowledge to make sound financial decisions. Therefore, the application side of financial knowledge is critical to complete the definition of financial literacy. Huston (2010) illustrated the concept of financial literacy as presented in Figure 2.4.

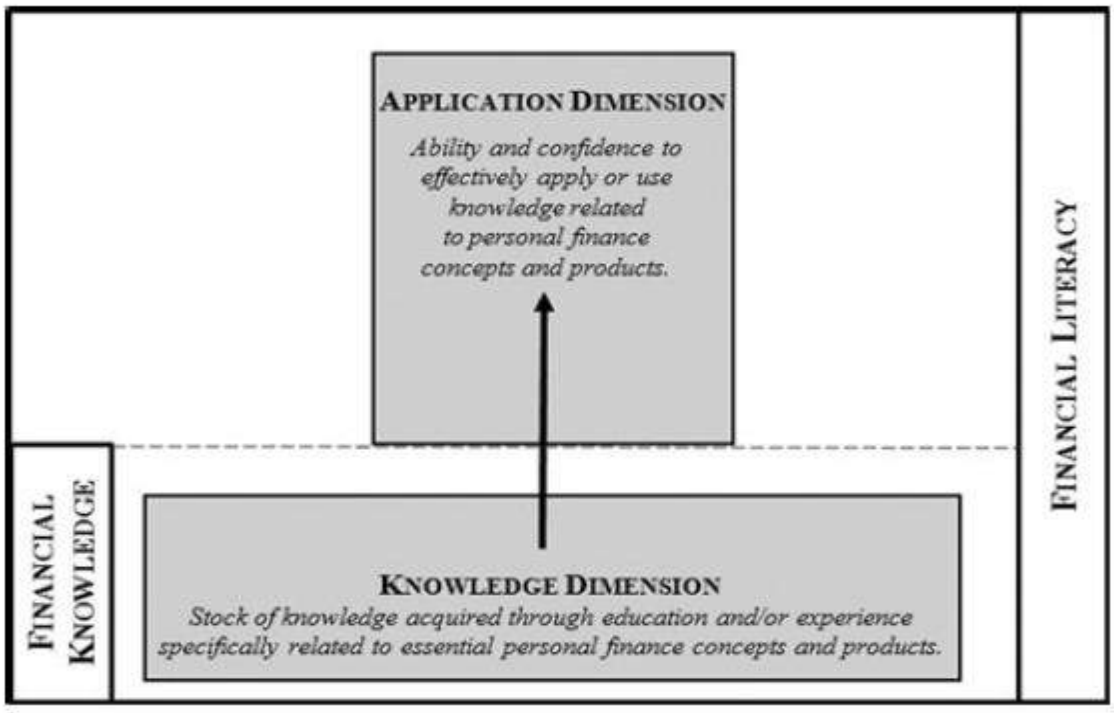


Figure 2.4: Concept of Financial Literacy (Huston, 2010)

A comparatively new aspect of financial literacy emerged as "Financial capability". It is a framework developed by Atkinson, et al. (2007). As per this framework, financially capable individuals *manage money, plan ahead, choose most suitable and best product and stay informed*. The authors however recognized the fact that the behavior and skills underlying financially capable actions vary by person and economic characteristics. To understand the process by which young adults acquire the financial knowledge and behaviors needed to manage full time adult social roles and responsibilities, Serido, et al (2013), propose a development model of financial capability. The model proposed by the authors integrates financial knowledge, financial self-beliefs, financial behaviors and wellbeing into a single decision-making process. Conceptual model of young adults' financial capability proposed by Serido, et al (2013) in illustrated in figure 2.5 below:

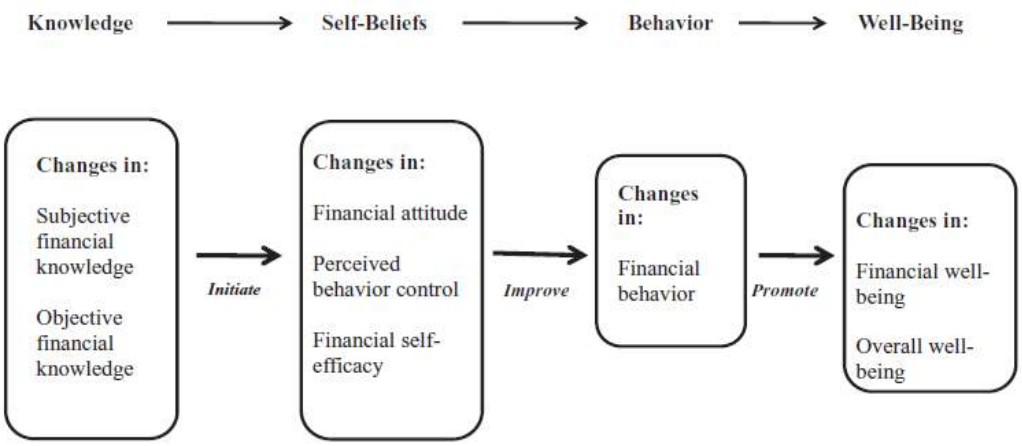


Figure 2.5: Conceptual model of Young Adults' Financial Capability (Serido, Shim, & Tang, 2013)

Literature provides valuable insights on financial literacy with regards to demographics such as gender, age, race and region. Hereunder a brief overview of financial literacy with reference to gender and age is carried out.

2.2.3. Financial Literacy and Gender:

Most of the studies found in literature concentrated on gender differences and financial literacy. Lusardi & Mitchell (2007), Lusardi, et al. (2010) and Lusardi (2015a) find that males are more financially knowledgeable than females across the age groups. Jappelli (2009) in Italy, Guiso &, Bucher-Koenen & Lusardi (2011) in Germany, Almenberg & Save-Soderbergh (2011) in Sweden, Rooij, et al. (2011) in Nederland, Sekita (2011) in Japan, Yu, et al. (2015) in Hong Kong and ANZ Banking Group (2015) in Australia also observed the same pattern. However, Agarwalla, et al. (2015) finds no difference in financial literacy level of males and females. Similarly, Lusardi & Mitchell (2011) in Russia and Bucher-Koenen & Lusardi (2011) in East Germany, did not find any significant knowledge differences between men and women. With regards to financial education, Hibbert, et al. (2013) proposes that women are more

significantly risk averse as compared to men. However, when both men and women have a high level of financial education, they are equally likely to invest a significant portion of their investment in risky assets, thus suggesting that financial education mitigates the gender difference in financial risk aversion.

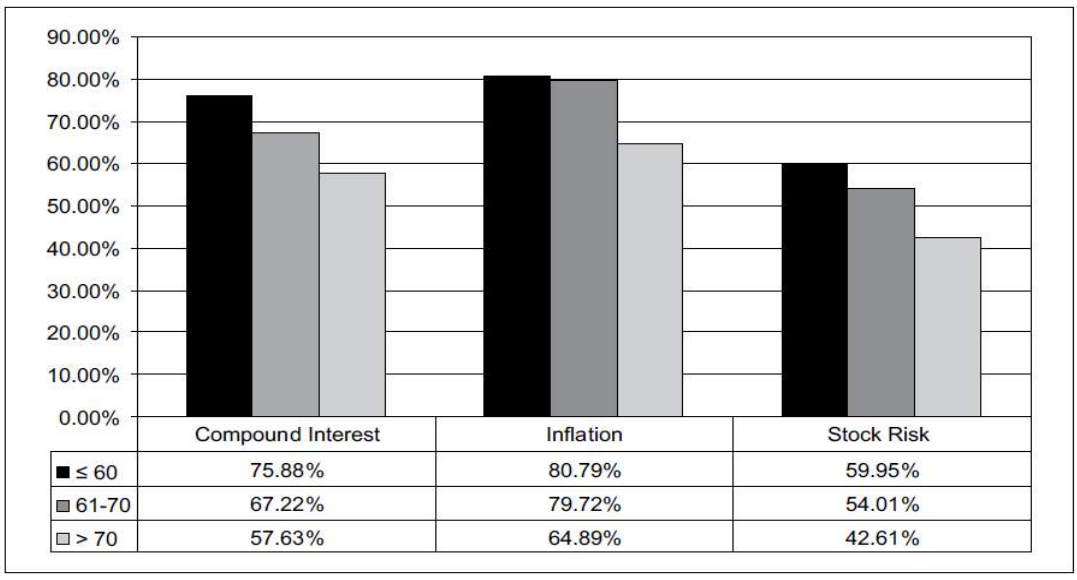
2.2.4. Financial Literacy and Age:

Level of financial literacy varies with regards to age which impacts the subsequent financial behavior. Studies find high school students are not well equipped with financial literacy as they consider only those students as financially literate, who got 75% or more in a financial literacy test (Mandell & Klein, 2009). Financial literacy training shows a significant increase of interest in not only financial matters but also self-assessed knowledge in teenagers between 14 and 16 years (Luhrmann, Serra-Garcia, & Winter, 2012). Concentrating on 924 college students, comprising various age groups; ranging from 18 years to 40 and above years, Chen & Volpe (1998), find that 53% of questions are responded correctly by the participants. Students having lesser level of knowledge are more prone to have wrong decisions and suboptimal opinions. They concluded that college students are least knowledgeable about personal finance.

Akben-Selcuk & Altiok-Yilmaz (2014) in a study conducted on Turkish College Students finds only 45% correct responses to the financial literacy questions and emphasized on the critical need of financial literacy to college students. Lusardi & Mitchell (2007) compared the holding of wealth by two groups of same age groups i.e. 51-56. Early baby boomers in 2004 is one of the groups and a group of individuals having same age group from 1992 Health and

Retirement Study of USA. The authors find higher wealth and financial literacy level in the individuals near retirement, who were better planners than those who did not planned well. The study highlighted the importance of financial planning to reach at retirement with a considerable wealth.

A strong decline in financial literacy with age specifically in advance age is observed by Lusardi (2015a), based on the data analyzed from 2004 Health and Retirement Study of USA. Figure 2.6 below shows the decline in understanding various financial literacy measure such as *compound interest*, *inflation* and *stock risk* with the passing age. Age above 70 shows a least knowledge about these financial aspects.



	Compound Interest	Inflation	Stock Risk
≤ 60	75.88%	80.79%	59.95%
61-70	67.22%	79.72%	54.01%
> 70	57.63%	64.89%	42.61%

Figure 2.6: Financial Literacy by Age (Source: 2004 Health and Retirement Study of USA) – Adopted from (Lusardi, 2015a)

The above literature stipulates that there exists a correlation between age and financial literacy depending on various age levels. Individuals in the middle age groups show higher level of financial literacy than those in youth and elderly age. This phenomenon may occur due to the reason that financial knowledge

may increase with experience however, at elderly age may decrease due to slow cognitive processes. This shows an inverted u-shaped relationship between age and financial literacy as it is found that financial literacy is lower at young age, then increased at middle age and at the elderly age it diminishes. The inverted U-shaped relationship between age and financial literacy is also evident from the study of Bucher-Koenen & Lusardi (2011) conducted in German context, where they found that individuals with age 35 and younger performed average by giving only 55.3% correct answer, while individuals in the age group 35-50 marked 60.7%, highest score among all groups. The age groups 51-65 and older than 65 marked 53.3 and 42.8 respectively. Bucher-Koenen & Lusardi (2011) called this a hump-shaped relationship between financial literacy and life cycle.

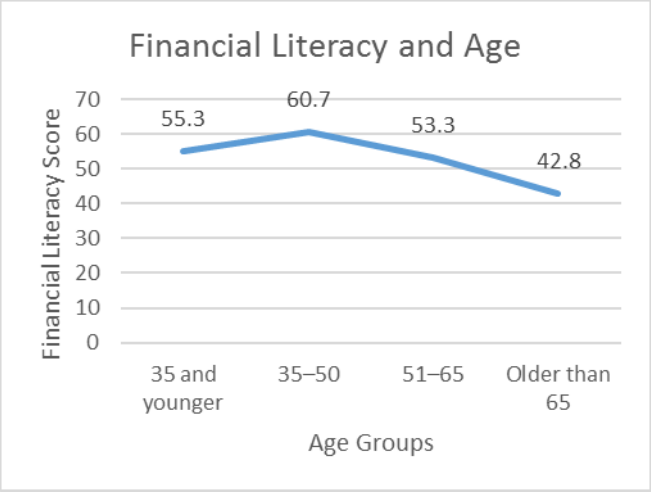


Figure 2.7: Financial Literacy and Age (Derived from the findings of (Bucher-Koenen & Lusardi, 2011)

2.2.5. The Life-Cycle Model of Consumption:

Modigliani & Brumberg (1954) and Ando & Modigliani (1963) propose the life-cycle model of consumption. The model contends that individuals smooth their consumption over their lifetime, meaning that based on the projected resources

an individual anticipates having over his or her lifetime, the individual will save and spend to maintain a steady lifestyle. The theory therefore purports that consumption remains relatively stable over time. This entails spending or borrowing in the younger years, saving in the middle years, and using or living off the savings in the later years. Importantly, since the life-cycle theory assumes that individuals consider not just their current financial position or near-future current position, but forecast the future as well, it provides a motive for retirement savings.

Traditional economic theory presumes that individuals derive maximum utility by following the life cycle consumption model and smoothing consumption over their lifetime. This theory assumes not only that individuals are rational, but also as Lusardi (2008) clearly states, that they can interpret information, make forecasts and perform financial calculations. For this reason, a growing amount of literature focuses on financial literacy, questioning whether individuals have sufficient knowledge to enable them to smooth consumption and plan for retirement. Therefore, understanding financial literacy, or the lack thereof, is critical.

Not only is it important to understand the level of financial knowledge that individuals possess, it is important to understand how this knowledge affects financial decision-making over the lifetime. This too is a daunting task, as Lusardi and Mitchell (2011) explain:

> *Inter temporal economic choice models posit that people formulate assumptions about their lifetime resources and make consumption decisions on those anticipated resources, rather than simply based on*

> *current income. Some degree of forward-looking perspective is required, so that people can save to smooth consumption over their lifetime. Yet implementing such life cycle model would require taking a stand on a host of assumptions about preferences and risk aversion as well as discount rates, expectations about lifetime income streams and capital market returns, borrowing possibilities, and income shocks* (Chai, Horneff, Maurer, & Mitchell, 2009)*, most of which are not particularly easily measured in empirical data.*

Agarwal, et al. (2009) review the literature on age-based patterns in cognitive functions and find that analytic function appears to decline dramatically over the life-cycle, starting at age 20. Individuals tend to do financial mistakes such as suboptimal use of credit card, misestimating of value of house and excess interest rate and fee payments. Life cycle patterns also show that middle aged adults do less mistakes as compare to younger and older adults; thus, financial mistakes follow a U-shaped pattern which has already been discussed. There exist consumption smoothing in financially literate individuals. In addition to the life cycle motive, Browning and Lusardi (1996) consider other reasons why individuals save: precautionary, “inter temporal substitution, improvement, independence, enterprise, bequest, avarice, and down payment motives”.

2.2.6. Financial literacy Themes:

A major challenge for conducting research on financial literacy is the difficulty of determining how best to measure financial literacy because there is no standard definition of it in the research literature (Hung, Parker, & Yoong, 2009; Huston, 2010; Remund, 2010; Lusardi & Mitchell, 2014).

Agarwalla, et al. (2015) identified three dimensions of financial literacy, which are: financial knowledge, financial behavior and financial attitude. The authors employed OECD (2011; 2012) questionnaire to collect date on financial literacy. Financial knowledge is assessed by asking questions regarding basic numeracy, time value of money concept (simple and compound interest), various relationships like inflation and return, inflation and prices, risk and return and the role of diversification in reducing risk. Whereas financial behavior is assessed by asking questions that about how individuals deal with money in daily life. It covers how the individuals assess affordability of the products and expenditures, timely payment of utility bills, financial planning for long term, managing household budget and financial affairs and efforts to evaluate various financial products and the act of savings and borrowings. Financial attitude is measured by questionnaire based on three items which are belief in planning, propensity to save and propensity to consume.

Although, low level of financial literacy prevails around the world (Lusardi & Mitchell, 2011), however, different types of financial knowledge such as inflation, diversification, interest and numeracy varies from nation to nation. The authors find that Italians are relatively knowledgeable about inflation while the Japanese are not as knowledgeable, results that could be attributed to the fact that Italy has experienced inflation in the recent decades while Japan has experienced deflation. Similarly, the Swedes, who experienced pension privatization, are more knowledgeable about the concept of diversification while Russians, who have not experienced such privatization, are not as knowledgeable. Moreover, countries that score well on math and science tests,

such as Sweden and the Netherlands, perform well on the numeracy financial literacy questions.

2.2.6.1. Knowledge about Inflation:

Day to day financial decisions require to consider not only present period but future period as well. Considering time value of money and inflation is critical for making better financial decisions. It also requires considerable numeracy. Bruin, et al. (2010) find that when financial decisions have consequences beyond the immediate future, individuals' economic success may depend on their ability of forecast the rate of inflation. Higher inflation expectations have been reported by females, poorer, single and less educated. Higher inflation expectations are partially explained by low levels of financial literacy. Bucher-Koenen & Lusardi (2011) and Lusardi (2015b) argued that although knowledge of inflation is critical for financial decisions specially retirement planning, however the individuals do not have a grasp of these concepts. The authors assess the understanding of inflation through the multiple-choice question given below (the correct answer is indicated in bold). It can be observed that respondents are not forced to pick an answer; they have the option to reply that they do not know the answer or that they do not want to answer.

2.2.6.2. Knowledge about Risk and Risk Diversification:

Lusardi (2015b) also shows that risk literacy is very low across the countries. Individuals do not know the link between risk and return. They do not exactly know the concept of risk diversification. One third of the survey respondents do not able to respond to the questions pertaining to risk literacy. According to

the author, a strong relationship exists between risk literacy and financial decisions as those who are more knowledgeable about risk are more likely to have retirement plan and precautionary savings. By employing a choice experiment, Bateman, et al. (2010) examine the decisions of retirement savers and find that contrary to expectations, younger investors are more risk averse while older investors were willing to take more risk for higher returns. Lusardi & Mitchell (2011) and Lusardi (2015b) employed the following question to measure the knowledge about risk and risk diversification (the correct answer is highlighted as bold).

2.2.6.3. Knowledge about Consumer Credit:

Research studies found that individual show low level of knoweldge regarding interest rates and numeracy (Bank & Oldfield, 2007; Garcia, 2013; Lusardi & Mitchell, 2011). A study conducted by Lee & Hogarth (1999) found that less than 10% mortgage borrowers correctly understood the interest rate associated with their closed end credit, whereas 46% of credit card holders understood the interest rate they pay on their open-end credit. Meier & Sprenger (2008) through a field experiment proposed that participation by the individuals in free credit counseling programs enhance the level of financial literacy and more long-term time preferences. Moreover, Norman (2010) considered financial education a very important tool for day to day dealings as the insufficient income issues in households arise mainly due to poor spending caused by lack of financial education. Experimental research on financial education proved that those who choose to study finance, can take rational choices that promote pro-social, trusting, and reciprocating choices, which generates wealth (McCannon &

Peterson, 2015). Although financial knowledge can be increased through acquiring financial education, but it is proposed by Hite, et al. (2011) that education is not the only factor that influences good financial decision making. Moreover, Rooij, et al. (2012) established a positive significant relationship among financial literacy and the wealth of the households.

2.2.7. Actual and Perceived Financial Literacy:

Recent research concentrates on two-part measure of financial literacy to investigate the likely effects of financial literacy on a broad range of financial behaviors (Allgood & Walstad, 2016). The first part of the measure is an objective test and is based on correct and incorrect answers to test questions, which has been the traditional way that financial literacy has been measured and studied in past research. The second part of the measure is a subjective evaluation and focuses on what people think they know about personal finance based on self-assessments of their financial literacy.

If perceived financial literacy is not simply another measure of actual financial literacy, it may affect financial behavior through some other mechanism. Perceived financial literacy may measure financial confidence, so that a person with high perceived financial literacy and low actual financial literacy may be thought of as over-confident. In the literature on stock market behavior and over-confidence, individuals are overconfident because they believe they have a better ability to forecast future stock prices, and this leads them to take riskier stock positions (Barber & Odean, 2013; Barber & Odean, 2001). Many entrepreneurs are overconfident about their ability to successfully start a

business, which leads them to enter markets where there is a low probability of success (Camerer & Lovallo, 1999).

2.2.8. Do Financially Literate Make Rational Decisions?

Although the literature on financial literacy is of critical nature and admirable, however, its effects are mixed. Individuals well-armed with financial knowledge may make sub-optimal decisions. Jason Zweig in his book on neuro-economics claims that Harry Markowitz, who won the Nobel Prize in Economics (1990) for his work on the efficient frontier, did not follow his rational allocation strategy in his personal financial planning. Markowitz did not act to maximize returns, but rather, to minimize regret (Zweig, 2007). The author quoted Markowitz as:

> *I should have computed the historical co-variances of the asset classes and drawn an efficient frontier. Instead, I visualized my grief if the stock market went way up and I wasn't in it – or if it went way down and I was completely in it. My intention was to minimize my future regret. So, I split my contributions 50/50 between bonds and equity.*

So, if the most knowledgeable individuals are prone to mistakes, what might be other factors which influence behavior? In the next section, the researchers have provided insights from the behavioral finance literature to respond to this question.

2.3. Existence of Market Inefficiency and Market Participants' Irrationality:

Various psychological biases pertaining to individual decision making are highlighted in previous sections. Researchers in the field of finance

documented the evidence for existence of irrationality in decision making in the financial markets at large. They have uncovered how the markets under and / or overreact to new information, the phenomenon called as anomalies. Over reaction in stock market and resultantly price reversals are observed by DeBondt & Thaler (1985). They test the hypothesis of experimental psychology in financial markets which claims that *people "overreact" to unexpected and dramatic news events*. They support the overreaction hypothesis by finding that portfolios of prior *losers* outperform prior *winners* over 36 months and otherwise. Mehra & Prescot (1985) highlight various market imperfections and called it equity premium puzzle i.e. returns on stocks are considerably higher than returns on government owned bonds over the past century. Evidence of a version of overreaction also find by Rozeff & Zaman (1998). They support the hypothesis that prices of value stocks (undervalued) tend to lie below fundamental values and prices of growth stocks (overvalued) tend to lie above fundamental values. Moreover, Jagadeesh & Titman (1993) observe the under reaction in the market. They find that portfolios developed based on prior returns of the stocks which performed well in the earlier time remain performing well in the coming 3 to 12 months. In another study by Chan, et al. (1996), market under reaction to past news is observe. They find that market incorporates the new information gradually. The anomalies identified by the researchers provide sufficient evidence that, i) markets are not efficient as they not fully reflect the new information as it happens, ii) individuals participate in the markets are not fully rational as they tend to be affected by various types of psychological and behavioral biases.

2.4. Defining Financial Wellbeing:

Financial wellbeing has been studied in various contexts. It has been linked with retirement planning (Lusardi & Mitchell, 2006), financial management (Lusardi & Mitchell, 2007; Vlaev & Elliott, 2014), financial behaviors (Gutter & Copur, 2011), ability to deal with debt (Tsai, Dwyer, & Tsay, 2016) and financial satisfaction (Ali, Rahman, & Bakar, 2015). In the current study, the researchers considered that financial wellbeing depends upon how rationally the individuals behave. The researchers proposed that the financial literacy could moderate the dependence of financial wellbeing on behavioral biases. On the other side, behavioral biases affect the financial behaviors of the individuals which in turn affect the financial wellbeing.

Financial wellbeing is measured differently in different contexts. Such as Vlaev & Elliott (2014) measured financial wellbeing through a single question “How satisfied would you say you are with your overall financial circumstances?” on a seven-point Likert Scale. Chu, Wang, Xiao, & Zhang (2017) considered that financial wellbeing is indicated by portfolio performance i.e. positive investment returns contributes to financial wellbeing. Recently, Consumer Financial Protection Bureau of USA has developed a scale to measure the financial wellbeing of the consumers based on research conducted by the Bureau in collaboration with researchers from Wisconsin-Madison Centre for Financial Security and others (Consumer Financial Protection Bureau, 2017). The definition concluded by them is:

"Financial wellbeing is a scale of being wherein a person can fully meet current and ongoing financial obligations, can feel secure in their financial future, and is able to make choices that allow them to enjoy life"

Based on this definition, the Consumer Financial Protection Bureau of USA has developed a set of questions on a 5-point categorical scale to tap the four elements, which are:

a. Having control over day to day, month to month finances
b. Having the capacity to absorb a financial shock.
c. Being on track to meet financial goals
d. Having the financial freedom to make the choices that allow to enjoy life.

Overall financial wellbeing score could be worked out based on the score attained by respondents against individual questions. The marginal reliability statistics of the CFPB financial wellbeing scale is above 0.80 which is considered as highly reliable.

A summary of literature review carried out on financial literary and its sub domains, as well as on household finance and financial wellbeing is presented in Table 2.2 below.

S#	Topic	Number of Papers	References
1	Financial Literacy	7	Adomako, et al. (2016), Lusardi (2008), Mitchell & Lusardi (2014), Huston (2010), Finke & Huston (2014), Garcia (2013), Hibbert, et al. (2012)

2	Household Finance	9	Guiso & Sodini (2013), Campbell (2006), Christelis, Georgarakos, & Haliassos (2013), Renneboog & Spaenjers (2009), Hong, Kubik, & Stein (2004), Liang & Guo (2015), Georgarakos & Pasini (2011), El-Attar & Poschke (2011), Balloch, et al. (2015),
3	Defining Financial Literacy	7	OECD (2005), OECD (2013), Allgood & Walstad (2016), Finke & Huston (2014), Huston (2010), Atkinson, et al. (2007), Serido, et al (2013),
4	Financial Literacy and Gender	14	Lusardi & Mitchell (2007), Lusardi, et al. (2010), Lusardi (2015a), Jappelli (2009), Guiso &, Bucher-Koenen & Lusardi (2011), Almenberg & Save-Soderbergh (2011), Rooij, et al. (2011), Sekita (2011), Yu, et al. (2015), ANZ Banking Group (2015), Agarwalla, et al. (2015), Lusardi & Mitchell (2011), Bucher-Koenen & Lusardi (2011), Hibbert, et al. (2013)
5	Financial Literacy and Age	7	Mandell & Klein (2009), Luhrmann, Serra-Garcia, & Winter, (2012), Chen & Volpe (1998), Akben-Selcuk & Altiok-Yilmaz (2014), Lusardi & Mitchell (2007), Lusardi (2015a), Bucher-Koenen & Lusardi (2011)
6	The Life-Cycle Model of Consumption	5	Modigliani & Brumberg (1954), Ando & Modigliani (1963), Lusardi (2008), Lusardi and Mitchell (2011), Agarwal, et al. (2009)
7	Financial literacy Themes	20	Hung, Parker, & Yoong (2009), Huston (2010), Remund (2010), Lusardi & Mitchell (2014), Agarwalla, et al. (2015), OECD (2011), OECD (2012), Lusardi & Mitchell (2011), Bruin, et al. (2010), Koenen & Lusardi (2011), Lusardi (2015b), Bateman, et al. (2010), Bank & Oldfield (2007), Garcia (2013), Lee & Hogarth (1999), Meier & Sprenger (2008), Norman (2010), McCannon & Peterson (2015), Hite, et al. (2011), Rooij, et al. (2012)

8	Actual and Perceived Financial Literacy	4	Allgood & Walstad (2016), Barber & Odean (2013), Barber & Odean (2001), Camerer & Lovallo (1999)
9	Do Financially Literate Make Rational Decisions?	1	(Zweig, 2007)
10	Existence of Market Inefficiency and Market Participants' Irrationality	5	DeBondt & Thaler (1985), Mehra & Prescot (1985), Rozeff & Zaman (1998), Jagadeesh & Titman (1993), Chan, et al. (1996)
11	Defining Financial Wellbeing	8	Lusardi & Mitchell (2006), Lusardi & Mitchell (2007), Vlaev & Elliott (2014), Gutter & Copur (2011), Tsai, Dwyer, & Tsay, (2016), Ali, Rahman, & Bakar (2015), Chu, Wang, Xiao, & Zhang (2017), Consumer Financial Protection Bureau (2017),
Total Papers Reviewed		87	

Table 2.2: Summary of Research Papers Reviewed for Financial Literacy and Financials Wellbeing

2.5. Developing Theoretical Framework and Hypothesis of the Study:

Traditional finance claims that markets are efficient to the extent that stock prices fully reflect the available information (Fama, 1970). As the prices of assets serve as a signal for further allocation of the assets, therefore the "efficient market hypothesis" is vital for capital markets, as in an efficient market, capital is to be invested in the most profitable projects. The literature reviewed above suggest that investors' expectations cannot be perceived accurately, so the question arise that how the efficient market hypothesis can be tested? Traditionally, Capital Asset Pricing Model (CAPM) initially proposed by Sharpe (1964), incorporates the rational investors' expectations into asset prices. However, if it is supposed that investors' expectations are not rational, so; can the market efficiency tested, if there exist irrationality in investors' expectations? The answer could be no, as the efficient market hypothesis is required to be

tested with an asset pricing model and rationality is an assumption of the asset pricing model.

The proponents of behavioral finance claim that market efficiency does not exist. Shefrin (2002) claims that the financial decision-making affects by a few psychological phenomena. He classified these phenomena in three distinctive themes which are: *heuristic-driven bias*, *frame dependence* and *inefficient markets*. The author further claims that these behavioral phenomena affect the traditional view of finance in the areas such as asset pricing, portfolio theory etc.

Summarizing the discussion based on review of existing literature, it can be concluded that financial behaviors deviate from purely rational behavior. This deviation from the purely relational behavior might be due to limited processing capacity which the literature called “bounded rationality” or improper calculations which the literature called “irrationality”. This study intends to explore how various behavioral factors affect the financial wellbeing of the individuals. Moreover, the role of financial literacy and financial behaviors in these interrelationships is also studied. This study has not only testes the existing interrelationships among demographic variables, financial literacy, financial behaviors and financial wellbeing, but also extended the analysis by investigating the U-shape relationship between age and financial literacy. Moreover, this study has explored how the actual and perceived financial literacy affect the relationship between various psychological phenomena and financial wellbeing. Based on review of the existing literature, following hypothesis and theoretical framework for this study are proposed.

The hypothesis are tested after controlling the demographic variables i.e. age, gender etc.

2.5.1. Behavioral Biases and Financial Wellbeing:

Review of literature suggested that existence of behavioral biases may affect the financial wellbeing of the individuals in a negative manner. Phenomenon called framing effect, while contradicting rational choice, could influence the financial decisions of the individuals (Kahneman & Tversky, 1984), which could further impact their overall financial wellbeing. Moreover, overconfidence is found risky for financial wellbeing of the individuals (Barber & Odean, 2000; Barber & Odean, 2013). Whereas, males are found more confident than females, as they trade more frequently, and such excessive trading resulted in reduction of their returns more than females (Barber & Odean, 2001). Exponential growth bias i.e. underestimation of interest rates and future value of an investment could also affect the financial wellbeing of the individuals (Stango & Zinman, 2009). Existence of higher level of exponential growth bias could result in high borrowings, less savings and inclination towards short term maturities by the individuals affected by this bias (Stango & Zinman, 2009). Mental accounting / budgeting, another deviation from rational behavior (Shefrin & Thaler, 1988; Thaler R. H., 1990; Antonides, Groot, & Raaij, 2011). Mental accounting / budgeting led the over and under spending by the individuals (Antonides, Groot, & Raaij, 2011), which in turn could affect the financial wellbeing of the individuals (Baker & Ricciardi, 2014). Based on these evidences, it can be viewed that the individuals could show least competence to take rational decisions, due to the existence of biasness in behavior,

therefore this could affect their overall financial wellbeing in a negative way. Considering these theoretical underpinnings, following hypothesis is tested to observe the existence of any such relationship.

H_1: Existence of behavioral biases affect the financial well-being of the individuals negatively.

2.5.2. Behavioral Biases and Financial Behavior:

Individuals are found to be involved in various positive and negative financial behaviors (Allgood & Walstad, 2016), whereas; individuals while investing tend to involve in behaviors which are beyond logic and reasoning due to their individual personality traits, emotions and mental mistakes (Baker & Ricciardi, 2014). Specifically, these mental mistakes are considered as simplified mechanisms of choice called as heuristics (Tversky & Kahneman, 1974; Kahneman & Tversky, 1979; Thaler & Sunstein, 2008). Individuals are subject to biases in judgment and with this claim they are viewed as frame dependent, who use various heuristics to cause anomalies not only at individual level but also at market level as well (Otuteye & Siddiquee, 2014; Howard, 2012; Slovic, 2001). Moreover, Jain et al. (2015), claims that mental shortcuts are used by investors in making investment decision, therefore both individual and institutional investors are influenced by psychological biases.

In household finance, people are responsible for managing their household budgets, while considering financial constraints in buying of goods / services, monitoring financial accounts, savings, investing and spending (now days through credit cards) and others (Campbell, 2006). While handling their financial affairs, individuals show both positive and negative financial

behaviors, such as not ever being late on a mortgage payment could be considered as a positive financial behavior (Allgood & Walstad, 2016). Behavioral biases such as overconfidence, exponential growth bias, mental accounting / budgeting and the way the financial information is framed could affect the financial behaviors. For instance, the individuals who believe that they have better ability to forecast future stock prices – the phenomenon called overconfidence – could be involved in investing in risky investments (Barber & Odean, 2001). In addition, individuals who underestimate interest rates and future value of an investment or spending – the phenomenon called exponential growth bias – could be involved in high borrowings and less savings (Stango & Zinman, 2009), which could be considered as negative financial behavior. Moreover, mental accounting / budgeting – a way to manage expenses by setting budgets – could results in healthy financial behaviors by having awareness of consequences and least carelessness about the future (Groot & Raaij, 2016). Lastly, the way how the information is framed have also implications on defining individuals' financial behaviors (Frydman & Camerer, 2016). To conclude, it can be argued that the individuals having biasness in their behaviors may exercise negative financial behaviors, therefore, following hypothesis is tested to observe the existence of any such relationship.

H_2: Existence of behavioral biases affect the financial behavior of the individuals negatively.

2.5.3. Financial Behaviors and Financial Wellbeing:

Plan a budget, saving for future, compulsive buying and having credits through risky credit cards are considered as the financial behaviors significantly

associated with financial wellbeing of the individuals (Gutter & Copur, 2011). Credit card behaviors such as not paying credit card bill in full, bearing charged interest in some months, paying minimum payment, bearing late fee and or being charges an over limit fee are the behaviors which are not considered healthy for the financial being and overall wellbeing of the individuals (Stango & Zinman, 2009). The way, individuals manage their investments and long-term loan also affect their financial wellbeing. For instance, owning an own home, paying mortgages payments on time and assessing various options before making choice about a specific loan are considered as healthy financial behaviors which could impact the financial wellbeing (Allgood & Walstad, 2016). Existence of any reverse causality between financial behaviors and financial wellbeing cannot be overruled, however there is no such evidence found in literature regarding such reverse causality. In fact, financial wellbeing is found as an outcome in the literature reviewed, such as retirement planning (Lusardi & Mitchell, 2006), financial management (Lusardi & Mitchell, 2007; Vlaev & Elliott, 2014), financial behaviors (Gutter & Copur, 2011), ability to deal with debt (Tsai, Dwyer, & Tsay, 2016) and financial satisfaction (Ali, Rahman, & Bakar, 2015). Moreover, it is found that financial wellbeing is confused with positive financial behaviors based on presumption that such positive financial behaviors could lead towards financial wellbeing, however, there exist very little or no evidence in the robust longitudinal studies (Consumer Financial Protection Bureau, 2015).

Having this theoretical background, it can be argued that if individuals have positive financial behaviors then it would impact their financial wellbeing in

positive way, however, if they are involved in any kind of negative financial behaviors, then it would impact their financial wellbeing in a negative way. Therefore, following hypothesis is tested to observe the existence of any such relationship.

H_3: Negative financial behaviors affect the financial well-being of the individuals negatively.

2.5.4. Mediating Role of Financial Behaviors in the Relationship of Behavioral Biases and Financial Wellbeing:

So far, it has been hypothesized that how behavioral biases could affect the financial wellbeing of the individuals and how the behavioral biases define the financial behaviors of the individuals. Support from literature has also invited to hypothesize the relationship between financial behaviors and financial wellbeing. Assuming the acceptance of H_1, H_2 and H_3, it seems that financial behaviors could play a mediating role in the relationship between behavioral biased and financial wellbeing. Based on these assumptions, it can be propagated that financial behaviors play a mediating role in the relationship of behavioral biases and financial wellbeing, therefore following hypothesis is proposed to be tested.

P_1: Existence of behavioral biases affect the financial behavior of the individuals negatively, which in turn affect the financial well-being of the individuals negatively.

2.5.5. Moderating Role of Financial Literacy in the Relationship of Behavioral Biases and Financial Wellbeing:

Literature suggest that the level of financial literacy attained by individuals can enhance their financial wellbeing (Lusardi, 2015a) and financially literate individuals can respond to risky choices in a better way (Lusardi, 2015b). Moreover, the financially literate individuals could make financial decisions with more confidence (Allgood & Walstad, 2016) and with better estimation of interest rate and future value of an investment (Almenberg & Gerdes, 2012). In addition, individual having better financial knowledge could ascertain savings and budgeting their resources in a better way (Antonides, Groot, & Raaij, 2011).

In hypothesis 1, it is assumed that existence of behavioral biases may affect the financial wellbeing in a negative manner, however, if level of financial literacy of the individuals to be enhanced, it could moderate the relationship of behavioral biases and financial wellbeing. Based on these findings, it can be assumed that increased financial literacy could affect the relationship between behavioral biases and financial wellbeing in a moderating way. No such moderating evidence of financial literacy is found in literature in the context of behavioral biases and financial wellbeing. However, the moderating role of financial literacy has been studied by Adomako, et al. (2016) in the context of access to finance and firm growth and it has been observed that financial literacy relationship between access to finance and firm growth. Therefore, following hypothesis is assumed to be tested on the data to be collected.

H_4: Financial literacy moderate the relationship of behavioral biases and financial well-being of the individuals.

2.6. Theoretical Framework:

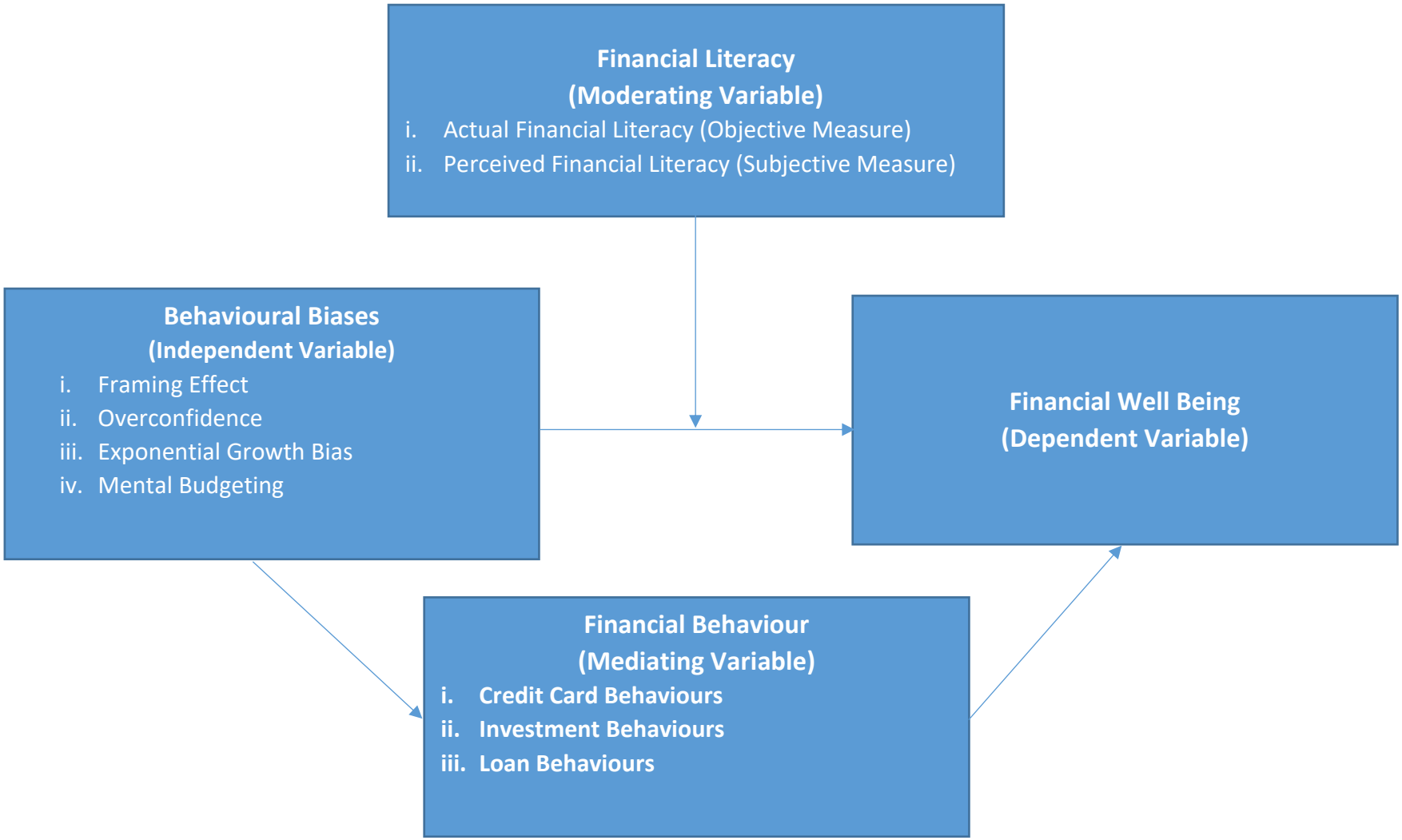


Figure 2.8: Theoretical Framework of the Study

Chapter 3 : Research Methodology

Methodology is one of the most significant components in a research project. Effective research methodology helps in ensuring validity of research (Healy & Perry, 2000). If methodology is not planned in an appropriate way, then this could result in serious threats with respect to reliability and validity of research (Joppe, 2016). In case of having less rigorous methodology it is difficult for researcher to generalize the research (Patton, 2002). This chapter deals with explanation of all processes and techniques that are used for the conduction of the research.

3.1. Type of Study:

This research is exploratory in nature. With the help of exploratory study, researcher became capable of getting in-depth information regarding main research problems. The study is conducted for analyzing the moderating role of financial literacy and mediating role of financial behavior on the relationship of behavioral biases and financial wellbeing in Pakistan. So, this study is conducted for getting wider information about behavioral biases, financial literacy, financial behaviors and financial wellbeing of the individuals in Pakistan.

3.2. Steps involved in a Research:

In the current research, mixed methods of the research are followed as devised by Creswell (2015). This process is used to design the whole methodology. With this method, various steps are used by researcher for comprehensive and detailed analysis of all the techniques and processes. The steps include philosophy, research strategy, research procedures, research instrument and types of data collection. These steps are explained below;

3.3. Philosophy of the Study:

Philosophy of research involves ways and mechanisms that are used for developing new and creative information. The philosophy of study is relevant to nature of information that is developed at the time of conducting research (Offredy & Vickers, 2010). Different assumptions underline research philosophy and these assumptions help to underpin research strategies (Johnson & Onwuegbuzie, 2004). The current research is conducted based on pragmatism philosophy as research has main aim of drawing conclusions with respect to the moderating role of financial literacy and mediating role of financial behaviors on the relationship between behavioral biases and financial wellbeing.

3.4. Research Methods:

As discussed above, mixed methods are used for the current study. Traditionally, two methods of research are under use of the researchers i.e. qualitative and quantitative research methods. However mixed methods provide an opportunity to employ both the methods to increase the depth of the analysis. In the current study, mixed methods approach is employed as this study has considered both quantitative and qualitative research methods. To be more specific, this study has employed explanatory sequential design. It has first employed quantitative analysis. Based on the findings of the quantitative analysis, a qualitative analysis is carried out to explain in depth the findings of the quantitate analysis.

With regards to quantitative methods, a closed ended questionnaire was devised based on questions adopted from various studies and a survey was conducted. The dataset concluded is quantified into facts and figures regarding financial literacy, financial behaviors, behavioral biases and financial wellbeing. Whereas, for qualitative

analysis, an open-ended questionnaire was developed on the basis of findings of quantitative analysis. Interviews of the experts are conduced to further explain the findings of the quantitative analysis.

Figure 3.1 presents the procedure of mixed methods sequential explanatory research design followed in this study. The procedure is developed based on the insights from the work of Creswell (2015). In the quantitative phase, survey is carried out based on the questionnaire developed through literature review. Data collected through survey is analyzed using descriptive and statistical tests. In the qualitative phase, semi structure interviews are conducted from the experts, based on an open-ended questionnaire developed on the basis of the findings of quantitative analysis. The details of procedure adopted for both quantitative and qualitative phase are presented in coming sections of the chapter.

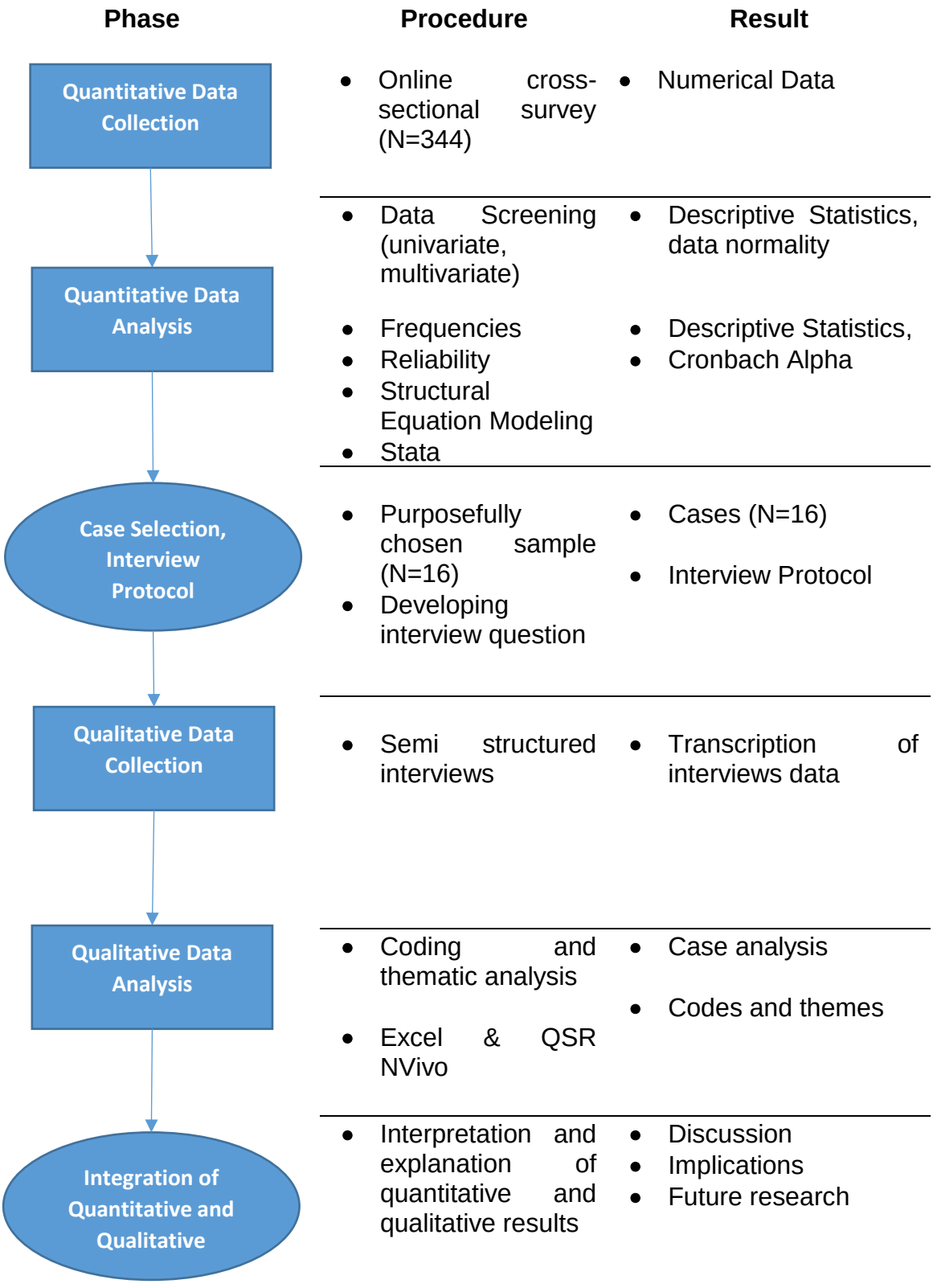


Figure 3.1: Mixed Methods Sequential Explanatory Research Design

3.5. Quantitative Phase:

3.5.1. Research Strategy:

Different techniques can be used to conduct a quantitative research. Mostly case studies, observations, experiments, survey and action studies are involved in research strategies. The research strategy could be selected based on requirement of the research. Case study analysis method helps in getting detailed information about research issue. For the quantitative phase, survey questionnaire is used as a research instrument. It helped in enhancing the understanding about research the issue (Sekaran & Bougie, 2009).

3.5.2. Data Collection:

To collect data for a research, two methods can be used i.e. primary data collection method and secondary data collection method. This research is conducted through primary data collection method. Data is collected from salaried persons having job experience of not less than three years and businessmen having business tenure of not less than three years. The reason to choose salaried persons and businessmen for this study is that they are mainly involved in making day to day financial decisions.

3.5.3. Sampling Technique and Sample:

The sample for present study is selected through convenient sampling method. As, researcher has budget and time constraints, so convenient sampling technique is considered best for this research. Researcher has collected data through questionnaires from those respondents who can be reached easily by the researcher. For ensuring high generalizability, more than 1000 respondents were approached as recommended by OECD (2015).

3.5.4. Research Instrument:

The instrument that researcher used in this research is survey questionnaire. Questionnaire comprised of questions adapted from various studies as reviewed in

literature review. Questionnaire consisted of four parts. First part of the questionnaire is related to demographic variables whereas second part is on financial wellbeing and financial literacy. Third part consist of behavioral biases and the fourth part consist of financial behaviors. The questionnaire devised for the research was uploaded online through Google Forms (available at https://goo.gl/forms/Dv8yVJa5OzUWhalJ3).

A total of 1,061 individuals were contacted through emails and other prevailing communication tools with consistent follow-ups. Out of those, 611 individuals have responded to the questionnaire. The criteria devised for the data collection required to consider salaried persons having job experience of not less than three years and businessmen having business tenure of not less than three years. The reason to choose salaried persons and businessmen for this study is that they are mainly involved in day to day financial matters and make financial decisions. Based on the devised criteria, out of 611 respondents, the sample finalized for the study comprised of 344 respondents. 267 respondents failed to meet the required criteria and therefore have not been considered in the final sample. Summary of responses is presented in Table 3.1.

The overall response rate of a survey shows the representativeness of the sample respondents. Achieving high response rate reduce the possibility of significant response bias. Response rate above 50% is considered as adequate for analysis, although it has no statistical basis and is just a rough guide (Rubin & Babbie, 2010). This study has achieved an overall response rate of 56.30%, whereas in case of businessmen, it is 57.69% and in case of employees, it is 74.01%.

	Businessmen	Employees	Not Businessmen, nor Employees	Total
Individuals Contacted	1,061			
Respondents	78	404	129	**611**
Respondents not met the Criteria	33	105	129	**267**
Final Sample	45	299	-	**344**
Response Rate (Final Sample to Respondents)	**57.69%**	**74.01%**	**-**	**56.30%**

Table 3.1: Summary of Responses

The data collected through the questionnaire was transformed into quantitative data for the sake of statistical analysis.

3.5.5. Variables:

3.5.5.1. Independent Variables - Behavioral Biases:

Framing Effect:

Base on Kahneman & Tversky (1984), framing effect is measured through the following modified questions.

Question: Imagine that the South Asia is preparing for the outbreak of an unusual disease which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences of the programs are as follows:

If Program A is adopted, 200 people will be saved.

If Program B is adopted, there is a two thirds probability that no people will be saved, and one third probability that 600 will be saved.

Which of the two programs would you favor?

i. Program A

ii. Program B

Question: Imagine that the Europe is preparing for the outbreak of an unusual Asian disease which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences of the programs are as follows:

If Program C is adopted, 400 people will be die.

If Program D is adopted, there is a one third probability that nobody will die and a two third probability that 600 will die.

Which of the two programs would you favor?

i. Program C

ii. Program D

Virtually, the options given in both questions are true, however, they are framed in a way to see how respondents answer to these. Base on their responses, it is evaluated whether the respondents are affected by framing effect or not.

Framing is also worked out by adopting following questions from Kahneman & Tversky (1984). The questions were framed to evaluate how individuals behave towards risk choices. Those who behaved differently to the given outcomes are found as affected of framing.

Question: Choose between:

A. A sure gain of PKR 240

B. 25% chance to gain PKR 1000 and 75% chance to gain nothing.

Question: Choose between:

C. A sure loss of PKR 750

D. 75% chance to lose PKR 1000 and 25% chance to lose nothing.

Overconfidence:

This study has ensured to cover all the manifestations of overconfidence as reviewed in related literature i.e. miscalibration, better than average affect and too high volatility estimates (Glaser & Weber, 2007). The questions to test these manifestations of overconfidence are adopted from the studies of Allgood & Walstad (2016) and Kramer (2016).

Allgood & Walstad (2016) found a relationship between perceived financial literacy and confidence of the individuals in their own financial insights and the financial matters handling ability. Based on Allgood & Walstad (2016) following question is employed to measure the overconfidence in the respondents: "*On a scale from 1 to 7, where 1 means very low and 7 means very high, how would you assess your overall financial knowledge?"*

Overconfidence 1: A dummy where [1] corresponds to respondents that self-assess their financial literacy in the highest possible category, while ranking below the median for the actual financial literacy score and [0] otherwise.

The second dummy is created by employing the question adopted from Kramer (2016): "*On a scale from 1 to 7, where one means no chance at all and 7 means absolutely certain, how likely is it that you will attain (at least) the age of 80?"*

Overconfidence 2: A dummy variable where [1] correspond to respondents who has answered 7 (maximum value) to the question and [0] otherwise.

Following Kramer (2016), the third dummy is generated from the available dataset on the questions regarding actual financial literacy.

Overconfidence 3: A dummy variable where [1] corresponds to respondents that never answered "*Don't know*" to any of the actual financial literacy questions, and [0] otherwise.

Based on the methodology of Kramer (2016), the fourth dummy is generated by calculating the inflation intervals from the difference of the questions: "*What is the maximum percentage prices will increase over the next twelve months, do you think*?" [=max] and "*What is the minimum percentage prices will increase over the next twelve months, do you think?*" [=min].

Overconfidence 4: A dummy where [1] corresponds to respondents whose inflation interval equaled to 0 and [0] otherwise.

Exponential Growth Bias:

Stango & Zinman (2009) has defined exponential growth bias as "*the tendency of individuals to systematically and dramatically underestimate the growth or decline of exponential series when asked to make intuitive assessments (without calculators)*". Almenberg & Gerdes (2012) measured exponential growth bias by asking the respondents to guess the future value of a certain investment at a certain compound

rate for a certain long period of time. The questions to ascertain the existence of exponential growth bias were adopted from the studies of Almenberg & Gerdes (2012) and Foltice & Langer (2015). From the study of Almenberg & Gerdes (2012), the following question to estimate the prospective savings is employed.

Question: Suppose you invest PKR 100 and the interest rate is 7% per year. If you don't withdraw any money, how much money do you have in this account after 30 years?

The respondents were not expected to try to calculate the answer, but simply to make a guess regarding the future value. Those individuals who has underestimated the future value are considered as affected by the exponential growth bias or otherwise.

One more question was adopted from the study of Foltice & Langer (2015) regarding savings in the retrospective. Question regarding savings in retrospective is:

Question: Your goal is to have PKR 100,000 in your savings account 36 years from today. Today, you will invest an initial amount of money in your savings account for 36 years at a constant rate of 12% per year. Assume no additional deposits or withdrawals. Interest is compounded annually and reinvested into the account. How much do you need to invest today in order to reach your savings goal in 36 years?

The respondents were not expected to try to calculate the answer, but simply to make a guess regarding the present value. Those individuals who had answered more than PKR 1 greater than the actual answer are considered as affected by the exponential growth bias or otherwise.

Mental Budgeting:

Following scale adopted from Antonides, et al. (2011) is employed to capture the responses. The scale consists of four items on a 7-point Likert scale. The higher score referred to higher presence of mental budgeting:

Question: Please, indicate to what extent each of the following statements apply to you.

(Answers: 1 = Extremely disagree; 2 = Very disagree; 3 = Fairly disagree, 4 = neither agree nor disagree; 5 = Fairly agree; 6 = Very agree, 7 = Extremely agree)

1. *I have reserved money (budget) for different expenses, such as food, clothing, transportation, etc.*
2. *I never spend more than a fixed amount on food, clothing, transportation, etc.*
3. *If I spend more on one thing, I economize on other expenses.*
4. *If I spend more than normal on one thing in 1 month, I spend less on other things in the next month.*

The four items listed above are labeled as “mental budgeting” by calculating the overall score.

3.5.5.2. Dependent Variable – Financial Wellbeing:

The scale developed by Consumer Financial Protection Bureau (2017) for measuring financial wellbeing score is adopted for this study. It has provided financial wellbeing score of each respondent. The scale is reliable and can measure financial wellbeing across individuals as it is developed based on a large sample. The scores achieved from the scale can be complemented to objective measures such as income, credit scores and measures of financial situation, as it is difficult to collect such objective

data in Pakistani settings due to reluctance of the respondents to share such information.

How well does this statement describe you or your situation?						
S.No.	This statement describes me	Completely	Very Well	Somewhat	Very Little	Not al all
1	I could handle a major unexpected expense					
2	I am securing my financial future					
3	Because of my money situation, I feel like I will never have the things I want in life					
4	I can enjoy life because of the way I'm managing my money					
5	I am just getting by financially					
6	I am concerned that the money I have or will save won't last					
How often does this statement apply to you?						
This statement applies to me		Always	Often	Sometimes	Rarely	Never
7	Giving a gift for a wedding, birthday or other occasion would put a strain on my finances for the month					

8	I have money left over at the end of the month					
9	I am behind with my finances					
10	My finances control my life					

Score to the response against each item is assigned as per guidelines of Consumer Financial Protection Bureau (2017) and then all individual scores are summed to get an overall Financial Wellbeing score of each respondent.

3.5.5.3. Mediating Variable - Financial Behaviors: Credit Card Behaviors:

With a condition that the respondents use credit card, this study has asked five relevant survey items in a set of questions. These questions are adopted from the study of Allgood & Walstad (2016).

1. I do not always pay my credit cards in full.
2. In some months, I carried over a balance and was charged interest.
3. In some months, I paid the minimum payment only.
4. In some months, I was charged a late fee for late payment.
5. In some months, I was charged an over-the-limit fee for exceeding my credit line.

Stango & Zinman (2009) argue that financial management experts do not endorse these financial behaviors to be adopted by credit card users due to their costs. Such behaviors, if repeated over time; may put the credit card users in financial troubles. Based on the perspective given by Stango & Zinman (2009), this study has explored the impact of various behavioral biases on these identified credit card behaviors. Data

transformation is carried out in a way to reflect negative credit card behaviors. For instance, if an individual did not pay full due amount against his / her credit card in a month, this is considered as financially an unhealthy credit card behavior. Therefore, those who said that that they have not paid credit care dues in full for a month, they are assigned a score of 1, whereas those who said that they paid full dues for a month, they are assigned a score of 0. An overall score of credit card usage is worked out by summing the score of each item.

Investment Behaviors:

Based on the methodology of Allgood & Walstad (2016), this study has selected four items on investment behavior. With an aim to know the form of financial investment of the respondents, a question is asked about investments in stocks, bonds, mutual funds or any other securities. To probe the investment behavior of working individuals upon retirement, a question is asked *whether a person had set up a retirement account independent of any retirement accounts with an employer*. To find out the wealth accumulation behavior upon retirement, a question is asked *whether or not adults had more than half of their retirement accounts invested in stocks or mutual funds containing stocks*. Fourth question is asked to know *whether a person rebalanced his or her portfolio in retirement account(s) at least once a year or once every few years*. This question is added to know how the respondents manage their investments. It is expected that behavioral biases may affect these investment behaviors of market participation in a negative manner. The qualitative data collected to reflect investment behaviors is transformed in a way to show negative investment behaviors. For instance, if a respondent replied to an investment related question that he / she do investments in stocks, bonds, mutual funds and other securities, it is considered as a positive investment behavior and the value assigned to this response is 0, whereas if

the respondent replied that he / she did not made any investment in stocks, bonds, mutual funds and other securities, this is considered as a negative investment behavior and the value assigned to this kind of response is 1. Based on scores of individual items, an overall score is calculated to reflect negative investment behaviors by summing up score of all individual items.

Loan Behaviors:

Loan behaviors are considered as infrequent financial decisions made by individuals (Allgood & Walstad, 2016). This study has included four questions to measure the loan behaviors which are adopted from the study of Allgood & Walstad (2016). Regarding homeownership and mortgages, three questions are included as individuals normally have to undertake mortgages. These questions are to ascertain whether adults owned a home because most homes are purchased with a mortgage, whether they make mortgage payments on time or become ever late and whether the adults with a mortgage had ever compared mortgage offers from different lenders. Fourth question is added regarding auto loan to provide a consumer loan contrast for comparing mortgage offers. It was to ascertain whether the adults compared different offers for auto loans or not.

Individuals having lesser level of behavioral biases would be more likely to own a home as it is considered as one of the way to accumulate wealth (Behrman, Mitchell, Soo, & Bravo, 2012; Lusardi & Mitchell, 2007). It is also expected that individuals more prone to behavioral biases may be more likely to become late on making mortgage payment on time.

3.5.5.4. Moderating Variables – Financial Literacy:

Actual Financial Literacy:

Five questions are asked to measure the actual level of financial literacy. Allgood & Walstad (2016) argued that although these questions appear to be relatively simple, they have been found to be challenging for many adults and have served as reliable and valid indicators of financial literacy in several national surveys. These questions are employed by 2004 Health and Retirement Survey of USA, Wave 11 of a 2007–2008 National Longitudinal Survey of Youth and American Life Panel survey. Following questions provide an overall measure that was labeled as "actual" financial literacy. The correct answers are indicated in bold.

Understanding of Inflation:

Question: Imagine that the interest rate on your bank savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in the account?

- *More than today*
- *Exactly the same*
- *Less than today*
- *Don't know*

Knowledge about Risk and Risk Diversification:

Question: Buying a single company's stock usually provides a safer return than a stock mutual fund.

- *True*
- *False*
- *Don't know*

Knowledge about Consumer Credit:

Lusardi & Mitchell (2011) and Lusardi (2015b) employed the following questions to measure the numeracy, or the capacity to do a simple calculation related to compounding of interest rates.

Question: Suppose you had PKR 1,000 in a bank savings account and the interest rate was 2% per year. After 5 years how much do you think you would have in the account if you left the money to grow?

- *More than PKR 1,020*
- *Exactly PKR 1,020*
- *Less than PKR 1,020*
- *Don't know*

Question: If interest rates rise, what will typically happen to bond prices?

- *They will rise*
- *They will fall*
- *They will remain the same*
- *There is no relationship between bond prices and the interest rate.*
- *Don't know*

Time Value of Money:

Question: A 15-year bank loan typically requires higher monthly payments than a 30-year bank loan, but the total interest paid over the life of the loan will be less.

- *True*
- *False*
- *Don't know*

Perceived Financial Knowledge:

It is a subjective evaluation of financial literacy and focus on what people think they know about personal finance based on self-assessment of their financial literacy. Following question on a 7-point Likert scale, adopted from Allgood & Walstad (2016); is asked from the respondents.

Question: On a scale from 1 to 7, where 1 means very low and 7 means very high, how would you assess your overall financial knowledge?

3.5.6. Validity and Reliability:

To use the questionnaires for data collection, it is important to check its validity. For testing validity, construct, content and face validity of questionnaire are checked. The questions adopted by various researchers to measure behavioral biases, financial literacy, financial behaviors and financial wellbeing are employed after making necessary changes keeping in view the local settings. This helped to achieve the content and face validity (Carter & Porter, 2000). In addition to the validity, it is important to test reliability of questionnaire as well. Reliability is related to dependability of data (Carter and Porter, 2000). The reliability test showed that how much items used in the questionnaire are consistent with the research issue.

3.5.7. Pilot Testing:

Before distributing questionnaires to all respondents, it is significant to do pilot test (Healy & Perry, 2000). To test reliability of questionnaire, researcher carried out pilot testing in which 100 questionnaires were distributed to the respondents. The results were used to test the reliability and those items were modified to make them simple, which showed less reliability. This helped in ensuring high reliability of the survey instrument used in the research.

3.5.8. Data Analysis:

After complete collection of cross-sectional data, analysis is carried out in Stata 14. Stata is an integrated software, which not only provides data analysis but also data management and graphical solution. It is featured with point and click interface as well as intuitive command syntax. It offers basic tabulation, summaries and advanced multilevel models (woofresh.com, 2019). For testing of hypothesis, Structural Equation Modelling (SEM) is employed. For reliability of the questionnaire, Cronbach's Alpha statistics is worked out. Descriptive statistics and correlation analysis are also reported. Moreover, multicollinearity diagnostic is carried out by employing Vector Inflation Factor. Histograms are drawn to represent the probability distributions of the continuous variables.

It is considered appropriate to highlight why structural equation modelling is used for testing of hypothesis. Structural equation modelling is referred to as second generation method of multivariate analysis (Awang, Afthanorhan, & Asri, 2015). The relationship between two or more observed variables can be estimated with structural equation modelling, as it provides support in explaining a theoretical model by hypothesizing how a variable or a set of variables explain a construct. In other words, the aim of structural equation modelling analysis is to determine the extent the sample data support a theoretical data. Structural equation modelling can be employed to test various theoretical models such as regression, path analysis and confirmatory factor analysis (Schumacker & Lomax, 2010). According to Kaplan (2008) "structural equation modelling is a set of methodologies that seeks to represent hypothesis about the means, variances and covariances of observed data in terms of smaller number of 'structural' parameters defined by a hypothesized underlying model". This shows that SEM offers a range of techniques under one umbrella.

Hypothesis testing is carried out in the standard linear SEM environment. Standard linear SEM assumes that the observed and latent variables are “jointly distributed normally” with mean and variance matrix. It also includes error terms among the latent variables (StataCorp LLC, 2018a). Within the standard linear SEM environment, four different estimation methods are available. These methods are maximum likelihood, quasimaximum likelihood, asymptotic distribution free and maximum likelihood with missing values. Maximum likelihood method assumes the full joint normality of all the observed variables (StataCorp LLC, 2018a). Model 1, 2, 3 and 4 are estimated with the maximum likelihood method, as the variables under these models were normally distributed. Whereas, Model 5 is estimated with asymptotic distribution free method, due to the fact that there was multicollinearity issue among the independent variables and the Financial Literacy variable was not normally distributed as evident from the histogram presented in Figure 4.7. It may be noted that the asymptotic distribution free method does not make any joint normality assumption or even not assume symmetry for the observed variables. It gives justifiable point estimates and standard errors, assuming no normality. However, one of its disadvantages is that sometimes it become difficult to know exactly that which normality assumption is relaxed. Asymptotic Distribution free method of estimation is a kind of weighted least squares. It also referred to as the generalized method of moments estimator.

SEM estimation in Stata allows to estimate the models with various methods, as presented above. It is also interested to know that Stata allows the use of these methods by combining with several different techniques of calculating standard errors. Without going into detail of all these techniques, only two techniques are explained hereunder i.e. observed information matrix (OIM) and nonparametric bootstrap techniques (StataCorp LLC, 2018b). OIM is the matrix of second derivatives, normally

of the log likelihood function. It is based on the theory of asymptotic maximum likelihood (StataCorp LLC, 2018c). On the other hand, nonparametric bootstrap technique is a general and distribution free technique. It executes a model multiple times by resampling the observations (StataCorp LLC, 2018d). In case of estimation the models of this study, fifty bootstrap replications are employed. Nonparametric bootstrap technique is useful when the formulas being used for calculation of estimates are grounded on the presumption that it cannot be understood well or cannot be hold or verified or is simply ambiguous. Moreover, it applies in models where the computational formula holds for large sample and not for small samples or in case where computational formula simply not exist (Ajmani, 2009) . In estimation of Model 1, 2, 3 and 4 of the current study, maximum likelihood model is applied in combination with OIM and nonparametric bootstrap techniques. Whereas, asymptotic distribution free method is used in combination with OIM technique in case of Model 5, as it gives more robust results when it combines with asymptotic distribution free method (StataCorp LLC, 2018b).

3.6. Qualitative Phase:

The qualitative phase is executed on the basis of findings of quantitative phase. Qualitative research methods help in developing an understanding of a social phenomenon from the view point of those who involved in it (Glesne, 2015). It helps in contextualizing the issues in a specific environment. This environment could be social, cultural or political (Glesne, 2015). Qualitative research methods are aimed to better understand and explain how different participants construct the world around them in a social setting. Researchers are required to approach the research problem with an exploratory open mind to achieve the said aim (Glesne, 2015).

While explaining the research methods for the present study under heading 3.4.4., the researchers have presented the overall research design in Figure 9. However, under this section, the researchers have presented in detail the procedures adopted for the execution of the qualitative phase of our study.

The study has employed semi structured, in-depth interviews of the consenting participants. Hereunder, the interview session is discussed in detail.

3.6.1. Semi Structured In-depth Interviews:

In-depth interviews conducted in a semi structured layout enable the researcher to collect the qualitative data with an open and relaxed approach (Galletta, 2013). With this approach, researcher communicate and gather meaningful data in a focused way while being less structured and intimidating as compare to a formal and structured interviewing method (Galletta, 2013). Semi structured interviews are considered as one of the efficient, simple and practical sources of collecting qualitative data. Moreover, semi structured interview helped the researchers to carry out careful investigation of the areas which could not be easily observed such as mental feelings, behaviors and thoughts (Galletta, 2013). Based on the findings of the quantitative analysis, this study has identified various interrelationships of behavioral biases, investment behaviors, financial literacy and financial wellbeing. The identified relationships from the quantitative analysis become the basis of in-depth investigation carried out through qualitative methods i.e. semi structured interviews. The interviews supported the researcher to verify and further explain the relationships emerged out of quantitative analysis.

The individuals responded to survey questionnaire in the quantitative phase were approached to participate in the interview sessions of the qualitative phase with an aim to verify and further explain the relationships emerged out of quantitative analysis.

There are varying viewpoints about the validity and reliability of interviews. There is a school of thought who argue that validity of semi-structured interviews is high as it provides the opportunity to the interviewee to discuss in detail and explain the meanings behind actions with minor or in cases no input from the interviewer (Galletta, 2013; Glesne, 2015). However, there is another school of thought who argue that validity of the interviews is low. They support their viewpoint with the claim that there is no way with the researcher to know whether the interviewee is speaking truth and the interviewee can fabricate the response consciously or unconsciously. One other strong argument against the validity of interviews is the role played by “hindsight” in semi structured interviews. People affected by hindsight could reflect on an occasion and rationalize their actions (Galletta, 2013; Glesne, 2015). The issues of validity are resolved while integrating the findings of both quantitative and qualitative methods. The explanatory mode of study enabled the researcher to carry out in-depth analysis of the findings of the quantitative analysis.

3.6.2. Participants:

For a sequential explanatory design, it is considered important to use the same participants for both phases of the study (Creswell, 2015). The criteria adopted for selection of participants in the quantitative phase was that they must have at least three years job or business experience. The researchers have selected the participants for the qualitative data collection from the participants of the quantitative phase, with the exception of three participants. Considering the questionnaire prepared on the basis of the findings of the quantitative analysis, it was found appropriate to choose those respondents who are highly specialized in the field of management sciences and research, as the questions to be asked were required strong background of research in the field of finance and management. Moreover,

three participants were interviewed which were not the part of survey conducted in quantitative phase. However, those three participants are university professors, having PhD / MS degrees, with strong academic background.

3.6.3. Sample:

Sampling is considered as very important in determining the results of a mixed method study (Creswell, 2015). In most of mixed methods researches, the sample size of a quantitative phase is larger than qualitative phase (Creswell, 2015). In sequential designs, it is mostly considered appropriate to employ the same participants in both study phases. However, this could not be necessarily true in case of sample size. Important thing is how purposively the qualitative sample is chosen from the quantitative sample, consisting of those participants who could be in best position to answer in detail about the phenomenon under study (Creswell, 2015).

Initially, it was planned to carry out 20 in depth interviews. However, the interviews were terminated on 16th interview, as a saturation level was attained, and no new point was being raised by the interviewees (Saunders, et al., 2018).

3.6.4. Procedure:

The participants were invited for interviews through emails (Appendix-A) and written invitation letters (Appendix-B) with subsequent requests through phone calls. Interviews are conducted during the period from March to May 2018. Upon receiving confirmation of time and venue, the researcher paid in-person visits to those participants who were available in-person, for the conduction of the interview. However, some interviews were also carried out through telephonic and skype calls. Call records are kept in safe custody. Interviews were recorded wherever possible, in addition to written notes. Recordings of the interviews are kept in safe custody, whereas the notes taken are scanned and converted into pdf files for record.

Before starting the interview session, a detailed briefing to the interviewee was given by the researcher regarding the aim and objectives of the study and interview. A consent form highlighting an undertaking by the researcher to keep the identity of the participant anonymous was presented to the participant with a request to sign it after careful reading. Sample of the consent form is placed at Appendix-C. Interviews were ranged from minimum 35 minutes to maximum 1.50 hours.

3.6.5. Material:

A layout for the interviews was prepared with due care (Appendix-D). It was based on the findings of the quantitative analysis. The interview session was planned for one hour and executed in eight sections, as under:

3.6.5.1. Opening Remarks:

Researcher in five minutes time period explained the overall aim of the study and a brief overview of the different constructs being under investigations in the study.

3.6.5.2. Background:

Brief background of the interviews including his / her education, experience, area of expertise etc. It was also comprised of some questions regarding behavioral biases, financial behaviors, financial literacy and financial wellbeing. These questions were not added in the interview for the sake of any analysis. The purpose of these questions was to develop a basic understanding about the various thematic areas being studied. The background section was planned to be covered in 10 minutes.

3.6.5.3. Thoughts about the Relationships of Behavioral Biases and Financial Wellbeing:

Under this section, questions were asked about the relationships identified in quantitative analysis regarding framing effect with financial wellbeing. Relationship of income level and number of dependent children with financial wellbeing is also discussed in this section. The section was planned to be covered in 10 minutes.

3.6.5.4. Thoughts about the Relationships of Behavioral Biases and Financial Behaviors:

Under this section, questions were asked about the relationships identified in quantitative analysis regarding framing effect, exponential growth bias and mental budgeting with investment behaviors. Moreover, a question about differing investment behaviors of job holders and businessmen is also asked in addition to a question regarding impact of level of education on investment behavior. The section was planned to be covered in 10 minutes.

3.6.5.5. Thoughts about Financial Behaviors and Financial Wellbeing:

Under this section, a question was asked about the relationship identified in quantitative analysis regarding investment behavior with financial wellbeing. The section was planned to be covered in 05 minutes.

3.6.5.6. Thoughts about interrelationships of Behavioral Biases, Financial Behaviors and Financial Wellbeing:

This section was basically based on the questions asked in previous sections. In quantitative analysis, the researchers have identified a mediating role of investment behaviors in the relationship between behavioral biases and financial wellbeing. So, this section was to probe the mediation effect in more detail. This section was planned to be covered in 10 minutes.

3.6.5.7. Thoughts about interrelationships of Financial Literacy, Behavioral Biases and Financial Wellbeing:

Under this section, three questions were asked about the moderation effect of financial literacy between exponential growth bias and financial wellbeing. The purpose was to better understand the moderation effect identified in quantitative analysis and to probe the explanations about it. This section was planned to be covered in 10 minutes.

3.6.5.8. Other Issues and Concluding Remarks:

This section was just to get an overall viewpoint of the participants regarding the identified relationships, setting a way forward for future research and to conclude the session. This section was planned to be covered in 05 minutes.

3.6.6. Data Analysis:

This section reflected on how the qualitative data collected through semi structured interviews was analyzed. The data collected was recorded through voice recordings and notes taken while interviewing. Interview transcripts were prepared by listening the audio recordings again and again and by getting help from summary notes. One of the transcripts prepared is placed at Appendix-E. All the interview transcripts are transferred to NVivo 11, converted into cases, coded against the nodes created for the identified themes and analyzed using by categorizing into various classifications. The codebook reflecting how the interview data was coded is placed at Appendix-F. Moreover, attribute analysis is also carried out for all the cases.

3.7. Ethical Considerations:

To conduct research in an effective and appropriate way, researcher has ensured fulfillment of ethical standards at all stages of research. It is very important for a researcher to focus on ethical considerations for getting success (Smith, Thorpe, & Lowe, 1991). In case of using sources for data collection, researcher has not tried to take any undue advantage. The researcher has referred to works of others by giving proper citations. Similarly, researcher has ensured the confidentiality and privacy of the respondents in both quantitative and qualitative phase. The respondents were not forced to fill the questionnaires or to participate in interviews and to become part of research, but rather than that data is collected from them with their own desire and choice.

Chapter 4 : Results of Quantitative Phase

This chapter has covered the results of the quantitative analysis. Following the methodology devised in previous chapter, the researchers have reported the results of the quantitative analysis carried out in Stata.

4.1. Quantitative Analysis:

4.1.1. Descriptive Statistics:

Before testing the validity of the hypothesis of the study, the data collected is evaluated through descriptive statistics i.e. mean, standard deviations, minimum and maximum values. Descriptive statistics has given a fair idea about the salient of the data in hand.

4.1.1.1. Dependent Variable: Financial Wellbeing:

Descriptive statistics of dependent variable are presented in Table 4.2. Financial Wellbeing (FWB_Score) is the dependent variable of the study. The number of observations are 344 for the dependent variable. Mean FWB_Score of the respondents is 20.95, having standard deviation of 5.02. Minimum score achieved by respondents is 6.00 and maximum score achieved is 35.00.

Variable	Obs	Mean	Std. Dev.	Min	Max
FWB_Score	344	20.95	5.02	6.00	35.00

Table 4.1: Descriptive Statistics of Dependent Variable

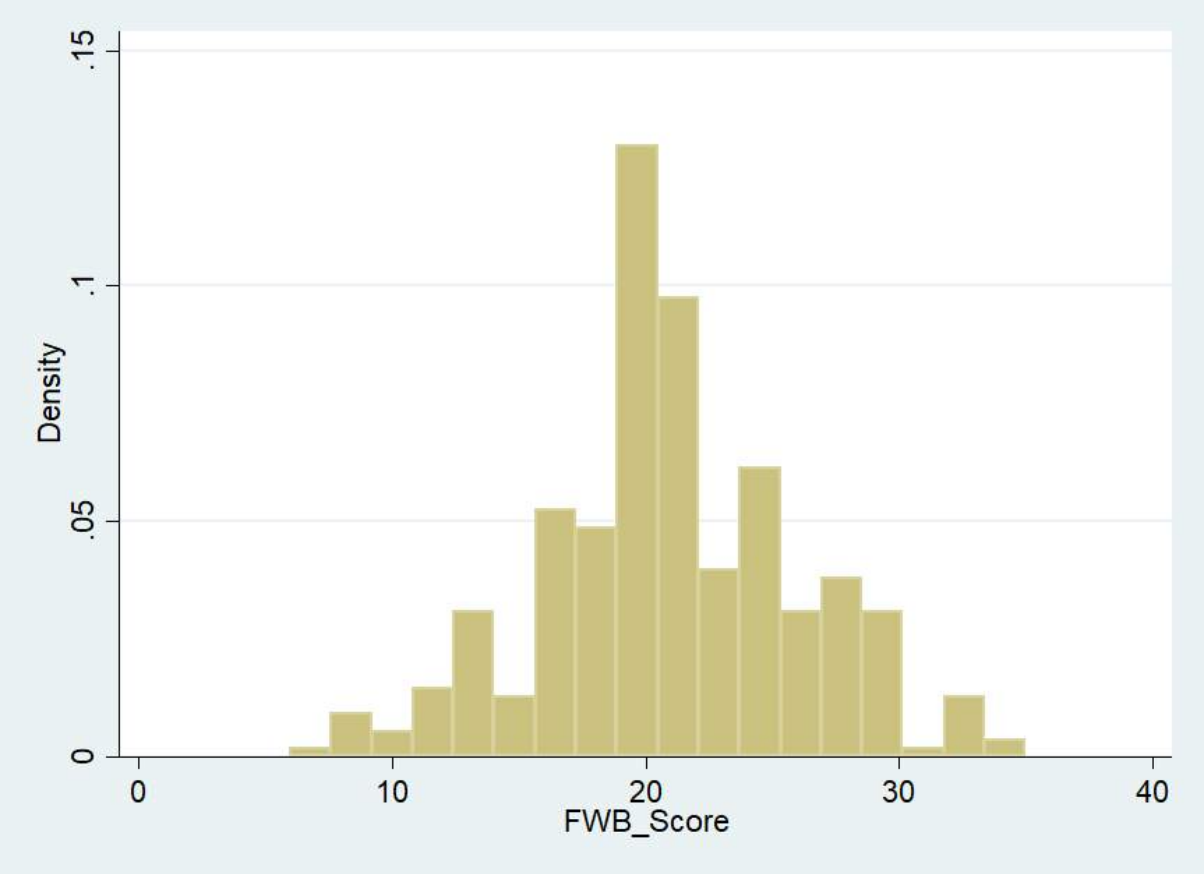


Figure 4.1: Financial Wellbeing Score Histogram

4.1.1.2. Independent Variables: Behavioral Biases:

Descriptive statistics of independent variables are presented in Table 4.1. Framing Effect (FE), Overconfidence (OC), Exponential Growth (EG) and Mental Budgeting (MB_Score) are the independent variables of the study. The number of observations are 344 for each of independent variable. FE, OC and EG are categorical variable through which it is shown whether these behavioral biases exist or not in the respondents. The responses in percentage terms shows that 59.30% of respondents were not affected by framing, whereas 40.70% respondents were affected by framing. 34.59% respondents have not shown overconfidence, whereas 65.41% have shown overconfidence. 38.66% respondents were not affected by exponential growth bias, whereas remaining 61.34% were affected by exponential growth bias. MB_Score, a

continuous variable has mean value of4.69 and standard deviation of 1.32 whereas, its minimum and maximum values are 1.00 and 7.00.

Variable	Number of Observations	Interpretation	Percentage / Mean (SD)
FE	344	No	59.30%
		Yes	40.70%
OC	344	No	34.59%
		Yes	65.41%
EG	344	No	38.66%
		Yes	61.34%
MB_Score	344	1 to 7	4.69 (1.32)

Table 4.2: Descriptive Statistics of Independent Variables

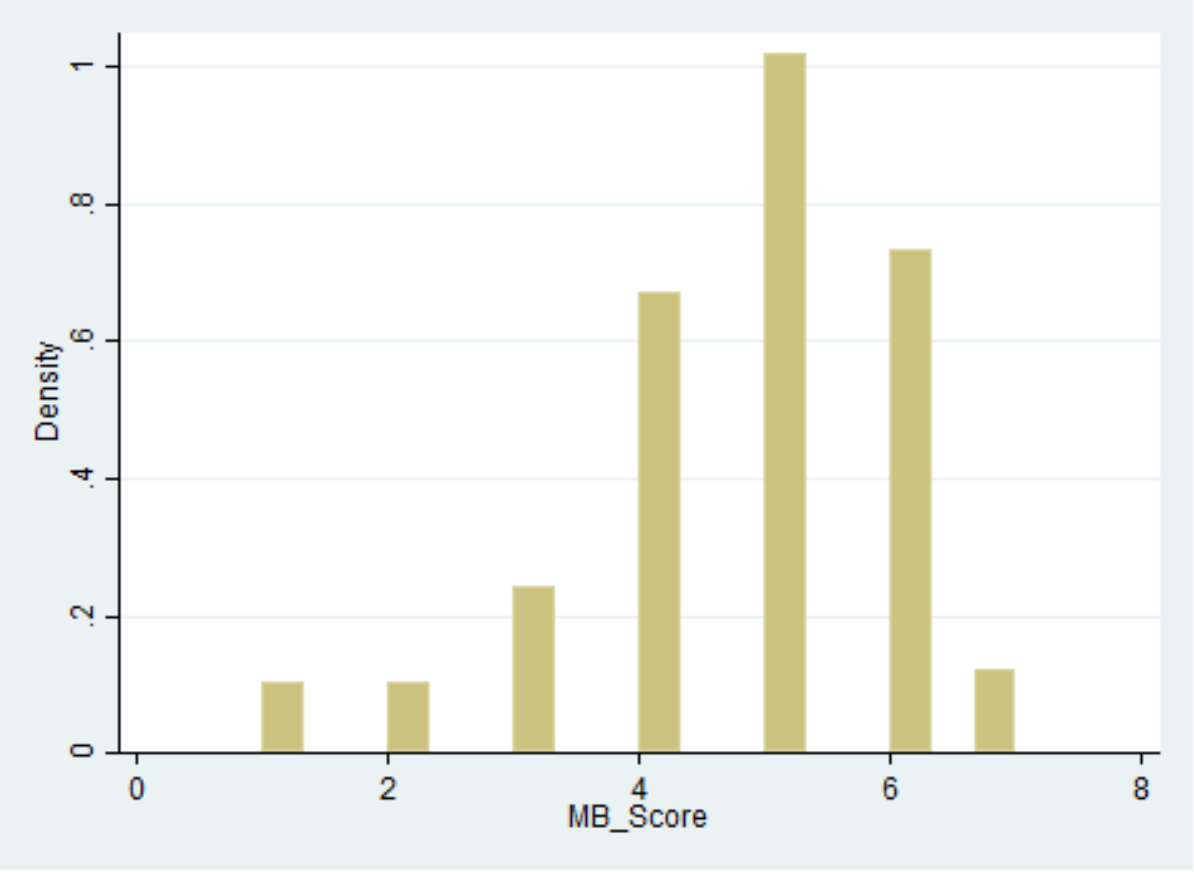


Figure 4.2: Mental Budgeting Score Histogram

4.1.1.3. Mediating Variables: Financial Behaviors:

Descriptive statistics of mediating variables are presented in Table 4.3. Credit Card Behaviors (CC_Score), Investment Behaviors (Inv_Score) and Loan Behaviors (Loan_Score) are the mediating variables of the study. The number of observations are 344 for each mediating variable. Mean CC_Score achieved by the respondents is 1.06, having standard deviation of 1.73. Minimum CC_Score of the respondents is 0.00 and maximum is 6.00. Mean value of Inv_Score is 3.42, whereas it standard deviation is 1.06. Minimum Inv_Score is 0.00 and maximum is 4.00. In case of loan behaviors, mean value of Loan_Score of the respondents is 3.93 (higher than CC_Score and Inv_Score) and standard deviation is 1.29. Minimum and maximum values of Loan_Score are 0.00 and 5.00 respectively.

Variable	Obs	Mean	Std. Dev.	Min	Max
CC_Score	344	1.06	1.73	0.00	6.00
Inv_Score	344	3.42	1.06	0.00	4.00
Loan_Score	344	3.93	1.29	0.00	5.00

Table 4.3: Descriptive Statistics of Mediating Variables

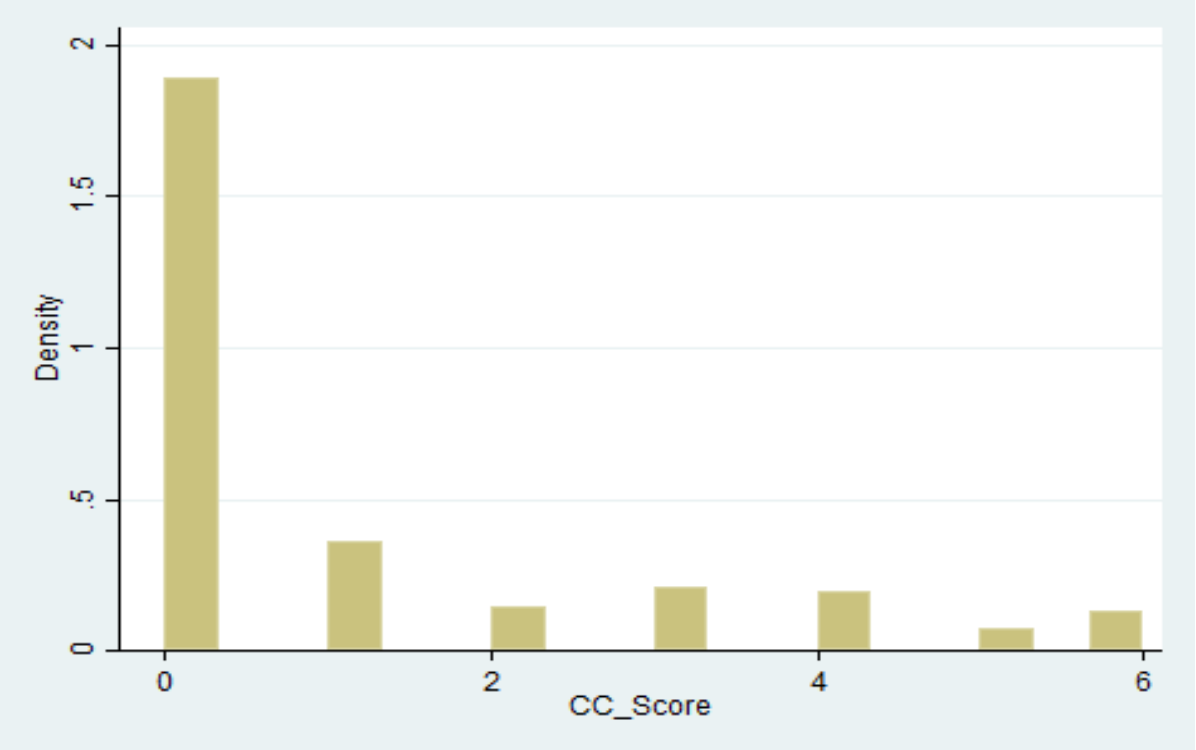


Figure 4.3: Credit Card Score Histogram

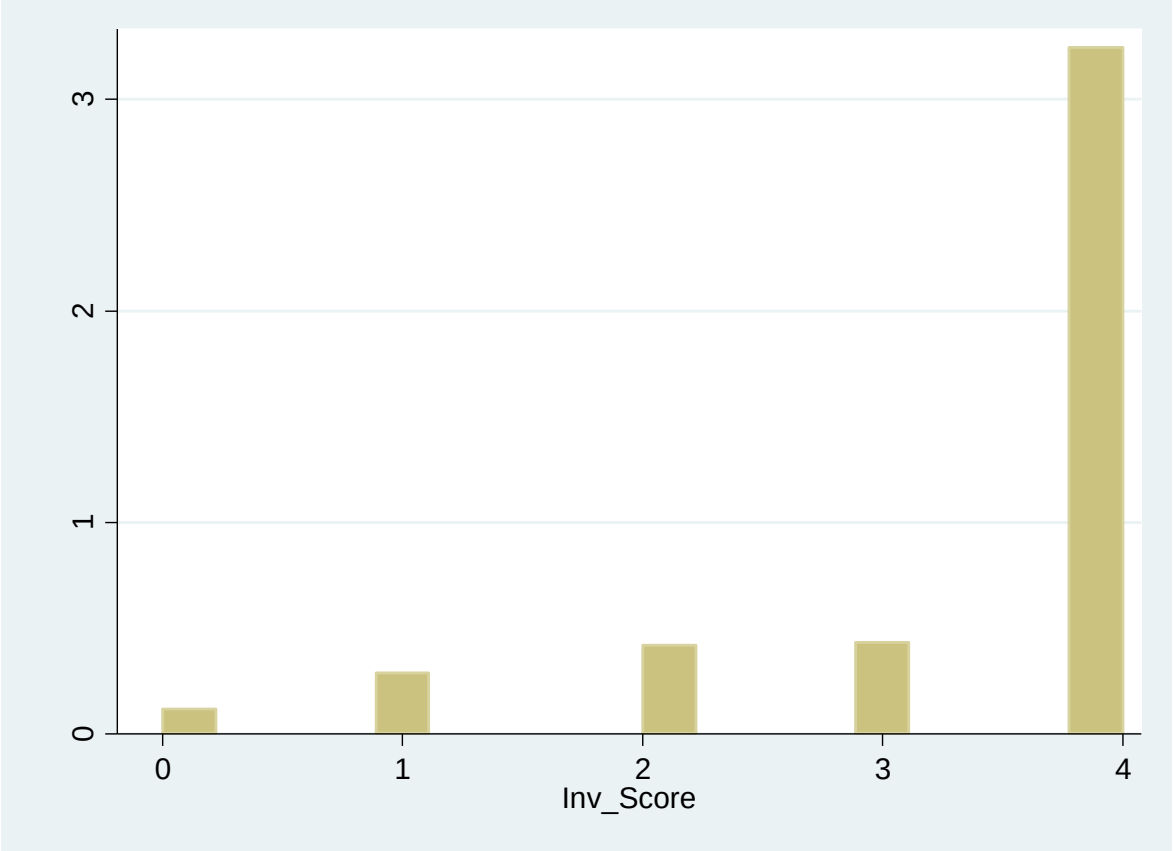


Figure 4.4: Investment Score Histogram

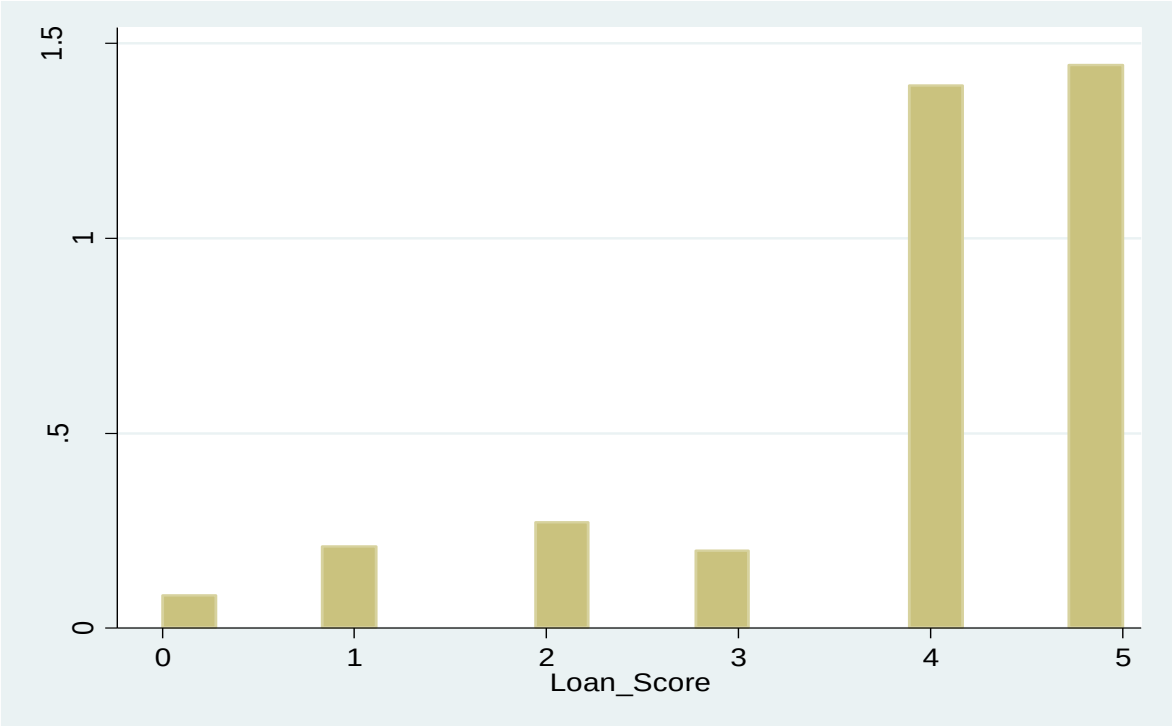


Figure 4.5: Loan Score Histogram

4.1.1.4. Moderating Variables: Financial literacy:

Descriptive statistics of moderating variables are presented in Table 4.4. Perceived Financial Literacy (FLS) and Actual Financial Literacy (FLO) are the moderating variables of the study. The number of observations are 344 for each moderating variable. Mean value of FLS is recorded as 4.42, whereas standard deviation is 1.27. Minimum and maximum values of FLS are 1.00 and 7.00 respectively. In case of FLO, mean value is 2.03 and deviation from mean is 0.94. FLO value ranges from minimum 0.00 to 3.00 maximum.

Variable	Obs	Mean	Std. Dev.	Min	Max
FLS	344	4.42	1.27	1.00	7.00
FLO	344	2.03	0.94	0.00	3.00

Table 4.4: Descriptive Statistics of Moderating Variables

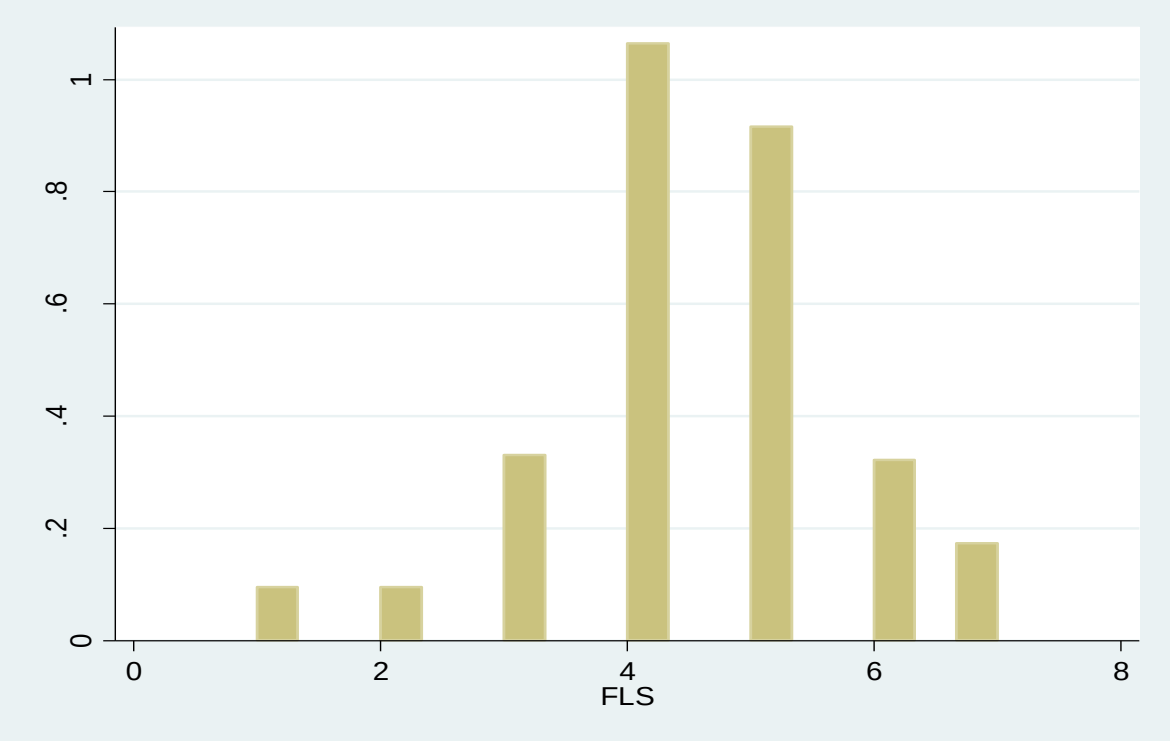


Figure 4.6: Financial Literacy Subjective Histogram

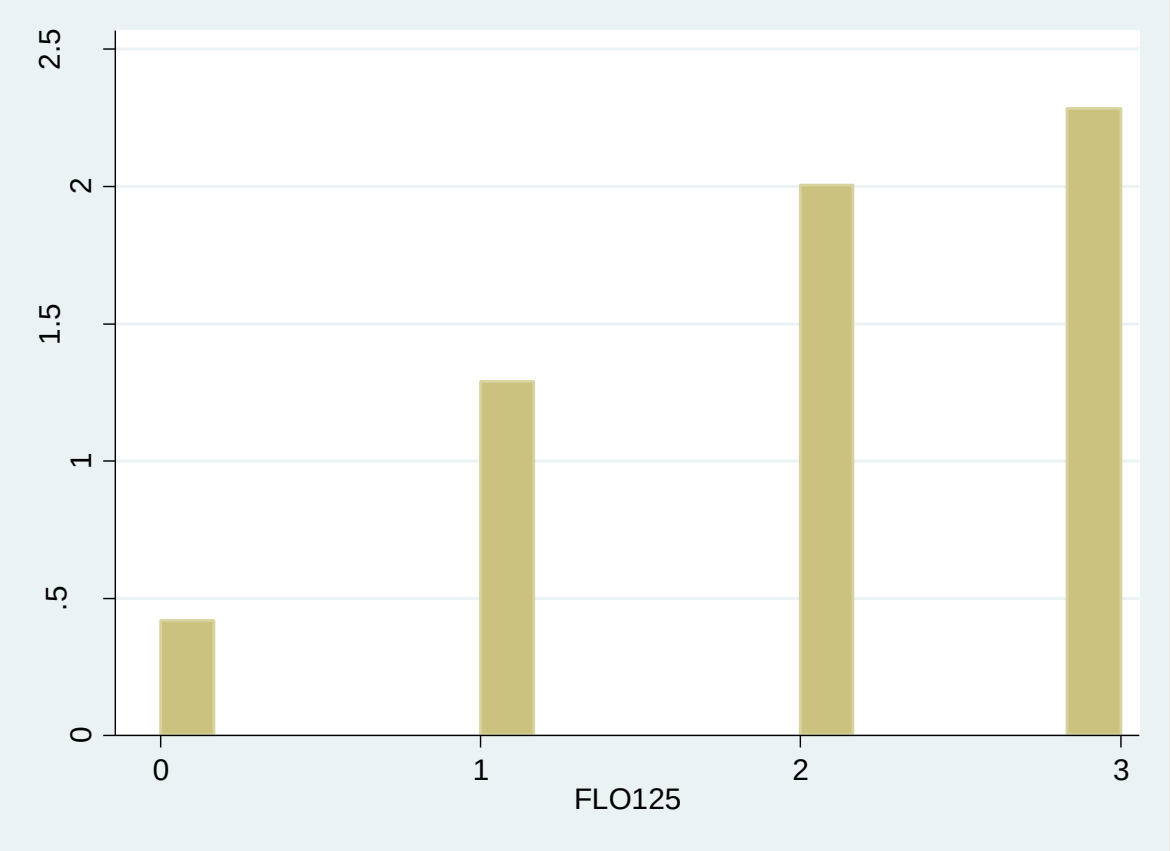


Figure 4.7: Financial Literacy Objective Histogram

4.1.1.5. Control Variables: Demographics and others:

Demographic and other information related to respondents is considered as control variables. Descriptive statistics of control variables are presented in Table 4.5. Respondents dong job or business (Profession), years of experience (Exp), sex of respondents (Gender), age group (Age_G), number of years of schooling (Edu), business education (BM_D) as field of study, computer sciences (CS_D) as field of study, Engineering (E_D) as field of study, physical sciences (PD_D) as field of study, monthly income (M_income), marital status (M_status) and number of children (Child) are the control variables of the study. The number of observations are 344 for each control variable. Taking an overview of key descriptive statistics shows that 86.92% respondents were doing job whereas 13.08% are doing their own business. Respective job or business experience was 3 to 5 years in case of 30.52%

respondents. 31.10% respondents have had experience between 5 to 10 years, whereas remaining 38.37% respondents have experience of more than 10 years. With respect to gender, 84.01% respondents were male and remaining 15.99% were females. The respondents fall in different age categories ranging from minimum 18 years to maximum 64 years. Most respondents were in middle age categories such as 52.03% respondents were in the age category of 25 to 34 years and 23.55% in the age category of 35 to 44 Years. The data set comprise of respondents having minimum primary education to maximum PhD as well. However, most of the respondents have education higher than 14 years graduation, for instance, 27.33% respondents have 14 years education, 36.34% have 16 years education, 28.78% have 18 years education and 2.03% have education equivalent to 21 years i.e. PhD. The respondents in the data set are from diverse field of studies, maximum from business management studies (43.31%), then from social science (22.09%), physical sciences (12.21%), computer and IT studies (12.50%) and engineering (9.88%). 88% respondents have monthly income higher than PKR 37,500. Out of those, 35.17% have monthly income of PKR 75,000, whereas 21.51% have monthly income higher than more than PKR 100,000. Most of respondents were married (69.48%) or single (29.65%). Only 0.87% were divorced or separated. As far as number of children are concerned, most of respondents have no children (38.95%), then 28.78% have two children, 13.95% have one child, 11.63% have three children, 3.78% have four children and 2.03% have five children. Only 0.87% respondents have six or more than six children.

Variable	Number of Observations	Interpretation	Percentage / Mean (SD)
Profession	344	Job	86.92%
		Business	13.08%
Exp in Years	344	3 to 5	30.52%
		5 to 10	31.10%
		Above than 10	38.37%
Gender	344	Male	84.01%
		Female	15.99%
Age_G	344	18 to 24 Years	8.72%
		25 to 34 Years	52.03%
		35 to 44 Years	23.55%
		45 to 54 Years	11.05%
		55 to 64 Years	4.65%
Edu in years	344	05	0.29%
		08	0.58%
		10	0.87%
		12	3.78%
		14	27.33%
		16	36.34%
		18	28.78%
		21	2.03%
Area of Study	344	Mgmt. Studies	43.31%
		Computer and IT	12.50%

		Engineering	9.88%
		Physical Sciences	12.21%
		Social Sciences	22.09%
M_Income (in PKR)	344	25,000.00	11.34%
		37,500.00	31.98%
		75,000.00	35.17%
		100,000.00	21.51%
M_Status	344	Separated / Divorced	0.87%
		Married	69.48%
		Single	29.65%
Number of Children	344	0	38.95%
		1	13.95%
		2	28.78%
		3	11.63%
		4	3.78%
		5	2.03%
		6 or more	0.87%

Table 4.5: Descriptive statistics of Demographic Variables

4.1.2. Reliability Statistics:

Cronbach Alpha is considered in this study to test the scale reliability of each construct. The test statistics are reported in Table 4.6 below, which shows that overall reliability of the questionnaire is 0.74, considering independent, dependent, mediating and moderating variables, which is acceptable. In case of only independent variables i.e. behavioral biases, Cronbach Alpha value is recorded as 0.82 which is observed as highest among all the constructs. Cronbach Alpha value for dependent variable i.e.

Financial Wellbeing is 0.69 which is only one point lesser than the acceptable threshold of 0.70. In case of mediating and moderating variables, the Alpha value is 0.74. Thus, at the whole; data collection instruments are reliable to test hypothesis.

Variables	Construct	Average interitem covariance	Number of items in the scale	Scale reliability coefficient
All	All	0.06	43	0.74
Independent Variables	Behavioral Biases	0.53	13	0.82
Dependent Variable	Financial Wellbeing	0.22	10	0.69
Mediating and Moderating Variables	Financial Behaviors and Financial Literacy	0.05	20	0.74

Table 4.6: Reliability Statistics

4.1.3. Correlation Analysis:

Correlation Analysis indicates a predictive relationship among the variables of interest. Table 4.7 exhibits results of correlation analysis among the variables of the study. With regards to variables involve in Hypothesis-1 i.e. Financial Wellbeing (Dependent Variable) and Behavioral Biases (Independent Variable), it has been observed that the

behavioral biases have shown weak positive/negative correlation with Financial Wellbeing. FE is negatively correlated with FWB_Score, although its correlation is weak having value of only -0.058. OC and EG both have shown positive but weak correlation with FWB_Score having values of correlation coefficient of 0.069 and 0.076 respectively. The fourth behavioral bias i.e. MB has also shown negative but weak correction with FWB_Score (-0.080).

As far as the variables involve in Hypothesis-2, i.e. Negative Financial Behaviors (Dependent Variable) and Behavioral Biases (Independent Variable) are concerned, it has been observed that FE has negative but weak correlation with CC_Score (-0.060). OC has shown a positive correlation with CC_Score (0.043), but again this relation is weak. EG is negatively correlated with CC_Score (-0.082), whereas MB has weak but positive correlation with CC_Score (0.011). The second Financial Behavior i.e. Inv_Score is somehow more positively correlated with FE (0.100), this shows that Framing Effect and negative Investment Behaviors could have a relation which needs further investigation. Other Behavioral Biases i.e. OC (-0.051), EG (-0.084) and MB (-0.058), has shown weak and negative correlation with Inv_Score. Loan_Score, third Financial Behavior has weak and positive correlation with FE (0.024), weak and negative correlation with OC and EG, having values -0.003 and -0.031 respectively and weak but positive correlation with MB (0.068).

For variables of Hypothesis-3, Financial Wellbeing (Dependent Variable) and Financial Behaviors (Independent Variable), correlation analysis found that CC_Score has weak but positive correlation with FWB_Score (0.035), Inv_Score has considerably negative correlation with FWB_Score (-0.114) as compare to other variables. Loan_Score has also negative but very weak correlation with FWB-Score.

With regards to moderating variables i.e. FLS and FLO, it has been observed that both the variables have positive correlation with Independent variable i.e. FWB_Score. Value of FLO correlation with FWB_Score is recorded as 0.167, whereas value of FLS correlation with FWB_Score is recorded as 0.125. On the other hand, the correlation of one of the moderating variables i.e. FLO has been observed as negative and weak with independent variables i.e. FE (-0.055), OC (-0.137), EG (-0.003) and MB (-0.230). The other moderating variable i.e. FLS has weak negative correlation with FE (-0.072), comparatively high positive correlation with OC (0.181), weak and negative correlation with EG (-0.012) and a weak but positive correlation with MB (0.036).

In case of correlation of control variables with FWB_Score, it has been found that only M_Income has somehow above than weak and positive correlation with FWB_Score, which shows that M_Income could have explanatory power to affect the Financial Wellbeing of the respondents. All other control variables have either positive or negative but weak correlation with FWB_Score.

	FWB_Score	FE	OC	EG	MB	CC_Score	Inv_Score	Loan_Score	FLO	FLS	profession	Exp
FWB_Score	1.000											
FE	-0.058	1.000										
OC	0.069	-0.007	1.000									
EG	0.076	0.184	0.012	1.000								
MB_Score	-0.080	0.116	0.050	0.034	1.000							
CC_Score	0.035	-0.060	0.043	-0.082	0.011	1.000						
Inv_Score	-0.114	0.100	-0.051	-0.084	-0.058	-0.232	1.000					
Loan Score	-0.028	0.024	-0.003	-0.031	0.068	-0.321	0.208	1.000				
FLO	0.167	-0.055	-0.137	-0.003	-0.230	-0.014	0.115	-0.049	1.000			
FLS	0.125	-0.072	0.181	-0.012	0.036	0.124	-0.036	-0.031	0.160	1.000		
profession	-0.026	0.058	-0.028	-0.060	0.087	-0.156	0.113	0.059	0.029	-0.135	1.000	
Exp	0.017	0.111	-0.048	0.078	-0.028	-0.062	0.031	-0.203	0.134	-0.066	0.107	1.000
_Gender	0.039	0.204	0.034	0.053	0.053	-0.043	0.066	0.056	-0.080	-0.065	0.075	-0.082

Age_G	0.025	0.119	0.052	0.065	0.013	-0.041	0.003	-0.191	0.120	-0.027	0.032	0.648
Edu	0.002	-0.104	0.041	-0.192	-0.052	0.160	-0.119	-0.182	0.096	0.070	0.145	-0.068
BM_D	-0.012	-0.151	-0.080	-0.041	-0.056	0.027	-0.049	0.022	0.164	0.198	-0.061	-0.131
CS_D	-0.019	0.009	0.053	0.029	-0.019	-0.054	-0.026	0.049	-0.067	-0.085	0.016	0.006
E_D	0.050	0.003	-0.066	-0.077	-0.012	0.005	0.015	0.072	0.064	-0.119	0.042	0.145
PS_D	0.016	0.053	0.029	-0.032	-0.001	0.120	0.019	-0.186	-0.020	-0.069	0.013	0.024
M_Income	0.214	0.029	-0.017	0.118	-0.138	0.140	-0.065	-0.219	0.276	0.035	-0.077	0.475
M_Status	-0.017	0.087	-0.084	0.096	-0.087	-0.042	0.019	-0.151	0.194	-0.032	0.080	0.546
Child	-0.084	0.062	-0.058	0.118	-0.071	-0.063	0.027	-0.110	0.067	-0.048	0.042	0.591

	_Gender	**Age_G**	**Edu**	**BM_D**	**CS_D**	**E_D**	**PS_D**	**M_Income**	**M_Status**	**Child**		
_Gender	1.000											
Age_G	0.065	1.000										
Edu	-0.044	-0.028	1.000									
BM_D	-0.077	-0.186	0.173	1.000								

CS_D	-0.045	-0.064	0.061	-0.330	1.000							
E_D	-0.065	0.043	-0.190	-0.290	-0.125	1.000						
PS_D	-0.042	0.047	-0.003	-0.326	-0.141	-0.124	1.000					
M_Income	-0.211	0.404	0.045	-0.029	-0.036	0.238	0.072	1.000				
M_Status	-0.124	0.475	-0.012	-0.083	0.060	0.114	-0.004	0.371	1.000			
Child	-0.106	0.570	-0.074	-0.094	0.033	0.046	-0.016	0.345	0.646	1.000		

Table 4.7: Correlation Analysis

4.1.4. Multicollinearity Diagnostics:

During correlation analysis, it has been found that few control variables have correlation affects with each other. For instance, Age_G and Exp (0.648), M_Income and Exp (0.475), M_Status and Exp (0.546), Child and Exp (0.591), M_Income and Age_G (0.404), M_Status and Age_G (0.475), Child with Age_G (0.570) and Child with M_Status (0.646). To ascertain that there is no collinearity issue among the predictor variables, this study has employed Variance Inflation Factor (VIF), to check the severity of multicollinearity among the predictors. The researchers ignored the severity of multicollinearity on the basis of VIF values being well within the threshold value of 4. Results of VIF are presented in Table 4.8.

Variable	**VIF**	**1/VIF**
Exp	2.290	0.437
Age_G	2.240	0.446
Child	2.190	0.457
BM_D	1.990	0.504
M_Status	1.940	0.515
M_Income	1.640	0.611
E_D	1.580	0.631
CS_D	1.500	0.668
PS_D	1.460	0.685
Edu	1.190	0.842
_Gender	1.180	0.849
EG	1.140	0.881

FE	1.130	0.885
profession	1.100	0.911
MB_Score	1.060	0.943
OC	1.040	0.960
Mean VIF	1.540	

Table 4.8: Multicollinearity Diagnostics

4.1.5. Hypothesis Testing:

In this section, the hypothesis developed on the basis of literature are tested on the data collected through a survey questionnaire from individuals having no less than 3 years job and business experience. Effect of behavioral biases i.e. framing effect, over confidence, exponential growth bias and mental budgeting on financial wellbeing of the individuals is tested empirically by employing Structural Equation Modelling in Stata in Section 4.1.5.1., whereas their effect on financial behaviors i.e. credit card behaviors, investment behavior and loan behaviors is reported in Section 4.1.5.2. In Section 4.1.5.3, results of empirical analysis of the relationship between financial behaviors i.e. credit card behaviors, investment behaviors and loan behaviors and financial wellbeing are reported. Section 4.1.5.4. comprised of empirical results of mediation effect of financial behaviors i.e. credit card behaviors, investment behaviors and loan behaviors between the relationship of behavioral biases (framing effect, overconfidence, exponential growth bias and mental budgeting) and financial wellbeing. Whereas, in Section 4.1.5.5., the results of moderating role of financial literacy between the behavioral biases (framing effect, overconfidence, exponential growth bias and mental budgeting) and financial wellbeing are reported.

4.1.5.1. Model-1: Behavioral biases and Financial Wellbeing:

Hypothesis-1 tested through Structural Equation Modelling (SEM) in Stata is presented in Figure-4.8. Overall Goodness of Fit Test showed that the model is suitable for estimation having P>Chi2 equals to 0.003 as shown in Table 4.9. The model is estimated with 50 bootstrap replications. Results of the model are presented in Table 4.10. The model is validated for Hypotehsis-1, in case of Framing Effect. Results show that FE significantly effect FWB_Score in a negative way at a p-value of 0.041. However, Hypothesis-1 is not validated for OC, EG and MB_Score having p-values of 0.323, 0.202 and 0.306, respectively. The model has also shown that M_Income (a control variable) has significant positive impact on FWB, observing p-value of 0.000. Another important result of the model is negative impact of number of children (Child – a control variable) on the FWB of the individuals, having p-value of 0.011.

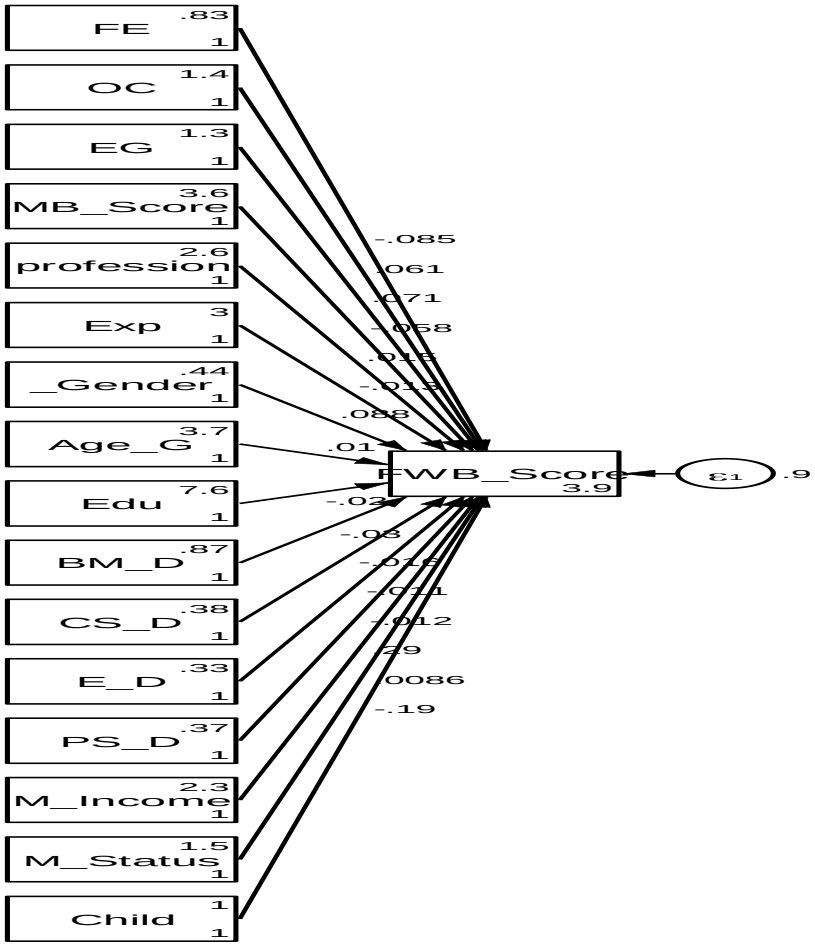


Figure 4.8: Model-1: Behavioral biases and Financial Wellbeing (BB → FWB)

Fit statistic	Value	Description
Likelihood ratio		
chi2_ms(0)	0.000	model vs. saturated
p > chi2	.	
chi2_bs(16)	35.788	baseline vs. saturated
p > chi2	0.003	

Table 4.9: Overall Goodness of Fit Test Results

Standardized	Observed Coef.	Bootstrap Std. Err.	z	P>|z|	Normal-based [95% Conf. Interval]	
Structural						
FWB_Score <-						
FE	-0.085	0.042	-2.040	0.041	-0.167	-0.003
OC	0.061	0.061	0.990	0.323	-0.060	0.181
EG	0.071	0.056	1.280	0.202	-0.038	0.180
MB_Score	-0.058	0.057	-1.020	0.306	-0.170	0.053
profession	0.015	0.060	0.250	0.800	-0.103	0.133
Exp	-0.013	0.073	-0.190	0.853	-0.156	0.129
_Gender	0.088	0.059	1.480	0.139	-0.029	0.204
Age_G	0.010	0.073	0.140	0.886	-0.133	0.154
Edu	-0.020	0.053	-0.390	0.700	-0.124	0.083
BM_D	-0.030	0.066	-0.450	0.650	-0.159	0.099
CS_D	-0.016	0.068	-0.230	0.815	-0.149	0.117
E_D	-0.011	0.069	-0.160	0.873	-0.147	0.125
PS_D	-0.012	0.059	-0.210	0.836	-0.129	0.104
M_Income	0.286	0.071	4.030	0.000	0.147	0.426
M_Status	0.009	0.065	0.130	0.895	-0.119	0.136
Child	-0.185	0.073	-2.530	0.011	-0.328	-0.042
_cons	3.904	0.578	6.760	0.000	2.771	5.036
Var (e. FWB_Score)	0.901	0.034			0.837	0.970

Table 4.10: Model-1: Behavioral biases and Financial Wellbeing (BB → FWB)

4.1.5.2. Model-2: Behavioral biases and Financial Behaviors:

This hypothesis is developed to test whether the behavioral biases could have any effect on the financial behaviors of the individuals. Here, it is important to mention that the qualitative data collected for Financial Behaviors is transformed into quantitative data in a way that it could reflect the negative financial behaviors. For instance, if a respondent replied to an investment related question that he / she do investments in stocks, bonds, mutual funds and other securities, it is considered as a positive investment behavior and the value assigned to this response is 0, whereas if the respondent replied that he / she did not made any investment in stocks, bonds, mutual funds and other securities, this is considered as a negative investment behavior and the value assigned to this kind of response is 1. Since, the study has collected data on three different financial behaviors i.e. Credit Card Behaviors, Investment Behaviors and Loan Behaviors, so the researchers have developed three sub hypotheses for testing of Hypothesis 2. Results of these sub-hypothesis i.e. H2-1, H2-2 and H2-3 are explained hereunder:

Behavioral Biases and Credit Card Behaviors:

The researchers have developed a model through SEM in Stata to estimate the effects of behavioral biases on negative credit card behaviors. The model is shown in Figure 4.9 given below. The model is suitable to test the proposed hypothesis as shown by Goodness of Fit Statistics in Table 4.11. Results of SEM, as presented in Table 4.12 showed that none of the behavioral biases significantly affect the negative credit card behaviors, as evident from p-values in case of FE (0.606), OC (0.548), EG (0.232) and MB_Score (0.253). However, some control variables have shown significant effect on negative credit card behaviors. The researchers have found that profession (more precisely individuals doing job) has significant negative affect on negative credit card

behaviors (p-value = 0.002). This shows that individuals who do jobs are less likely to involve in negative credit card behaviors as compared to those who are doing their own businesses. Education has shown a significant positive effect on the negative credit card behaviors, having p-value of 0.003. PS_D, a dummy variable for those respondents whose field of education is physical sciences, has near to significant positive effect on credit care behaviors, p-value in this case is 0.065. Another control variable i.e. M_Income also have shown a significant positive impact on negative credit card behaviors, p-value in this case is 0.003. This shows that individuals having higher income level could be more likely to involve in negative credit card behaviors.

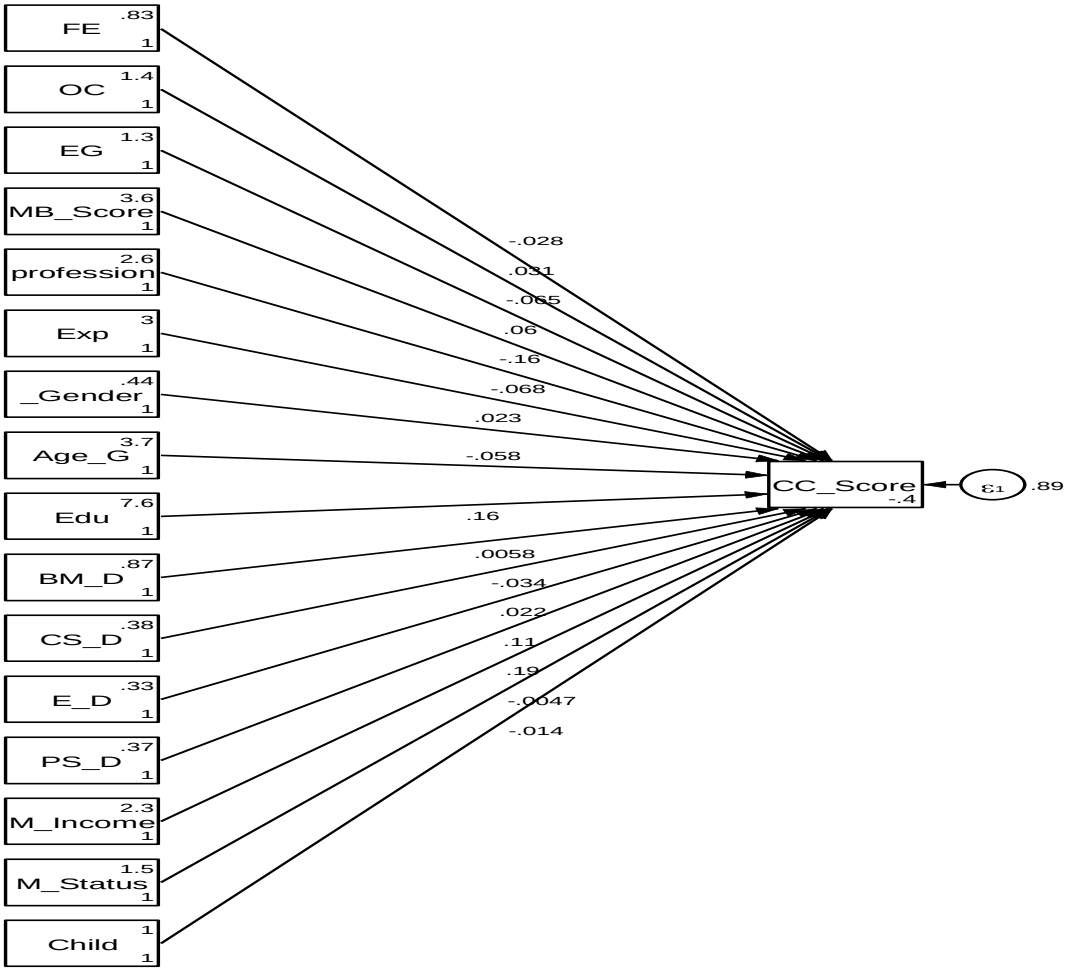


Figure 4.9: Model 2-1 Behavioral Biases and Credit Card Behaviors (BB → CC_Score)

Fit statistic	Value	Description
Likelihood ratio		
chi2_ms(0)	0.000	model vs. saturated
p > chi2	.	
chi2_bs(16)	39.805	baseline vs. saturated
p > chi2	0.001	

Table 4.11: Overall Goodness of Fit Test Results

Standardized	Coef.	OIM Std. Err.	z	P>z	[95% Conf. Interval]	
Structural						
CC_Score <-						
FE	-0.028	0.054	-0.520	0.606	-0.134	0.078
OC	0.031	0.052	0.600	0.548	-0.071	0.133
EG	-0.065	0.054	-1.200	0.232	-0.171	0.041
MB_Score	0.060	0.052	1.140	0.253	-0.043	0.162
profession	-0.164	0.052	-3.140	0.002	-0.267	-0.062
Exp	-0.068	0.077	-0.880	0.380	-0.218	0.083
_Gender	0.023	0.055	0.410	0.681	-0.086	0.131
Age_G	-0.058	0.076	-0.760	0.450	-0.207	0.092
Edu	0.161	0.055	2.950	0.003	0.054	0.268
BM_D	0.006	0.072	0.080	0.936	-0.135	0.146

CS_D	-0.034	0.062	-0.540	0.588	-0.156	0.088
E_D	0.022	0.064	0.340	0.737	-0.104	0.147
PS_D	0.113	0.061	1.840	0.065	-0.007	0.232
M_Income	0.190	0.064	2.970	0.003	0.065	0.316
M_Status	-0.005	0.071	-0.070	0.947	-0.144	0.134
Child	-0.014	0.075	-0.190	0.850	0.162	0.133
_cons	-0.398	0.526	-0.760	0.449	-1.429	0.633
Var (e.CC_Score)	0.891	0.031			0.832	0.953
LR test of model vs. saturated: chi2(0) = 0.00, Prob > chi2 = .						

Table 4.12: Model 2-1 Behavioral Biases and Credit Card Behaviors (BB → CC_Score)

Behavioral Biases and Investment Behaviors:

Under this model, the researchers have tested the relationship between behavioral biases and negative investment behaviors. The SEM model is presented in Figure 4.10. Goodness of Fit Statistics are presented in Table 4.13. Results of SEM estimated in Stata with 50 bootstrap replications are presented in Table 4.14. The researchers have found that FE positively effect negative investment behaviors, at a p-value of 0.029. This shows that individuals affected by framing effect are more likely to involve in negative investment behaviors. On the other hand, MB_Score have a significant negative effect on negative investment behaviors, having p-value of 0.031. This shows that individuals having higher level of mental budgeting are less likely to involve in negative investment behaviors.

Another behavioral bias i.e. EG has shown a negative effect on negative investment behaviors, however, p-value in this case is near to significance (0.065). However, about the direction of relationship (beta value = -0.123), the researchers are not sure whether it is really negative because the confidence intervals fall between two extremes, the one is negative and the other one is positive (-0.254 to 0.008). This phenomenon could be further explored through another sample. This shows that individuals having higher level of exponential growth bias are less likely to involve in negative in negative investment behaviors. Two control variables have shown significant impact on negative investment behaviors. Profession is significantly and positively affecting negative investment behaviors, having p-value of 0.066. Whereas, Edu has shown a significant negative effect on negative investment behaviors. P-value is significant in this case at 0.003.

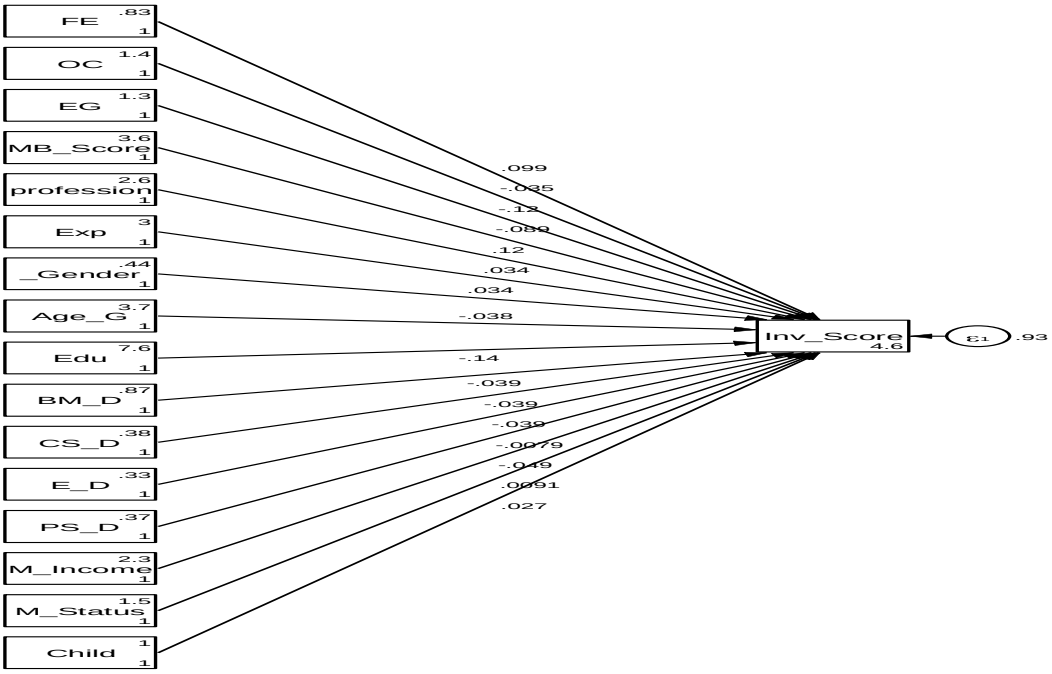


Figure 4.10: Model 2-2 Behavioral Biases and Investment Behaviors (BB → Inv_Score)

Fit statistic	Value	Description
Likelihood ratio		
chi2_ms(0)	0.000	model vs. saturated
p > chi2	.	
chi2_bs(16)	23.869	baseline vs. saturated
p > chi2	0.092	

Table 4.13: Overall Goodness of Fit Test Results

Standardized	Observed Coef.	Bootstrap Std. Err.	z	P>z	Normal-based [95% Conf. Interval]	
Structural						
Inv_Score <-						
FE	0.099	0.045	2.180	0.029	0.010	0.188
OC	-0.035	0.057	-0.610	0.542	-0.145	0.076
EG	-0.123	0.067	-1.840	0.065	-0.254	0.008
MB_Score	-0.089	0.041	-2.160	0.031	-0.169	-0.008
profession	0.117	0.064	1.840	0.066	-0.008	0.242
Exp	0.034	0.078	0.430	0.667	-0.120	0.187
_Gender	0.034	0.052	0.660	0.510	-0.067	0.135
Age_G	-0.038	0.081	-0.460	0.643	-0.197	0.121
Edu	-0.144	0.048	-2.980	0.003	-0.239	-0.049
BM_D	-0.039	0.076	-0.520	0.603	-0.188	0.109

CS_D	-0.039	0.070	-0.570	0.571	-0.176	0.097
E_D	-0.039	0.063	-0.620	0.533	-0.162	0.084
PS_D	-0.008	0.055	-0.140	0.886	-0.115	0.100
M_Income	-0.049	0.062	-0.800	0.426	-0.171	0.072
M_Status	0.009	0.074	0.120	0.902	-0.135	0.154
Child	0.027	0.076	0.350	0.723	-0.123	0.177
_cons	4.610	0.506	9.110	0.000	3.618	5.603
var(e.Inv_Score)	0.933	0.027			0.881	0.988

Table 4.14: Model 2-2 Behavioral Biases and Investment Behaviors (BB → Inv_Score)

Behavioral Biases and Loan Behaviors:

Under this model, the researchers have tested the relationship between behavioral biases and negative loan behaviors. The SEM model is presented in Figure 3.11. Goodness of Fit Statistics are presented in Table 4.15. Results of SEM estimated in Stata are presented in Table 4.16. The researchers have found that none of the behavioral biases have shown any significant effect on negative loan behaviors, although there are few control variables which have shown significant effect on negative loan behaviors.

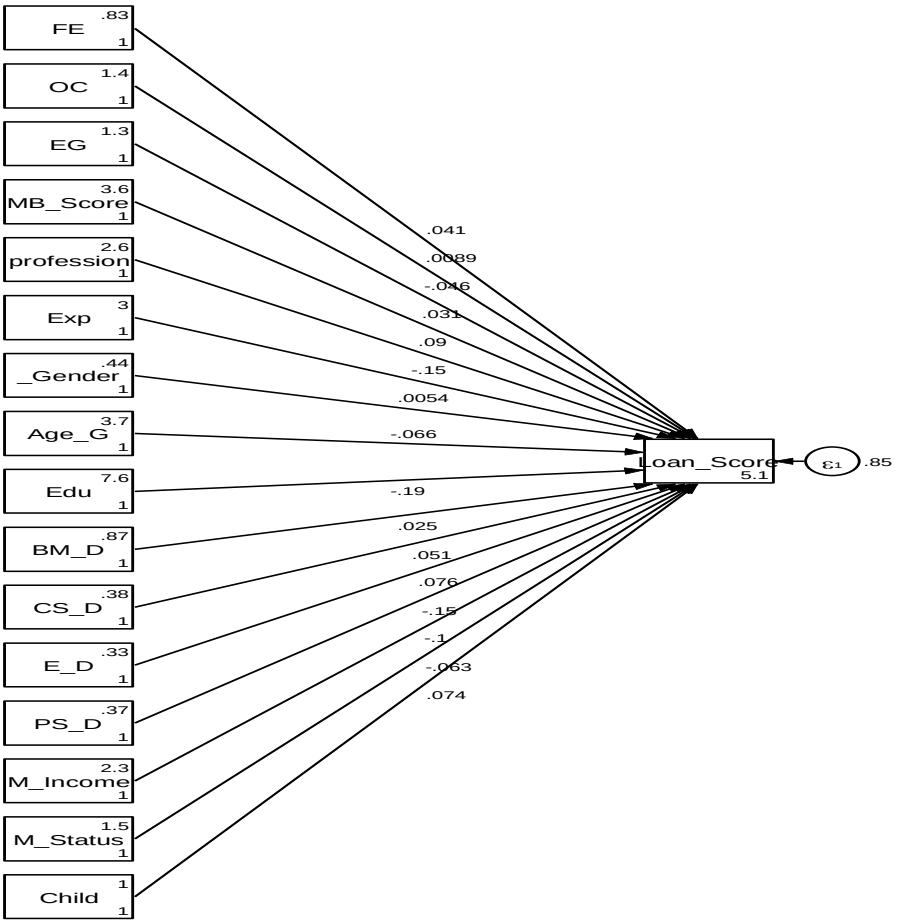


Figure 4.11: Model 2-3 Behavioral Biases and Loan Behaviors (BB → Loan_Score)

Fit statistic	Value	Description
Likelihood ratio		
chi2_ms(0)	0.000	model vs. saturated
p > chi2	.	
chi2_bs(16)	55.397	baseline vs. saturated
p > chi2	0.000	

Table 4.15: Overall Goodness of Fit Test Results

Standardized	Coef.	OIM Std. Err.	z	P>z	[95% Conf. Interval]	
Structural						
Loan_Score <-						
FE	0.041	0.053	0.780	0.435	-0.062	0.145
OC	0.009	0.051	0.170	0.861	-0.091	0.108
EG	-0.046	0.053	-0.860	0.388	-0.149	0.058
MB_Score	0.031	0.051	0.610	0.542	-0.069	0.132
profession	0.090	0.052	1.730	0.084	-0.012	0.191
Exp	-0.146	0.075	-1.960	0.050	-0.293	0.000
_Gender	0.005	0.054	0.100	0.920	-0.100	0.111
Age_G	-0.066	0.074	-0.890	0.374	-0.212	0.080
Edu	-0.193	0.053	-3.650	0.000	-0.297	-0.089
BM_D	0.025	0.070	0.350	0.724	-0.113	0.162
CS_D	0.051	0.061	0.840	0.402	-0.068	0.170
E_D	0.076	0.062	1.220	0.221	-0.046	0.199
PS_D	-0.152	0.059	-2.560	0.011	-0.268	-0.035
M_Income	-0.105	0.063	-1.650	0.098	-0.229	0.019
M_Status	-0.063	0.069	-0.910	0.364	-0.198	0.073
Child	0.074	0.073	1.010	0.314	-0.070	0.218
_cons	5.127	0.501	10.240	0.000	4.145	6.109

Var (e.Loan_Score)	0.851	0.034			0.787	0.921
LR test of model vs. saturated: chi2(0) = 0.00, Prob > chi2 = .						

Table 4.16: Model 2-3 Behavioral Biases and Loan Behaviors (BB → Loan_Score)

4.1.5.3. Model-3: Financial Behaviors and Financial Wellbeing:

Under this model, the researchers have tested the relationship between negative financial behaviors and financial wellbeing of the individuals. The SEM model is presented in Figure 4.12. Goodness of Fit Statistics are presented in Table 4.17. Results of SEM estimated in Stata are presented in Table 4.18. The results have shown that Inv_Score has significantly affected the financial wellbeing. P-value is 0.037 in this case. The negative beta value -0.112 shows that the impact is in negative direction. This shows that individuals involved in negative financial behaviors are less likely to be financially well off. Other two independent variables i.e. CC_Score and Loan_Score are not found statistically significant to have any effect on financial wellbeing of the individuals. Control variables i.e. M_Income has a significant positive affect on financial wellbeing at p-value of 0.000. This shows that individuals having higher income levels are more likely to have higher level of financial wellbeing. On the other hand, Child has a significant negative affect on financial wellbeing. This shows that individuals having higher number of children are more likely to be financially constrained.

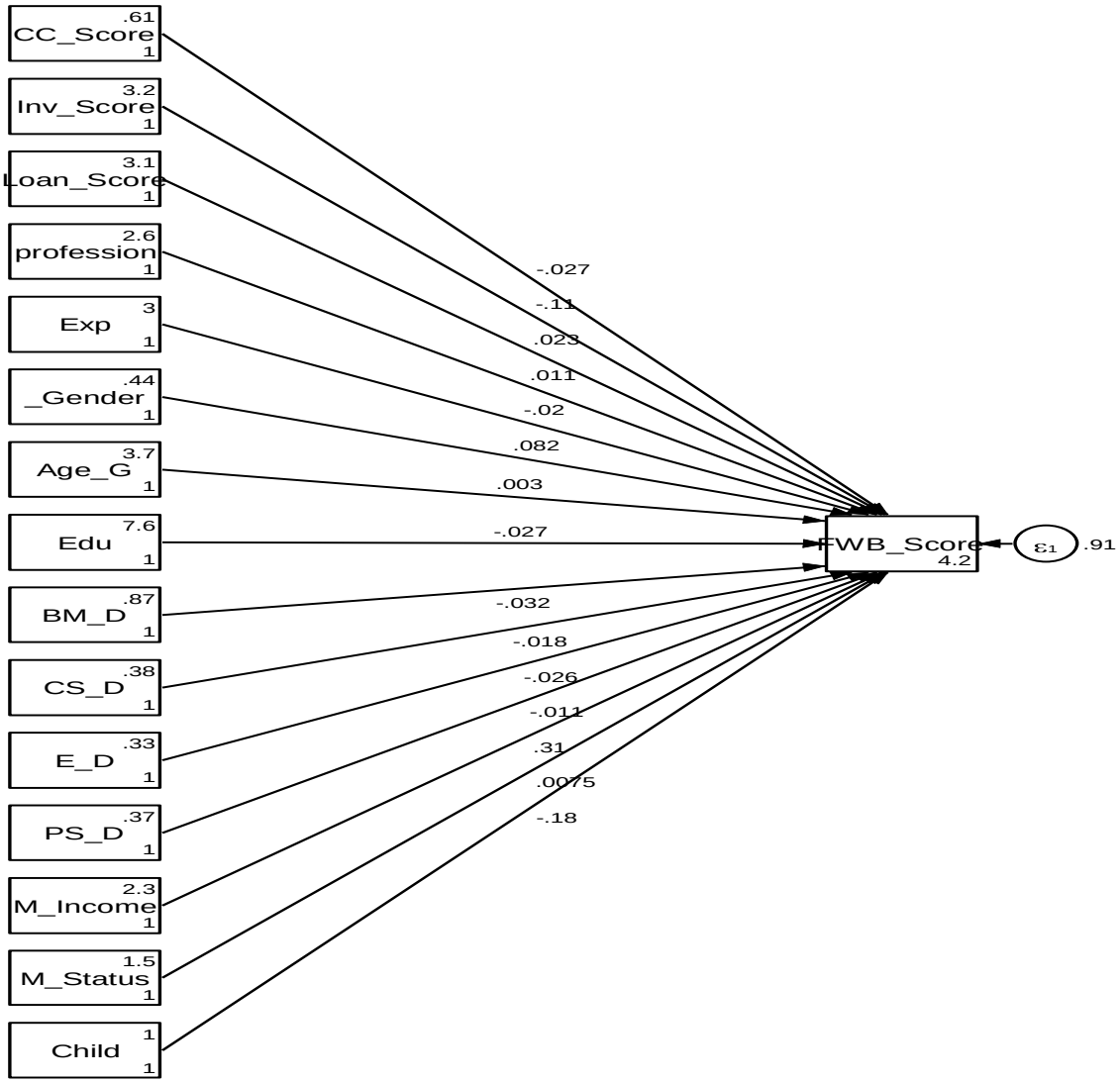


Figure 4.12: Model-3: Financial Behaviors and Financial Wellbeing (FB → FWB)

Fit statistic	Value	Description
Likelihood ratio		
chi2_ms(0)	0.000	model vs. saturated
p > chi2	.	
chi2_bs(15)	33.663	baseline vs. saturated
p > chi2	0.004	

Table 4.17: Overall Goodness of Fit Test Results

Standardized	Coef.	OIM Std. Err.	z	P>z	[95% Conf. Interval]	
Structural						
FWB_Score <-						
CC_Score	-0.027	0.057	-0.480	0.631	-0.139	0.085
Inv_Score	-0.112	0.054	-2.090	0.037	-0.217	-0.007
Loan_Score	0.023	0.059	0.390	0.694	-0.092	0.138
profession	0.011	0.054	0.190	0.847	-0.096	0.117
Exp	-0.020	0.078	-0.260	0.793	-0.174	0.133
_Gender	0.082	0.054	1.510	0.132	-0.025	0.189
Age_G	0.003	0.076	0.040	0.968	-0.147	0.153
Edu	-0.027	0.056	-0.480	0.628	-0.137	0.083
BM_D	-0.032	0.072	-0.440	0.659	-0.172	0.109
CS_D	-0.018	0.063	-0.280	0.777	-0.141	0.105
E_D	-0.026	0.064	-0.410	0.685	-0.151	0.099
PS_D	-0.011	0.063	-0.180	0.858	-0.134	0.111
M_Income	0.307	0.062	4.920	0.000	0.185	0.429
M_Status	0.008	0.071	0.110	0.916	-0.132	0.147
Child	-0.176	0.075	-2.350	0.019	-0.323	-0.029
_cons	4.172	0.600	6.950	0.000	2.995	5.348

Var (e.FWB_Score)	0.907	0.029			0.851	0.966
LR test of model vs. saturated: chi2(0) = 0.00, Prob > chi2 = .						

Table 4.18: Model-3: Financial Behaviors and Financial Wellbeing (FB → FWB)

4.1.5.4. Model-4: Financial Behaviors - A Mediator between Behavioral Biases and Financial Wellbeing:

This preposition is basically developed on the basis of Hypothesis 2 and 3. The purpose of this preposition is to find any kind of mediation effect of financial behaviors on the relationship of behavioral biases and financial wellbeing. Same as Hypthesis-2, this preposition is tested through three sub-prepositions i.e. P1-1, P1-2 and P1-3.

Credit Card Behaviors as Mediator:

Under this model, the researchers have tested the mediation effect of negative credit card behaviors on the relationship of behavioral biases and financial wellbeing of the individuals. The SEM model is presented in Figure 4.13. Goodness of Fit Statistics are presented in Table 4.19. Results of SEM estimated in Stata are presented in Table 4.20. No significant mediation effect found under this model, as evident from the p-values of behavioral biases i.e. FE (0.606), OC (0.548), EG (0.232) and MB_Score (0.253) and negative financial behaviors pertaining to credit cards i.e. CC_Score (0.513).

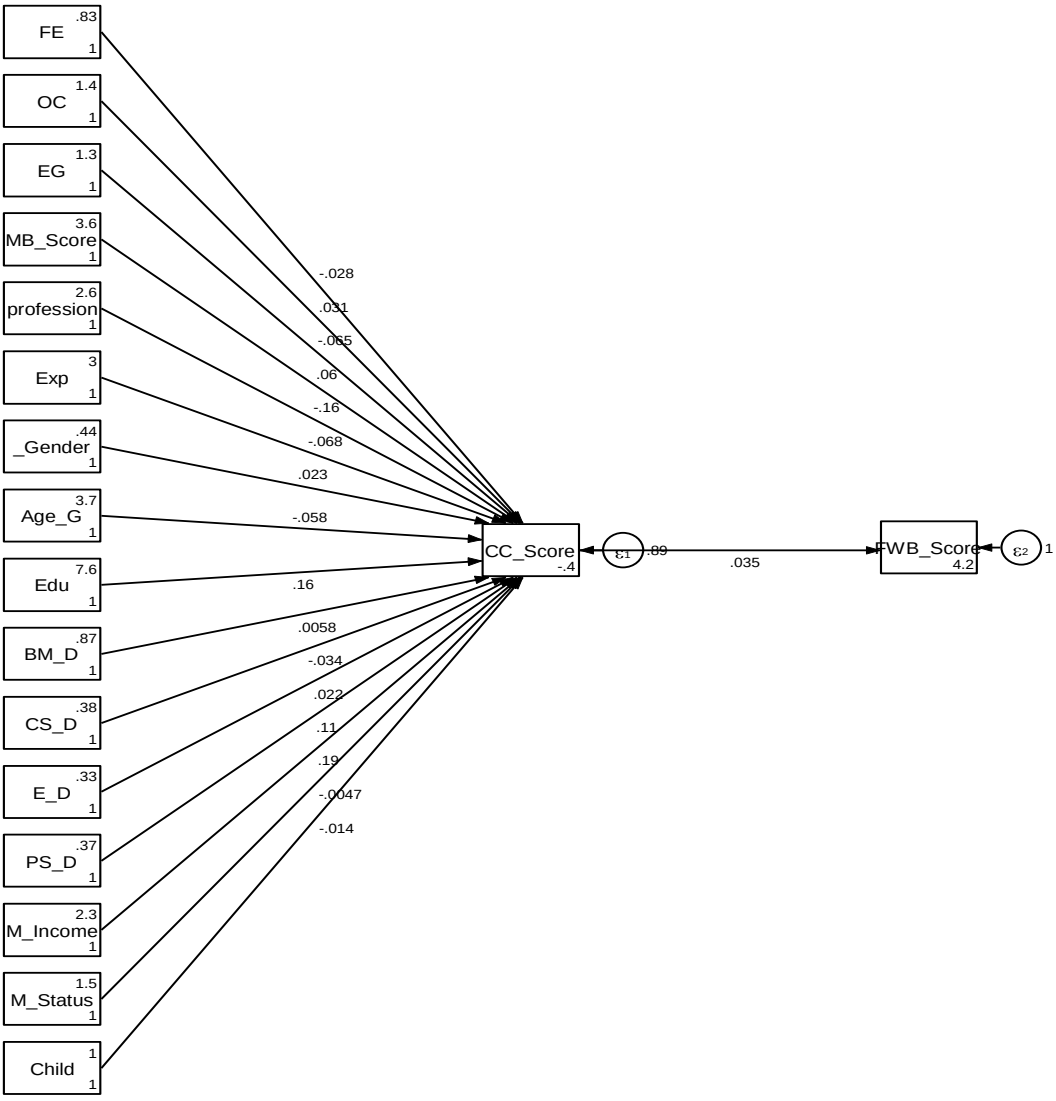


Figure 4.13: Model 4-1 Credit Card Behaviors as Mediator (BB → CC_Score → FWB)

Fit statistic	**Value**	**Description**
Likelihood ratio		
chi2_ms(16)	35.382	model vs. saturated
p > chi2	0.004	
chi2_bs(33)	75.613	baseline vs. saturated
p > chi2	0.000	

Table 4.19: Overall Goodness of Fit Test Results

Standardized	Coef.	OIM Std. Err.	z	P>z	[95% Interval]	Conf.
Structural						
CC_Score <-						
FE	-0.028	0.054	-0.520	0.606	-0.134	0.078
OC	0.031	0.052	0.600	0.548	-0.071	0.133
EG	-0.065	0.054	-1.200	0.232	-0.171	0.041
MB_Score	0.060	0.052	1.140	0.253	-0.043	0.162
profession	-0.164	0.052	-3.140	0.002	-0.267	-0.062
Exp	-0.068	0.077	-0.880	0.380	-0.218	0.083
_Gender	0.023	0.055	0.410	0.681	-0.086	0.131
Age_G	-0.058	0.076	-0.760	0.450	-0.207	0.092
Edu	0.161	0.055	2.950	0.003	0.054	0.268
BM_D	0.006	0.072	0.080	0.936	-0.135	0.146
CS_D	-0.034	0.062	-0.540	0.588	-0.156	0.088
E_D	0.022	0.064	0.340	0.737	-0.104	0.147
PS_D	0.113	0.061	1.840	0.065	-0.007	0.232
M_Income	0.190	0.064	2.970	0.003	0.065	0.316
M_Status	-0.005	0.071	-0.070	0.947	-0.144	0.134
Child	-0.014	0.075	-0.190	0.850	-0.162	0.133
_cons	-0.398	0.526	-0.760	0.449	-1.429	0.633

FWB_Score <-						
CC_Score	0.035	0.054	0.650	0.513	-0.070	0.141
_cons	4.157	0.172	24.150	0.000	3.820	4.495
var (e. CC_Score)	0.891	0.031			0.832	0.953
var (e. FWB_Score)	0.999	0.004			0.991	1.006
LR test of model vs. saturated: chi2(16) = 35.38, Prob > chi2 = 0.0035						

Table 4.20: Model 4-1 Credit Card Behaviors as Mediator (BB → CC_Score → FWB)

Investment Behaviors as Mediator:

Under this model, the researchers have tested the mediation effect of negative investment behaviors on the relationship of behavioral biases and financial wellbeing of the individuals. The SEM model is presented in Figure 4.14. Goodness of Fit Statistics are presented in Table 4.21. Results of SEM estimated in Stata with bootstrap replications (50) are presented in Table 4.22. Significant mediation effect found under this model in case of behavioral biases i.e. FE (0.045) and EG (0.029), MB_Score (0.021) and mediator i.e. Inv_Score (0.027).

The results of this model suggest that framing effect has a significant positive effect on negative investment behaviors, which subsequently affect the financial wellbeing of the individuals in a negative manner. Moreover, exponential growth bias i.e. under estimating the future and mental budgeting have significant negative affect on negative investment behaviors, which in turn affect the financial wellbeing negatively.

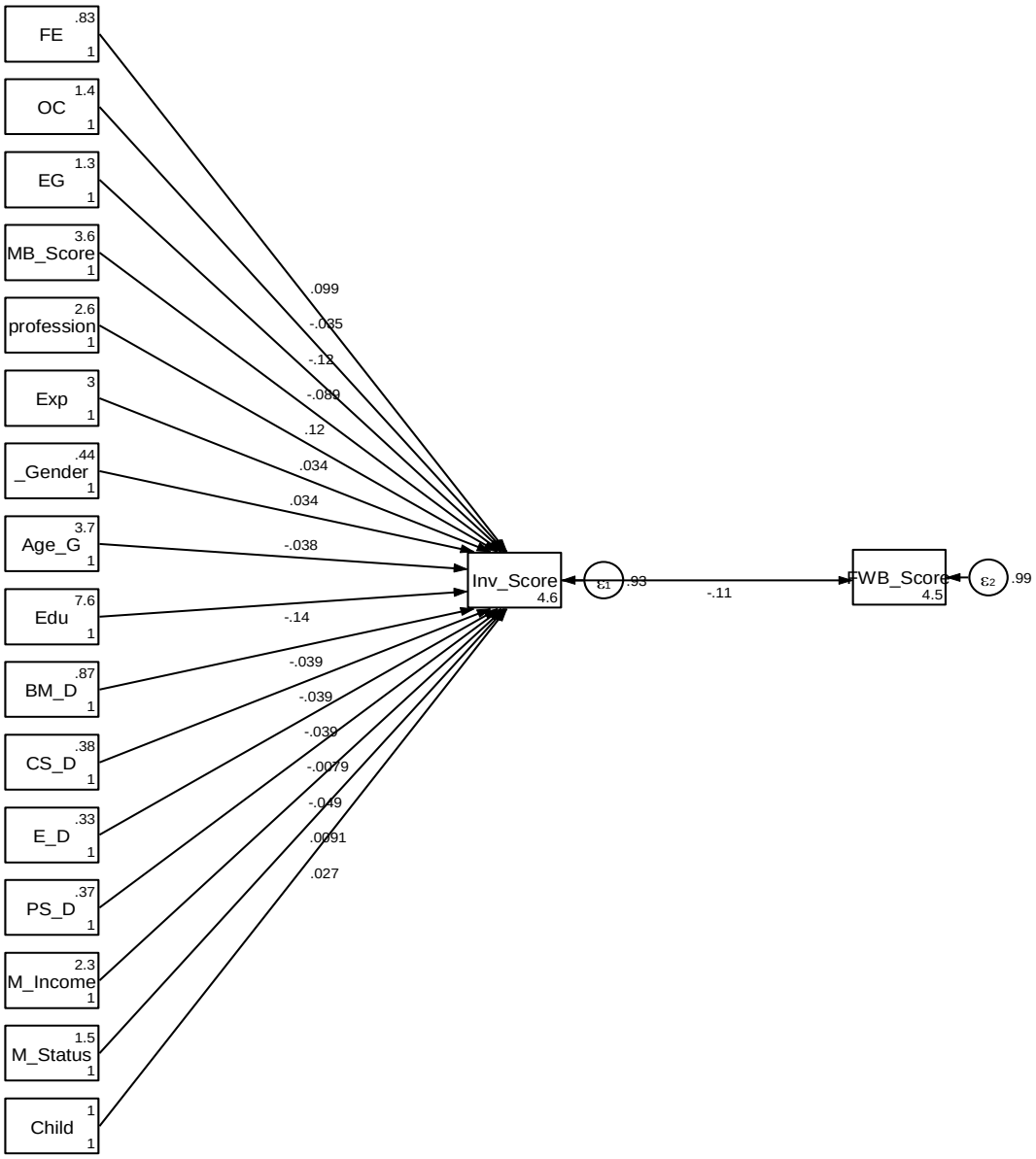


Figure 4.14: Model 4-2 Investment Behaviors as Mediator (BB → Inv_Score → FWB)

Fit statistic	Value	Description
Likelihood ratio		
chi2_ms(16)	34.429	model vs. saturated
p > chi2	0.005	
chi2_bs(33)	62.828	baseline vs. saturated
p > chi2	0.001	

Table 4.21: Overall Goodness of Fit Test Results

Standardized	Observed Coef.	Bootstrap Std. Err.	z	P>z	Normal-based [95% Conf. Interval]	
Structural						
Inv_Score <-						
FE	0.099	0.049	2.010	0.045	0.002	0.195
OC	-0.035	0.058	-0.590	0.552	-0.148	0.079
EG	-0.123	0.057	-2.180	0.029	-0.234	-0.012
MB_Score	-0.089	0.038	-2.310	0.021	-0.164	-0.013
profession	0.117	0.076	1.540	0.124	-0.032	0.267
Exp	0.034	0.086	0.390	0.696	-0.135	0.202
_Gender	0.034	0.067	0.510	0.609	-0.097	0.165
Age_G	-0.038	0.096	-0.390	0.695	-0.225	0.150
Edu	-0.144	0.053	-2.730	0.006	-0.247	-0.040
BM_D	-0.039	0.078	-0.510	0.613	-0.192	0.113
CS_D	-0.039	0.065	-0.610	0.545	-0.167	0.088
E_D	-0.039	0.057	-0.680	0.495	-0.151	0.073
PS_D	-0.008	0.056	-0.140	0.887	-0.117	0.101
M_Income	-0.049	0.075	-0.660	0.511	-0.196	0.098
M_Status	0.009	0.080	0.110	0.909	-0.147	0.165
Child	0.027	0.071	0.380	0.704	-0.112	0.166
_cons	4.610	0.563	8.190	0.000	3.507	5.714

FWB_Score <-						
Inv_Score	-0.114	0.052	-2.210	0.027	-0.216	-0.013
_cons	4.548	0.207	22.010	0.000	4.143	4.953
var(e.Inv_Score)	0.9329652	0.028			0.879	0.990
var(e.FWB_Score)	0.986919	0.012			0.964	1.010

Table 4.22: Model 4-2 Investment Behaviors as Mediator (BB → Inv_Score → FWB)

For this mediation model, the researchers have further estimated direct, indirect and total affects, which are presented in Table 4.23, 4.24 and 4.25.

Direct effects	**Observed Coef.**	**Bootstrap Std. Err.**	**z**	**P>z**	**Normal-based [95% Conf. Interval]**	
Structural						
Inv_Score <-						
FE	0.214	0.106	2.020	0.043	0.007	0.420
OC	-0.077	0.130	-0.590	0.554	-0.332	0.178
EG	-0.269	0.126	-2.140	0.033	-0.515	-0.022
MB_Score	-0.072	0.031	-2.330	0.020	-0.132	-0.011
profession	0.369	0.247	1.500	0.134	-0.114	0.852
Exp	0.014	0.037	0.390	0.697	-0.058	0.087
_Gender	0.099	0.194	0.510	0.610	-0.281	0.478
Age_G	-0.004	0.011	-0.390	0.696	-0.026	0.017

Edu	-0.073	0.029	-2.560	0.010	-0.129	-0.017
BM_D	-0.085	0.167	-0.510	0.613	-0.412	0.243
CS_D	-0.127	0.210	-0.600	0.547	-0.539	0.285
E_D	-0.139	0.203	-0.680	0.495	-0.538	0.260
PS_D	-0.026	0.180	-0.140	0.887	-0.379	0.328
M_Income	0.000	0.000	-0.660	0.512	0.000	0.000
M_Status	0.021	0.184	0.110	0.909	-0.340	0.382
Child	0.021	0.055	0.380	0.704	-0.087	0.129
FWB_Score <-						
Inv_Score	-0.540	0.246	-2.190	0.028	-1.023	-0.057

Table 4.23: Direct Affects (BB → Inv_Score → FWB)

Indirect effects	**Observed Coef.**	**Bootstrap Std. Err.**	**z**	**P>z**	**Normal-based [95% Conf. Interval]**	
Structural						
FWB_Score <-						
FE	-0.115	0.076	-1.530	0.127	-0.263	0.033
OC	0.042	0.076	0.550	0.584	-0.107	0.191
EG	0.145	0.092	1.570	0.116	-0.036	0.326
MB_Score	0.039	0.025	1.540	0.124	-0.011	0.088
profession	-0.199	0.166	-1.200	0.229	-0.524	0.126
Exp	-0.008	0.020	-0.400	0.691	-0.046	0.031

_Gender	-0.053	0.106	-0.500	0.614	-0.260	0.154
Age_G	0.002	0.006	0.390	0.695	-0.009	0.014
Edu	0.039	0.024	1.650	0.099	-0.007	0.086
BM_D	0.046	0.088	0.520	0.603	-0.126	0.218
CS_D	0.068	0.113	0.610	0.545	-0.153	0.290
E_D	0.075	0.105	0.720	0.474	-0.130	0.280
PS_D	0.014	0.096	0.140	0.886	-0.175	0.202
M_Income	0.000	0.000	0.580	0.560	0.000	0.000
M_Status	-0.011	0.100	-0.110	0.910	-0.207	0.184
Child	-0.011	0.032	-0.350	0.724	-0.074	0.051

Table 4.24: Indirect Affects (BB → Inv_Score → FWB)

Total effects	**Observed Coef.**	**Bootstrap Std. Err.**	**z**	**P>z**	**Normal-based [95% Conf. Interval]**	
Structural						
Inv_Score <-						
FE	0.214	0.106	2.020	0.043	0.007	0.420
OC	-0.077	0.130	-0.590	0.554	-0.332	0.178
EG	-0.269	0.126	-2.140	0.033	-0.515	-0.022
MB_Score	-0.072	0.031	-2.330	0.020	-0.132	-0.011
profession	0.369	0.247	1.500	0.134	-0.114	0.852
Exp	0.014	0.037	0.390	0.697	-0.058	0.087
_Gender	0.099	0.194	0.510	0.610	-0.281	0.478

Age_G	-0.004	0.011	-0.390	0.696	-0.026	0.017
Edu	-0.073	0.029	-2.560	0.010	-0.129	-0.017
BM_D	-0.085	0.167	-0.510	0.613	-0.412	0.243
CS_D	-0.127	0.210	-0.600	0.547	-0.539	0.285
E_D	-0.139	0.203	-0.680	0.495	-0.538	0.260
PS_D	-0.026	0.180	-0.140	0.887	-0.379	0.328
M_Income	0.000	0.000	-0.660	0.512	0.000	0.000
M_Status	0.021	0.184	0.110	0.909	-0.340	0.382
Child	0.021	0.055	0.380	0.704	-0.087	0.129
FWB_Score <-						
Inv_Score	-0.540	0.246	-2.190	0.028	-1.023	-0.057
FE	-0.115	0.076	-1.530	0.127	-0.263	0.033
OC	0.042	0.076	0.550	0.584	-0.107	0.191
EG	0.145	0.092	1.570	0.116	-0.036	0.326
MB_Score	0.039	0.025	1.540	0.124	-0.011	0.088
profession	-0.199	0.166	-1.200	0.229	-0.524	0.126
Exp	-0.008	0.020	-0.400	0.691	-0.046	0.031
_Gender	-0.053	0.106	-0.500	0.614	-0.260	0.154
Age_G	0.002	0.006	0.390	0.695	-0.009	0.014
Edu	0.039	0.024	1.650	0.099	-0.007	0.086
BM_D	0.046	0.088	0.520	0.603	-0.126	0.218

CS_D	0.068	0.113	0.610	0.545	-0.153	0.290
E_D	0.075	0.105	0.720	0.474	-0.130	0.280
PS_D	0.014	0.096	0.140	0.886	-0.175	0.202
M_Income	0.000	0.000	0.580	0.560	0.000	0.000
M_Status	-0.011	0.100	-0.110	0.910	-0.207	0.184
Child	-0.011	0.032	-0.350	0.724	-0.074	0.051

Table 4.25: Total Affects (BB → Inv_Score → FWB)

Loan Behaviors as Mediators:

Under this model, the researchers have tested the mediation effect of negative loan behaviors on the relationship of behavioral biases and financial wellbeing of the individuals. The SEM model is presented in Figure 4.15. Goodness of Fit Statistics are presented in Table 4.26. Results of SEM estimated in Stata are presented in Table 4.27. No evidence of mediating role of negative loan behaviors is found under this model, therefore this proposition is not validated.

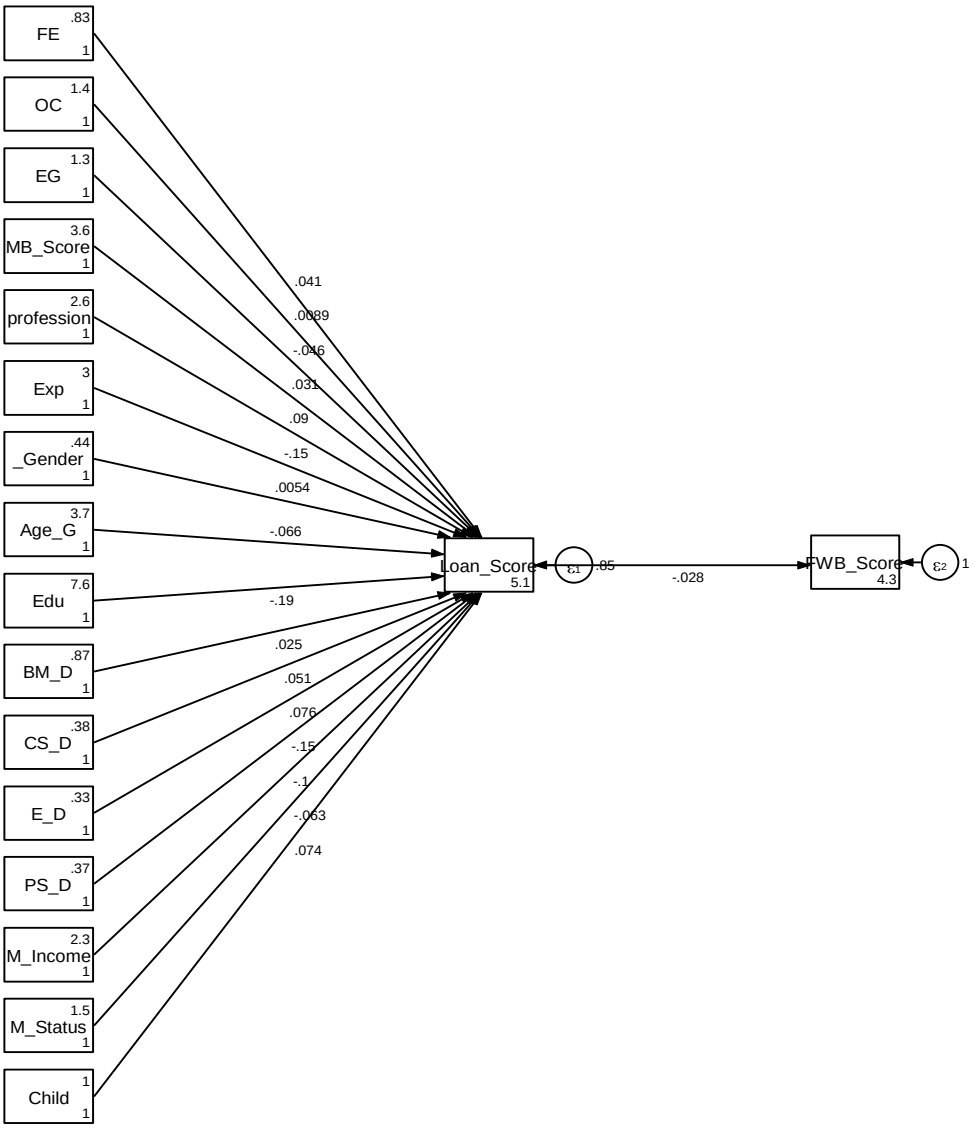


Figure 4.15: Model 4-3 Loan Behaviors as Mediators (BB → Loan_Score → FWB)

Fit statistic	Value	Description
Likelihood ratio		
chi2_ms(16)	35.600	model vs. saturated
p > chi2	0.003	
chi2_bs(33)	91.269	baseline vs. saturated
p > chi2	0.000	

Table 4.26: Overall Goodness of Fit Test Results

Standardized	Coef.	OIM Std. Err.	z	P>z	[95% Conf. Interval]	
Structural						
Loan_Score <-						
FE	0.041	0.053	0.780	0.435	-0.062	0.145
OC	0.009	0.051	0.170	0.861	-0.091	0.108
EG	-0.046	0.053	-0.860	0.388	-0.149	0.058
MB_Score	0.031	0.051	0.610	0.542	-0.069	0.132
profession	0.090	0.052	1.730	0.084	-0.012	0.191
Exp	-0.146	0.075	-1.960	0.050	-0.293	0.000
_Gender	0.005	0.054	0.100	0.920	-0.100	0.111
Age_G	-0.066	0.074	-0.890	0.374	-0.212	0.080
Edu	-0.193	0.053	-3.650	0.000	-0.297	-0.089
BM_D	0.025	0.070	0.350	0.724	-0.113	0.162
CS_D	0.051	0.061	0.840	0.402	-0.068	0.170
E_D	0.076	0.062	1.220	0.221	-0.046	0.199
PS_D	-0.152	0.059	-2.560	0.011	-0.268	-0.035
M_Income	-0.105	0.063	-1.650	0.098	-0.229	0.019
M_Status	-0.063	0.069	-0.910	0.364	-0.198	0.073
Child	0.074	0.073	1.010	0.314	-0.070	0.218
_cons	5.127	0.501	10.240	0.000	4.145	6.109

FWB_Score <-						
Loan_Score	-0.028	0.054	-0.520	0.601	-0.134	0.077
_cons	4.265	0.233	18.290	0.000	3.808	4.722
Var (e. Loan_Score)	0.851	0.034			0.787	0.921
Var (e. FWB_Score)	0.999	0.003			0.993	1.005
LR test of model vs. saturated: chi2(16) = 35.60, Prob > chi2 = 0.0033						

Table 4.27: Model 4-3 Loan Behaviors as Mediators (BB → Loan_Score → FWB)

4.1.5.5. Model- 5: Financial Literacy – A Moderator between Behavioral Biases and Financial Wellbeing:

The researchers have introduced perceived and actual financial literacy as moderators to test this hypothesis. Under this model, the moderation effect of actual and perceived financial literacy on the relationship of behavioral biases and financial wellbeing is tested. Results of SEM estimated in Stata are presented in Table 4.28. The researchers found no evidence of significant moderation under this model. To check, if there could be any collinearity issues among the variables, the researchers have carried out multicollinearity diagnostic through Stata. The results of Variance Inflation Factor are presented in Table 4.29. It is found that the value of VIF in case of moderators and some of their interactions is much higher than the acceptable value of 4.00, therefore the researchers decided to test each moderator and its interaction effect separately, so that to avoid multicollinearity issues.

Standardized	Coef.	OIM Std. Err.	z	P>z	[95% Conf. Interval]	
Structural						
FWB_Score <-						
FE	-0.117	0.080	-1.450	0.146	-0.274	0.041
OC	0.029	0.078	0.380	0.706	-0.123	0.182
EG	0.101	0.078	1.290	0.196	-0.052	0.255
MB_Score	-0.147	0.085	-1.730	0.083	-0.313	0.019
FLS	-0.054	0.215	-0.250	0.802	-0.476	0.368
FLO	0.014	0.209	0.070	0.945	-0.395	0.424
FLS_Int_FE	0.052	0.086	0.610	0.544	-0.117	0.221
FLS_Int_OC	0.124	0.110	1.130	0.258	-0.091	0.339
FLS_Int_EG	0.098	0.100	0.980	0.326	-0.098	0.293
FLS_Int_MB	0.014	0.204	0.070	0.947	-0.386	0.413
FLO_Int_FE	-0.023	0.077	-0.290	0.770	-0.174	0.129
FLO_Int_OC	-0.065	0.095	-0.690	0.492	-0.251	0.121
FLO_Int_EG	-0.181	0.091	-1.990	0.046	-0.360	-0.003
FLO_Int_MB	0.272	0.184	1.480	0.140	-0.089	0.633
profession	0.021	0.053	0.400	0.692	-0.083	0.124
Exp	-0.014	0.076	-0.180	0.854	-0.162	0.135
_Gender	0.092	0.055	1.690	0.091	-0.015	0.199
Age_G	-0.012	0.076	-0.160	0.871	-0.160	0.136

Edu	-0.033	0.055	-0.600	0.548	-0.141	0.075
BM_D	-0.053	0.073	-0.730	0.468	-0.196	0.090
CS_D	-0.028	0.063	-0.450	0.652	-0.151	0.094
E_D	-0.011	0.064	-0.170	0.867	-0.135	0.114
PS_D	-0.003	0.061	-0.050	0.963	-0.122	0.116
M_Income	0.302	0.064	4.730	0.000	0.177	0.427
M_Status	-0.041	0.071	-0.580	0.565	-0.179	0.098
Child	-0.145	0.075	-1.930	0.053	-0.292	0.002
_cons	4.229	0.582	7.270	0.000	3.089	5.369
var(e.FWB_Score)	0.850	0.034			0.785	0.919
LR test of model vs. saturated: chi2(0) = 0.00, Prob > chi2 = .						

Table 4.28: Financial Literacy – A Moderator between Behavioral Biases and Financial Wellbeing (BB → FWB – FLO & FLS Moderators)

Variable	VIF	1/VIF
FLS	18.770	0.053
FLO	17.650	0.057
FLS_Int_MB	16.840	0.059
FLO_Int_MB	13.850	0.072
FLS_Int_OC	4.890	0.204
FLS_Int_EG	4.030	0.248

FLO_Int_OC	3.660	0.273
FLO_Int_EG	3.400	0.294
FLS_Int_FE	3.010	0.332
MB_Score	2.930	0.341
FE	2.630	0.380
EG	2.500	0.400
OC	2.460	0.407
FLO_Int_FE	2.420	0.413
Exp	2.320	0.430
Age_G	2.320	0.432
Child	2.300	0.435
BM_D	2.160	0.463
M_Status	2.020	0.494
M_Income	1.780	0.563
E_D	1.630	0.612
CS_D	1.580	0.631
PS_D	1.490	0.670
Edu	1.240	0.809
_Gender	1.220	0.822
profession	1.130	0.885
Mean VIF	4.620	

Table 4.29: Variance Inflation Factor

The researchers have found actual financial literacy as a significant moderator, affecting the relationship of EG and FWB. The model estimated for EG as predictor, FWB_Score as dependent variable and FLO as moderator is presented in Table 4.30. Asymptotically distribution-free (ADF) technique is used as estimation method. ADF is a form of weighted least squares (WLS). It is also referred as generalized method of moments (GMM) estimator. This method can be applied to relax the normality assumption of errors (StataCorp LLC, 2018a). SEM developed for the purpose is shown in Figure 4.16. the researchers found that EG affect the FWB positively, at a significance level of 0.012. Moderator i.e. FLO (Actual Financial Literacy) and its interaction with predictor i.e. EG both are found statistically significant at p-value of 0.001 and 0.043. However, it is observed that although EG affecting FWB positively, however the interaction of EG with moderating variable i.e. FLO_Int_EG negatively affect the FWB.

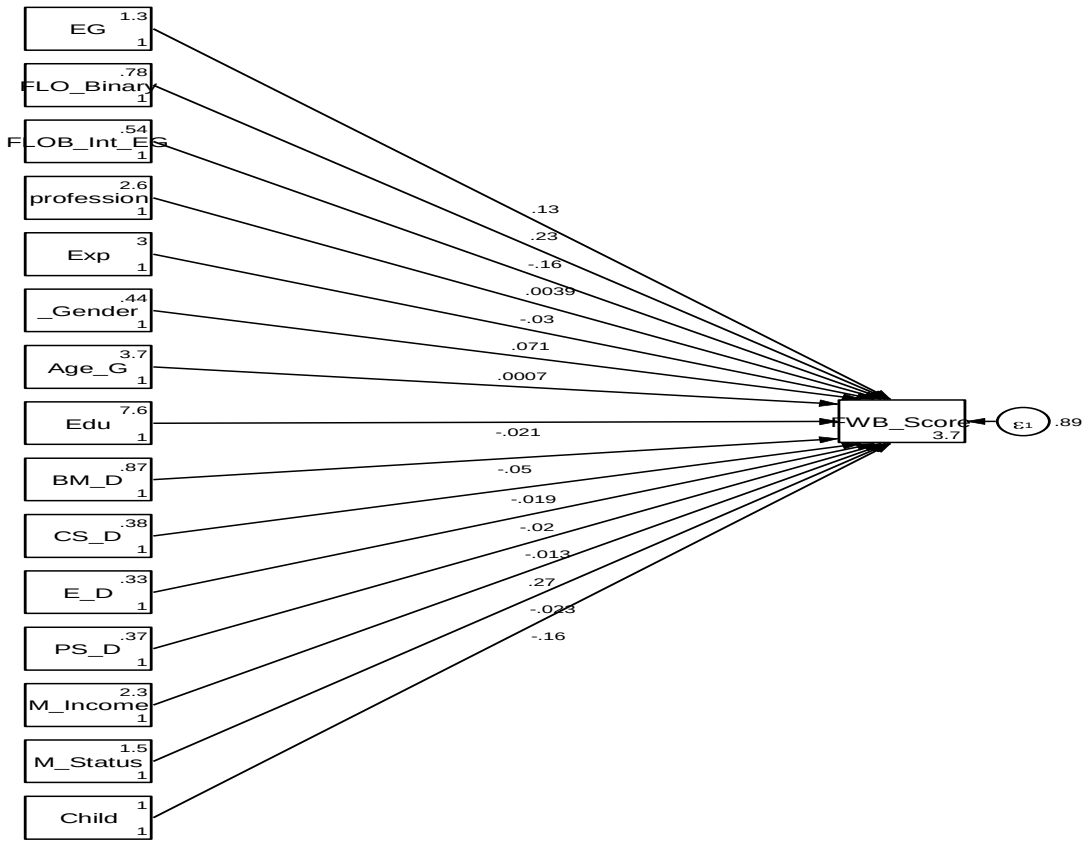


Figure 4.16: FLO as moderator (EG → FWB – FLO Moderator)

Standardized	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Structural						
FWB_Score <-						
EG	0.132	0.053	2.500	0.012	0.029	0.236
FLO	0.233	0.072	3.230	0.001	0.092	0.374
FLO_Int_EG	-0.161	0.080	-2.020	0.043	-0.318	-0.005
profession	0.004	0.044	0.090	0.930	-0.082	0.090
Exp	-0.030	0.057	-0.520	0.601	-0.142	0.082
_Gender	0.071	0.040	1.770	0.077	-0.008	0.150
Age_G	0.001	0.054	0.010	0.990	-0.104	0.106
Edu	-0.021	0.038	-0.570	0.572	-0.096	0.053

BM_D	-0.050	0.060	-0.830	0.404	-0.168	0.068
CS_D	-0.019	0.047	-0.410	0.681	-0.111	0.073
E_D	-0.020	0.050	-0.400	0.689	-0.119	0.078
PS_D	-0.013	0.049	-0.260	0.792	-0.110	0.084
M_Income	0.274	0.048	5.700	0.000	0.180	0.367
M_Status	-0.023	0.054	-0.430	0.668	-0.130	0.083
Child	-0.160	0.057	-2.810	0.005	-0.272	-0.048
_cons	3.742	0.376	9.940	0.000	3.004	4.479
var(e.FWB_Score)	0.895	0.025			0.847	0.945
Discr. test of model vs. saturated: chi2(0) = 0.00, Prob > chi2 = .						

Table 4.30: FLO as moderator (EG → FWB – FLO Moderator)

To further interpret these findings, the researchers have drawn interaction plot by employing the methodology devised by Dawson (2018). The interaction plot showing the interaction of moderator with EG is presented in Figure 4.17. It is observed from the interaction plot that high FLO weakens the positive affect of EG on FWB but on the other side, Low FLO strengthen the positive effect of EG on FWB.

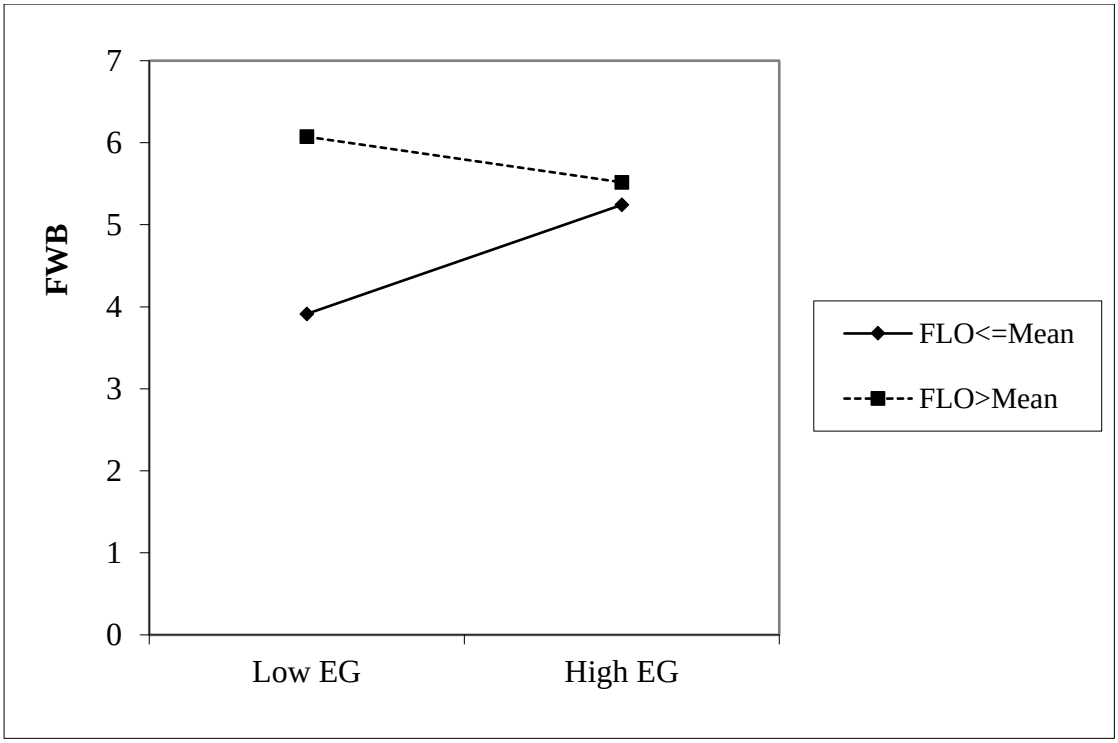


Figure 4.17: Interaction Plot

4.1.6. Key Findings Based on Quantitative Data Analysis:

This chapter was aimed to analyze the data collected, as per methodology devised in previous chapter. The researchers have tested all the hypothesis and findings of the quantitative analysis are summarized as under:

H1: Behavioral biases affect the financial well-being of the individuals negatively.

a. Framing Effect decreases the Financial Wellbeing of the individuals.
b. Higher the monthly Income, higher will be the Financial Wellbeing of the individuals.
c. Higher the number of children, lesser will be the Financial Wellbeing of the individuals.

H2: Behavioral biases affect the financial behaviors of the individuals.

a. Framing Effect escalates negative investment behaviors.

b. Individuals having Exponential Growth Bias are less likely to exercise negative investment behaviors.
c. Individuals more involved in Mental Budgeting are less likely to exercise negative investment behaviors.
d. Individuals doing job are more likely to exercise negative investment behaviors than those who do their own business.
e. Higher the level of education, it is less likely that individuals will involve in negative investment behaviors.

H3: Negative financial behaviors affect the financial well-being of the individuals negatively.

a. The more the individuals are involved in negative Investment Behaviors, it is more likely that they will have lower level of Financial Wellbeing.

P1: Existence of behavioral biases affect the financial behavior of the individuals, which in turn affect the financial well-being of the individuals.

a. Framing Effect increases negative Investment Behaviors, which subsequently decreases financial wellbeing of the individuals.
b. Exponential Growth and Mental Budgeting decreases negative investment behaviors, where negative investment behavior decreases the Financial Wellbeing of the individuals.

H4: Financial literacy moderate the relationship of behavioral biases and financial well-being of the individual.

a. Actual Financial literacy moderate the relationship of Exponential Growth Bias and Financial Wellbeing.

b. High Actual Financial Literacy weakens the positive affect of Exponential Growth on Financial Wellbeing.
c. Low Actual Financial Literacy strengthen the positive effect of Exponential Growth on Financial Wellbeing.

Chapter 5 : Results of Qualitative Phase and Integration of Quant + Qual Results

This chapter has covered the results of the qualitative analysis as well as integration of results of both the quantitative and qualitative analysis. Qualitative analysis is carried out in QSR-NVivo. Following the methodology devised in chapter No.3, The researchers have reported the results of the qualitative analysis. At the end, integration of results of both the quantitative and qualitative phases is carried out and overall findings of the study are presented.

5.1. Qualitative Analysis:

5.1.1. Attribute Analysis of Interviewees:

Table 5.1 presents the summary background of the interviews. Gender, education, experience and area of expertise of the interviewees are recorded to highlight that the respondents are mature, highly educated, having both teaching and non-teaching experience of considerable duration and are from relevant area of specialization. Hereunder, the researchers have presented the attribute analysis of the interview participants.

Gender	Education	Experience	Years of Experience	Area of Expertise	Number of scoped items which have that particular attribute value combination
Male	PhD	Teaching	02 Years	Finance	2
Male	Masters	Non-Teaching	03 Years	Finance and Banking	1
Male	Masters	Non-Teaching	04 Years	International Marketing and Digital Marketing	1
Male	MS / M.Phil.	Both Teaching and Non-Teaching	07 Years	Finance	1
Male	MS / M.Phil.	Teaching	10 Years	Finance	1
Male	MS / M.Phil.	Teaching	12 Years	Finance	1

Male	PhD	Both Teaching and Non-Teaching	25 Years	Finance	1
Male	PhD	Teaching	15 Years	Finance	1
Male	PhD Scholar	Both Teaching and Non-Teaching	30 Years	Finance and Banking	1
Male	PhD Scholar	Teaching	08 Years	Finance	1
Male	PhD Scholar	Teaching	08 Years	Human Resource Management	1
Male	PhD Scholar	Teaching	09 Years	Finance	1
Male	PhD Scholar	Teaching	13 Years	Finance	1
Female	MS / M.Phil.	Teaching	11 Years	Human Resource Management	1
Female	PhD	Teaching	12 Years	Management	1

Table 5.1: Summarized background of the Interviewees

Figure 5.1 presents that there are 88% male (14 Nos) and 12% female (2 Nos) participants.

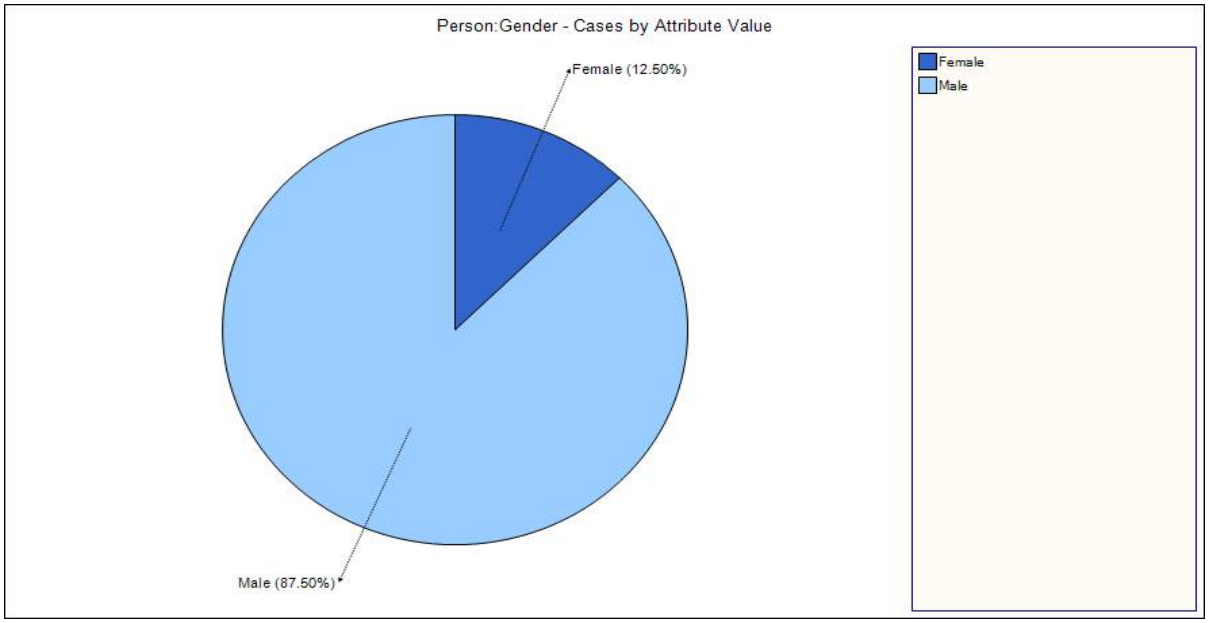


Figure 5.1: Participant's Gender

Figure 5.2 presents that 12% participants (2 Nos) hold master's degree i.e. 16 years education, 25% participants (4 Nos) hold MS / M.Phil degree i.e. 18 years education, 31% are currently doing PhD (5 Nos) and 31% hold PhD Degree (5 Nos).

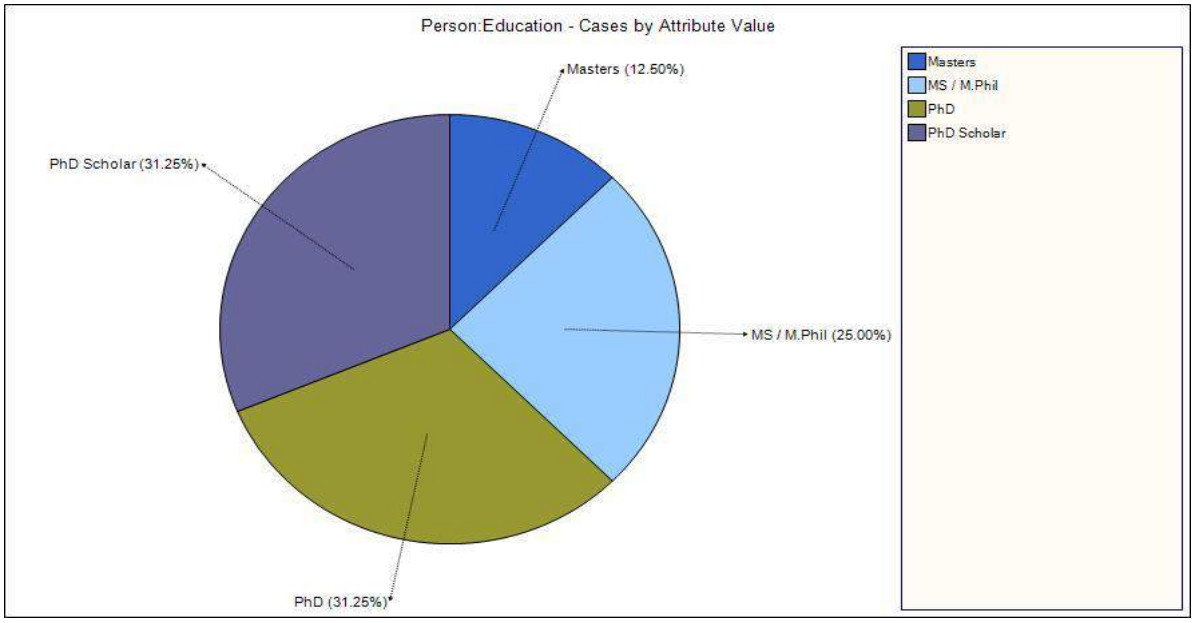


Figure 5.2: participant's Education

Figure 5.3 categorized the respondents on the basis of their teaching / non-teaching experience. It shows that 19% of the participants (3 Nos) hold both teaching and non-teaching experience, 12% hold non-teaching experience (2 Nos) and 69% hold teaching experience (11 Nos).

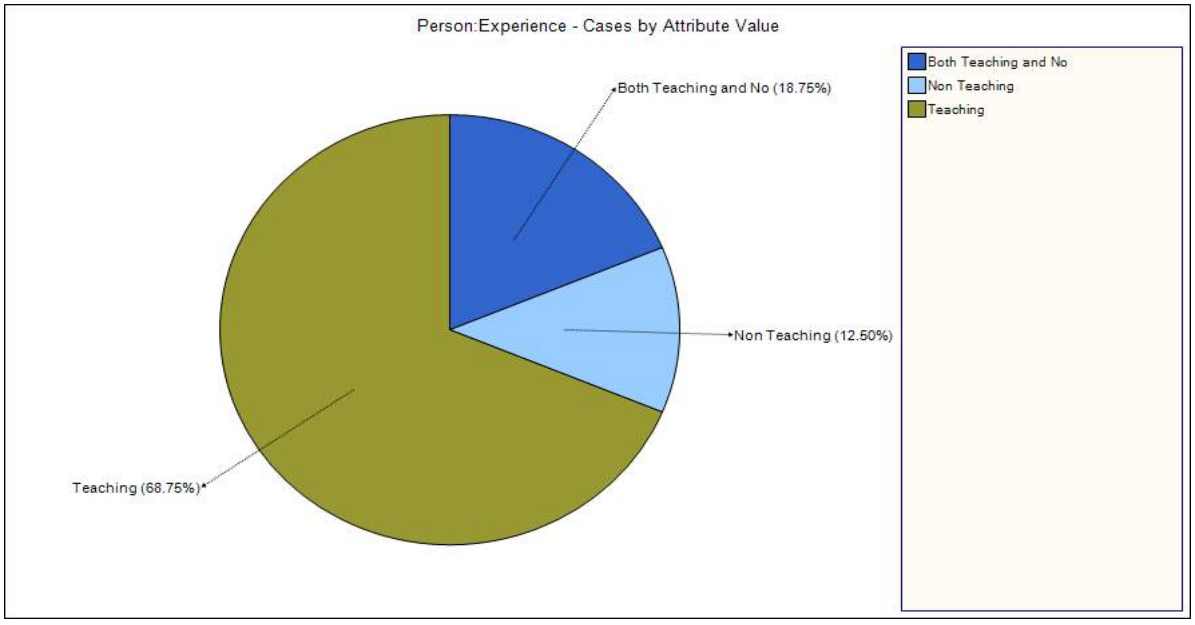


Figure 5.3: Teaching / Non-Teaching Experience

Figure 5.4 presents the years of experiences possessed by interviewees at the time of interviews. It shows that the interviewees hold experience from minimum 2 years to maximum 30 years. Table 2 presented above shows that those participants who hold 2 years' experience are both males, doing teaching and hold PhD degree.

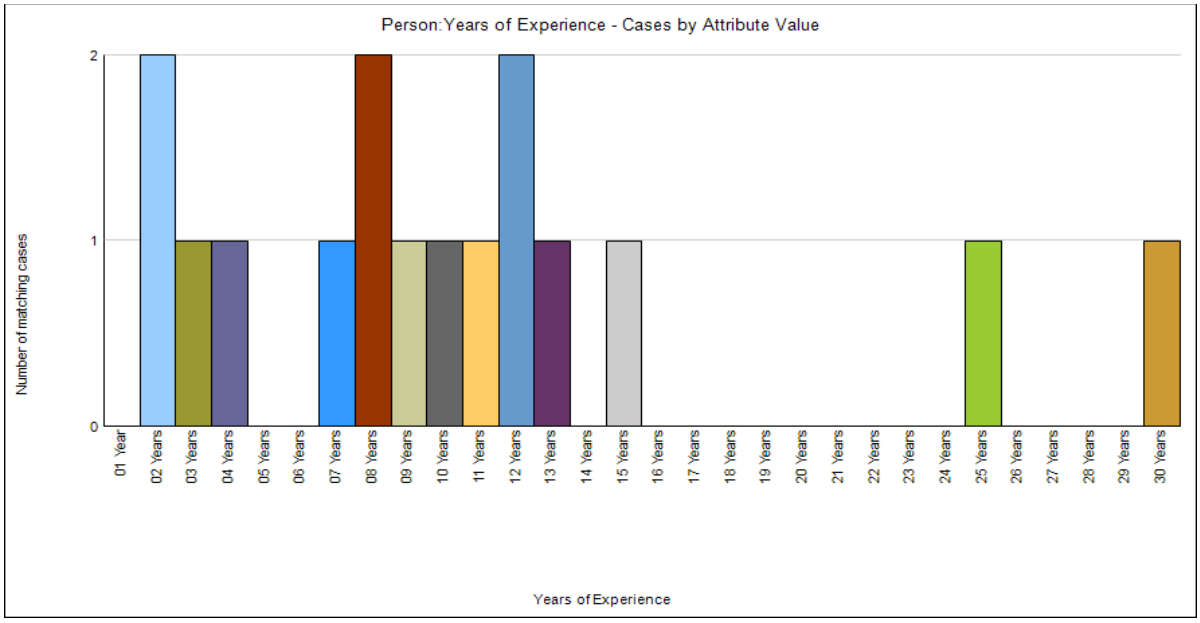


Figure 5.4: Years of Experience

Figure 5.5 presents the area of expertise of the participants. It shows that 2 of the have specialization in finance and banking, 2 have expertise in human resource management, 1 have expertise in international marketing and digital marketing, 1 is expert in the field of management, whereas 10 participants have expertise in finance.

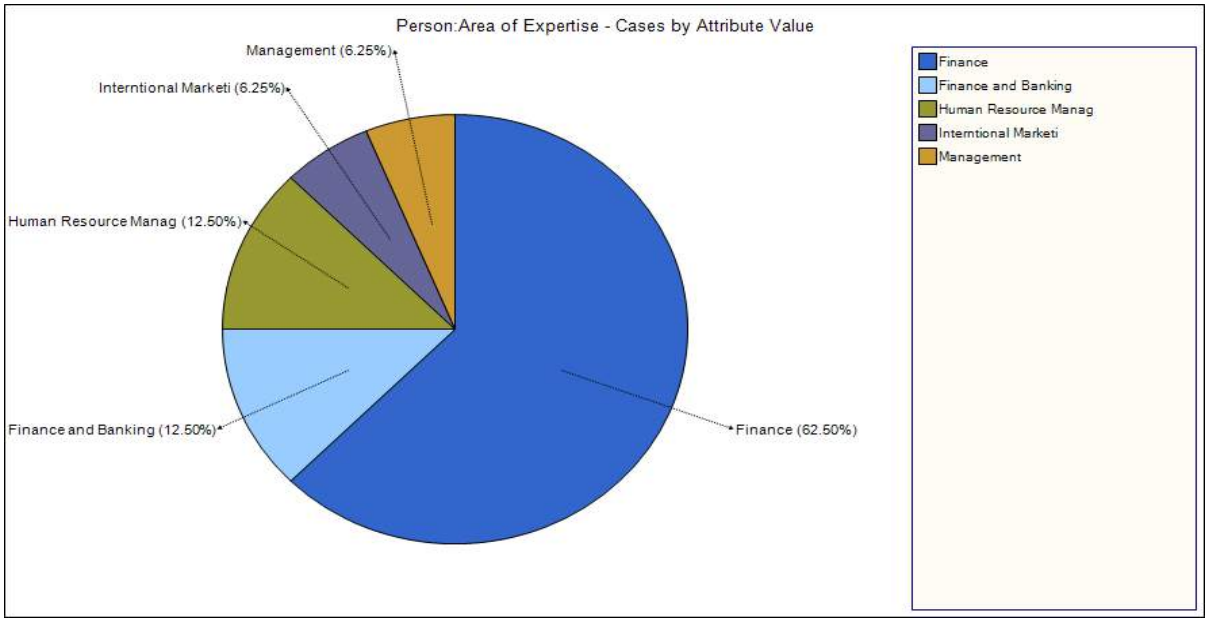


Figure 5.5: Area of Expertise

5.1.2. Thematic Analysis:

Based on the quantitative analysis, the researchers have made certain findings, as presented in Table 32 above. The questions developed for qualitative analysis are to reaffirm those findings. Hereunder, the researchers have analyzed the interview responses against the questions asked, by categorizing responses into various classifications in NVivo. the researchers have also presented the responses through graphs. The justifications given by the respondents in agreement with the interviewer statements or against it are also quoted to augment the opinions.

5.1.2.1. Framing Effect and Financial Wellbeing:

Regarding the impact of framing effect on financial wellbeing, following question was posed:

Question: Do you think the way information is framed can affect the Financial Wellbeing?

Figure 5.6 shows that all the 16 interviewees were agreed with the statement. Regarding the direction of the relationship 13 interviewees has given opinion. Out of those 13 interviewees, 6 were of the opinion that the impact could be in both positive and negative way, whereas; other 6 respondents opined that the relationship could be in a negative way. Only one respondent argued that the relationship could be positive.

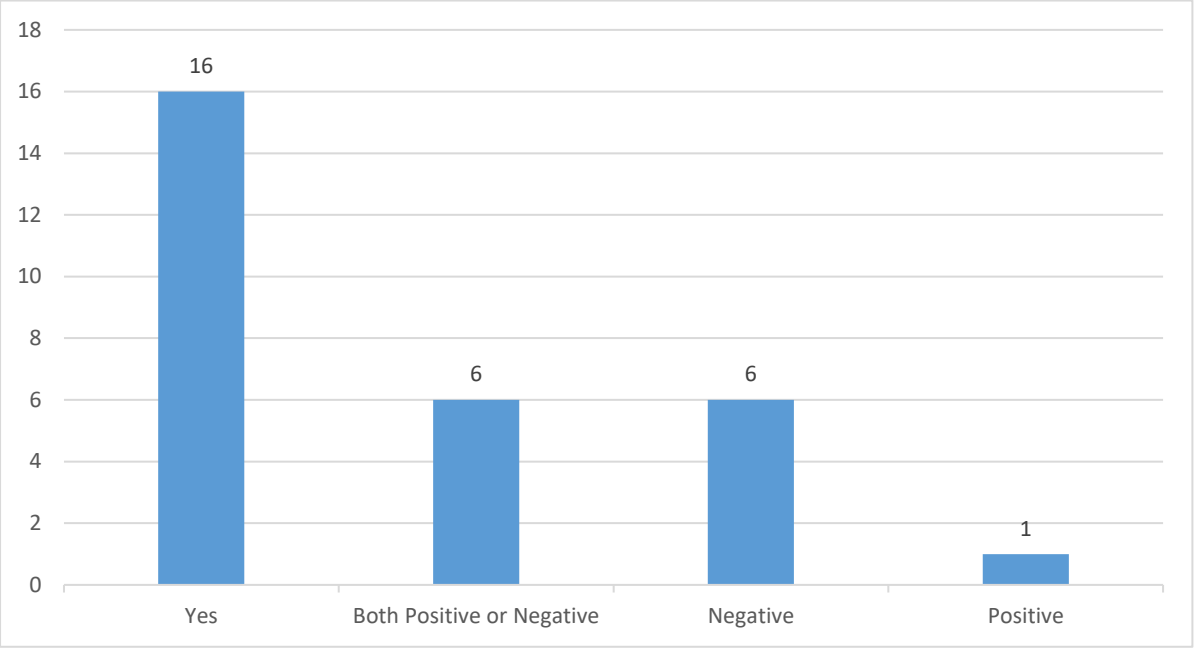


Figure 5.6: Framing Effect and Financial Wellbeing

Interviewee No.6 was of the view that the relationship could be both in positive and negative direction. Regarding the positive relation of framing effect on financial well-being, he related the positive framing with the concept of nudging. He said:

> "*nudging is like that you present things in a way that you get the desired outcome. Like "save more tomorrow plan". A study in US school regarding eating junk food. Here the idea of nudging is involved. One way to stop children from eating junk food and carbonated drinks was to give them lectures. Instead of that they simply removed the tray from school cafeteria. Students were used to fill up the tray with the junk food. Only by removing the tray from the school*

cafeteria, they avoided buying too much junk and they started to buy only a burger. The junk food intake in that school was reduced significantly. It was a particular example of nudging / framing. Without giving them any lecture and by making slight change in the arrangements"

At one other instance, he said that:

"*If the information is deliberately framed in a way to increase the savings among the people, it could have a positive impact. I think you need to study the positive aspect of nudging"*

Moreover, he said that:

"*Nudging is positive thing. You can study the positive framing with reference to nudging*"

Interviewee No.06 was of the opinion that the impact of framing impact on financial wellbeing could be in both positive and negative, as it depends on the way information is framed, he said that:

"*The positive and negative direction of framing depend on the way the information is framed. If the information is deliberately framed in a way to increase the savings among the people, it could have a positive impact"*

Moreover, he said that:

"*Corporations normally frame the things to increase their selling. Like coca cola drinks, they attach it with cricket, emotions etc. This kind of framing is good for companies but not for consumers"*

Interviewee No.4 & 5 were also agreed that the framing could affect the financial wellbeing in both positive and negative way, due to the way information is framed, Interviewee No. 04 said that:

> "*If we frame the information in a rational way, it will positively affect the financial wellbeing and vice versa*"

Whereas interviewee No.5 supported justified his viewpoint as:

> "*If information is framed negatively, it could affect the financial wellbeing negatively. If information is framed positively, it will affect financial wellbeing positively*"

From those interviewees who claimed that framing impact the financial wellbeing in a negative way, some of them provided further explanations to support their viewpoint. For instance, interviewee No.1 related it with *unrealistic information presentation.* He said that:

> "*Mostly, banks showed very rosy picture regarding their credit card, loan and saving's offers. In fact, there involve huge transaction costs and less returns than showed. This could be a fundamental example of framing as they do not reflect the true information. Financial decisions made by individuals based on the information offered by the financial institution could be faulty and could result in adverse effect on financial well-being of the individuals*"

The opinion of Interviewee No.8 also supported the viewpoint of Interviewee No.1. He said that:

> "*banks may charge you interest which was not specifically mentioned in the information provided*"

Interviewee No.9 related framing effect with idle investments. He said that:

> "*If there is framing effect, people could invest in idle investments, it means they could be under specifying their financial wellbeing*"

An important aspect emerged from the qualitative analysis, on which all the interviewees were agreed; is that the framing has implications towards financial wellbeing of the individuals. However, the direction of the relationship depends upon how the information is framed. Positively framed information, which an interviewee has referred to as "nudging", could have positive impact on financial wellbeing. Whereas, if the information is framed to increase the corporation's interests for instance increased sales of a product by misrepresenting the facts, it could be considered as negative framing from the viewpoint of a consumer, and it would have a negative impact on the financial wellbeing of the individuals.

5.1.2.2. Monthly Income and Financial Wellbeing:

Regarding the impact of monthly income on financial wellbeing, following question was posed:

Question: Do you think the level of monthly income can affect the Financial Wellbeing?

Figure 5.7 shows that all the 16 interviewees were agreed with the statement. Regarding the direction of the relationship 12 interviewees has given opinion and all the 12 were agreed that there is a direct relationship of monthly income and financial wellbeing.

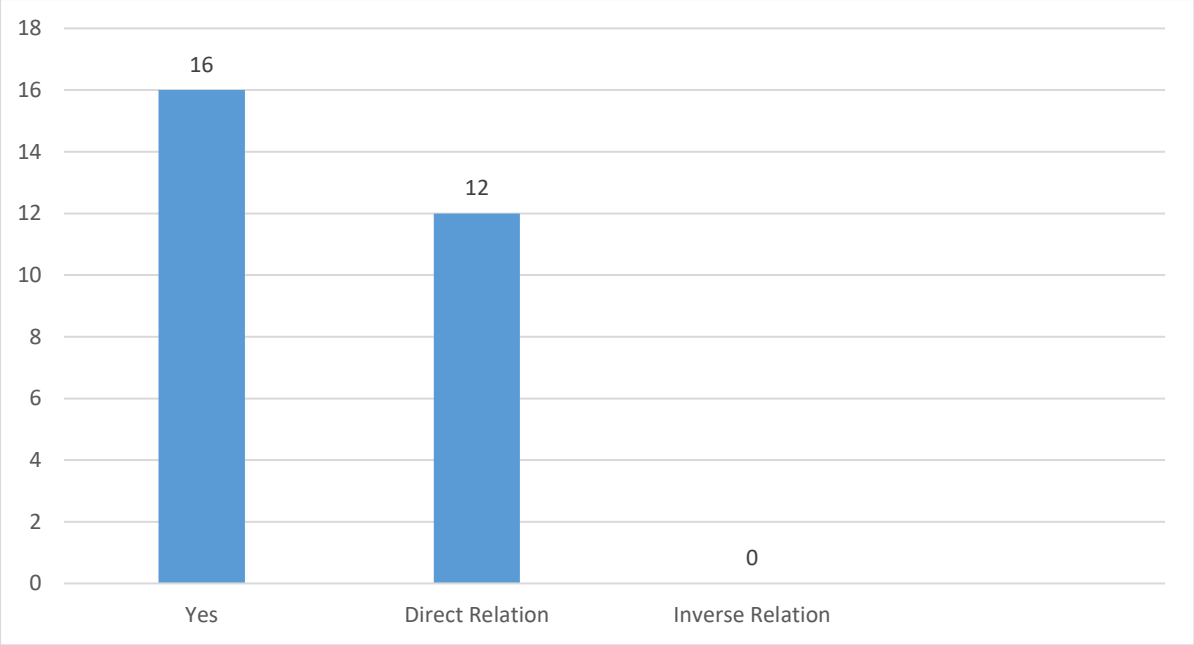


Figure 5.7: Income Level and Financial Wellbeing

Interviewee No.16 related monthly income with savings and investments planning, he said that:

> "*Level of monthly income allows a person to plan his/her savings and investment plans effectively*"

Whereas Interviewee No.6 related it with terrible financial decision making by giving an interesting example of a research carried out in Indian settings. He said that:

> "*There is an interesting study in India on sugarcane farmers which explain that farmers showed different IQ level when they had money and when they had not. So, income levels could result in terrible financial decisions. Poor people spend recklessly on marriages, even they borrow and spend. So monthly income can have adverse effect on financial wellbeing*"

Interviewee No.7 linked monthly income with the concept of financial autonomy. He said that:

> "T*he more the income level people could have, the more the financial wellbeing they will enjoy. They will have more financial autonomy*"

From this analysis, the researchers found that monthly income does have a direct impact on financial wellbeing of the individuals. If there will be higher income level, people will enjoy higher level of financial wellbeing. They will have better financial autonomy. They will have better savings and investments plan.

5.1.2.3. Dependent Children and Financial Wellbeing:

Regarding the impact of number of dependent children on financial wellbeing, following question was posed:

Question: Do you think the number of children can affect the Financial Wellbeing?

Figure 5.8 shows that 15 interviewees replied to the statement as "yes". Regarding the direction of the relationship 10 interviewees has given opinion and all the 10 were agreed that there is an inverse relation between number of dependent children and financial wellbeing.

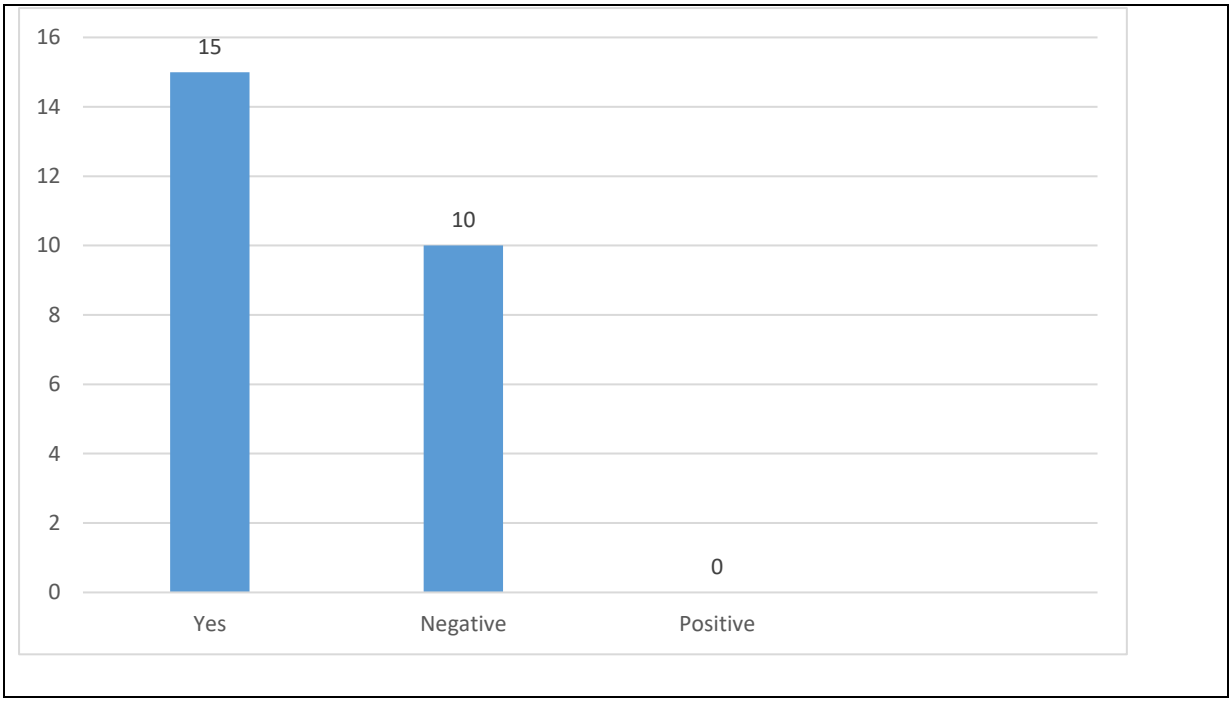


Figure 5.8: Number of Dependent Children and Financial Wellbeing

Some of the respondents provided justifications in favor of inverse relation of number of dependent children and financial wellbeing. For instance, Interviewee No.1 said:

> "*having less number of children means you will be spending less on food and education etc. You will have financial cushion to spend, save or invest*"

Interviewee No.10 said that:

> "*when you have big family, you bear more expense than small family*"

Interviewee 16 said that:

> "*the more dependents a person has, the more spending he/she has to make on their various expenses*"

Interviewee No.3 said that:

> "*if you have to feed more mouths then it could have implications on your financial well-being*"

Interviewee No.7 said that:

"*If you have 4-5 children, of course it will affect your financial wellbeing*"

Based on the opinions of the interviewees, the researchers found a general agreement that having higher number of children could have a negative impact on the financial wellbeing of the individuals, as justified by Interviewee No.3 as "*if you have to feed more mouths then it could have implications on your financial well-being*".

5.1.2.4. Framing Effect and Investment Behaviors:

Regarding the impact of framing on investment behaviors, following question was asked from the interviewee:

Question: Do you think the way information is framed can affect the Investment Behaviors?

Figure 5.9 shows that 14 interviewees agreed to the statement. Regarding the direction of the relationship 9 interviewees have given opinion. Out of those, 4 were considered that the impact of framing on investment behaviors could be both in positive and negative ways. Other 4 claimed that it would be negative. Whereas, only one interviewee stated that the relationship will be positive.

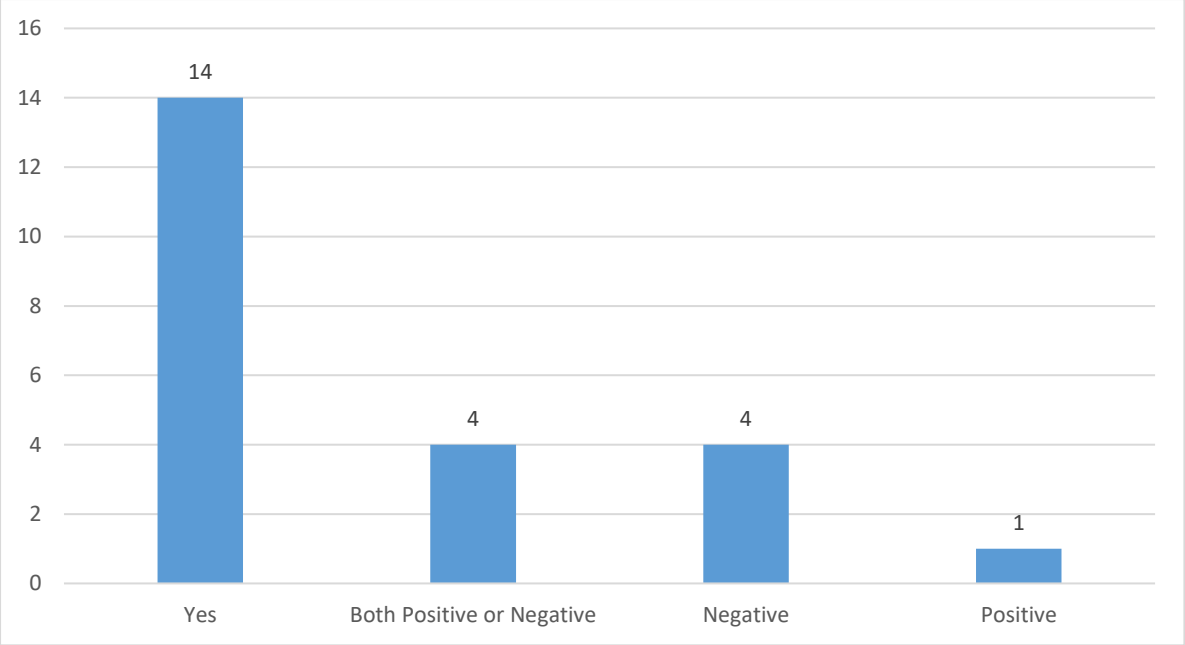


Figure 5.9: Framing Effect and Investment Behaviors

Interviewee No.8 who was of the view that framing can affect investment behaviors both in positive and negative way said that:

> "*Yes, framing could have impact on investment behaviors. Banks frame information in a rosy way, although it is not attractive. Framing effect can positively affect investment behaviors, if the information is framed positively*"

Whereas Interviewee No.1 was in support of only negative impact of framing on investment, he said:

> "*If information provided is not true reflection of the risks and returns associated with that investment alternative*, *it will effect in a negative way*"

Interviewee No.9 provided a different aspect of framing, he said:

> "*framing affect will lead to a specific investment while not considering other investment opportunities*"

Interviewee No.7, while stating the positive impact of framing, related the investment behaviors with risk taking behavior. She said:

"*Risk takers will have different investment behaviors and risk averse people will have different investment behaviors*"

The analysis of the viewpoints of the interviewees found that framing does affect the investment behaviors. If the information is framed in a negative way, it is more likely that people will involve in negative investment behaviors. On the other hand, if the information is framed in a positive way, people will be involved in positive investment behaviors.

5.1.2.5. Exponential Growth Bias and Investment Behaviors:

Following question was asked from the interviewees regarding the impact of exponential growth bias on investment behaviors:

Question: Do you think that under estimating future value (Exponential Growth Bias) can affect the Investment Behaviors?

Figure 5.10 shows that all the 16 respondents were agreed that under estimating future value i.e. exponential growth bias affects the investment behaviors. However, the respondents differed about the direction of relationship. Only 1 respondent said that the relationship could be both in negative or positive side. Whereas, 2 interviews said that the relationship will be negative and 5 said that the relationship will be positive. Hereunder the researchers have presented the justifications given by respondents in favor of their opinion.

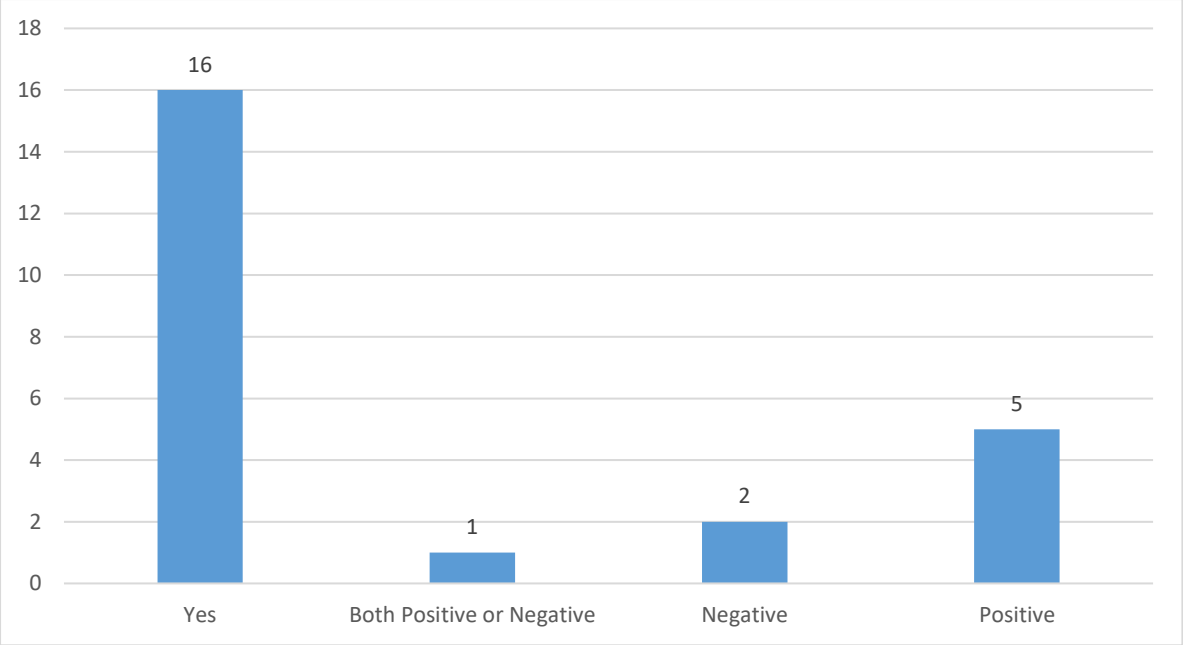


Figure 5.10: Exponential Growth Bias and Investment Behaviors

Interviewee No.6 who talked about both positive and negative impact of exponential growth bias on investment behaviors justified his opinion as:

> "*One aspect could be if someone is underestimating, he would be less likely to invest. Because for him return will be very low. This relationship could be positive, if people are underestimating the future value for some certain investments which were risky, and they avoided those*"

Interviewee No.4, who was of the opinion that exponential growth bias will impact investment behaviors negatively, provided the following rationale:

> "*If people are not exactly known about the growth of future investment, it will negatively affect their investment behaviors*"

Interviewee No. 3, 7 and 9 were in favor of positive impact of exponential growth bias on investment behaviors. Interviewee No.3 supported his viewpoint by providing the following argument:

"*If I will see future is not giving good return, I might not go with that investment. Risk aversion could be a factor for underestimating the future value regarding an investment which will affect the investment behaviors positively*"

The argument provided by Interviewee No.7 in favor of positive impact of exponential growth bias on investment behaviors was:

"*by underestimating, people try to be more secured. Considering future security, they will invest more*"

Whereas the argument given by Interviewee No.9 was:

"*people behave in a conservative way and they set their targets at low level so that they could achieve the expected future returns easily. And if there are any losses, then these losses are not too much high comparing the threshold*"

A general agreement was found among all the interviewees that underestimating the future value could impact the investment behaviors. However, interviewees differed regarding the direction of the relationship. Some were of the opinion that the relationship among both the variables of interest would be positive, while other said, it will be in negative direction. One of them said it will be both positive or negative. The argument given by Interviewee No.09 sounds more justified regarding the positive impact of exponential growth bias on investment behaviors.

5.1.2.6. Mental Budgeting and Investment Behaviors:

With regards to the relationship of mental budgeting with investment behaviors, following question was asked:

Question: Do you think Mental Budgeting can affect the Investment Behaviors?

Figure 5.11 shows that all the 16 interviewees were agreed with the statement. 9 respondents further reflected on the direction of the relationship. 4 were of the opinion that the relation could be on both positive or negative side. 1 said that it will be in negative direction, whereas 4 others said that it will be in positive direction.

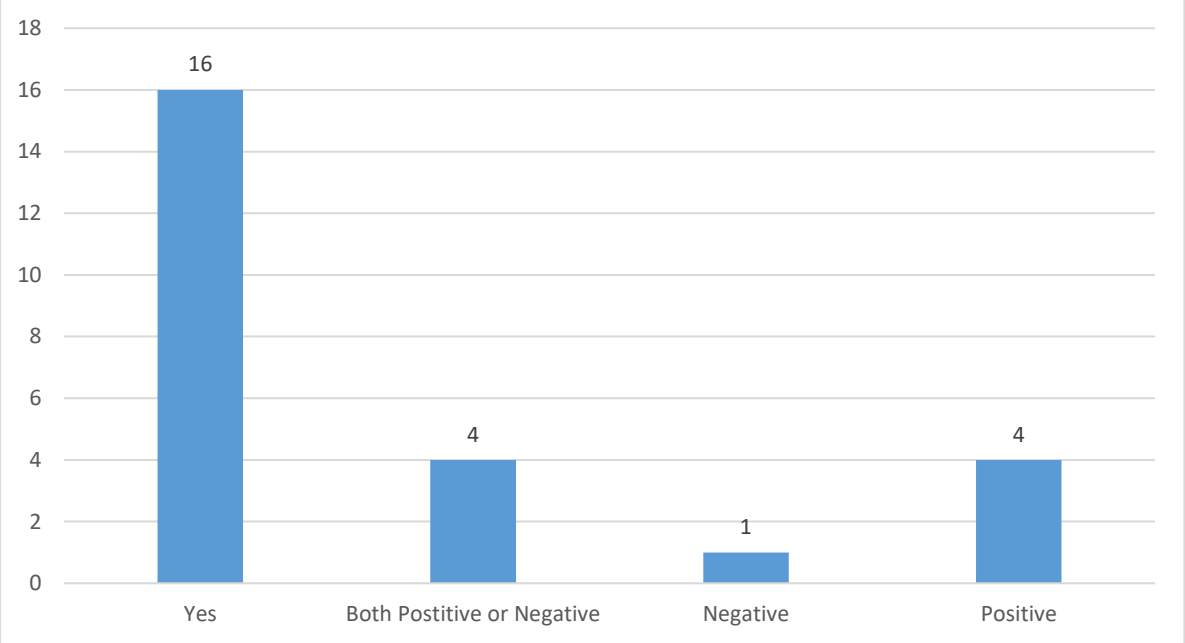


Figure 5.11: Mental Budgeting and Investment Behaviors

Some of the respondents further justified their opinion. From those, who said that the relationship could be in both positive or negative side, Interviewee No.1 provided the following reason:

> "*If a person planned to invest and he created mental account by allocating a future cash inflow to be utilized for a specific investment, this could result in a positive effect on investment behavior of that individual*"

Interviewee No.13 was also considering that the impact would be in negative or positive side, providing the justification that:

"*this relationship could be positive or negative depending on how we do mental budgeting*"

Interviewee No.4 was of the opinion that mental budgeting can impact investment behaviors in a negative way. He provided the following justification:

"*Mental budgeting can act as barrier and it can affect the investment behaviors*"

The justifications given by Interviewee No.6 & 7 regarding their opinion of positive impact of mental budgeting on investment behaviors are:

Interviewee No.6 said:

"*Mental budgeting could affect positively the investment behaviors. One of the benefit is heuristics, in a way make life easier. It is a kind of nudging. You are maintaining separate accounts*"

Whereas, Interviewee No.7 said:

"*Positive relation could be seen as people are more vigilant, balanced and more aware of their spending and savings patterns*"

The analysis of the interviewees' responses found that mental budgeting affects the investment behaviors. However, again regarding the direction of this impact, a varying opinion is recorded. The justifications given by interviewees in favor of their opinion provide sound basis to believe that mental budgeting could have a positive or negative impact. At one side, the researchers found that mental budgeting could act as a barrier affecting investment behaviors, while on the other side, people doing mental budgeting could be more vigilant, balanced and more aware of their spending and savings patterns.

5.1.2.7. Profession and Investment Behaviors:

In quantitative phase, the researchers found that profession i.e. job or business could impact the investment behaviors of the individuals. To further investigate, the researchers posed the following question in interviews.

Question: Do you think that there could be any difference on Investment Behaviors if individuals are doing job or business?

Figure 5.12 Shows that all the 16 interviewees were agreed with the statement that "*there could be any difference on Investment Behaviors if individuals are doing job or business*". However only 5 respondents further explained the relationship. 3 were of the opinion that those who do business could have positive investment behaviors. Whereas, 2 interviewees were of the opinion that people doing job could have negative investment behaviors.

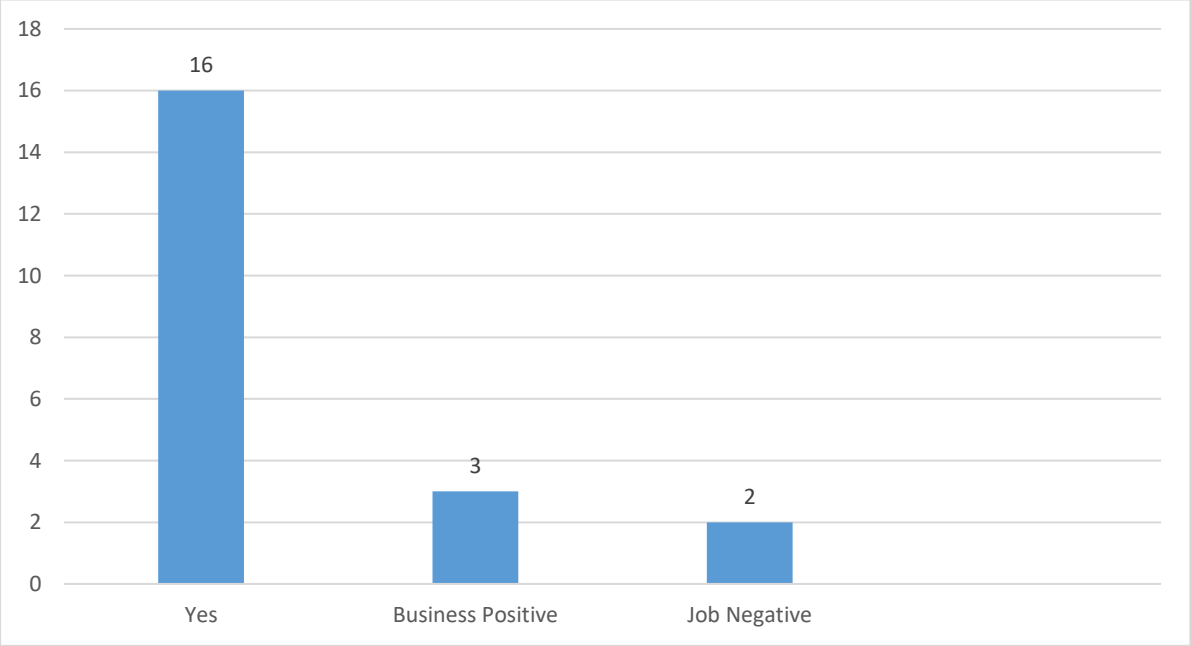


Figure 5.12: Profession and Investment Behaviors

The phenomenon that businessmen could have positive and jobholders could have negative investment behaviors was related by the interviewees with the risk seeking behavior of the individuals. Interviewee No.1 said that:

> "*Individuals doing job are normally considered as risk averse, whereas businessmen are considered as risk seekers, so there must be a difference in their investment behaviors*"

Interviewee No.10 said:

> "*job holders are risk averse and businessman are risk takers*"

Interviewee No.13 said:

> "*Businessmen are more risk takers than job holders, so there will be difference in their way to behave towards investments*"

Interviewee No.16 said:

> "*When a person is doing a job, his/her investment behavior is risk averse while a person doing a business is risk taker when it comes to investment decision*"

Interviewee No.4 said:

> "*job have negative and business have positive impact. As Job holders are risk averse and businessmen are risk takers*"

Interviewee No.9 said:

> "*Businessmen can go for more risky investments than job holders*"

Interviewee No.3 & 6 related the phenomenon of different investment behaviors of businessmen and jobholders with the perspective hold by those individuals. They were

of the opinion that the businessmen hold an organizational perspective, whereas jobholders focus on individual perspective. They explained there viewpoint as:

Interviewee No. 3 said:

> "*Businessmen have organizational perspective, they think about their existing assets. They go for capital expenditures to earn more assets from their existing assets. However, people doing job focus more on spending due to their limited / short term orientation. They concentrate more on near future requirements*"

And Interviewee No.6 said:

> "*those doing job have more predictable income and they are more likely to be part of saving schemes, bonds and bank deposits. On the other hand, if someone is doing business and more specifically if someone is doing small or medium size business, then his / her primary focus will be to save for the business. What we call retained earnings. They think that their business will grow with passage of time and will take care of their future obligations such as their kid's studies and buying a house after 10 years. So, they save for the business. For corporations this will be different*"

Interviewee No.5 related the phenomenon that why jobholders and businessmen have different investment behaviors, with family orientation. She said:

> "*There are certain families who are job oriented and there are families who are business oriented. We see that the job-oriented families have different investment behaviors then business-oriented families*"

From the analysis, the researchers found that investment behaviors of the people differ, if they are doing job or if they are doing business. This difference could be due

to the risk-taking behavior of the people. People doing job could be more risk averse, whereas people doing businesses could be risk takers. The researchers also found that the investment behaviors could also depend on family orientation i.e. job oriented and business-oriented families could have different investment behaviors.

5.1.2.8. Level of Education and Investment Behaviors:

The researchers found in quantitative phase, that “higher the level of education, it is less likely that individuals will involve in negative investment behaviors”. To further verify and investigate the finding, the researchers asked following question from our respondents in interviews.

Question: Do you think that the level of education can affect the Investment Behaviors?

Figure 5.13 Shows that all the 16 respondents were agreed that the level of education can affect the investment behaviors. Regarding the direction of relationship, 10 were of the opinion that having higher education means people will have positive investment behaviors. Interestingly, 3 respondents while being agree to the statement were also saying that higher education do not matter.

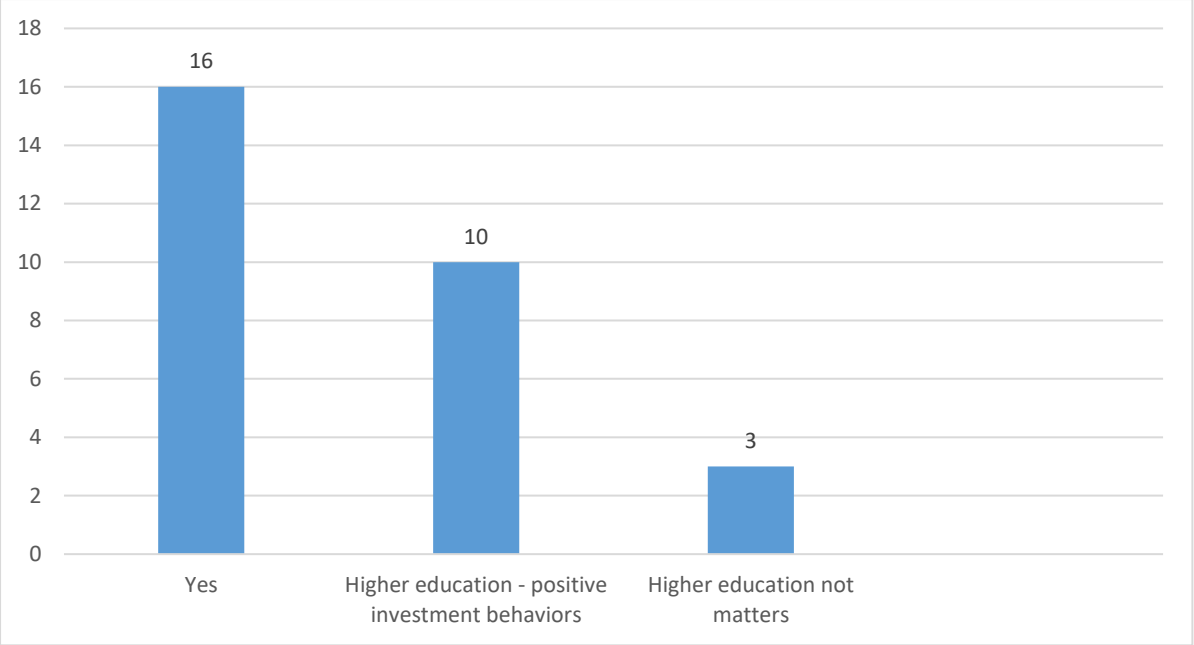


Figure 5.13: Level of Education and Investment Behaviors

Those who were saying that having higher level of education could impact the investment behaviors in a positive way, had provided different justifications. For instance, interviewee No.13 said:

> "*people having higher level of education will exercise positive investment behaviors as they will have more rational approach*"

Interviewee No.16 said:

> "*Level of education determines the amount of planning done by a person for investing in a particular financial product or asset*"

Interviewee No.3 said:

> "*Highly educated people are in better place to involve in positive investment behaviors*"

Interviewee No.6 said:

"*Normally if you are educated you will have more awareness. It is not easy to generalize but normally it does*"

Interviewee No.7 said:

"*there will be positive impact as people having higher education may have better understanding and analytical skills*"

Those who claimed that higher education may not matter, have provided the following arguments.

Interviewee No.10 said:

"*an illiterate person has more experience than educated person and vice versa so we cannot define the investment behavior of person on the basis of education*"

Interviewee No.14 said:

"*Well, level of education may affect the investment behavior of the individual, but I think it should not have significant/greater influence*"

Interviewee No.3 said:

"*Theoretically, it is correct. But, based on my personal experience, I found that the higher level of education could lead towards negative investment behaviors. Higher the level of education, higher will be level of security and integrity and higher the level of satisfaction. Whereas the person not highly educated do not care or might not have higher level of satisfaction, so he might be involved in positive investment behaviors*"

Overall, the researchers found a general agreement among all the interviewees that level of education affect the investment behaviors. It also found that most of the interviewees were of the opinion that if people will have higher level of education, they will involve in positive investment behaviors. However, at the same, the opposite

viewpoint of an interviewee who was not agreed with others cannot be ignored as he said that "*Theoretically, it is correct. But, based on my personal experience, I found that the higher level of education could lead towards negative investment behaviors. Higher the level of education, higher will be level of security and integrity and higher the level of satisfaction. Whereas the person not highly educated do not care or might not have higher level of satisfaction, so he might be involved in positive investment behaviors*".

5.1.2.9. Investment Behaviors and Financial Wellbeing:

During quantitative analysis, the researchers found that "The more the individuals are involved in negative Investment Behaviors, it is more likely that they will have lower level of Financial Wellbeing". Based on this finding, the researchers asked the following question from the respondents in qualitative phase.

Question: Do you think that the Investment Behaviors can affect the financial wellbeing?

The opinions of the interviewees coded into various categories as presented in Figure 5.14. It can be seen that all the 16 interviewees were agreed that investment behaviors affect the financial wellbeing of the individuals. 11 interviewees opined that investment behaviors could have a direct impact with financial wellbeing i.e. negative investment behaviors will have negative impact on financial wellbeing and positive investment behaviors will have a positive impact on financial wellbeing.

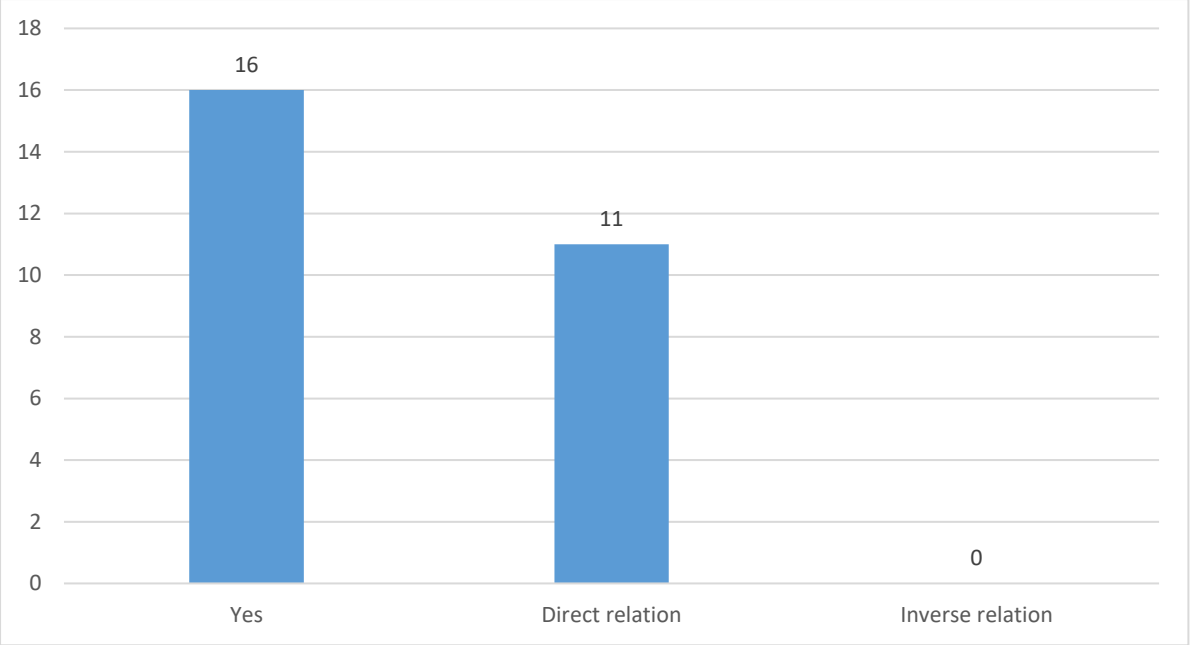


Figure 5.14: Investment Behaviors and Financial Wellbeing

Interviewee No.1 supported the direct relation by saying that:

> "*people involve in positive investment behaviors would have better financial well-being then those who exercise negative investment behaviors*"

Whereas Interview No.7 was agreed with the direct relation, but she added that:

> "*Theoretically it is correct*"

The researchers found a general consensus among all the interviewees that investment behaviors do impact the financial wellbeing of the individuals. The researchers also found that negative investment behaviors impact the financial wellbeing in a negative way, whereas positive investment behaviors impact the financial wellbeing in a positive way.

5.1.2.10. Mediating role of investment behaviors between framing effect and Financial Wellbeing:

From the quantitative analysis, the researchers found that “Framing Effect increases negative Investment Behaviors, which subsequently decreases financial wellbeing of the individuals”. This shows that investment behaviors could have played a mediating role between framing effect and financial wellbeing. To further investigate, the researchers asked the following question from our interviewees.

Question: Do you think the way information is framed can affect the Investment Behaviors, which can further affect the financial wellbeing?

From the analysis of the responses to this question and based on the agreement found under headings 5.2.2.1. and 5.1.2.4. and 5.1.2.9., it is concluded that all the interviewees were agreed with the statement. Thereby, a mediating role of investment behaviors between framing effect and financial wellbeing is evident.

5.1.2.11. Mediating role of investment behaviors between Exponential Growth Bias and Financial Wellbeing:

From the quantitative analysis, the researchers found that “Exponential Growth Bias decreases negative investment behaviors, whereas negative investment behavior decreases the Financial Wellbeing of the individuals” This shows that investment behaviors could have played a mediating role between exponential growth bias and financial wellbeing. To further investigate, the researchers asked the following question from our interviewees.

Question: Do you think that under estimating future value (Exponential Growth Bias) can affect the Investment Behaviors, which can further affect the financial wellbeing?

From the analysis of the responses to this question and based on the agreement found under headings 5.1.2.5. and 5.1.2.9., it is concluded that all the interviewees were agreed with the statement. Thereby, a mediating role of investment behaviors between exponential growth bias and financial wellbeing is evident.

5.1.2.12. Mediating role of investment behaviors between Mental Budgeting and Financial Wellbeing:

From the quantitative analysis, the researchers found that “Mental Budgeting decreases negative investment behaviors, whereas negative investment behavior decreases the Financial Wellbeing of the individuals” This shows that investment behaviors could have played a mediating role between exponential growth bias and financial wellbeing. To further investigate, the researchers asked the following question from our interviewees.

Question: Do you think Mental Budgeting can affect the Investment Behaviors, which can further affect the financial wellbeing?

From the analysis of the responses to this question and based on the agreement found under headings 5.1.2.6. and 5.1.2.9., it is concluded that all the interviewees were agreed with the statement. Thereby, a mediating role of investment behaviors between mental budgeting and financial wellbeing is evident.

5.1.2.13. Moderating Role of Financial Literacy between Exponential Growth Bias and Financial Wellbeing:

From the quantitative analysis, the researchers found that “Actual Financial literacy moderate the relationship of Exponential Growth Bias and Financial Wellbeing”. During the qualitative analysis, the researchers have further explored this relationship by asking the following question from the interviewees:

Question: Do you agree with this statement "level of actual Financial literacy can moderate the relationship of Exponential Growth Bias and Financial Wellbeing"?

The results of interviews as shown in Figure 5.15 have supported the finding of the quantitative analysis. 15 interviewees agreed to the statement, whereas one was not sure about it.

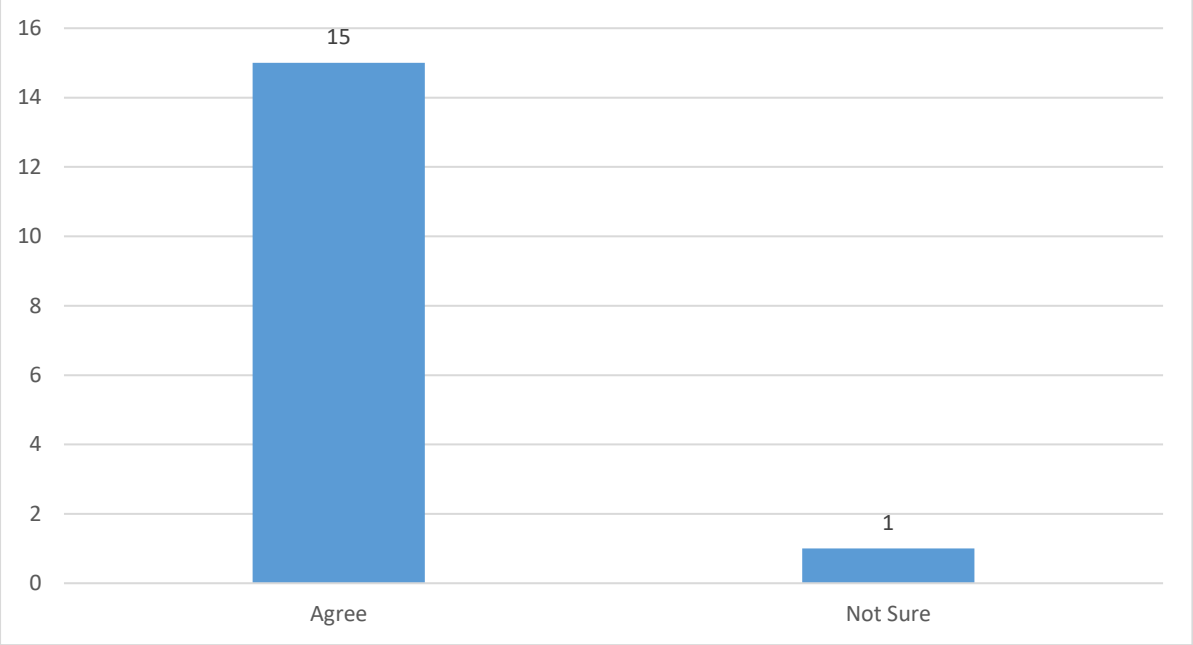


Figure 5.15: Financial literacy Moderates the Relationship of Exponential Growth Bias and Financial Wellbeing

From the interviewees who were agreed with the statement, some of them provided further explanations in favor of the statement. For instance, Interviewee No.4 said:

> "*if you have better financial literacy, it can moderate the relationship of Exponential Growth Bias and Financial wellbeing*"

Whereas Interviewee No.5 said:

> "*A person having better financial literacy will be relatively in better position to see the real picture and he will be in better position to estimate the future value of an investment*"

From the analysis, the researchers found that financial literacy could have a moderating effect on the relationship of exponential growth bias and financial wellbeing. Argument given by Interviewee No.05 provide a valid justification of existence of such relationship, who said that "*A person having better financial literacy will be relatively in better position to see the real picture and he will be in better position to estimate the future value of an investment*".

5.1.2.14. High Financial Literacy can weaken the positive relationship of Exponential Growth and Financial Wellbeing:

Quantitative analysis found that "High Actual Financial Literacy weakens the positive affect of Exponential Growth on Financial Wellbeing". The researchers have further explored this relationship in qualitative analysis, by posing the following question from the interviewees.

Question: Do you agree with this statement "high Actual Financial Literacy can weaken the positive relationship of Exponential Growth and Financial Wellbeing"?

The analysis of the text of the interviews data found 11 instances where the interviewees were agreed with the statement, whereas 3 were not agreed and two were not sure. Results diagrammatically represented through bar chart in Figure 5.16 are presented hereunder.

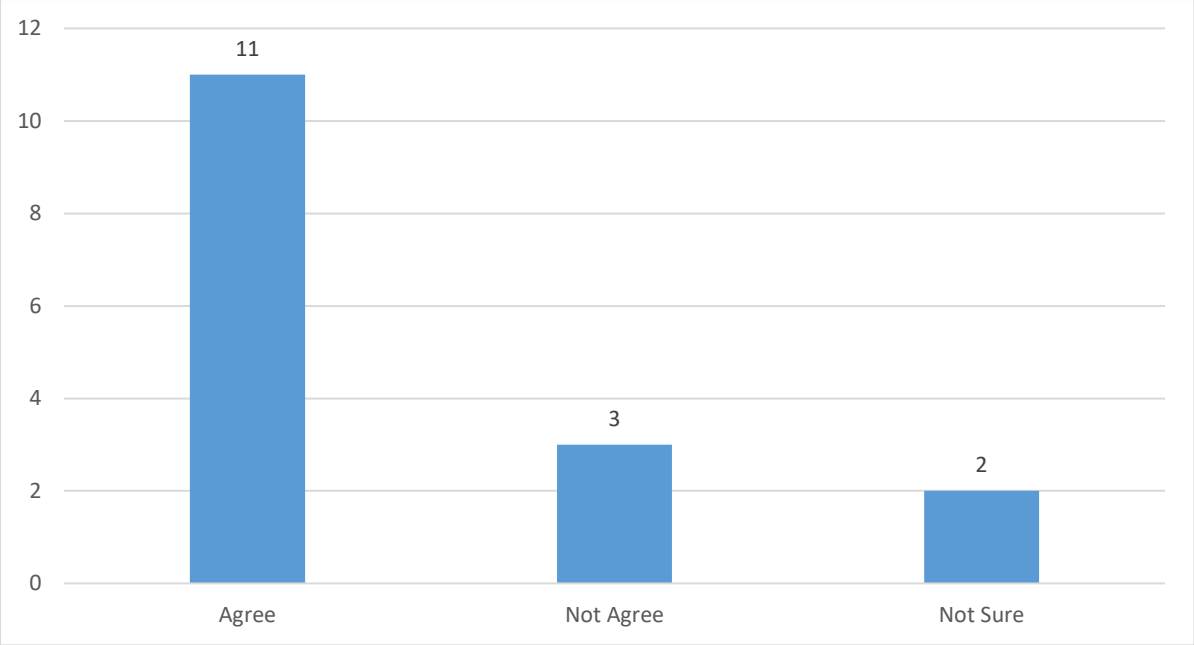


Figure 5.16: High Financial Literacy can weaken the positive relationship of Exponential Growth and Financial Wellbeing

From the respondents who were agreed with the statement, some of them further explained the relationship by providing the following justifications.

Interviewee No.1 said:

> "*if people are underestimating the future value and this could be affecting their financial well-being positively. This could not be true in individuals having higher level of financial literacy. Because they will have better understanding of time value of money and they will not be underestimating future value and their decision will be more rational*"

Interviewee No.13 said:

> "*People having better idea of compounding interest could not under estimate the future, in fact they would be estimating future value in a correct way. Therefore, the positive relationship of Exponential Growth and Financial*

Wellbeing will be weakened in case of people having high actual financial literacy"

Interviewee No.14 while being agreed with the statement further stated that:

"*it depends on the sample and data*"

While Interviewee No.3 said that:

"*Persons having higher level of financial literacy will take informed decision*"

Interviewee No.4 said:

"*If higher Financial literacy, you can better understand the time value and resultantly you will have better financial wellbeing*"

Interviewee No.7 & 8, while being agreed with the statement advised to further check the statement.

Interviewee No.7 said:

"*It can be strengthened, but you need to recheck it*"

Interviewee No.8 said:

"*I am agreed with these relations; however, you need to check these relations again*"

Interview No.12, who were not agree with the statement also advised to recheck the relationship. He said:

"*There could be outliers, need to recheck, take a sub sample*"

Similarly, Interview No.6, who was not sure about the relationship also advised to recheck the relationship. He said:

"*You need to see these relations again or better to rephrase to make them a better understand*."

Although, most of the interviewees were agreed with the statement that "*high Actual Financial Literacy can weaken the positive relationship of Exponential Growth and Financial Wellbeing*", however at the same time there were some of the interviewees who advised to recheck the relationship.

5.1.2.15. Low Financial Literacy can strengthen the positive relationship of Exponential Growth and Financial Wellbeing:

Quantitative analysis found that "Low Actual Financial Literacy strengthen the positive effect of Exponential Growth on Financial Wellbeing". The researchers have further explored this relationship in qualitative analysis, by posing the following question from the interviewees.

Question: Do you agree with this statement "low Actual Financial Literacy can strengthen the positive relationship of Exponential Growth and Financial Wellbeing"?

The analysis of the text of the interviews data found 10 instances where the interviewees were agreed with the statement, whereas 3 were not agreed and two were not sure. Results diagrammatically represented through bar chart in Figure 5.17 are presented hereunder:

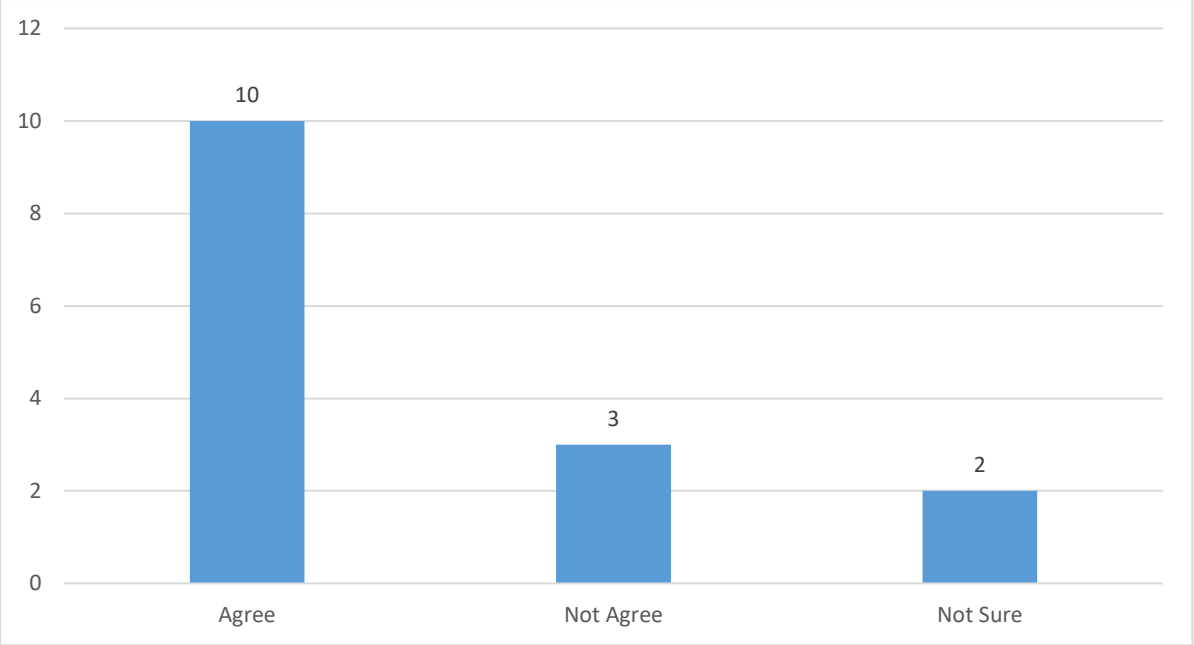


Figure 5.17: Low Financial Literacy can strengthen the positive relationship of Exponential Growth and Financial Wellbeing

From the respondents who were agreed with the statement, some of them further explained the relationship by providing the following justifications.

Interviewee No.1 said:

> "*People having lower levels of actual financial literacy will be more likely to underestimate the future value, so it is more likely in these cases, the relationship of exponential growth and financial well-being will be strengthened*"

Interviewee No.13 said:

> "*People having better idea of compounding interest could not under estimate the future, in fact they would be estimating future value in a correct way. Therefore, the positive relationship of Exponential Growth and Financial Wellbeing will be weakened in case of people having high actual financial literacy*"

Interviewee No.4 said:

> "*People having low financial literacy will not be able to estimate the time value of money correctly. So there financial wellbeing will be more dependent on their under estimation*"

While, interviewee No.7 & 8, while being agreed with the statement advised to further check the statement.

Interviewee No.7 said:

> "*It can be strengthened, but you need to recheck it*"

Interviewee No.8 said:

> "*I am agreed with these relations; however, you need to check these relations again*"

Interview No.12, who was not agree with the statement also advised to recheck the relationship. He said:

> "*There could be outliers, need to recheck, take a sub sample*"

Similarly, Interview No.6, who was also not agreed about the relationship advised to recheck the relationship. He said:

> "*You need to see these relations again or better to rephrase to make them a better understand*."

Although, most of the interviewees were agreed with the statement that "*low Actual Financial Literacy can strengthen the positive relationship of Exponential Growth and Financial Wellbeing*", however at the same time there were some of the interviewees who advised to recheck the relationship.

5.2. Integration of Findings of Quantitative Analysis and Qualitative Analysis:

Based on the quantitative analysis and qualitative analysis, certain findings are emerged. This section is an effort to integrate the findings of both the phases. The researchers tried to make a comparison of findings of both the phases of the analysis and based on that the researchers have presented the overall findings of the analysis. Integration of the findings is made in a tabular form, so that to enable the readers to see the findings of both the phases at the same place and to see the overall findings.

S.#	Thematic Areas	Findings of Quantitative Phase	Findings of Qualitative Phase	Overall Findings on the basis of Quant + Qual Analysis
01	Framing Effect and Financial Wellbeing	• Framing Effect decreases the Financial Wellbeing of the individuals.	• Framing has implications towards financial wellbeing of the individuals. • Direction of the relationship depends upon how the information is framed. • Positively framed information, which an interviewee has referred to as “nudging”, could have positive impact on financial wellbeing. • If the information is framed to increase the corporation’s interests for instance increased	• Framing affect the financial wellbeing. • Positively framed information i.e. nudging can improve the financial wellbeing of the individuals. • Information framed to achieve the vested interests of the corporations, could have adverse impact on the financial wellbeing of the individuals.

			sales of a product by misrepresenting the facts, it could be considered as negative framing from the viewpoint of a consumer, and it would have a negative impact on the financial wellbeing of the individuals.	
02	Monthly Income and Financial Wellbeing	• Higher the monthly Income, higher will be the Financial Wellbeing of the individuals.	• From this analysis, it is found that monthly income does have a direct impact on financial wellbeing of the individuals. • If there will be higher income level, people will enjoy higher level of financial wellbeing. They will have better financial	• Higher level of monthly income will result in better financial wellbeing. • People having higher monthly income will be in better position to save or invest.

			autonomy. They will have better savings and investments plan.	
03	Dependent Children and Financial Wellbeing	• Higher the number of children, lesser will be the Financial Wellbeing of the individuals.	• Having higher number of children could have a negative impact on the financial wellbeing of the individuals, as justified by Interviewee No.03 as “if you have to feed more mouths then it could have implications on your financial well-being”.	• Number of children affects the financial wellbeing. • Having higher number of children could have a negative impact on the financial wellbeing of the individuals.
04	Framing Effect and Investment Behaviors	• Framing Effect escalates negative investment behaviors.	• Framing does affect the investment behaviors. • If the information is framed in a negative way, it is more likely	• The way information is framed could affect the investment behaviors of the individuals.

			that people will involve in negative investment behaviors. • On the other hand, if the information is framed in a positive way, people will be involved in positive investment behaviors.	• If the information is framed in a negative way, it will affect the investment behaviors negatively. • If the information is framed positively, it will affect the investment behaviors positively.
05	Exponential Growth Bias and Investment Behaviors	• Individuals having Exponential Growth Bias are less likely to exercise negative investment behaviors.	• Underestimating the future value could impact the investment behaviors. • The relationship among both the variables of interest could be positive or negative.	• It is less likely that individuals having exponential growth bias will exercise negative investment behaviors due to the reasons that such "*people behave in a conservative way and they set their targets at low level so that they could achieve*

				the expected future returns easily. And if there are any losses, then these losses are not too much high comparing the threshold"
06	Mental Budgeting and Investment Behaviors	• Individuals more involved in Mental Budgeting are less likely to exercise negative investment behaviors.	• Mental budgeting affects the investment behaviors. • Mental budgeting could have a positive or negative impact. • Mental budgeting could act as a barrier affecting investment behaviors • People exercise mental budgeting could be more vigilant, balanced and more	• Mental Budgeting an affect the investment behaviors in both positive or negative way. • Mental budgeting can act as a barrier to wisely behave towards investments • On the other side, mental budgeting can make the individuals more vigilant, balanced and more aware towards their investments.

			aware of their spending and savings patterns.	
07	Profession and Investment Behaviors	• Individuals doing job are more likely to exercise negative investment behaviors than those who do their own business.	• Investment behaviors of the people differ, if they are doing job or if they are doing business. • The difference could be due to the risk-taking behavior of the people. People doing job could be more risk averse, whereas people doing businesses could be risk takers. • Investment behaviors could also depend on family orientation i.e. job oriented and business-oriented families	• People behave differently towards investments, depending upon whether they do job or business. • The possible reasons could be the risk seeking behaviors developed due to the type of profession, people are in, or due to the family orientation i.e. job or business-oriented family background.

			could have different investment behaviors.	
08	Level of Education and Investment Behaviors	• Higher the level of education, it is less likely that individuals will involve in negative investment behaviors.	• Level of education affect the investment behaviors. • Having higher level of education, people will involve in positive investment behaviors. • The opposite viewpoint cannot be ignored that level of education is necessarily affect the investment behaviors as argued by an interviewee that "Theoretically, it is correct. But, based on my personal experience, I found that the	• Higher level of education could result in positive investment behaviors. However, it would not be true in all cases.

			higher level of education could lead towards negative investment behaviors. Higher the level of education, higher will be level of security and integrity and higher the level of satisfaction. Whereas the person not highly educated do not care or might not have higher level of satisfaction, so he might be involved in positive investment behaviors".	
09	Investment Behaviors and	• The more the individuals are involved in negative	• Investment behaviors do impact the financial wellbeing of the individuals.	• There exists a relationship between investment behaviors and financial wellbeing.

	Financial Wellbeing	Investment Behaviors, it is more likely that they will have lower level of Financial Wellbeing.	• Negative investment behaviors impact the financial wellbeing in a negative way, whereas positive investment behaviors impact the financial wellbeing in a positive way.	• People exercising positive investment behaviors will have better financial wellbeing and vice versa.
10	Mediating role of investment behaviors between framing effect and Financial Wellbeing	• Framing Effect increases negative Investment Behaviors, which subsequently decreases financial wellbeing of the individuals.	• A mediating role of investment behaviors between framing effect and financial wellbeing is evident.	• Investment behaviors play a mediating role between framing effect and financial wellbeing.
11	Mediating role of investment	• Exponential Growth decreases negative	• A mediating role of investment behaviors between	• Investment behaviors play a mediating role between

	behaviors between Exponential Growth Bias and Financial Wellbeing	investment behaviors, where negative investment behavior decreases the Financial Wellbeing of the individuals.	exponential growth bias and financial wellbeing is evident.	exponential growth bias and financial wellbeing.
12	Mediating role of investment behaviors between Mental Budgeting and Financial Wellbeing	• Mental Budgeting decreases negative investment behaviors, where negative investment behavior decreases the Financial Wellbeing of the individuals.	• A mediating role of investment behaviors between mental budgeting and financial wellbeing is evident.	• Investment behaviors play a mediating role between mental budgeting and financial wellbeing.

13	Moderating Role of Financial Literacy between Exponential Growth Bias and Financial Wellbeing	• Actual Financial literacy moderate the relationship of Exponential Growth Bias and Financial Wellbeing.	• A moderating effect of financial literacy on the relationship of exponential growth bias and financial wellbeing is evident. • Argument given by Interviewee No.05 provide a valid justification of existence of such relationship, who said that "*A person having better financial literacy will be relatively in better position to see the real picture and he will be in better position to estimate the future value of an investment*".	• Financial literacy can moderate the relationship of exponential growth and financial wellbeing.

14	High Financial Literacy can weaken the positive relationship of Exponential Growth and Financial Wellbeing	• High Actual Financial Literacy weakens the positive affect of Exponential Growth on Financial Wellbeing.	• High actual financial Literacy can weaken the positive relationship of Exponential Growth and Financial Wellbeing. • However, the relationship needs to be rechecked.	• High actual financial Literacy can weaken the positive relationship of Exponential Growth and Financial Wellbeing. • The relationship needs further investigation.
15	Low Financial Literacy can strengthen the positive relationship of Exponential Growth and	• Low Actual Financial Literacy strengthen the positive effect of Exponential Growth on Financial Wellbeing.	• Low actual financial literacy can strengthen the positive relationship of Exponential Growth and Financial Wellbeing. • However, the relationship needs to be rechecked.	• Low actual financial literacy can strengthen the positive relationship of Exponential Growth and Financial Wellbeing. • The relationship needs further investigation.

	Financial Wellbeing			

Table 5.2: Integration of Findings of Quantitative and Qualitative Phases and Overall Findings

Chapter 6 : Discussion on Results and Conclusion

The purpose of this study was to explore the relationship between various behavioral biases and financial wellbeing, while considering the channels and conditions of Pakistani. For the purpose, mixed methodology, to be more specific sequential explanatory mode of study is adopted. A qualitative study is carried out to investigate and further investigate the findings of a quantitative study. Hereunder, a discussion is carried out on the findings of the study emerged out of both quantitative and qualitative study. Afterwards, conclusions are made, along with recommendations and future research directions.

6.1. Framing Effect and Financial Wellbeing:

The researchers found in literature review that behavioral biases i.e. framing effect, overconfidence, exponential growth bias and mental budgeting could have an adverse effect on financial wellbeing of the individuals. Based on that the researchers proposed a hypothesis as under:

H_1: Existence of behavioral biases affect the financial well-being of the households negatively.

During the quantitative phase, the above-mentioned hypothesis was tested on survey data. The hypothesis was validated to the extent of the relationship of framing effect and financial wellbeing. It was found that “framing effect decreases the financial wellbeing of the individuals”. The results of quantitative analysis are further investigated in qualitative analysis. During qualitative analysis, it is found that framing has implications towards financial wellbeing of the individuals. Moreover, the direction of the relationship of framing on financial wellbeing depends upon how the information is framed. Positively framed information, which an interviewee has referred to as “nudging”, could have positive impact on financial wellbeing. Whereas, if the

information is framed to increase the corporation's interests, for instance; increased sales of a product by misrepresenting the facts, it could be considered as negative framing from the viewpoint of a consumer, and it would have a negative impact on the financial wellbeing of the individuals. Based on both quantitative and qualitative analysis, the researchers found that framing effect affects the financial wellbeing. The researchers also found that positively framed information i.e. nudging can improve the financial wellbeing of the individuals. However, if the information is framed to achieve the vested interests of the corporations, it could have adverse impact on the financial wellbeing of the individuals.

During the review of literature, the researchers learnt that framing effect contradicts the rational choice (Kahneman & Tversky, 1984). The findings of this study, which are based on both quantitative and qualitative analysis, support the viewpoint of Kahneman & Tversky (1984), as the choices made by individuals are found affected by framing. The data analysis showed an adverse impact of choices made by individuals on their financial wellbeing. The phenomenon of positive (negative) impact of positively (negatively) framed information is also recognized in a recent study by Yang, Solgaard, & Ren (2018). Wherein, it was found that the consumers showed stronger intention for green electricity, when the information provided to them was positively framed, as compared to the scenario, in which information was framed negatively.

Therefore, it is concluded that framing could have significant implication towards the financial wellbeing of the individuals and the way information is framed i.e. positive / negative can impact the financial wellbeing of the individuals in positive / negative way.

6.2. Monthly Income and Financial Wellbeing:

A significant positive relationship of monthly income levels with financial wellbeing was identified in quantitative analysis, when it was tested under Model-01. The findings of

the quantitative analysis i.e. “higher the monthly Income, higher will be the financial wellbeing of the individuals”, was further discussed with the interviewees in the qualitative analysis, who also endorsed the finding. Based on both the quantitative and qualitative analysis, the researchers reached to the finding that higher level of monthly income results in better financial wellbeing and people having higher monthly income are in better position to save or invest.

This relationship is in line with the study of (Brown & Gray, 2016), who found a significant impact of a household’s financial position on his / her wellbeing. It also partially endorsed the claim of Zyphur, Li, Zhang, Arvey, & Barsky (2015), who found that men, but not women, hold higher financial wellbeing when they have higher incomes.

Therefore, it is concluded that higher income level could have significant positive impact on the financial wellbeing of the individuals.

6.3. Dependent Children and Financial Wellbeing:

A significant negative relationship of number of dependent children with financial wellbeing was identified in quantitative analysis, when tested under Model-01. The findings of the quantitative analysis i.e. “higher the number of children, lesser will be the financial wellbeing of the individuals”, was further placed before the interviewees in the qualitative analysis, who also endorsed the relationship. Based on both the quantitative and qualitative analysis, the researchers reached to the finding that number of children affects the financial wellbeing and having higher number of children could have a negative impact on the financial wellbeing of the individuals.

This is an interested finding. From this result, it is found that having a big family could result in financial constraints, and individuals responsible to take care big families could be in financial distress and they could not be able to enjoy financial freedom.

This phenomenon can be further studied in the context of family planning and considering the extent of support extended by the regulatory authorities and the employers in the Pakistani context.

6.4. Framing Effect and Investment Behaviors:

During the review of the related literature, it was found that human being could be involved in positive or negative investment behaviors. These behaviors could be beyond logic and reasoning due to their individual personality traits, emotions and mental mistakes. During literature review, it was also found that various behavioral biases i.e. framing, over confidence, exponential growth bias and mental budgeting can affect the financial behaviors of the individuals. On the basis of literature review, the researchers had proposed the following hypothesis.

H_2: Existence of behavioral biases affect the financial behavior of the households negatively.

During the quantitative phase, the researchers considered various financial behaviors such as credit card behaviors, investment behaviors and loan behaviors. However, the above-mentioned hypothesis (tested under Model-2) was validated in case of three behavioral biases i.e. framing, exponential growth bias and mental budgeting and their relationship with investment behaviors. With regards to framing, the researchers found that framing escalated negative investment behaviors in our survey sample respondents. This finding is further investigated by placing before the interviewees in the qualitative phase. The researchers found in qualitative analysis that framing does affect the investment behaviors. If the information is framed in a negative way, it is more likely that people will involve in negative investment behaviors. On the other hand, if the information is framed in a positive way, people will be involved in positive investment behaviors.

These findings support the viewpoint of Frydman & Camerer (2016), who found that the way how the information is framed have implications on defining individuals' financial behaviors.

6.5. Exponential Growth Bias and Investment Behaviors:

During quantitative analysis, under Model-2, it was found that individuals having exponential growth bias are less likely to exercise negative investment behaviors. This phenomenon was contrary to the hypothesis 02 in which it was proposed that existence of behavioral biases affect the financial behavior of the households negatively. This result was also found contrary to the findings of Stango & Zinman (2009), who claimed that individuals who underestimate interest rates and future value of an investment or spending – the phenomenon called exponential growth bias – could be involved in negative financial behaviors. For identification of possible explanations of the positive relationship of exponential growth bias with investment behaviors, the findings of quantitative analysis are discussed with interviewees in qualitative analysis, who opined that underestimating the future value could impact the investment behaviors and the relationship among both the variables of interest could be positive or negative. Based on the quantitative and qualitative analysis, this study reached to the finding that it is less likely that individuals having exponential growth bias will exercise negative investment behaviors due to the reasons that such "*people behave in a conservative way and they set their targets at low level so that they could achieve the expected future returns easily. And if there are any losses, then these losses are not too much high comparing the threshold*".

6.6. Mental Budgeting and Investment Behaviors:

A significant positive impact of mental budgeting on investment behaviors was also observed under the Model-2 in quantitative analysis, wherein it was found that individuals more involved in mental budgeting are less likely to exercise negative

investment behaviors. The finding was further investigated in qualitative analysis, wherein it was found that mental budgeting could affect the investment behaviors both in positive or negative way. Mental budgeting can act as a barrier affecting investment behaviors. On a positive note, people exercise mental budgeting could be more vigilant, balanced and more aware of their spending and savings patterns.

The positive impact of mental budgeting on investment behaviors is in line with the findings Groot & Raaij (2016), who claimed that mental budgeting could result in healthy financial behaviors by having awareness of consequences and least carelessness about the future. However, the negative impact of mental budgeting cannot be ignored as the human beings have restricted ability to understand and absorb the information and, in that case, mental budgeting can act as a barrier which can result in exercising negative investment behaviors.

6.7. Profession and Investment Behaviors:

Under Model-2 in quantitative analysis, it was found that individuals doing job are more likely to exercise negative investment behaviors than those who do their own business. This finding is investigated in qualitative analysis as well and on the basis of both quantitative and qualitative analysis, it is found that people behave differently towards investments, depending upon whether they do job or business. The possible reasons could be the risk seeking behaviors developed due to the type of profession, people are in, or it could be due to the family orientation i.e. job or business-oriented family background. These findings support the viewpoint of Allgood & Walstad (2016), who found significant difference in investment behaviors with respect to occupation of the people.

6.8. Level of Education and Investment Behaviors:

Under Model-2 in quantitative analysis, one other important finding made was that the higher the level of education, it is less likely that individuals will involve in negative investment behaviors. Qualitative analysis also provided valuable insights, where it was found that the level of education affects the investment behaviors. Having higher level of education, people will involve in positive investment behaviors. However, the opposite viewpoint cannot be ignored that level of education is necessarily affect the investment behaviors as argued by an interviewee that "*Theoretically, it is correct. But, based on my personal experience, I found that the higher level of education could lead towards negative investment behaviors. Higher the level of education, higher will be level of security and integrity and higher the level of satisfaction. Whereas the person not highly educated do not care or might not have higher level of satisfaction, so he might be involved in positive investment behaviors*".

Therefore, the researchers concluded that higher the level of education could result in positive investment behaviors. However, it would not be true in all cases. These results support the findings of Mak & Ip (2017), who claimed that education level being a sociological attribute determines the investment behaviors.

6.9. Investment Behaviors and Financial Wellbeing:

The literature review suggested that various financial behaviors i.e. credit card behaviors, investment behaviors and loan behaviors could impact the financial wellbeing of the individuals. Based on that, following hypothesis was developed.

H_3: Negative financial behaviors affect the financial well-being of the households negatively.

The hypothesis was tested in Model-3 in quantitative analysis and was validated to the extent investment behaviors and financial wellbeing. It was found that the more the

individuals are involved in negative investment behaviors, it is more likely that they will have lower level of financial wellbeing. On the other side, the findings of qualitative analysis suggested that investment behaviors do impact the financial wellbeing of the individuals. Negative investment behaviors impact the financial wellbeing in a negative way, whereas positive investment behaviors impact the financial wellbeing in a positive way. Based on the findings of both quantitative and qualitative phases, it is finally concluded that there exists a relationship between investment behaviors and financial wellbeing. People exercising positive investment behaviors will have better financial wellbeing and vice versa.

These findings are in line with the viewpoint of Allgood & Walstad (2016) and Consumer Financial Protection Bureau (2015). They found that exercising healthy investment behaviors could result in higher financial wellbeing.

6.10. Mediating Role of Investment Behaviors between Behavioral Biases and Financial Wellbeing:

A proposition was developed based on literature review that financial behaviors i.e. credit card behaviors, investment behaviors and loan behaviors can play a mediating role between behavioral biases and financial wellbeing. The proposition was:

P_1: Existence of behavioral biases affect the financial behavior of the households negatively, which in turn affect the financial well-being of the households negatively.

The results of quantitative analysis (tested in Model-4) showed that only investment behaviors played a significant mediating role between three behavioral biases i.e. framing, exponential growth bias and mental budgeting and financial wellbeing. With regards to framing, it was found that framing increases negative investment behaviors, which subsequently decreases financial wellbeing of the individuals. However, in case of exponential growth bias and mental budgeting, it was found that both exponential

growth bias and mental budgeting decreases the negative investment behaviors, where negative investment behavior decreases the Financial Wellbeing of the individuals. The qualitative analysis has also endorsed the mediating role played by investment behaviors between exponential growth bias and mental budgeting and financial wellbeing. There is no such mediating relationship found in previous studies.

6.11. Moderating Role of Financial Literacy between Exponential Growth Bias and Financial Wellbeing:

After having review of the literature, it was found that financial literacy can moderate the relationship of behavioral biases and financial wellbeing. Therefore, following hypothesis was proposed:

H_4: Financial literacy moderate the relationship of behavioral biases and financial well-being of the individuals.

Financial literacy categorized into actual and perceived financial literacy was introduced as moderator and tested under Model-5 in quantitative analysis. Initially, no significant evidence of moderation was found in the model. After identification of collinearity issues, the model was tested separately for each moderator along with its interaction, using Asymptotically distribution-free (ADF) technique. From the results, actual financial literacy was found as a significant moderator, affecting the relationship of exponential growth bias and financial wellbeing. To further investigate the direction of relationships of moderator, interaction plots were drawn by using the methodology devised by Dawson (2018). The interaction plot showed that high actual financial literacy weakens the positive affect of exponential growth on financial wellbeing. It also showed that low actual financial literacy strengthens the positive effect of exponential growth on financial wellbeing.

These results are further discussed with interviewees in qualitative analysis. Based on the both the quantitative and qualitative analysis, it is concluded that high actual financial Literacy can weaken the positive relationship of Exponential Growth and Financial Wellbeing. Whereas, the low actual financial literacy can strengthen the positive relationship of Exponential Growth and Financial Wellbeing. However, it is also recommended that the relationship needs further investigation.

6.12. Conclusion:

This study is carried out on the presumption that human beings are not rational agents and they make decisions based on heuristics and mental shortcuts. It was believed that such heuristics, which the researchers referred to as behavioral biases, could have implications towards the financial wellbeing of the individuals. Where, financial wellbeing is considered as the outcome of the decisions made by individuals based on the behavioral biases. It is referred to as the ability of an individual to meet the current and ongoing financial obligations, a state where an individual can feel secure in his / her financial future and is able to make the choices that allow them to enjoy life. The study has also considered the significance of financial behaviors and financial literacy in explaining the financial wellbeing of the individuals. A gap in existing literature was felt regarding the interrelationships of behavioral biases, financial behaviors, financial literacy and financial wellbeing.

Based on the review of existing literature, a theoretical model was developed, wherein some interesting interrelationships in variables of the study were proposed. The aim was to investigate the moderating role of the financial literacy and the mediating role of the financial behaviors on the relationship between the behavioral biases and the financial wellbeing by collecting evidence from Pakistan. The hypothesis were

developed, taking support from existing literature; wherever found available. However, in case of mediating relationships, a proposition was developed.

After careful review of the literature, it was found that behavioral biases such as framing, overconfidence, exponential growth bias and mental budgeting can affect the financial wellbeing. Various financial behaviors related to use of credit cards, investments and loans are considered in the study. As far as financial literacy is concerned, both objective and subjective financial literacy measures are considered in the study.

The study has adopted mixed methodology, to be more specific, explanatory sequential design of study is followed. This method allowed to do quantitative analysis, followed by qualitative analysis. This approach enabled the researcher to explain the results of quantitative analysis with the help of qualitative analysis. Based on the methodology devised, the research was split into two phases i.e. the quantitative and qualitative phases. During the quantitative analysis, data was collected through an online survey questionnaire from a sample of 344 individuals having not less than three years job or business experience. The survey questionnaire was consisted of questions regarding demographic background of the respondents, behavioral biases, financial behaviors, financial literacy and financial wellbeing. The questions about these variables of interest were not developed by researcher himself but were taken from various recognized research studies. However, certain modifications were made considering the local setting. The modifications in questions were also made after the pilot study to ascertain the better reliability and validity of the questionnaire items. Data transformation was made in excel and Stata to make the analysis meaningful. Various descriptive and inferential statistical tools such as descriptive statistics, correlation

analysis, multicollinearity diagnostics and structural equation modelling (SEM) etc. are used to get the results.

The results of quantitative analysis validated the hypothesis proposed, but not in case of all the behavioral biases and financial behaviors. In model 1, framing emerged as a significant predictor of financial wellbeing along with two control variables i.e. income level and number of dependent children. Whereas, behavioral biases such as overconfidence, exponential growth bias and mental budgeting were not found as significant predictors of financial wellbeing. In Model 2, framing, exponential growth bias and mental budgeting are found as significant predictors of investment behaviors along with two control variables i.e. profession and level of education. In this model, overconfidence is not found as a significant predictor of investment behaviors. Moreover, there is no significant relationship found between behavioral biases and other financial behaviors i.e. credit card and loan behaviors. Moreover, in model 3, the researchers found that only investment behaviors, but not credit card and loan behaviors predict the financial wellbeing. In model 4, a mediating role of investment behaviors is identified between behavioral biases i.e. framing, exponential growth bias and mental budgeting and financial wellbeing. In model 5, the researchers found a significant moderation effect of actual financial literacy on the relationship of exponential growth bias and financial wellbeing.

These quantitative results provided some valuable insights to understand the interrelationships of variables of the study. However, to further investigate and explain these findings, a qualitative analysis is carried out. In qualitative analysis, the findings of quantitative analysis are placed before the interviewees to get their expert opinion regarding these interrelationships. For the purpose, interviews of 16 experts having research background in the field of business management and finance are carried out.

The interviewees endorsed most of the findings of the quantitative analysis with suitable justifications. However, in case of moderation effect of financial literacy, although the interviewees were agreed to with the findings, however, they suggested that the phenomenon need further investigation.

Overall findings of the study are summarized as under:

1. Framing could have significant implications towards the financial wellbeing of the individuals and the way information is framed i.e. positive / negative can impact the financial wellbeing of the individuals in positive / negative way.
2. Income level could have significant impact on the financial wellbeing of the individuals.
3. Having a big family could result in financial constraints, and individuals responsible to take care big families could be in financial distress and they could not be able to enjoy financial freedom. This phenomenon can be further studied in the context of family planning and considering the extent of support extended by the regulatory authorities and the employers in the Pakistani context.
4. The way how the information is framed have implications towards defining individuals' financial behaviors.
5. It is less likely that individuals having exponential growth bias will exercise negative investment behaviors due to the reasons that such "*people behave in a conservative way and they set their targets at low level so that they could achieve the expected future returns easily. And if there are any losses, then these losses are not too much high comparing the threshold*".
6. Mental budgeting could result in healthy financial behaviors by having awareness of consequences and least carelessness about the future. However, the negative impact of mental budgeting cannot be ignored as the human

beings have restricted ability to understand and absorb the information and, in that case, mental budgeting can act as a barrier which can result in exercising negative investment behaviors.

7. People behave differently towards investments, depending upon whether they do job or business. The possible reasons could be the risk seeking behaviors developed due to the type of profession, people are in, or it could be due to the family orientation i.e. job or business-oriented family background.
8. The level of education affects the investment behaviors. Having higher level of education, people will involve in positive investment behaviors. However, the opposite viewpoint cannot be ignored that level of education is necessarily not affect the investment behaviors as argued by an interviewee that "*Theoretically, it is correct. But, based on my personal experience, I found that the higher level of education could lead towards negative investment behaviors. Higher the level of education, higher will be level of security and integrity and higher the level of satisfaction. Whereas the person not highly educated do not care or might not have higher level of satisfaction, so he might be involved in positive investment behaviors*".
9. There exists a relationship between investment behaviors and financial wellbeing. People exercising positive investment behaviors will have better financial wellbeing and vice versa.
10. Investment behaviors play a mediating role between framing effect, exponential growth bias and mental budgeting and financial wellbeing. There is no such mediating relationship found in previous studies.
11. High actual financial Literacy can weaken the positive relationship of exponential growth and financial wellbeing. Whereas, the low actual financial

literacy can strengthen the positive relationship of exponential growth and financial wellbeing. However, it is also recommended that the relationship needs further investigation.

Based on the above findings, which are emerged through a quantitative analysis followed by a qualitative analysis, the researchers summarized the study as under:

S. #	Hypothesis	Validated / Not Validated
1	H_1: Existence of behavioral biases affect the financial well-being of the households negatively.	Validated (In case of framing effect.)
2	H_2: Existence of behavioral biases affect the financial behavior of the households negatively.	Validated (In case of behavioral biases i.e. framing, exponential growth bias and mental budgeting and investment behaviors.)
3	H_3: Negative financial behaviors affect the financial well-being of the households negatively.	Validated (In case of investment behaviors.)
4	P_1: Existence of behavioral biases affect the financial behavior of the households negatively, which in turn affect the financial well-being of the households negatively.	Validated (In case of investment behaviors as mediator and framing, exponential growth bias and mental budgeting as behavioral biases.)

5	H_4: Financial literacy moderate the relationship of behavioral biases and financial well-being of the individuals.	Validated (In case of actual financial literacy as moderator between exponential growth bias and financial wellbeing.)

6.13. Recommendations:

Based on the findings of the study, following recommendations concerning individual decision makers and policy maker are given:

1. From the investing point of view, investors are advised to critically analyze and understand well the information being provided by the investment house, before making any investment decision. Detailed scrutiny of the terms and conditions of the investment alternatives could help them to make an optimal investment decision.
2. For the regulators, it is suggested to structure the investor awareness programs in a way that the investors could learn the investment information with more convenience. There is a need to introduce such regulatory initiatives which could bound the investment houses to provide well laid down information, specifically highlighting both positive and negative aspects of the investment opportunity being offered.
3. There is a need to develop investor awareness programs not only by focusing on the finance knowledge, but also by considering the fact that human beings are not rational agents and their personal beliefs affect their financial decisions.

6.14. Limitations and Future Research Directions:

Every study has its limitations. There are lot of factors which can be considered in this study as suggested by the interviewees in qualitative phase. They suggested to consider the factors such as education orientation, inherited assets, personality traits, life style, self-control, other behavioral biases such as anchoring, social networks, micro and macro-economic, regional culture, religions, Job type (part time or regular), job security. These factors are very important; however, these factors are not considered in the current study. Therefore, this can be considered as one of the limitations of the study constrained due to limited time and resources availability. However, these factors can be considered in future research studies. The data collected for quantitative analysis relied on only online survey questionnaire. Although, online survey questionnaires ensure least intervention of the researchers, however, collecting data online for quantitative analysis can be considered as one of the limitations of the study.

In addition to this, some of the interviews suggested that the moderating role of financial literacy can be further investigated. the researchers suggest that the future studies may be conducted to further investigate that how financial literacy can moderate the relationship between behavioral biases and financial wellbeing.

Moreover, the researchers conducted an analysis on the available data considering both actual and perceived financial literacy being independent variables and financial wellbeing as dependent variables and found a significant positive impact of actual and perceived financial literacy on financial wellbeing (Appendix-G). Future research can be conducted to see how financial literacy directly affects the financial wellbeing of the individuals in Pakistani context. The study has also tested a mediation – moderation effect, as presented in Appendix-H, in which significant mediation-moderation by

investment behaviors and financial literacy is found between exponential growth bias and financial wellbeing. Therefore, future studies can also explore the mediated moderation effects of financial behaviors and financial literacy in explaining the financial wellbeing of the individuals.

Future research can also focus on the role of religiosity being a moderator, affecting the relationship of behavioral biases and financial wellbeing. From Islamic perspective, the belief of giving charity could be considered as a financial behavior, which can mediate the relation of behavioral biases with financial wellbeing. Moreover, the role of charity in explaining the financial wellbeing can also be explored. The definition of financial wellbeing can be reviewed consider the Islamic belief, as it a common belief of Muslims that by giving charity, they feel happy, contended and satisfied. Moreover, the role of locus of control can also be studied from the religion perspective. At one side, Muslims believe that whatever being happened with them is because of Allah's Will, but Allah said in Holy Book Quran, Surah Al-Najm, Ayat No.39-38 that {أَلاَّ تَزِرُ وَازِرَةٌ وِزْرَ أُخْرَى، وَأَن لَّيْسَ لِلإِنسَانِ إِلاَّ مَا سَعَى} "*That no bearer of burdens will bear the burden of another, And that there is not for man except that [good] for which he strives*". Therefore, the role of locus of control in determining the financial wellbeing can also be investigated.

References

Adomako, S., Danso, A., & Damoah, J. O. (2016). The moderating influence of financial literacy on the relationship between access to finance and firm growth in Ghana. *Venture Capital, 18*(01), 43–61.

Agarwal, S., Driscoll, J. C., Gabaix, X., & Laibson, D. (2009). The Age of Reason: Financial Decisions over the Life-Cycle with Implications for Regulation. *Brookings Papers on Economic Activity, 2*, 51-117.

Agarwalla, S. K., Barua, S. K., Jacob, J., & Varma, J. R. (2015). Financial Literacy among Working Young in Urban India. *World Development, 67*, 101-109.

Ajmani, V. B. (2009). *Appendix D: Introduction to Bootstrap Estimation*. Retrieved from https://onlinelibrary.wiley.com: https://onlinelibrary.wiley.com/doi/pdf/10.1002/9780470377901.app4

Akben-Selcuk, E., & Altiok-Yilmaz, A. (2014). Financial Literacy Among Turkish College Students: The Role of Formal Education, Learning Approaches, and Parental Teaching. *Psychological Reports: Employment Psychology & Marketing, 115*(2), 351-371.

Akerlof, G. A., & Shiller, R. J. (2009). *Animal Spirits: How Human Psychology Drives the Economy, and Why It Matters for Clobal Capitalism.* Princeton: Princeton University Press.

Ali, A., Rahman, M. S., & Bakar, A. (2015). Financial Satisfaction and the Influence of Financial. *Social Indicators Research*, 137-156.

Allen, W., & Evans, D. (2005). Bidding and Overconfidence in Experimental Financial Markets. *The Journal of Behavioural Finance, 6*(3), 108-120.

Allgood, S., & Walstad, W. B. (2016). The Effects of Percieved and Actual Financial Literacy on Financial Behaviors. *Econmoic Inquiry, 54*(01), 675-697.

Almenberg, J., & Gerdes, C. (2012). Exponential growth bias and financial literacy. *Applied Economics Letters, 19*, 1693–1696.

Almenberg, J., & Save-Soderbergh, J. (2011). Financial literacy and retirement planning in Sweden. *Journal of Pension Economics and Finance, 10*(4), 585-598.

Ando, A., & Modigliani, F. (1963). The "Life Cycle" Hypothesis of Saving: Aggregate Implications anf Tests. *The American Economic Review, 53*(1), 55-84.

Antonides, G., Groot, I. M., & Raaij, W. F. (2011). Mental Budgeting and the mangement of Household Finance. *Journal of Economic Psychology, 31*, 546-555.

Ariely, D., Loewenstein, G., & Prelec, D. (2003). "Coherent Arbitrariness": Stable Demand Curves without Stable Preferences. *The Quarterly Journal of Economics, 118*(1), 73-105.

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

Australia and New Zealand Banking Group. (2015). *ANZ Survey of Adult Financial Literacy in Australia.* Melbourne: Australia and New Zealand Banking Group.

Awang, Z., Afthanorhan, A., & Asri, I. (2015). Parametric and Non Parametric Approach in Structural Equation Modeling (SEM): The Application of Bootstrapping. *Modern Applied Science*, 58-67.

Baker, H., & Ricciardi, V. (2014). How biases affect investor behavior. *The European Financial Review* .

Baker, M., & Wurgler, J. (2006). Investor sentiment and the cross-section of stock returns. *The Journal of Finance, 61*(4), 1645-1680.

Balloch, A., Nicolae, A., & Philip, D. (2015). Stock Market Literacy, Trust and Participation. *Review of Finance, 19*(5), 1925-1963.

Bank, J., & Oldfield, Z. (2007). Understanding Pensions: Cognitive Function, Numerical Ability and Retirement Saving. *Fiscal Studies, 28*(02), 143-170.

Barber, B. M., & Odean, T. (2001). Boys will be Boys: Gender, Overconfidence, and Common Stock Investment. *Quarterly Journal of Economics, 116*(1), 261-292.

Barber, B. M., & Odean, T. (2013). The Behavior of Individual Investors. In G. M. Constantinides, M. Harris, & R. M. Stulz (Eds.), *Handbook of the Economics and Finance* (pp. 1533-1570). Elsevier B.V.

Barber, B., & Odean, T. (2000). Trading is hazardous to your wealth: The common stock investment performance of individual investors. *The journal of Finance, 55*(2), 773-806.

Barberis, N. C., & Thaler, R. H. (2003). A survey of behavioral finance. *In G. M. Constantinides, M. Harris, and R. M. Stulz, editors, Handbook of the Economics of Finance*, 1053–1128.

Bargh, J., & Chartrand, T. (1999). The unbearable automaticity of being. *American psychologist, 54*(7), 462.

Bateman, H., Louviere, J., Thorp, S., Islam, T., & Satchell, S. (2010). Investment Decisions for Retirement Savings. *Journal of Consumer Affairs, 44*(3), 463-482.

Bayer, P. J., Bernheim, B. D., & Scholz, J. K. (2009). The Effects of Financial Education in the Workpalce: Evidence from a Survey of Employers. *Economic Inquiry, 47*(04), 605-624.

Behrman, J. R., Mitchell, O. S., Soo, C. K., & Bravo, D. (2012). *How Financial Literacy Affects Household Wealth Accumulation.* Philadelphia: University of Pennsylvania.

Benartzi, S., & Thaler, R. H. (1995). Myopic Loss Aversion and the Equity Premium Puzzle. *The Quarterly Journal of Economics*, 73-92.

Bernéus, H., Sandberg, C., & Wahlbeck, D. (2008). *Behvioral Fiannce: Investors' Rationality.* Retrieved 07 19, 2016, from http://www.diva-portal.se/smash/get/diva2:158536/FULLTEXT01.pdf

Bernheim, B. D. (1998). Chaper 3: Financial Literacy, Educaiton, and Retirement Saving. In O. S. Mitchell, & S. J. Schieber (Eds.), *Living with Defined Contribution Pensions.* Philadelphia: The Pension Research Council, The Wharton School of the University of Penneylvania.

Bernheim, B., & Garrett, D. M. (2003). The Effects of Financial Education in the Workplace: Evidence from a Survey of Households. *Journal of Pubic Economics, 87*(7), 1487-1519.

Bernheim, B., Garrett, D. M., & Maki, D. M. (2001). Education and saving:: The long-term effects of high school financial curriculum mandates. *Journal of Public Economics, 80*(3), 435-465.

Blaikie, N. (2000). *Designing Social Research* (1st ed.). Cambridge: Polity Press.

Broadbent, D. (1958). *Perception and Communication.* Pergamon: Cambridge.

Brown, S., & Gray, D. (2016). Household Finances and Well-being in Australia: An Empirical Analysis of Comparison Effects. *Journal of Economic Psychology*, 17-36.

Browning, M., & Lusardi, A. (1996). Household Saving: Micro Theories and Micro Facts. *Journal of Economic Literature, 34*(4), 1797-1855.

Bruin, W. B., Vanderklaauw, W., Downs, J. S., Fischhoff, B., Topa, G., & Armantier, O. (2010). Expectations of Inflation: The Role of Demographic Variables, Expectation Formation, and Financial Literacy. *The Journal of Consumer Affairs, 44*(2), 381-402.

Bucher-Koenen, T., & Lusardi, A. (2011). Financial literacy and retirement planning in Germany. *Journal of Pension Economics and Finance, 10*(4), 565-584.

Camerer, C., & Lovallo, D. (1999). Overconfidence and Excess Entry: An Experimental Approach. *American Economic Review, 89*(1), 306-318.

Camerer, C., Loewenstein, G., & Rabin, M. (2004). *Advances in Behavioral Economics.* Princeton: Princeton University Press.

Campbell, J. (2006). Household Finance. *The Journal of Finance, LXI*(4), 1553-1604.

Carter, D., & Porter, S. (2000). Validity and reliability. In *Cormack D (ed.) The Research Process in Nursing.* Oxford: Blackwell Science.

CERME - Ca'Foscari University of Venice. (2016). *Behavioral finance and financial literacy*. Retrieved 09 12, 2016, from http://www.unive.it/nqcontent.cfm?a_id=182550

Chabris, C., & Simons, D. (2011). *The invisible gorilla: And other ways our intuitions deceive us.* Harmony Books.

Chai, J., Horneff, W., Maurer, R., & Mitchell, O. (2009). *Extending Life Cycle Models of Optimal Portfolio Choice: Integrating Flexible Work, Endogenous Retirement, and Investment Decisions with Lifetime Payouts.* Retrieved 09 13, 2016, from https://www.researchgate.net/publication/46466871_Extending_Life_Cycle_Models_of_Optimal_Portfolio_Choice_Integrating_Flexible_Work_Endogenous_Retirement_and_Investment_Decisions_with_Lifetime_Payouts

Chan, L. K., Jagadeesh, N., & Lakonishok, J. (1996). Momentum Strategies. *The Journal of Finance, 51*(5), 1681-1713.

Chen, H., & Volpe, R. P. (1998). An analysis of personal financial literacy among college students. *Financial Services Review, 7*(2), 107-122.

Chen, S., & Chaiken, S. (1999). The heuristic-systematic model in its broader context. *Dual-process theories in social psychology, 15*, 73-96.

Cheng, P. (2007). The Trader Interaction Effect on the Impact of Overconfidence on Trading Performance: An Empirical Study. *The Journal of Behavioral Finance, 8*(2), 59-69.

Cherry, E. (1953). Some experiments on the recognition of speech, with one and with two ears. *The Journal of the Acoustical Society of America, 25*(5), 975-979.

Choi, J., Laibson, D., Madrian, B., & Metrick, A. (2003). Optimal defaults. *The American Economic Review, 93*(2), 180-185.

Choi, J., Laibson, D., Madrian, B., & Metrick, A. (2009). Reinforcement learning and savings behavior. *The Jozurnal of finance, 64*(6), 2515-2534.

Christelis, D., Georgarakos, D., & Haliassos, M. (2013). *Economic Integration and Mature Postfolios.* Fisciano (SA) - Italy: Center for Studies in Economics and Finance - University of Salerno.

Chu, Z., Wang, Z., Xiao, J. J., & Zhang, W. (2017). Financial Literacy, Portfolio Choice and Financial. *Social Indicators Research*, 799-820.

Consumer Financial Protection Bureau. (2015, 01). *Financial Wellbeing: The Goal of Financial Education.* Retrieved from www.consumerfinance.gov: http://files.consumerfinance.gov/f/201501_cfpb_report_financial-well-being.pdf

Consumer Financial Protection Bureau. (2017, 05). *CFPB Financial Well-Being Scale.* Retrieved from https://s3.amazonaws.com: https://s3.amazonaws.com/files.consumerfinance.gov/f/documents/201705_cfpb_financial-well-being-scale-technical-report.pdf

Creswell, J. W. (2015). *A Concise Introduction to Mixed Methods Research.* Los Angeles: Sage Publications, Inc.

Dawson, J. (2018). *Interpreting Interaction Effects*. Retrieved from http://www.jeremydawson.co.uk/: http://www.jeremydawson.co.uk/slopes.htm

DeBondt, W., & Thaler, R. (1985). Does the stock market overreact? *The Journal of finance, 40*(3), 793-805.

DeBondt, W., Forbes, W., Hamalainen, P., & Muradoglu, Y. G. (2010). What can Behavioral Finance Teach Us About Finance. *Qualitative Research in Financial Markets, 2*(1), 29-35.

Denzin, N., & Lincoln, Y. (2003). The Discipline and Practice of Qualitative Research. In *Collecting and Interpreting Qualitative Materials.* Sage Publications.

Drexler, A., Fischer, G., & Schoar, A. (2014). Keeping it simple: Financial literacy and rules of thumb. *American Economic Journal: Applied Economics*, 1-31.

Eisenstein, E. M., & Hoch, S. J. (2007, 12). *Intuitive Compounding: Farming, Temporal Perspective, and Expertise.* Retrieved 09 13, 2016, from http://eric-eisenstein.com/papers/Eisenstein&Hoch-Compounding.pdf

El-Attar, M., & Poschke, M. (2011). Trust and the Choice Between Hosuing anf Financial Assets: Evidence from Spanish Households. *Review of Finace, 15*(5), 727-756.

Eriksson, P., & Kovalainen, A. (2008). *Qualitative Methods in Business Research.* London: SAGE Publications Ltd.

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

Fasolo, B., McClelland, G. H., & Todd, P. M. (2007). Escaping the Tyranny of Choice: When Fewer Attributes make Choice Easier. *Marketing Theory*, 13-26.

Feng, L., & Seasholes, M. (2005). Do Investor Sophistication and Trading Experience Eliminate Behavioral Biases in Financial Markets? *Review of Finance, 9*, 305-351.

Fernandes, D., Lynch, J. G., & Netemeyer, R. G. (2014). The Effect of Financial Literacy and Financial Education on Downstream Financial Behaviors. *Management Science*, 1861-1883.

Finke, M. S., & Huston, S. J. (2014). Financial Literacy and Education. In K. H. Baker, & V. Ricciardi (Eds.), *Investor Behavior: The Psychology of Finanial Planning and Investing* (pp. 65-81). Somerset: Wiley.

Foltice, B., & Langer, T. (2015, 05 05). *Exponential Growth Bias Matters: Evidence and Implications for Financial Decision Making of College Students in the U.S.A.* Retrieved from Scholarship and Professional Work - Business Lacy School of Business: https://digitalcommons.butler.edu/cgi/viewcontent.cgi?article=1264&context=cob_papers

Frydman, C., & Camerer, C. F. (2016). The Psychology and Neuroscience of Financial Decision Making. *Trends in Cognitive Sciences, 20*(9), 661-675.

Galletta, A. (2013). *Mastering the Semi-Structured Interview and Beyond: From Research Design to to Analysis and Publication.* New York: New York University Press.

Garcia, M. J. (2013). Financial Educaiton and Behavioral Finance: New Insights into the Role of Informaiton in Financial Decisions. *Journal of Economic Surveys, 27*(2), 297–315.

Garvey, R., & Wu, F. (2007). Professional Trader OrderSelection and Prior Outcomes. *Journal of Trading*, 23-33.

Georgarakos, D., & Pasini, G. (2011). Trust, Sociability, and Stock Market Participation. *Review of Finance, 15*(4), 693-725.

Gilovich, T., Vallone, R., & Tversky, A. (1985). The hot hand in basketball: On the misperception of random sequences. *Cognitive psychology, 17*(3), 295-314.

Glaser, M., & Weber, M. (2007). Overconfidence and trading volume. *The Geneva Risk and Insurance Review, 32*(1), 1-36.

Glesne, C. (2015). *Becoming Qualitative Researchers: An Introduction.* New York: Pearson Education.

Griffin, D., & Tversky, A. (1992). The weighing of evidence and the determinants of confidence. *Cognitive psychology, 24*(3), 411-435.

Grinblatt, M., & Keloharju, M. (2009). Sensation seeking, overconfidence, and trading activity. *The Journal of Finance, 64*(2), 549-578.

Groot, I. M., & Raaij, W. F. (2016). The Role of Mental Budgeting in Healthy Financial Behavior: A Survey Among Self-Employed Entrepreneurs. *Applied Studies in Agribusiness and Commerce, 10*(2-3), 15-26.

Guiso, L., & Jappelli, T. (2009, January). Financial Literacy and Portfolio Diversification. *Centre for Studies in Economics and Finance (CSEF), University of Naples, Italy*. Retrieved 09 01, 2016

Guiso, L., & Sodini, P. (2013). Household Finance: An Emerging Field. In G. M. Constantinides, M. Harris, & R. M. Stulz (Eds.), *Handbook of Economics of Finance* (pp. 1397-1532). Elsevier B.V.

Gutter, M., & Copur, Z. (2011). Financial Behaviors and Financial Well-Being of College Students: Evidence from a National Survey. *Journal of Family and Economic Issues, 32*(4), 699-714.

Hayes, A. F., & Preacher, K. J. (2014). Statistical Mediation Analysis with a Multicategorical Independent Variable. *British Journal of Mathematical and Statistical Psychology, 67*, 451-470.

Healy, M., & Perry, C. (2000). Comprehensive criteria to judge validity and reliability of qualitative research within the realism paradigm. *Qualitative Market Research, 3*(3), 118-126.

Hibbert, A. M., Lawrence, E. R., & Prakash, A. J. (2012). The Role of Financial Education in the Management of Retirement Savings. *Journal of Behavioral Finance, 13*(4), 299-307.

Hibbert, A. M., Lawrence, E. R., & Prakash, A. J. (2013). Does knowledge of finance mitigate the gender difference in financial risk-aversion? *Global Finance Journal, 24*, 140-152.

Hite, N. G., Slocombe, T. E., Railsback, B., & Miller, D. (2011). Personal Finance Education in Recessionary Times. *Journal of Education for Business, 86*, 253-257.

Hong, H., Kubik, J. D., & Stein, J. C. (2004). Social Interaction and Stock Market Participation. *The Journal of finance, LIX*(1), 137-163.

Howard, J. A. (2012). Behavioral Finance: Contributions of Cognitive Psychology and Neuroscience to Decision Making. *Journal of Organizational Psychology, 12*(3), 52-70.

Hung, A. A., Parker, A. M., & Yoong, J. K. (2009, 09). *Defining and Measuring Financial Literacy.* Retrieved 09 08, 2016, from https://www.rand.org/content/dam/rand/pubs/working_papers/2009/RAND_WR708.pdf

Huston, S. J. (2010). Measuring Financial Literacy. *Journal of Consumer Affairs, 44*(2), 296-316.

Jagadeesh, N., & Titman, S. (1993). Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency. *The Journal of Finance, 48*(1), 65-91.

James, K., & Vinnicombe, S. (2002). *Essential Skills for Management Research: Acknowledging the Individual in the Researcher.* London: Sage Publications Ltd.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: a research paradigm whose time has come. *Educational Researcher, 33*(7), 14-26.

Johnston, W., & Heinz, S. (1978). Flexibility and capacity demands of attention. *Journal of Experimental Psychology: General, 107*(4), 420.

Joppe, M. (2016). *The Research Process.* Retrieved May 19, 2016, from http://www.ryerson.ca/~mjoppe/rp.htm

Kahneman, D. (2003). Maps of Bounded Rationality: Psychology for Behavioral Economics. *American Economic Review, 93*(5), 1449-1475.

Kahneman, D. (2012). *Ons feilbare denken: thinking, fast and slow.* Business Contact.

Kahneman, D., & Riepe, M. W. (1998). Aspects of Investor Psychology. *Journal of Portfolio Management, 24*(04), 52-65.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica: Journal of the econometric society, , 47*(2), 263-291.

Kahneman, D., & Tversky, A. (1984). Choices, Values and Frames. *American Psychologist, 39*(4), 341-350.

Kaplan, D. (2008). *Structural Equation Modeling: Foundations and Extensions.* CA: Sage Publications.

Katarachia, A., & Konstantinidis, A. (2014). Financial education and decision making processes. *Procedia Economics and Finance, 9*, 142-152.

Konig, C. J., & Kleinmann, M. (2006). Individual Differences in the Use of Time Management Mechanics and in Time Discounting. *Individual Differences Research, 04*(03), 194-207.

Kramer, M. M. (2016). Financial Literacy, Confidence and Fiancial Advice Seeking. *Journal of Economic Behavior & Organization, 131*, 198-217.

Lai, C., & Xiao, J. (2010). Consumer biases and competencies in company stock holdings. *The Journal of Consumer Affairs, 44*(1), 180-200.

Lee, J., & Hogarth, J. M. (1999). Do Consumers Know the Price of Credit? A Comparison of Consumers' Knowledge of Open and Closed End Credit. *Consumer Interests Annual, 45*, 71-76.

Lehrer, J. (2009). *How we decide.* New York: Houghton Mifflin Harcourt Publishing Company.

Levy, M. R., & Tasoff, J. (2017). Exponential Growth Bias and Overconfidence. *Journal of Economic Psychology*, 1-14.

Liang, P., & Guo, S. (2015). Social Interaction, Interest Access and Stock Market Participation - An Empirical Study in China. *Journal of Comperative Economics, 43*, 883-901.

Lo, A. W. (2004). The Adaptive Markets Hypothesis: Market Efficiency from an Evolutionary Perspective. *Journal of Portfolio Management, 30*, 12-29.

Lo, A. W. (2005). Reconciling Efficient Markets with Behavioral Finance: The Adaptive Markets Hypothesis. *The Journal of Investment Consulting, 7*(2), 21-44.

Lo, A. W. (2007). Efficient markets hypothesis. *In L. Blume and S. Durlauf, editors The New Palgrave: A Dictionary of Economics, chapter 18*, 831–880.

Locke, P., & Mann, S. (2005). Professional trader descipline and trade descipline. *Journal of Financial Economics, 76*(2), 401-444.

Loewenstein, G., Weber, E., Hsee, C., & Welch, N. (2001). Risk as feelings. *Psychological bulletin, 127*(2), 267.

Logan, G. (1988). Toward an instant theory of automization. *Psychological Review, 95*(4), 492-527.

Loibl, C., & Schraff, R. (2010). Examining the Effect of Expressing a Quantitative Goal on Consumer Savings. *The Journal of Consumer Affairs, 44*(22-78).

Luhrmann, M., Serra-Garcia, M., & Winter, J. (2012). The Effects of Finanical Literacy Traning: Evidence from a Field Experiment in German High School. German Economic Association.

Lusardi, A. (2008, June). *Financial Literacy: An Essential Tool for Informed Consumer Choice?* Retrieved 09 08, 2016, from http://www.dartmouth.edu/~alusardi/Papers/Lusardi_Informed_Consumer.pdf

Lusardi, A. (2008). Household Saving Behaviour: The Role of FInancial Literacy, Information, and Financial Education Programs. *National Bureau of Economic Research*, Working Paper 13824. Retrieved from http://www.nber.org/papers/w13824

Lusardi, A. (2015a). Financial Literacy: Do People Know the ABCs of Finance? *Public Understanding of Science, 24*(3), 260-271.

Lusardi, A. (2015b). Risk Literacy. *Italian Economic Journal, 1*, 5-23.

Lusardi, A., & Mitchell, O. S. (2006). *Financial Literacy and Planning: Implications for Retirement Wellbeing.* Retrieved 09 14, 2016, from http://www.dartmouth.edu/~alusardi/Papers/FinancialLiteracy.pdf

Lusardi, A., & Mitchell, O. S. (2007). Baby Boomer Retirement Security: The Roles of Planning, Financial Literacy, and Housing Wealth. *Journal of Monetry Economics, 54*, 205-224.

Lusardi, A., & Mitchell, O. S. (2008). Planning and Financial Literacy: How do Women Fare? *American Economic Review, 98*(2), 413-417.

Lusardi, A., & Mitchell, O. S. (2011). Financial Literacy Around the World: An Overview. *Journal of Pension Economics and Finance, 10*(4), 497-508.

Lusardi, A., & Mitchell, O. S. (2014). The Economic Importance of Financial Literacy: Theory and Evidence. *Journal of Economic Literature, 52*(1), 5-44.

Lusardi, A., Mitchell, O. S., & Curo, V. (2010). Financial Literacy among the Young. *The Journal of Consumer Affairs, 44*(2), 358-380.

Lyons, A. C., Chang, Y., & Scherpf, E. M. (2006). Translating Financial Education into Behaviour Change for Low Income Population. *Financial Counselling and Planning, 17*(2), 27-45.

Mak, M. K., & Ip, W. (2017). An Exploratory Study of Investment Behaviour of Investors. *International Journal of Engineering Busienss Management*, 1-12.

Malhotra, N. K., Jain, A. K., & Lagakos, S. W. (1982). The Information Overload Controversy: An Alternative Viewpoint. *Journal of Marketing*, 27-37.

Malkiel, B. G. (2003). The efficient market hypothesis and its critics. *The Journal of Economic Perspectives*, 59–82.

Mandell, L., & Klein, L. S. (2009). The Impact of Financial Literacy Education on Subsequent Financial Behavior. *Journal of Financial Counseling & Planning, 20*(1), 15-24.

Markowitz, H. M. (1952). Portfolio Selection. *Journal of Finance, 7*, 77-91.

McArdle, J. J., Smith, J. P., & Willis, R. (2009). *Cognition and Economic Outcomes in the Health and Retirement Survey.* Retrieved 09 14, 2016, from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.592.3318&rep=rep1&type=pdf

McCann, R., & Johnston, J. (1992). Locus of the single-channel bottleneck in dual-task interference. *Journal of Experimental Psychology: Human Perception and Performance, 18*(2), 471.

McCannon, B. C., & Peterson, J. (2015). Born for Finance? Experimental Evidence of the Impact of Finance Education. *The Journal of Behavioral Finance*(16), 199-205. doi:10.1080/15427560.2015.1064933

Mehra, R., & Prescot, E. C. (1985). The Equity Premium: A Puzzle. *Journal of Monetry Economics, 15*, 145-161.

Meier, S., & Sprenger, C. (2008). Discounting Financial Lieracy: TIme Preferences and Participation in Financial Educaiton Program. *Public Policy Discussion Papers, Federal Reserve Bank of Boston*(07-5), 1-25.

Mitchell, O. S., & Lusardi, A. (2014). The Economic Importance of Financial Literacy: Theory and Evidence. *Journal of Economic Literature, 52*(1), 5-44.

Modigliani, F., & Brumberg, R. (1954). Utility Analysis and the Consumption Function: An Interpretation of Cross Section Data. In K. K. Kurihara (Ed.), *Post Keynesian Economics* (pp. 388–436). New Brunswick: Rutgers University Press.

Moray, N. (1959). Attention in dichotic listening: Affective cues and the influence of instructions. *Quarterly Journal of Experimental Psychology, 11*(1), 56-60.

Neumann, V. J., & Morgenstern, O. (1944). *Theory of Games and Economic Behaviour.* Princeton: Princeton Univerity Press.

Nisbett, R., & Wilson, T. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological review, 84*(3), 231.

Norman, A. S. (2010). Importance of Financial Education in Making Informed Decisons on Spending. *Journal of Economics and International Finance, 2*(10), 199-207.

Odean, T. (1998). Are Investors Reluctant to Realize Their Losses? *Journal of Finance, 53*(5), 1775-1798.

OECD. (2005). *Improving Financial Literacy. Analysis of Issues and Policies.* Paris, Finance: OECD Publishing.

OECD. (2005). *Recommendations on Principles and Good Practices for Financial Education.* OECD Publishing.

OECD. (2011). *Measuring Financial Literacy: Questionnaire and Guidance Notes for Conducting an Internationally Comparable Survey of Financial Literacy*. Retrieved 03 05, 2016, from http://www.oecd.org/finance/financial-education/49319977.pdf

OECD. (2012). *Supplementary Questions: Optional Survey Questions for the OECD INFE Financial Literacy Core Questionnaire.* Retrieved 07 19, 2016, from https://www.oecd.org/finance/financial-education/49878153.pdf

OECD. (2013). *Improving Financial Education Effectiveness through Behvioral Economics.* Retrieved 07 20, 2016, from https://www.oecd.org/daf/fin/financial-education/TrustFund2013_OECDImproving_Fin_Ed_effectiveness_through_Behavioural_Economics.pdf

OECD. (2013). *PISA 2012 Assessment and Analytical Framework: Mathematics, Reading, Science, Problem Solving and Financial Literacy.* doi:10.1787/9789264190511-7-en

OECD. (2015, 03). *2015 OECD / INFE Toolkit for Measuring Financial Literacy and Financial Inclusion.* Retrieved 07 25, 2016, from http://www.oecd.org/daf/fin/financial-education/2015_OECD_INFE_Toolkit_Measuring_Financial_Literacy.pdf

Offredy, M., & Vickers, P. (2010). *Developing a healthcare research proposal. An interactive student guide.* Chichester: Wiley-Blackwell.

Olsen, R., & Troughton, G. (2000). Are risk premium anomalies caused by ambiguity? *Financial Analysts Journal, 56*(2), 24-31.

Olsson, H. (2014). Measuring Overconfidence: Methodological problems and Statistical Artifacts. *Journal of Business Research*, 1766-1770.

Otuteye, E., & Siddiquee, M. (2014). Overcoming Cognitive Biases: A Heuristic for Making Value Investing Decisions. *The Journal of Behavioral Finance, 16*(2), 140-149.

Patton, M. Q. (2002). *Qualitative evaluation and research methods.* Thousand Oaks, CA: Sage Publications, Inc.

Petty, R., & Cacioppo, J. (1986). *The elaboration likelihood model of persuasion. In Communication and persuasion (pp. 1-24.* Springer New York.

Pinker, S. (2009). *How the Mind Works.* New York.

Pompian, M. M. (2006). *Behavioral Finance and Wealth Management.* New Jursey: John Wiley & Sons Inc.

Rabin, M. (1998). Psycology and Economics. *Journal of Economic Literature, XXXVI*, 11-46.

Remenyi, D., Williams, B., Money, A., & Swartz, E. (1998). *Doing Research in Business sandManagement.* Sage, London.

Remund, D. L. (2010). Financial Literacy Explicated: The Case for a Clearer Definition in an Increasingly Complex Economy. *The Journal of Consumer Affairs, 44*(2), 276-295.

Renneboog, L., & Spaenjers, C. (2009). Where Angels Fear to Trade: The Role of Religion in Household Finance. *Tilburg: Finance, 2009–34*(0924-7815), 1-39.

Rooij, M. C., Lusardi, A., & Alessie, R. J. (2012). Financial Literacy, Retirement Planning and Household Wealth. *The Economic Journal*(122), 449–478.

Rooij, M. v., Lusardi, A., & Alessie, R. (2011). Financial literacy and stock market participation. *Journal of Financial Economics, 101*(2), 449-472.

Rozeff, M. S., & Zaman, M. A. (1998). Overreaction and Insider Trading: Evidence from Growth and Value Portfolios. *Journal of Finance, 53*(02), 701-716.

Rubin, A., & Babbie, E. R. (2010). *Essential Research Methods for Social Work.* Belmont: Cengage Learning.

Rubinstein, A. (1998). *Modeling Bounded Rationality.* London: The MIT Press.

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., . . . Jinks, C. (2018). Saturation in Qualitative Research: Exploring its Conceptualization and Operationalization. *Quality & Quantity*, 1893-1907.

Saunders, M., Lewis, P., & Thornhill, A. (2007). *Research Methods for Business Students.* Harlow: Prentice Hall Financial Times.

Schumacker, R. E., & Lomax, R. G. (2010). *A Beginner's Guide to Structural Equation Modelling.* New York: Taylor and Francis Group.

Sekaran, U., & Bougie, R. (2009). *Research Methods for Business: A Skill Building Approach* (5th ed.). John Wiley & Sons Ltd.

Sekita, S. (2011). Financial literacy and retirement planning in Japan. *Journal of Pension Economics and Finance, 10*(4), 637-656.

Serido, J., Shim, S., & Tang, C. (2013). A Development Model of Financial Capability: A Framework for Promoting a Successful Transition to Adulhood. *International Journal of Behavioral Development, 37*(4), 287-297.

Sewel, M. (2010). *Behavioral Finance.* Retrieved 05 08, 2016, from http://www.behaviouralfinance.net/behavioural-finance.pdf

Shapira, Z., & Venezia, I. (2001). Patterns of behavior of professionaly managed and independent investors. *Journal of Banking & Finance, 25*, 1573-1587.

Sharpe, W. F. (1964). Capital Asset Prices: A Theory of Market Equilibrium Under Conditions of Risk. *The Journal of Finance, 19*(3), 425-442.

Shefrin, H. (2000). *Beyond Greed and Fear: Understanding Behavioral Finance and the Psychology.* Oxford University Press.

Shefrin, H. (2002). Behavioral Decision Making, Forecasting, Game Theory, and Role Play. *International Journal of Forecasting, 18*(3), 375-382.

Shefrin, H. (2002). *Beyond Greed and Fear: Understanding Behvioral Finance and the Psychology of Investing.* New York: Oxford University Press.

Shefrin, H. M., & Thaler, R. H. (1988). The Behavioral Life-Cycle Hypothesis. *Economic Inquiry, 26*(4), 609-643.

Shiller, R. J. (2003). From Efficient Markets Theory to Behavioral Finance. *Journal of Ecnomic Perspective, 17*(1), 83-104.

Shleifer, A. (2000). *Inefficient Markets: An Introduction to Behavioural Finance.* Clarendon: Oxford University Press.

Simon, H. A. (1957). A Behavioral Model of Rational Choice. In H. A. Simon (Ed.), *Models of Man, Social and Rational: Methametical Essays on Rational Human Behavior in a Social Setting* (pp. 79-87). New York: Wiley.

Simon, H. A. (1999). Bounded Rationality and Organizational Learning. *Organization Science, 2*(1), 17-27.

Simon, H. A. (2000). Bounded Rationality in Social Science: Today and Tomorrow. *Mind & Society, 1*(1), 25-39.

Simonsohn, U., & Loewenstein, G. (2006). Mistake# 37: The effect of previously encountered prices on current housing demand. *The Economic Journal, 116*(508), 175-199.

Slovic, P. (2001). Psychological Study of Human Judgment: Implications for Investment Decision Making. *Journal of Psychology and Financial Markets, 2*(3), 160-172.

Smith, M., Thorpe, R., & Lowe, A. (1991). *Management Research: an Introduction.* London: Sage Publications.

South Asian Federation of Exchanges. (2009). *Financial Literacy Initiative.* South Asian Federation of Exchanges.

Stango, V., & Zinman, J. (2009). Exponential Growth Bias and Household Finance. *The Journal of Finance, LXIV*(06), 2807-2849.

StataCorp LLC. (2018a). *Intro 4 - Substantive Concepts*. Retrieved from https://www.stata.com: https://www.stata.com/manuals/semintro4.pdf#semintro4RemarksandexamplessemChoiceofestimationmethod

StataCorp LLC. (2018b). *Intro 9 - Standard Errors, the Full Story*. Retrieved from https://www.stata.com: https://www.stata.com/manuals/semintro9.pdf

StataCorp LLC. (2018c). *Intro 8 — Robust and clustered standard errors*. Retrieved from https://www.stata.com: https://www.stata.com/manuals/semintro8.pdf

StataCorp LLC. (2018d). *bootstrap — Bootstrap sampling and estimation*. Retrieved from https://www.stata.com: https://www.stata.com/manuals13/rbootstrap.pdf

Statman, M. (2014). Behavioral finance: Finance with normal people. *Borsa Istanbul Review, 14*, 65-73.

Steel, N., Huppert, F. A., & Melzer, D. (2003). Chapter 07: Physical and cognitive function. In M. Marmot, J. Banks, R. Blundell, C. Lessof, & J. Nazroo (Eds.), *Health, wealth and lifestyles of the older population in England: THE 2002 ENGLISH LONGITUDINAL STUDY OF AGEING.* London: Institute for Fiscal Studies.

Sulphey, M. M. (2014). *Bheviaoral Finance.* Delhi: PHI Learning Private Limited.

Tashakkori, A., & Creswell, J. W. (2007). Exploring the nature of research questions in mixed methods research. *Journal of Mixed Methods Research, 1*(3), 207-211.

Thaler, R. H. (1985). Mental Accounting and Consumer Choice. *Marketing Science, 04*(3), 199-214.

Thaler, R. H. (1990). Saving, Fungibility, and Mental Accounts. *The Journal of Economic Perspectives, 4*(1), 193-205.

Thaler, R. H. (1993). *Advances in Behvioral Finance.* New York: Russel Sage Foundation.

Thaler, R. H. (1999). Mental Accounting Matters. *Journal of Behavioral Decision Making, 12*(03), Journal of Behavioral Decision Making.

Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: Improving Decisions About Health, Wealth, and Happiness.* New Haven and London: Yale Universty Press.

Treisman, A. (1960). Contextual cues in selective listening. *Quarterly Journal of Experimental Psychology, 12*(4), 242-248.

Tsai, M.-C., Dwyer, R. E., & Tsay, R.-M. (2016). Does Financial Assistance Really Assist? The Impact of Debt on Wellbeing, Health Behavior and Self-Concept in Taiwan. *Social Indicators Research*, 127-147.

Tversky, A., & Kahneman, D. (1971). Belief in the law of small numbers. *Psychological bulletin, 76*(2), 105.

Tversky, A., & Kahneman, D. (1974). Judgement under Uncertainity: Heuristics and Biases. *Science, 185*(4157), 1124-1131.

Vlaev, I., & Elliott, A. (2014). Financial Well-Being Components. *Social Indicators Research, 118*(3), 1103-1123.

Willis, L. E. (2011). The Financial Education Fallacy. *American Economic Review, 101*(3), 429-434.

Wonder, N., Wilhelm, W., & Fewings, D. (2008). The financial rationality of consumer loan choices: Revealed preferences concerning interest rates, down payments, contract length, and rebates. *Journal of Consumer Affairs, 42*(2), 243-270.

woofresh.com. (2019, 06 29). *The 10 Best Statistical Analysis Software*. Retrieved from https://woofresh.com: https://woofresh.com/statistical-analysis-software/

Yang, Y., Solgaard, H. S., & Ren, J. (2018). Does Positive Framing Matter? An Investigation of How Framing Affects Consumer' Willingness to Buy Green Electricity in Denmark. *Energy Research & Social Science*, 40-47.

Yates, D., & Ward, C. (2011). Financial literacy: Examining the Knowledge Transfer of Personal Finance from Highschool to College to Adulthood. *American Journal of Business Education*, 65-78.

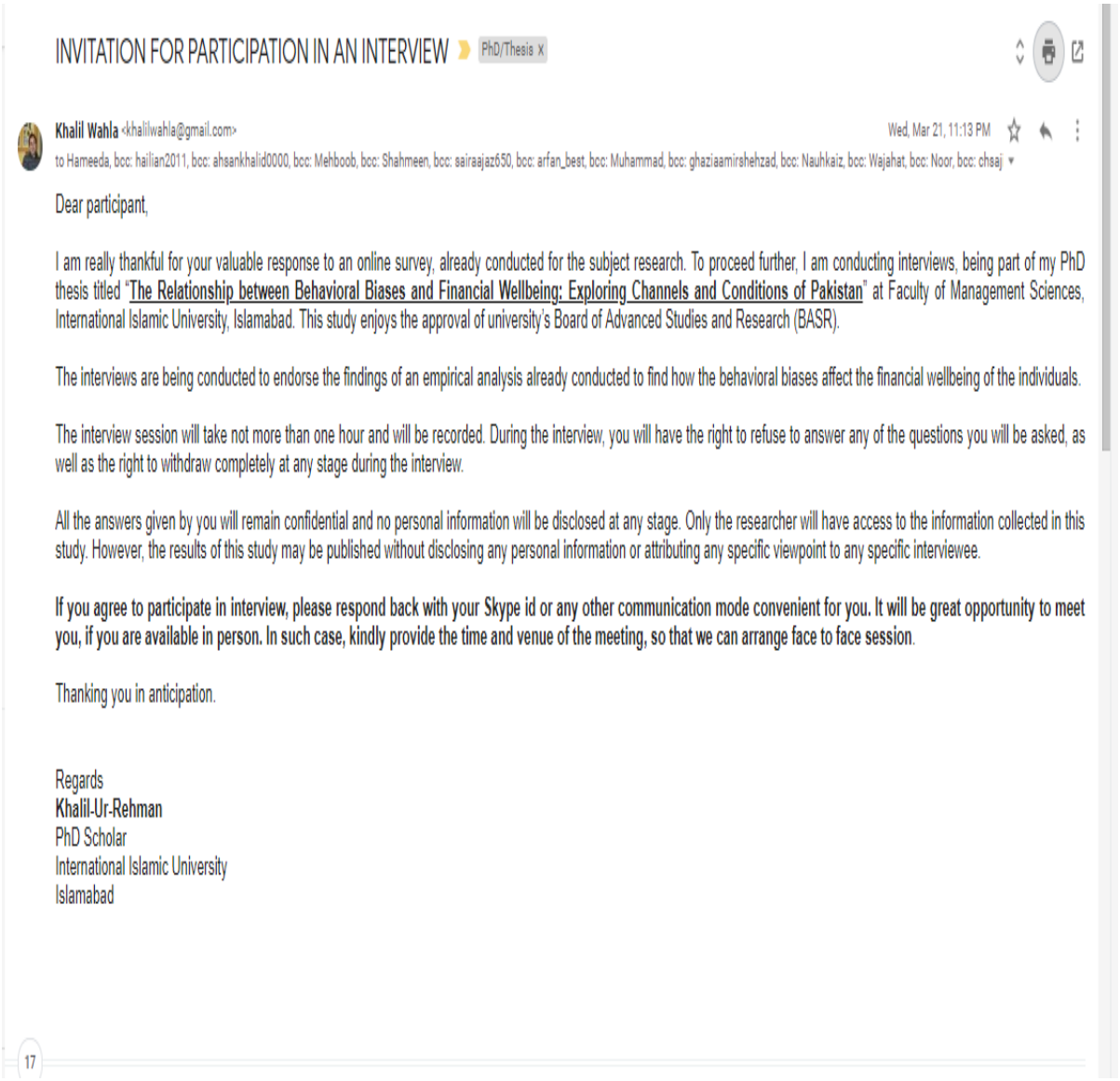
Yu, K.-M., Wu, A. M., Chan, W.-S., & Chou, K.-L. (2015). Gender Differences in Financial Literacy Among Hong Kong Workers. *Educational Gerontology, 41*, 315=326.

Zia, L., Sindhu, M. I., & Hashmi, S. H. (2017). Testing Oerconfidence Bas in Pakistani Stock Market. *Cogent Economics & Finance*, 1-8.

Zweig, J. (2007). *our Money and Your Brain. How the new science of neuroeconomics can help make you rich.* New York: Simon & Schuster.

Zyphur, M. J., Li, W.-D., Zhang, Z., Arvey, R. D., & Barsky, A. P. (2015). Income, Personality, and Subjective Financial Well-being: The role of Gender in their Genetic and Environmental Relationships. *Frontiers in Psychology*.

Appendix-A: Invitation for Interview through Email



INVITATION FOR PARTICIPATION IN AN INTERVIEW PhD/Thesis x

Khalil Wahla <khalilwahla@gmail.com> Wed, Mar 21, 11:13 PM

to Hameeda, bcc: hailian2011, bcc: ahsankhalid0000, bcc: Mehboob, bcc: Shahmeen, bcc: sairaajaz650, bcc: arfan_best, bcc: Muhammad, bcc: ghaziaamirshehzad, bcc: Nauhkaiz, bcc: Wajahat, bcc: Noor, bcc: chsaj

Dear participant,

I am really thankful for your valuable response to an online survey, already conducted for the subject research. To proceed further, I am conducting interviews, being part of my PhD thesis titled "The Relationship between Behavioral Biases and Financial Wellbeing: Exploring Channels and Conditions of Pakistan" at Faculty of Management Sciences, International Islamic University, Islamabad. This study enjoys the approval of university's Board of Advanced Studies and Research (BASR).

The interviews are being conducted to endorse the findings of an empirical analysis already conducted to find how the behavioral biases affect the financial wellbeing of the individuals.

The interview session will take not more than one hour and will be recorded. During the interview, you will have the right to refuse to answer any of the questions you will be asked, as well as the right to withdraw completely at any stage during the interview.

All the answers given by you will remain confidential and no personal information will be disclosed at any stage. Only the researcher will have access to the information collected in this study. However, the results of this study may be published without disclosing any personal information or attributing any specific viewpoint to any specific interviewee.

If you agree to participate in interview, please respond back with your Skype id or any other communication mode convenient for you. It will be great opportunity to meet you, if you are available in person. In such case, kindly provide the time and venue of the meeting, so that we can arrange face to face session.

Thanking you in anticipation.

Regards
Khalil-Ur-Rehman
PhD Scholar
International Islamic University
Islamabad

17

(3)

To,

The Interview Participants

Faculty of Management Sciences
International Islamic University
Islamabad, Pakistan
E-mail: khalilwahla@gmail.com

21st March, 2018

SUBJECT: INVITATION FOR PARTICIPATION IN AN INTERVIEW

Dear participant,

This study is part of a PhD thesis titled "**The Relationship between Behavioral Biases and Financial Wellbeing: Exploring Channels and Conditions of Pakistan**" at Faculty of Management Sciences, International Islamic University, Islamabad. This study enjoys the approval of university's Board of Advanced Studies and Research (BASR).

The interviews are being conducted to endorse the findings of an empirical analysis already conducted to find how the behavioral biases affect the financial wellbeing of the individuals.

The interview session will take not more than one hour and will be recorded. During the interview, you will have the right to refuse to answer any of the questions you will be asked, as well as the right to withdraw completely at any stage during the interview.

All the answers given by you will remain confidential and no personal information will be disclosed at any stage. Only the researcher will have access to the information collected in this study. However, the results of this study may be published without disclosing any personal information or attributing any specific viewpoint to any specific interviewee.

If you agree to participate in this interview, please fill and sign the attached consent form and handover to the researcher before starting the interview.

Please feel free to ask, if you desire any more information concerning the interview. You can contact the researcher anytime via address or email mentioned above.

Thanking you in anticipation.

Regards

Khalil ur-Rehman
PhD Scholar
International Islamic University
Islamabad

Appendix-C: Consent Form for Interview

Interview Consent Form

Research Title: The Relationship between Behavioral Biases and Financial Wellbeing: Exploring Channels and Conditions of Pakistan

Research Investigator: Khalil-Ur-Rehman, PhD Scholar, International Islamic University, Islamabad

Name of Participant: _____

The interview will not take more than one hour. We don't foresee any risks associated with your participation, however, you can ask to stop the interview or can withdraw from the research any time.

We are thankful for your valuable time and feedback. This consent form is important for this research. It highlights the purpose of this research and your participation subject to agreeing to the following conditions:

1. This interview will be recorded, and the researcher will take notes for further analysis
2. Your feedback, after transcription; will be sent to you for making any corrections and improvement.

3. Feedback from the interview will be analyzed by Mr. Khalil-Ur-Rehman, as research investigator.
4. The content of the interview will remain confidential and limited to the researcher and his academic colleagues to whom he could have research collaborations.
5. Any findings from the interview, to be published in academic journals; will be anonymous and your identity will not be exposed.
6. Interview recording will be kept in safe custody.

By signing this form, I agree that;

1. I am voluntarily taking part in this project. I understand that I can stop the interview at any time
2. The interview content will be used as specified above.
3. I have read the Information sheet.
4. I don't expect to receive any benefit or payment for my participation.
5. I can request a copy of the transcript of my interview and may make edits I feel necessary to ensure the effectiveness of any agreement made about confidentiality.
6. I have been able to ask any questions I might have, and I understand that I am free to contact the researcher with any questions I may have in the future.

Participant's Signature & Date _____

Researcher's Signature & Date _____

Appendix-D: Interview Layout

Layout of the Interview:

1. **Opening Remarks (5 minutes)**
    a. Thanks for Participation
    b. Introduction of the Interviewer
    c. Briefing about the Content of the Interview
        i. Aim of the Interview is to gather expert opinion about various identified relationships of Behavioral Biases and Financial Wellbeing
        ii. For meeting the aim, interview sessions will cover the followings
            1. Some Background Information of the Interviewee
            2. About your thoughts concerning Behavioral Biases, Financial Behaviors, Financial Literacy and Financial Wellbeing
            3. About your thoughts concerning some specific Behavioral Biases i.e. Framing Effect, Over Confidence, Exponential Bias and Mental Budgeting.
            4. About your thoughts concerning some specific Financial Behaviors i.e. Credit Card Behaviors, Investment Behaviors and Loan Behaviors.
            5. About your thoughts concerning Financial Literacy.
            6. About your thoughts concerning some components of Financial Wellbeing i.e. having control over day to day, month to month finances, having the capacity to absorb a financial shock, being on track to meet financial goals and

having the financial freedom to make the choices that allow to enjoy life.

d. Before we start, we seek following permissions:
    i. Consent Form
    ii. Recording interviews and taking notes
    iii. Quitting interview any time
    iv. Any questions
e. Start of Interview
    i. Recording
    ii. Stating Interview number and date

2. Background (10 minutes)

a. About yourself
    i. Education

    ii. Work experience

    iii. Area of expertise

    iv. Anything else need to specify about yourself

b. What you know about

i. Behavioral Biases

ii. Financial Behaviors

iii. Financial Literacy

iv. Financial Wellbeing

c. What you know about some specific Behavioral Biases

i. Framing Effect

ii. Over Confidence

iii. Exponential Growth Bias

iv. Mental Budgeting

d. What you know about some specific Financial Behaviors

i. Credit Card Behaviors

ii. Investment Behaviors

iii. Loan Behaviors

e. What you know about Financial Literacy

i. Actual Financial Literacy

ii. Perceived Financial Literacy

f. What you think about various components of Financial Wellbeing?

i. Having control over day to day, month to month finances

ii. Having the capacity to absorb a financial shock.

iii. Being on track to meet financial goals

iv. Having the financial freedom to make the choices that allow to enjoy life.

3. Your thoughts about the Relationships of Behavioral Biases and Financial Wellbeing (10 minutes)

a. Do you think the way information is framed can affect the Financial Wellbeing?

b. Do you think the level of monthly income can affect the Financial Wellbeing?

c. Do you think the number of children can affect the Financial Wellbeing?

4. Your thoughts about the Relationships of Behavioral Biases and Financial Behaviors (10 minutes)

a. Do you think the way information is framed can affect the Investment Behaviors?

b. Do you think that under estimating future value (Exponential Growth Bias) can affect the Investment Behaviors?

c. Do you think Mental Budgeting can affect the Investment Behaviors?

d. Do you think that there could be any difference on Investment Behaviors if individuals are doing job or business?

e. Do you think that the level of education can affect the Investment Behaviors?

5. Your thoughts about Financial Behaviors and Financial Wellbeing (05 minutes)

a. Do you think that the Investment Behaviors can affect the financial wellbeing?

6. Your thoughts about interrelationships of Behavioral Biases, Financial Behaviors and Financial Wellbeing (10 minutes)

a. Do you think the way information is framed can affect the Investment Behaviors, which can further affect the financial wellbeing?

b. Do you think that under estimating future value (Exponential Growth Bias) can affect the Investment Behaviors, which can further affect the financial wellbeing?

c. Do you think Mental Budgeting can affect the Investment Behaviors, which can further affect the financial wellbeing?

7. Your thoughts about interrelationships of Financial Literacy, Behavioral Biases and Financial Wellbeing (10 minutes)

a. Do you agree with this statement “level of actual Financial literacy can moderate the relationship of Exponential Growth Bias and Financial Wellbeing”?

b. Do you agree with this statement “high Actual Financial Literacy can weaken the positive relationship of Exponential Growth and Financial Wellbeing”?

c. Do you agree with this statement “low Actual Financial Literacy can strengthen the positive relationship of Exponential Growth and Financial Wellbeing”?

8. Other Issues and Concluding Remarks (5 minutes)

a. Do you have any views you would like to share about all these interrelationships?

b. What could be the factors, other than we have mentioned above; which can affect the financial behaviors?

c. What could be the factors other than we have mentioned above; which can affect the financial wellbeing?

d. Any other important items that we have overlooked?

e. Would you mind being contacted for any follow-up questions?

f. Also, could we send you a copy of our write-up for your comments?

    i. This would help to ensure that our interpretations are correct.

g. Thank-you again!

1. Background:
1.1. What is your education?
Answer: MS (Finance)
1.2. How many years of work experience you have?
Answer: 10 years teaching experience
1.3. What is your area of expertise?
Answer: Finance
1.4. Anything else need to specify about yourself?
Answer: -
2. Behavioral Biases and Financial Wellbeing
2.1. Do you think the way information is framed can affect the Financial Wellbeing?
Answer: Yes, as we discussed, it effects the financial wellbeing. Framing is important. You are unable to keep track of own expenses, because things were presented in different way. How things are framed can affect the behavior. If we follow the rational model completely, then yes it will not affect, but actually it affects. Positive and negative effects could depend on the way how the information was framed. Was it framed positively or negatively? Here it involves nudging. It is like that you present things in a way that you get the desired outcome. Like "save more tomorrow plan". A study in US school regarding eating junk food. Here the idea of nudging is involved. One way to stop children from eating junk food and carbonated drinks was to give them lectures. Instead of that they simply removed the tray from school cafeteria. Students were used to fill up the tray with the junk food. Only by removing the tray from the school cafeteria, they avoided buying too much junk and they started to buy only a burger. The junk food intake in that school was reduced significantly. It was a particular example of nudging / framing. Without giving them any lecture and by making slight change in the arrangements. The positive and negative direction of framing depend on the way the information is framed. If the information is deliberately framed in a way to increase the savings among the people, it could have a positive impact. I think you need to study the positive aspect of nudging. Corporations normally frame the things to increase their selling. Like coca cola drinks, they attach it with cricket, emotions etc. This kind of framing is good for companies but not for consumers. On the other hand, Nudging is positive thing. You can study the positive framing with reference to nudging.
2.2. Do you think the level of monthly income can affect the Financial Wellbeing?
Answer: Of course, if your income is good, you will enjoy good financial wellbeing. There is an interesting study in India on sugarcane farmers which explain that farmers showed different IQ level when they had money and when they had not. So, income levels could result in terrible financial decisions. Poor people spend recklessly on marriages, even they borrow and spend. So monthly income can have adverse effect on financial wellbeing.

2.3. Do you think the number of children can affect the Financial Wellbeing?

Answer:

Yes, may be from religious and cultural point of view it does not matter. But in the country like Pakistan, where the state is very weak in giving education and health, you have to trade off. If you have more children, you will have issues to send them to school. In these circumstances, the relationship you identified is very logical. Studies around the globe showed that as the income rises, the number of children decreases. It is obvious, if the number of children is higher, it will have adverse impact on financial wellbeing. In a country where education and health are being supported by government, it will not a matter if you have more children.

3. Behavioral Biases and Financial Behaviors

3.1. Do you think the way information is framed can affect the Investment Behaviors?

Answer:

Of course, as we discussed about framing earlier. Same is case with investing.

3.2. Do you think that under estimating future value (Exponential Growth Bias) can affect the Investment Behaviors?

Answer:

Of course, if you are underestimating the future, it will have impact on investment behaviors. One aspect could be if someone is underestimating, he would be less likely to invest. Because for him return will be very low. This relationship could be positive, if people are underestimating the future value for some certain investments which were risky, and they avoided those.

3.3. Do you think Mental Budgeting can affect the Investment Behaviors?

Answer:

Mental budgeting could affect positively the investment behaviors. One of the benefits is heuristics, in a way make life easier. It is a kind of nudging. You are maintaining separate accounts.

3.4. Do you think that there could be any difference on Investment Behaviors if individuals are doing job or business?

Answer:

Yes, huge difference. Because those doing job have more predictable income and they are more likely to be part of saving schemes, bonds and bank deposits. On the other hand, if someone is doing business and more specifically if someone is doing small or medium size business, then his / her primary focus will be to save for the business. What we call retained earnings. They think that their business will grow with passage of time and will take care of their future obligations such as their kid's studies and buying a house after 10 years. So, they save for the business. For corporations this will be different.

3.5. Do you think that the level of education can affect the Investment Behaviors?

Answer:

Education should affect. Normally if you are educated you will have more awareness. It is not easy to generalize but normally it does.

4. Financial Behaviors and Financial Wellbeing

4.1. Do you think that the Investment behaviors can affect the financial wellbeing?

Answer: Yes of course, positive financial behaviors will lead to positive financial wellbeing and vice versa.
5. Interrelationships of Behavioral Biases, Financial Behaviors and Financial Wellbeing
5.1. Do you think the way information is framed can affect the Investment Behaviors, which can further affect the financial wellbeing?
Answer: Of course, because if we think that framing effect the behavior, then behavior will ultimately affect the financial wellbeing.
5.2. Do you think that under estimating future value (Exponential Growth Bias) can affect the Investment Behaviors, which can further affect the financial wellbeing?
Answer: yes
5.3. Do you think Mental Budgeting can affect the Investment Behaviors, which can further affect the financial wellbeing?
Answer: yes
6. Interrelationships of Financial Literacy, Behavioral Biases and Financial Wellbeing
6.1. Do you agree with this statement "level of actual Financial literacy can moderate the relationship of Exponential Growth Bias and Financial Wellbeing"?
Answer: Obviously, it can moderate.
6.2. Do you agree with this statement "high Actual Financial Literacy can weaken the positive relationship of Exponential Growth and Financial Wellbeing"?
Answer: You need to see these relations again or better to rephrase to make them a better understand.
6.3. Do you agree with this statement "low Actual Financial Literacy can strengthen the positive relationship of Exponential Growth and Financial Wellbeing"?
Answer: You need to see these relations again or better to rephrase to make them a better understand.
7. Other Issues and Concluding Remarks
7.1. Do you have any views you would like to share about all these interrelationships?
Answer: Yes, I think this is very important idea. It is a good idea. We have some theoretical understanding, but it is good you have seen these in Pakistani perspective.
7.2. What could be the factors, other than we have mentioned above; which can affect the financial behaviors?
Answer: Look at biases. Like anchoring can affect the financial behaviors. Cultural reasons, religious religions, although those are not part of study.

7.3. What could be the factors other than we have mentioned above; which can affect the financial wellbeing?
Answer: Family structure, in Pakistan families are more interconnected. Wellbeing criteria in Pakistan could be different. Whenever you buy a big asset, rarely people get support from families.
7.4. Any other important items that we have overlooked?
Answer: Macro-economic variables and socio-economic factors could be considered.

NVivo Code Book

Name	Description	Sources	References	Created On	Created By
Financial Wellbeing		0	0	7/5/2018 1:35 PM	K
Investment Behavior		0	0	7/5/2018 1:35 PM	K
Framing Effect		0	0	7/5/2018 1:35 PM	K
Yes		14	14	7/7/2018 11:34 AM	K
Positive		1	1	7/7/2018 11:34 AM	K
Justification		1	1	7/7/2018 11:36 AM	K
Negative		4	4	7/7/2018 11:35 AM	K
Justification		2	2	7/7/2018 11:36 AM	K
Both Positive and Negative		4	4	7/7/2018 11:35 AM	K
Justification		2	2	7/7/2018 11:36 AM	K
Exponential Growth Bias		0	0	7/5/2018 1:35 PM	K
Yes		16	16	7/7/2018 11:59 AM	K
Positive		5	5	7/7/2018 12:02 PM	K
Justification		3	3	7/7/2018 12:10 PM	K

Negative		2	2	7/7/2018 12:02 PM	K
Justification		1	1	7/7/2018 12:14 PM	K
Both positive and negative		1	1	7/7/2018 12:02 PM	K
Justification		1	1	7/7/2018 12:19 PM	K
Mental Budgeting		0	0	7/5/2018 1:35 PM	K
Yes		15	15	7/7/2018 12:59 PM	K
Both positive and negative		4	4	7/7/2018 1:00 PM	K
Justification		3	3	7/7/2018 1:02 PM	K
Negative		1	1	7/7/2018 1:00 PM	K
Justification		1	1	7/7/2018 1:10 PM	K
Positive		4	4	7/7/2018 1:00 PM	K
Justification		2	2	7/7/2018 1:11 PM	K
Job ~ Business		0	0	7/5/2018 1:35 PM	K
Yes		16	16	7/7/2018 1:28 PM	K
Business Positive		3	3	7/7/2018 1:28 PM	K
Job Negative		2	2	7/7/2018 1:29 PM	K
Risk seeking behavior		8	8	7/7/2018 1:30 PM	K
Other factors affecting investment behaviors		1	1	7/7/2018 1:33 PM	K
Organizational - individual perspective		2	2	7/7/2018 1:37 PM	K

Family Orientation		1	1	7/7/2018 1:40 PM	K
Level of Education		0	0	7/5/2018 1:35 PM	K
Yes		16	16	7/7/2018 1:54 PM	K
Higher education - positive investment behaviors		10	10	7/7/2018 1:55 PM	K
Higher education not matters		3	3	7/7/2018 1:58 PM	K
Other factors affecting investment behaviors		1	1	7/7/2018 2:04 PM	K
Other factors affecting investment behaviors		15	15	7/7/2018 11:41 AM	K
Yes		16	16	7/7/2018 2:42 PM	K
Direct relation		11	11	7/7/2018 2:43 PM	K
Inverse relation		0	0	7/7/2018 2:43 PM	K
Other factor affecting financial wellbeing		2	2	7/7/2018 2:51 PM	K
Framing Effect		0	0	7/5/2018 1:35 PM	K
Yes		16	16	7/5/2018 1:35 PM	K
Positive		1	1	7/5/2018 1:35 PM	K
Negative		6	6	7/5/2018 1:35 PM	K
Due to unrealistic information presentation		2	2	7/5/2018 1:35 PM	K
Due to negative information framing		1	1	7/5/2018 1:35 PM	K
Due to idle investments		1	1	7/5/2018 3:02 PM	K
Both Positive and Negative		6	6	7/5/2018 1:35 PM	K

Due to the way information framed	Positively framed information - Positive effect. Negatively framed information - Negative effect	3	5	7/5/2018 1:35 PM	K
Positive due to nudging		1	3	7/5/2018 1:35 PM	K
Due to risk seeking behavior		1	1	7/5/2018 2:58 PM	K
Level of Monthly Income		0	0	7/5/2018 1:35 PM	K
Yes		16	16	7/7/2018 9:49 AM	K
Inverse relation		0	0	7/5/2018 1:35 PM	K
Direct relation		12	12	7/5/2018 1:35 PM	K
Helps in planning savings and investments effectively		1	1	7/5/2018 1:35 PM	K
Terrible financial decision making		1	1	7/7/2018 10:12 AM	K
Financial Autonomy		1	1	7/7/2018 10:22 AM	K
Other factors affecting financial wellbeing	factors other than income levels	2	2	7/7/2018 9:58 AM	K
Number of Children		0	0	7/5/2018 1:35 PM	K
Yes		15	15	7/7/2018 10:56 AM	K
Negative		10	10	7/5/2018 1:35 PM	K
Justifications		6	6	7/5/2018 1:35 PM	K
Positive		0	0	7/5/2018 1:35 PM	K

Other factors affecting financial wellbeing		4	7	7/7/2018 10:58 AM	K
Financial Literacy as Moderator		0	0	7/5/2018 1:35 PM	K
FL Moderates the Relationship of WGB and FWB		0	0	7/7/2018 8:37 PM	K
Agree		15	15	7/7/2018 8:14 PM	K
Explanation		4	4	7/7/2018 8:18 PM	K
Not Sure		1	1	7/7/2018 8:16 PM	K
High Financial Literacy		0	0	7/7/2018 8:37 PM	K
Agree		11	11	7/7/2018 8:38 PM	K
Explanation		7	7	7/7/2018 8:39 PM	K
Not Agree		3	3	7/7/2018 8:38 PM	K
Explanation		1	1	7/7/2018 8:41 PM	K
Not Sure		2	2	7/7/2018 8:41 PM	K
Explanation		1	1	7/7/2018 8:47 PM	K
Low Financial Literacy		0	0	7/7/2018 8:38 PM	K
Not Agree		3	3	7/7/2018 8:38 PM	K
Explanation		2	2	7/7/2018 8:56 PM	K
Agree		10	10	7/7/2018 8:38 PM	K
Explanation		5	5	7/7/2018 8:56 PM	K
Not Sure		2	2	7/7/2018 8:56 PM	K

Explanation		0	0	7/7/2018 8:57 PM	K
Other factors affecting FWB		13	13	7/7/2018 9:24 PM	K

Standardized	Coef.	OIM Std. Err.	z	P>z	[95% Conf. Interval]	
Structural						
FWB_Score <-						
FLS_Binary	0.150	0.052	2.900	0.004	0.049	0.251
FLO_Binary	0.102	0.054	1.870	0.061	-0.005	0.208
profession	0.017	0.053	0.310	0.753	-0.087	0.121
Exp	-0.022	0.077	-0.280	0.778	-0.172	0.129
_Gender	0.083	0.054	1.540	0.123	-0.022	0.188
Age_G	-0.001	0.075	-0.010	0.989	-0.149	0.147
Edu	-0.046	0.054	-0.840	0.399	-0.152	0.061
BM_D	-0.053	0.071	-0.740	0.459	-0.193	0.087
CS_D	-0.007	0.062	-0.120	0.906	-0.129	0.114
E_D	-0.011	0.063	-0.180	0.858	-0.135	0.112
PS_D	-0.009	0.061	-0.150	0.882	-0.129	0.111
M_Income	0.288	0.063	4.580	0.000	0.165	0.411
M_Status	-0.027	0.071	-0.390	0.699	-0.166	0.111
Child	-0.151	0.075	-2.020	0.043	-0.297	-0.005
_cons	3.868	0.496	7.800	0.000	2.897	4.839
var(e.FWB_Score)	0.885	0.031			0.826	0.949
LR test of model vs. saturated: chi2(0) = 0.00, Prob > chi2 = .						

Standardized	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Structural						
FWB_Score <-						
EG	0.120	0.051	2.360	0.018	0.021	0.219
FLO_Binary	0.236	0.069	3.430	0.001	0.101	0.371
FLOB_Int_EG	(0.159)	0.078	(2.050)	0.040	(0.311)	(0.007)
profession	0.016	0.042	0.370	0.714	(0.067)	0.098
Exp	(0.026)	0.056	(0.460)	0.643	(0.135)	0.084
_Gender	0.077	0.039	1.980	0.048	0.001	0.153
Age_G	(0.004)	0.052	(0.080)	0.935	(0.106)	0.098
Edu	(0.037)	0.038	(0.980)	0.329	(0.111)	0.037
BM_D	(0.055)	0.057	(0.970)	0.330	(0.167)	0.056
CS_D	(0.024)	0.045	(0.530)	0.598	(0.111)	0.064
E_D	(0.024)	0.048	(0.500)	0.616	(0.119)	0.071
PS_D	(0.014)	0.047	(0.290)	0.773	(0.106)	0.079
M_Income	0.268	0.045	5.900	0,000	0.179	0.358
M_Status	(0.021)	0.052	(0.410)	0.684	(0.123)	0.081
Child	(0.156)	0.053	(2.930)	0.003	(0.261)	(0.052)
Inv_Score	(0.102)	0.034	(2.960)	0.003	(0.169)	(0.034)
_cons	4.185	0.413	10.130	-	3.376	4.995
var(e.FWB_Score)	0.885	0.024			0.839	0.934
Discr. test of model vs. saturated: chi2(0) = 0.00, Prob > chi2 = .						