Vol.2, Issue.1, (2024)
International Journal of Management Thinking
https://doi.org/10.56868/ijmt.v2i1.46

Financial Literacy's Moderating Effect on Project Selection with Heuristic-Driven Biases: SMEs' Entrepreneurial Market Development in Pakistan

Hira Asif[1*] and Mariam Mansoor[2]

[1-2]Bahria Business School, Bahria University, Islamabad, 44000, Pakistan

Article Information

Article Type: Research Article

Dates:
Received: November 30, 2023
Revised: March 17, 2024
Accepted: April 11, 2024
Available online: May 08, 2024

Corresponding Author:
Hira Asif
hiraasifarsalan19@gmail.com
https://orcid.org/0000-0003-2232-5546

ABSTRACT

Certain biases on various project stages influence projects. Based on the moderating influence of financial literacy, the effect of heuristic-driven biases on project selection is evaluated in this research. The study aimed to evaluate how heuristics-driven biases affected the project management environment. A questionnaire with a five-point Likert scale is used to gather quantitative data. The study's target demographic comprises project managers and other senior employees at Small and Medium Enterprises (SMEs) with more than five years of experience. This study involved 200 participants, but only 151 responses were deemed authentic. Convenience sampling is the study's methodology. SPSS and Smart PLS3 are used for data analysis. The findings show that three behavioural biases, availability, representativeness, and under-confidence, have a negligible influence on project selection, but two behavioural biases—overconfidence and anchoring have a favourable impact. The research asserts that individuals do not succumb to these biases in many SMEs. The findings indicate that financial literacy does not moderate the association between heuristic-driven biases and project selection. Entrepreneurs, managers, investors, and businesses will gain immensely. Business owners should detect heuristic-driven biases to make better judgements. Controlling heuristic biases helps entrepreneurs make better decisions and implement productive business strategies. This research will help business owners manage their heuristic biases and grab business opportunities without making costly mistakes. This study offers a unique opportunity and the potential to improve the knowledge of entrepreneurial managers about the impact of heuristic-driven biases in the context of project management.

Keywords: Financial Literacy; Cognitive Bias; Heuristic-Driven Bias; Entrepreneurial Decision-Making; Entrepreneurship and Project Management

1. INTRODUCTION

The decision-making process in project selection can be simple or complicated based on project size and type. Thus, the project manager's and entrepreneur's primary role is to judge which opportunities to pursue and how to capitalize on them (Shane & Venkataraman, 2000). Entrepreneurs often use heuristics in their business decisions (Pinto, 2014). As entrepreneurship has always been full of risks, good decision-making is crucial to succeed, no matter how much data and time you have. Moreover, limited time and money made it difficult for entrepreneurs to decide which opportunity is worth pursuing (Hjeij, 2022). On the other hand, adopting these heuristics with empirical study may result in better judgment and decision-making, severely affecting the organization's project management decisions (Simon, 1991; Adil et al., 2021). Researchers concluded that investors like to operate rationally when deciding where to put their money (Kubilay & Bayrakdaroglu, 2016).

People scum to behavioural biases that have a detrimental influence on investment decisions and performance (Ahmad, 2020; Dangol & Manandhar, 2020; Khan et al., 2021). Facing time constraints, people tend to fall back on heuristics, which are defined as patterns, habits, or experiences they have had in the past (Goodie & Crooks, 2004). Available research in this regard suggests that the heuristics used by entrepreneurs and the effect that these heuristics have on project selection in developing countries need to be investigated (Ahmad, 2020). Therefore, it is necessary to research how the qualities above impact the selection of projects and the behaviour of entrepreneurs. Similarly, it has been observed in practice and literature that the majority of business owners have a poor degree of financial literacy, and it is uncommon for them to evaluate the financial elements of the projects they are working on (Ahmad, 2010; Brundin & Gustafsson, 2013).

As a result, financial literacy was chosen to function as a moderator in this study so that researchers could determine if heuristic-driven biases affected the project selection process (Ahmad et al., 2021; Hair Jr et al., 2021; Khan et al., 2021). Due to a lack of relevant research in this area, behavioural finance has played only a minor role in management decision-making processes in emerging markets; for instance, company owners are only sometimes aware of their own behavioural biases. Market fundamentals in emerging countries, such as Pakistan, vary from those in industrialized countries regarding investor psychology (Shah et al., 2018). Overconfidence affects a financier in a collectivistic society, leading to psychological biases in decision-making; this reflects the collectivism prevalent in many Asian nations (Ranaweera & Kawshala, 2021). Emerging economies like Pakistan have significant challenges, such as limited market access, data availability, funding, technology, bad laws, and a regulatory environment (Sherazi et al., 2013). As a result, small and medium-sized firms (SMEs) have a high failure rate, and business owners must make strategic decisions regarding their company.

Different theoretical views characterize the link between heuristic-driven biases and decision-making. According to the bounded rationality theory, people's reason is restricted when making decisions. The restrictions include the task's intricacy, the mind's cognitive ability, and the time available to decide. When decision-makers face perilous situations with great uncertainty, their reasoning suffers (Eisenhardt & Zbaracki, 1992; Pettigrew, 2014). Prospect theory states that people make decisions based on gains and losses, setting reference points and deciding whether or not to follow them (Kahneman & Tversky, 1979). People value gains and losses differently; some accept lower returns to prevent losing money, while others accept lower returns to avoid losing money in exchange for higher returns. Using heuristics to avoid losses in uncertain situations is a central concept of heuristics theory (Ritter, 2003).

Heuristics simplify the complexity of measuring probability and forecasting values. Heuristics is an effort-reduction method that employs one or more of the following: analysis of a few suggestions, integration of less information, or assessment of a few options (Shah & Oppenheimer, 2008). In light of the above, this research sought to assess the influence of heuristics on project selection, with financial literacy as a moderator. The study will focus on entrepreneurs, project directors, and project supervisors from Pakistani Small and Medium Size Enterprises (SMEs). The recent development of connections between China and Pakistan has spurred the negotiation of an agreement that will benefit all parties involved, not just these two. The cornerstone of China's $5 trillion One Belt, One Road (OBOR) investment strategy is the China-Pakistan Economic Corridor (CPEC) (Heydarian, 2020).

The project was expected to give Pakistan's government a sizable economic incentive and attract more international investment (Hayat & Anwar, 2016). Many academics agreed that CPEC could alter the course of history, as all international investors, including those from East Asia, the United States, and the European Union (Akcam et al., 2019; Ahmad et al., 2021). Pakistanis have significant ownership and support for the CPEC project, especially when it comes to enhancing the region's tourist market, socioeconomic growth, eradicating poverty, and improving living conditions across various geographical regions (Menhas et al.,2019). Consequently, the local SME market would expand, positively impacting global economic cooperation. There will also be a greater need for future project selections, especially from emerging countries' perspectives, which might need additional studies in a related field.

In context to Pakistan, completing this research's goal would provide the current literature with a more intriguing global perspective on developing countries, given that most of the literature in this field is produced in Western nations and developed countries. The study aims to identify heuristic biases that impact project selection. To identify impact levels of heuristic-driven biases on project selection and to examine financial literacy as a moderator in the relationship between heuristic-driven biases and project selection. This research intends to investigate the following questions: Does heuristic-driven bias influence project selection? Does financial literacy moderate the relationship between heuristic-driven biases and project selection?

2. LITERATURE REVIEW

2.1 Project Selection

Project selection is a time-consuming procedure that considers the marketing environment and client wants. Most companies need more resources as well as a plethora of risks and possibilities. As a result, managers and entrepreneurs often cannot properly predict customer reactions, market potential, feasibility, and risks because they need crucial knowledge (Hammedi et al., 2011; Loch et al., 2008). Deciding which innovative projects to pursue directly influences a company's competitiveness and performance (Chao & Kavadias, 2008). Poorly assessed choices in terms of costs and benefits result in bad decisions. Decision-making traps may also cause decision-makers to make erroneous decisions based on heuristics and biases (Ahmad, 2020; Chao & Kavadias, 2008). Strategic decisions are made when the resources and talents required to achieve strategic goals are committed to influencing organizational direction and structure and defining the destiny of a firm (Eisenhardt, 1999). They need both a reactive and proactive strategy. A variety of options impact individuals' strategic decisions. This category includes individual characteristics, prior experiences, and cognitive biases (West et al., 2008). These factors are important in strategic decision-making, as are intuition and emotional components (Fenton-O'Creevy et al., 2011).

2.2 Heuristics

Heuristics are efficient cognitive processes that intentionally or unintentionally dismiss specific information (Gigerenzer & Gaissmaier, 2011). Heuristics are the rules of thumb and mental shortcuts that govern management decisions during the start-up and management of a new business (Manimala, 1992).

Entrepreneurs' heuristics are useful and favourable when decision-makers lack information and time (Waweru et al., 2008).
They may, however, result in a sequence of errors in judgment (Ritter, 2003). Heuristics may be more accurate with minimal data than complex strategies (Gigerenzer & Gaissmaier, 2011). Research suggests that in today's volatile environment, entrepreneurs must demonstrate the ability to function confidently and promptly under pressure to thrive (Bandura, 1997). As a consequence, entrepreneurs can only conduct business with the use of heuristics. Heuristics help entrepreneurs advance by implementing updated information and developing risk-averse strategies (Hackman & Wageman, 1995; Lyytinen et al., 1998). More often, relying on intuition and cognition, decision-making biases, such as overconfidence, are inherent in entrepreneurial characteristics (Baron, 1998). Small company owners lacking well-established decision-making styles are more susceptible to heuristics and biases than managers in large corporations (Busenitz & Barney, 1997). Entrepreneurs suffering from these biases are unaware of the risks of launching new enterprises. Consequently, they must be equipped to compete in the market (Simon et al., 2000).

Some of the most significant causes of heuristics and biases and their effects on new venture development have been studied. Although research in this field is sufficient, numerous unsolved problems remain the exact nature of business heuristics and biases? What is the relationship between heuristics and biases? What are the consequences, and how negative consequences be mitigated? Even though past research has shown the relevance of cognitive biases in explaining entrepreneurial outcomes, further research is required (Gudmundsson & Lechner, 2013). Many behavioural biases may be observed among financial practitioners and corporate performers who use heuristics to make judgments. According to this research, overconfidence, representativeness, availability, anchoring and underconfidence biases affect project selection.

2.3 Overconfidence Bias

Overconfidence is a cognitive heuristic bias characterized by unjustified reliance on one's intuition, reasoning, and cognitive abilities (Pompian, 2012). Investors are overconfident because initial investments are not sufficiently amended by investors after getting fresh facts (Simon et al., 2000). According to Gigerenzer et al., (2011), overconfidence favors the decision to start a firm. It may initially support entrepreneurs by assisting them in uncovering opportunities in difficult situations, providing them with energy and enthusiasm. According to some experts, overconfidence bias and decision-making are only sometimes favourable. Cognitive simplification processes, such as overconfidence, negatively impact choices and judgments (Nouri et al., 2018).

Dangol and Manandhar (2020) show that the overconfidence bias has a detrimental influence on venture capitalists' decision-making ability. The impact of overconfidence bias on Indian investors' choices was shown to be negligible in a study (Adil et al., 2021) however, overconfidence significantly impacts investment decisions (Adiputra, 2021). Investment decisions in the Indonesian stock market were found to be highly impacted by investors' overconfidence (Armansyah, 2021). It was found that millennial investors in Semarang City's stock market benefited from the influence of overconfidence (Adielyani & Mawardi, 2020). Overconfidence positively impacts investment decision-making (Nareswari et al., 2021). After examining past research, we discovered the following relationship:
H1*: Overconfidence bias has a significant influence on project selection.*

2.4 Representativeness Biases

Representativeness is one of the most common decision-making biases. The cognitive heuristic Bias known as 'representativeness' refers to mental shortcuts such as adopting mental stereotypes to make decisions (Shefrin, 2008). Because of their representativeness, people value current experiences more than long-term rates (Ritter, 2003). Preconceptions let Individuals make inappropriate predictions about current circumstances (Shefrin, 2008). The two types of representativeness bias are base-rate neglect and sample-size neglect. When making decisions on the outcome of an investment, the decision maker depends on faulty data (Pompian, 2012); this is referred to as base-rate neglect. Decision-makers commit sample-size neglect when they base their conclusions on small samples.

Due to the representativeness heuristic Bias, project selection and performance suffer. Representativeness cognitive biases hurt the quality of entrepreneurs' strategic decisions (Kudratova et al., 2018). In emerging businesses, applying representative heuristics may impede quality management decisions (Brundin & Gustafsson, 2013). The representativeness heuristic is particularly important for entrepreneurs making initial choices as it allows fast discovery of interesting prospects (Busenitz & Barney, 1997). Similar research discovered a link between representativeness bias and investing choices (Irshad et al., 2016; Toma, 2015). The research has indicated that representativeness bias positively impacts investment choices (Hirshleifer, 2001; Islam, 2012; Merikas et al., 2004). Investment choices are influenced favorably by representativeness, overconfidence, and anchoring (Rehan & Umer, 2017).

Overconfidence and representational heuristics considerably impact investor decision-making and stock market trading activity (Parveen et al., 2020). Representativeness, anchoring and overconfidence significantly affect investors (Raut et al., 2020). Both patterns' cognitive biases (representative and availability) are positively associated with entrepreneurial activity and performance (Zhang et al., 2020). Several cognitive biases had a positive and significant relationship with the intuitive side of investment decision-making, including overconfidence, representativeness, availability, and anchoring and adjustment biases. According to the findings of the empirical investigation, the following relationship is predicted:

H2*: Representativeness bias has a significant influence on project selection.*

2.5 Availability Bias

People prefer information that is easily available while making decisions. This is known as an 'availability cognitive heuristic bias (Ahmad et al., 2021). As a result, entrepreneurs use availability as a judgmental foundation for estimating an event's possibility by seeking easily recallable instances. The availability cognitive heuristic has a detrimental impact on project selection and entrepreneur performance. People use the availability heuristic to assess the probability of an event based on how soon relevant information comes to mind (Tversky & Kahneman, 1973). It has a detrimental impact on the decision-making process. Researchers found that cognitive heuristics like anchoring and availability impact risk perception, causing a choice bias (Gigerenzer et al., 2011). Availability influences investment choices favorably (Ikram, 2016; Khan, 2017). Investment choices are positively linked with availability and representativeness bias (Khan et al., 2021). Unit trust investors' investment decisions were found to be negatively impacted by availability bias but not by a statistically significant amount (Kigen, 2020).

H3: *Availability bias has a significant influence on project selection.*

2.6 Anchoring and Adjustment Bias

Anchoring and adjustment bias is a cognitive heuristic bias that occurs while making decisions and relies on the first piece of information supplied (the "anchor") (Ahmad et al., 2021). Anchoring and adjustment influence risk perception, resulting in skewed decision-making. Entrepreneurs tend to overestimate their chances of success owing to anchoring and adjustment bias, which may negatively influence their decisions. Another study in Ghana showed that investors are susceptible to anchoring Bias (Owusu & Laryea, 2022). Similarly, multiple behavioural biases were discovered in the sample of investors included in the study (overconfidence and anchoring) (Quaicoe & Eleke-Aboagye, 2021). Some researchers believe that anchoring and adjustment biases impede entrepreneurs' ability to establish a firm, manage cash, and network (Bruch & Feinberg, 2017). In contrast, others argue that anchoring has a favourable impact on investing choices (Ishfaq & Anjum, 2015; Parveen & Siddiqui, 2018). Representativeness, overconfidence, anchoring, and availability biases favourably correlate with investment performance (Aziz & Khan, 2016).

According to the research conducted in the Zimbabwe stock market, the following psychological biases have a role in investment decisions: anchoring, availability, gambler's fallacy, overconfidence, herding, loss aversion, mental accounting, regret aversion, and representativeness (Hunguru et al., 2020). The study in Nepal indicated that heuristics (such as anchoring, representative, overconfidence, and availability bias) have little bearing on investment returns (Pokharel, 2020); according to the research, anchoring and adjustment bias impact project selection directly or indirectly.

H4*: Anchoring and adjustment bias have a significant influence on project selection.*

2.7 Under Confidence Bias

Individuals with under-confidence Bias, a heuristic-driven prejudice, underestimate their talents and knowledge (Mitchell et al., 2002). When an investor's subjective knowledge is diminished, that investor is considered unconfident. When investors need more confidence, they may be more inclined to invest or trade extensively because they think they better understand financial literacy (Pikulina et al., 2017). Investors in emerging markets may need to be more protected by underconfidence bias in both the short and long run (Ahmad, 2020). Project selection has a negative connection with the under-confidence Bias, showing that this prejudice impairs entrepreneurs' ability to make informed decisions. As a result, insecure company owners tend to overestimate their downside risk, resulting in inefficient start-up planning and financial management decisions that eventually contribute to the firm's collapse. Under-confidence negatively influences individuals' choices (Gigerenzer et al., 2011). According to the empirical investigation, the following link exists:

H5*: Under-confidence Bias has a significant influence on project selection.*

2.8 Moderating Role of Financial Literacy

Financial literacy is a person's ability to understand and apply financial principles. According to Bruch and Feinberg (2017), SMEs in underdeveloped nations fail due to a lack of business awareness and

financial understanding. Financial literacy positively moderates the connection between access to financing and growth for small and medium-sized firms (SMEs) (Huston, 2010; Mitchell et al., 2002).

According to a study, financial literacy favours company growth when resources are readily available, and firm owners have simple access to funding (Adomako & Danso, 2014). Financial literacy improves the relationship between firm growth and access to funding (Adomako et al., 2016). Another research looked at the association between financial literacy and the success of Nigerian SMEs (Eniola & Entebang, 2016). Other findings indicate that financial literacy moderates overconfidence bias in the context of investing choices (Hayat & Anwar, 2016). Another research found that financial knowledge influences investing choices favourably (Khalid et al., 2018).

Financial knowledge, financial power, and financial behaviour all increase company success, according to other evidence (Menike, 2018). Bandung's working-age population's investment choices are significantly impacted by their level of financial literacy. When deciding whether or not to invest, financial literacy is a strong and positive factor (Adil et al., 2021). Therefore, the following hypotheses are assumed:
H6*: Financial literacy moderates the relationship between overconfidence and project selection.*
H7*: Financial literacy moderates the relationship between representativeness and project selection.*
H8*: Financial literacy moderates the relationship between availability and project selection.*
H9*: Financial literacy moderates the relationship between anchoring and project selection.*
H10*: Financial literacy moderates the relationship between under-confidence and project selection.*

Within the scope of this investigation, heuristic-driven biases are treated as independent variables (i.e. overconfidence, availability, anchoring, representativeness and under-confidence). The dependent variable is project selection. The conceptual framework of the investigation is shown in Figure 1. The study model demonstrates a moderating function that financial literacy plays between the linkages between heuristic-driven biases and the selection of projects.

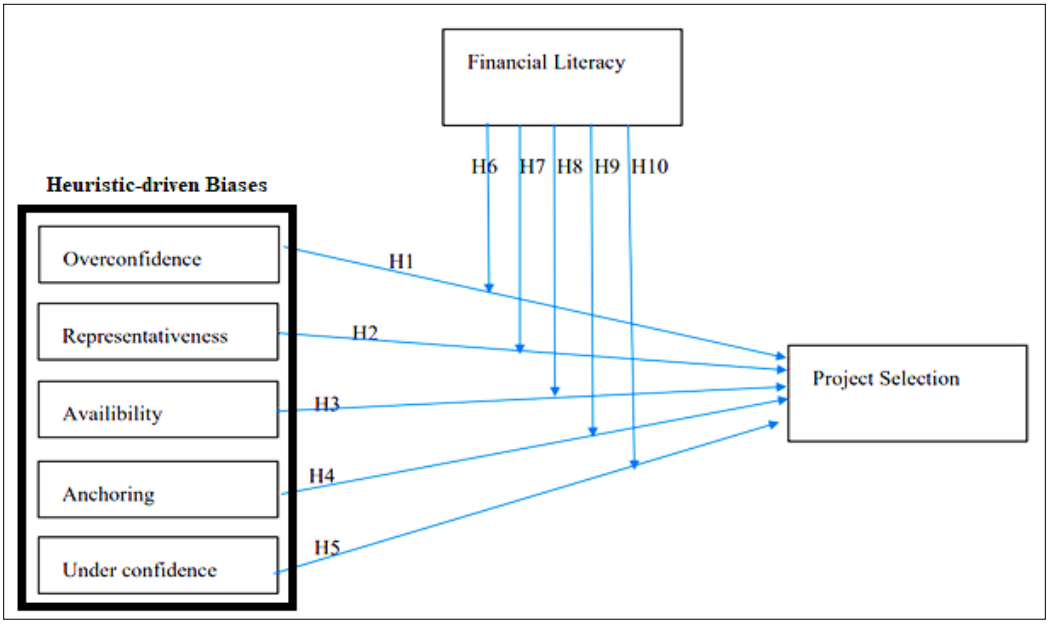

Figure 1. Theoretical Framework

3. RESEARCH METHODOLOGY

3.1 Research Design

In this study, data were quantified, i.e., using numerical values and statistical analysis rather than "qualitative" research techniques (Parylo, 2012). A survey was conducted to collect data (i.e., quantitative data) from the respondents. The study used a questionnaire with a five-point Likert scale to gather quantitative data (from 1 [strongly disagree] to 5 [strongly agree]). Moreover, the study was based on cross-sectional data to empirically test the proposed hypothesis, model, and theories.

3.2 Data Instrumentation

Five questions from the research conducted by Qasim et al. (2019) were used to evaluate the overconfidence heuristic. Four items from Rasheed et al. (2018), were utilized to test the representativeness heuristics. The availability heuristic was tested using three items from Rasheed et al.'s (2018) study. The anchoring heuristic was measured using a scale adapted from Ulabdin et al. (2017). Three questions from Sheldrake (2016) were used in the research to measure under-confidence. Eight distinct items were employed for the project selection dependent variable, taken from George (2007) study and Four items from Kuria (2019) were utilized for the moderator, which is financial literacy.

3.3 Data Collection and Sampling Techniques

The target group (SMEs in Pakistan) for our research comprises business owners, project directors, and project supervisors from Rawalpindi and Islamabad due to their accessibility. Due to the diverse location, the target population was first divided into six (6) zones using cluster sampling techniques. In the second stage, systematic random sampling was applied to reduce the biases and reach the target population. Although a sample size of 200 was used in our study, only 151 authentic responses were acquired. Given that it was more than the necessary minimum sample size (100, as recommended by Reinartz et al., 2009), the sample size was enough. Data were collected across 3.5 months at one point using a cross-sectional technique. Participants were given the questionnaires through social media (LinkedIn, WhatsApp) and email. Respondents were reassured of the confidentiality of the information. Furthermore, the data collection process followed all protocols to ensure data validity, authenticity, reliability, and meaningfulness.

4. RESULTS AND DISCUSSION

4.1 Demographics

Table 1 reveals the demographic information for the study. According to the statistics, over 33.8% of respondents worked as CEOs of businesses, followed by project directors (35.1%), project supervisors (29%), and others (just 2%). 78.1% of the population was male and 21.9% female. The age values show that 32.5% of respondents i.e most of the respondent age were between 26 and 30. A little over 29.8% of respondents were in the 31 to 35 age range. Additionally, 13.2% were between 36 and 40, and 15.2% were between 18 and 25. Only 9.3% of responders were in the age range of 46 to 50. Regarding education, 34.4% of respondents had a bachelor's degree, compared to 53.6% with a master's. In addition, 1.3% had a Ph.D., 0.7% were internationally certified, and 0.7% had no formal education. 9.3% of the students also held an MBA.

Table 1. Demographics of the study

Gender		Frequency	Percent (%)
	Male	118	78.1
	Female	33	21.9
Age			
	18–25	23	15.2
	26–30	49	32.5
	31–35	45	29.8
	36–40	20	13.2
	46–50	14	9.3
Qualification			
	Masters	81	53.6
	Bachelors	52	34.4
	MBA	14	9.3
	Ph.D.	2	1.3
	NoFormal Education	1	0.7
Designation			
	CEO	51	33.8
	PD	53	35.1
	PS	44	29.1
	Others	3	2.0
	Total	151	100.0

Smart-PLS3 and SPSS were utilized to analyze the collected data. The structural equation modelling (SEM) approach was employed for hypothesis testing. Smart-PLS3 program was used for reflective measurements analysis. The structural model was used due to its numerous beneficial characteristics, including the heterotrait-monotrait (HTMT) criterion, bootstrap-based significance testing, Partial Least Square prediction, and goodness of fit. Moreover, Smart-PLS3 can manage normal and abnormal data and ensure consistency, reliability, and validity. Data was analyzed in two stages. First, the measuring model was used to investigate construct validity, reliability, convergent validity, and discriminant validity. The second step created a structural model to test the idea (Hair et al., 2017).

4.2Measurement Model Assessment

The model first measured instrument reliability and internal consistency using Cronbach's alpha (CA) and composite reliability (CR). These numbers fell between 0.550 and 0.831 for CA and 0.738 and 0.871 for CR. CA values between 0.5 and 0.7 were deemed moderate (acceptable) dependability. According to the threshold, a CA of at least 0.8 indicates high dependability (Ekolu & Quainoo, 2019). Average Variance Extracted (AVE) must be more than 0.5 to prove convergent validity. However, convergent validity is sufficient and acceptable if AVE is less than 0.5 and CR is more than 0.6. (Fornell & Larcker, 1981). The values reveal that every CR number is higher than 0.6. According to Table 2, only one AVE value is marginally below 0.5. A project selection item (P3) with an extremely low outer loading value was eliminated.

After elimination, the outcomes could have improved. Items from outer loadings between 0.4 and 0.7 should only be removed if doing so raises the AVE value beyond the threshold value; values below 0.4 should be left alone (Hair Jr et al., 2017). The research preserved these elements since removing them had no discernible impact on the AVE score. Another source claims that a loading value of 0.5 or greater is acceptable, whereas a value of less than 0.5 is deleted (Chin, 1998). As shown in Figure 2, all outside loading values are more than 0.5.

Table 2. Construct Validity and Reliability

Items		Factor Loadings	Cronbach's Alpha	Rho (ρ)	Composite Reliability	Average Variance Extracted (AVE)
ANC			0.550	0.570	0.735	0.415
	ANC1	0.726				
	ANC2	0.511				
	ANC3	0.741				
	ANC4	0.659				
AVB			0.831	0.809	0.871	0.696
	AVB1	0.809				
	AVB2	0.774				
	AVB3	0.631				
RP			0.641	0.668	0.797	0.569
	RP1	0.627				
	RP2	0.468				
	RP3	0.789				
	RP4	0.678				
OVC			0.777	0.840	0.839	0.516
	OVC1	0.790				
	OVC2	0.754				
	OVC3	0.524				
	OVC4	0.864				
	OVC5	0.803				
UCB			0.831	0.809	0.871	0.696
	UCB1	0.711				
	UCB 2	0.934				
	UCB 3	0.941				
FL			0.702	0.710	0.818	0.531
	FL1	0.726				
	FL2	0.817				
	FL3	0.666				
	FL4	0.696				
PS			0.787	0.792	0.845	0.539
	PS1	0.658				
	PS2	0.746				
	PS3	0.638				
	PS4	0.595				

	PS5	0.625
	PS6	0.666
	PS7	0.698
	PS8	0.707

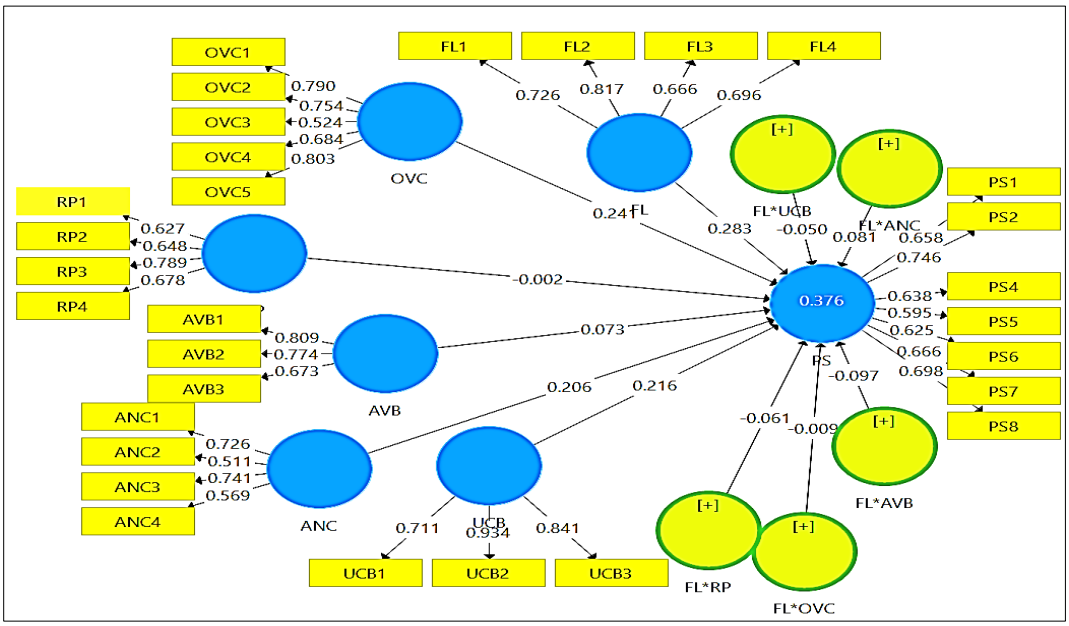

Figure 2. Measurement Model

The HTMT ratio approach was used to evaluate the constructs' discriminant validity. The discriminant validity of any pair of variables is established if the correlation values are less than 0.9. This approach was recommended by Henseler et al. (2015). Table 3 shows that both support values fall below the 0.9 cutoff.

Table 3. Discriminant Validity–HTMT

	ANC	AVB	FL	OVC	PS	RP	UCB
ANC							
AVB	**0.532**						
FL	0.590	**0.276**					
OVC	0.490	0.242	**0.403**				
PS	0.579	0.385	0.613	**0.402**			
RP	0.562	0.275	0.417	0.557	**0.341**		
UCB	0.253	0.480	0.156	0.388	0.208	**0.248**	

Fornell and Lacker, (1981) are considered the initial criteria for discriminant validity. For this procedure to work, the square root of the construct's AVE must be greater than its inter-correlation values. As shown in Table 4, each construct's square root was greater than its corresponding inter-correlation value, supporting the model's discriminant validity. The values are given in Table 4.

Table 4. Fornell Lacker Values

Variables	ANC	AVB	FL	AVG	PS	RP	UCB
ANC	**0.849**						
AVB	0.636	**0.839**					
FL	0.717	0.738	**0.803**				
OVC	0.790	0.702	0.793	**0.833**			
PS	0.602	0.638	0.720	0.822	**0.857**		
RP	0.479	0.502	0.638	0.765	0.842	**0.842**	
UCB	0.738	0.692	0.730	0.788	0.762	0.790	**0.816**

4.3 Assessment of Structural Model

PLS-SEM uses six phases to evaluate the structural model's validity. First, it is crucial to evaluate the latent co-linearity problems, which were evaluated using the variance inflation factor (VIF). According to the protocols, VIF should be less than or equal to 5 (VIF = 5). R2 and F2 were also used to evaluate the structural model's importance and relevance. Moreover, Q2 evaluated the predictive relevance. Table 5 displays the values of the indicators above. The results are also supported by Figure 3.

Table 5. Assessment of Structural Model

R-Square	**Endogenous Variables**	**R Square**			**R Square Adjusted**		0.26: Substantial, 0.13: Moderate, 0.02: Weak
	PS	0.209			0.201		
Effect Size (F-square)	**Exogenous Variables**	**ANC**	**AVB**	**FL**	**OVC**	**RP**	0.35: Substantial, 0.15: Medium effect, 0.02: Weak effect
	ANC	0.016	0.068	0.016	0.028	0.158	
	AVB			0.084			
	FL			0.033			
	OVC			0.040			
	RP						
Co linearity (Inner VIF)	**Exogenous Variables**	**ANC**	**AVB**	**FL**	**OVC**	**RP**	VIF <= 5.0
	ANC	1.000	1.000	1.267	1.385	1.000	
	AVB			1.048			
	FL			1.125			
	OVC			1.183			
	RP			1.728			
Predictive Relevance (Q-Square)	**Endogenous Variables**	**CCR**			**CCC**		Value larger than 0 indicates Predictive Relevance
	ANC	0.010			0.593		
	AVB	0.036			0.487		
	FL	0.125			0.514		
	OVC	0.093			0.609		
	RP	0.183			0.637		

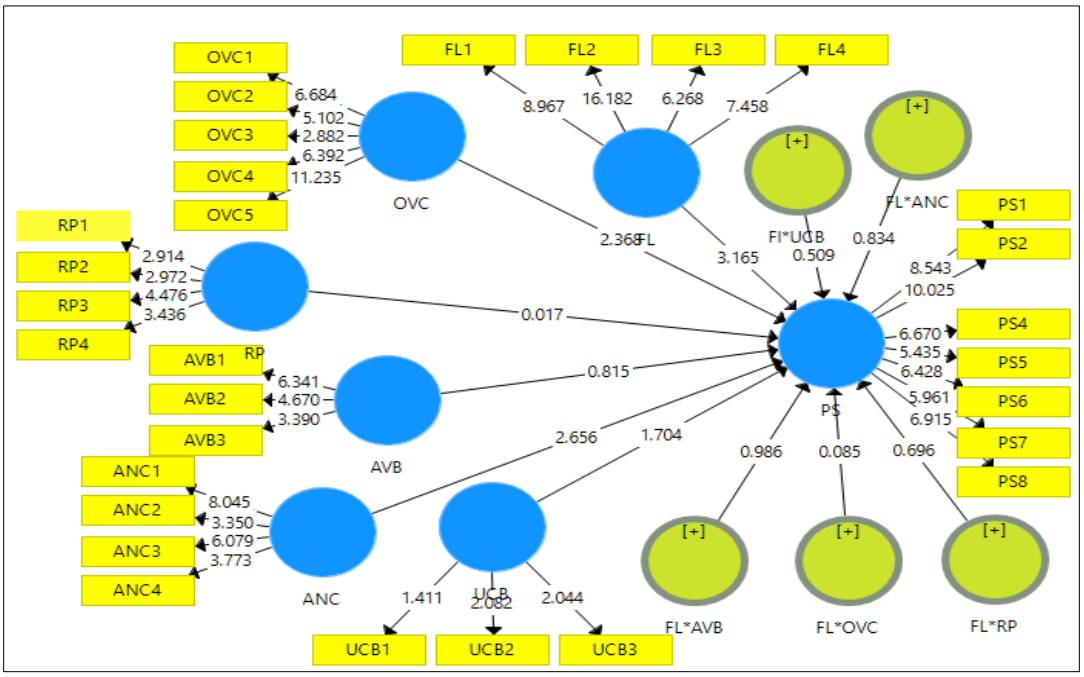

Figure 3. Structural Model

4.4 Hypothesis Testing

The importance of the relationship was determined by testing hypotheses in evaluating the goodness of fit. H1 states that overconfidence bias significantly influences project selection(PS). The result shows that overconfidence(OVC) has a significant influence on project selection ($\beta = 0.241$, $t = 2.507$, $p = 0.012$, $p < 0.05$). Hence, H1 is supported. Hypothesis H2 is between representativeness and project selection. The results reveal that representativeness(RP) has an insignificant influence on project selection ($\beta = -0.002$, $t = 0.018$, $p = 0.986$, $p > 0.05$). Hence, H2 is not supported. H3 states that availability has a significant influence on project selection. The results show that availability (AVB) has an insignificant influence on project selection ($\beta = 0.073$, $t = 0.806$, $p = 0.420$, $p > 0.05$). Hence, H3 is also not supported. Anchoring and adjustment have a significant influence on PS. The results show that anchoring and adjustment (ANC) have a significant influence on project selection ($\beta = 0.206$, $t = 2.732$, $p = 0.006$, $p < 0.05$). Hence, H4 is supported by the study results.

H5 is that under-confidence has a significant influence on project selection. However, the results reveal that under-confidence (UCB) has an insignificant influence on project selection ($\beta = 0.216$, $t = 1.736$, $p = 0.083$, $p > 0.05$). Hence, H5 is not supported. Moderation analysis was conducted to check the moderating role of financial literacy. The results revealed that there was no significant moderating role of financial literacy between OVC and project selection ($\beta = -0.009$, $t = 0.084$, $p = 0.933$), representativeness and project selection ($\beta = -0.061$, $t = 0.722$, $p = 0.470$), availability and project selection ($\beta = -0.097$, $t = 0.992$, $p = 0.321$), anchoring and adjustment and project selection ($\beta = 0.081$, $t = 0.858$, $p = 0.391$) and UCB and project selection ($\beta = -0.050$, $t = 0.525$, $p = 0.600$). The results are listed in Table 6.

Table 6. Path Coefficient (Direct Effect)

Hypothesis	OS(Beta)	Mean (M)	S. D	T Statistics	P Values	Decision
ANC -> PS	0.206	0.211	0.075	2.656	0.006	Supported
AVB -> PS	0.073	0.085	0.091	0.815	0.420	Rejected
FL*ANC -> PS	0.081	0.065	0.094	0.834	0.391	Rejected
FL*AVB -> PS	−0.097	−0.084	0.097	0.986	0.321	Rejected
FL*OVC -> PS	−0.009	−0.034	0.112	0.085	0.933	Rejected
FL*RP -> PS	−0.061	−0.050	0.084	0.696	0.470	Rejected
FL*UCB -> PS	−0.050	−0.014	0.095	0.509	0.600	Rejected
OVC -> PS	0.241	0.248	0.096	2.368	0.012	Supported
RP -> PS	−0.002	0.025	0.094	0.017	0.986	Rejected
UCB -> PS	0.216	0.180	0.124	1.704	0.083	Rejected

4.5 Discussion

This study in Pakistan observed the impact of heuristic-driven biases on project selection. Moreover, whether financial literacy moderates the relationship between heuristic-driven biases and project selection was evaluated. To help entrepreneurs avoid making costly mistakes that may result from heuristic biases, the study suggested some solutions to overcome the negative effects. The results revealed that only two of five heuristic-driven biases (overconfidence and anchoring) significantly impact project selection. Furthermore, Smart PLS3 was used to check the moderating effect of financial literacy. The results showed that financial literacy does not moderate the relationship between heuristic-driven biases and project selection.

The findings showed that overconfidence has a positive significant impact on project selection, which is consistent with Alquraan et al. (2016); Alrabadi et al. (2018); Hayat and Anwar (2016) and Qasim et al. (2019). According to Gigerenzer et al. (2011), overconfidence has a constructive effect on the choice to start a business. In addition, when one's knowledge and experience grow, one can easily become overconfident. Most respondents have a master's degree. The results show that anchoring and adjustment Bias also positively impact project selection, which is consistent with (Ishfaq & Anjum, 2015). When making investment decisions, anchoring is useful (Suresh, 2013). In a risky environment where fast decisions are made by using overconfidence and anchoring Bias, success, where the economy is notoriously unstable, is achieved (Quddoos et al., 2020).

The findings reveal that the rest of the heuristic-driven biases (availability, representativeness, and under-confidence) have insignificant influence on project selection. The most common biases in Islamabad and Rawalpindi SMEs are overconfidence and anchoring, which are positively related to project selection. Furthermore, financial literacy was analyzed as a moderator. The results showed that financial literacy does not moderate the relationship between heuristic-driven biases (overconfidence, availability, representativeness, anchoring, and under-confidence) and project selection. This result is similar to the findings of Quddoos et al., (2020). Similarly, another study showed that financial literacy does not moderate the relationship between overconfidence and investment decisions (Novianggie & Asandimitra, 2019); Ranaweera & Kawshala, 2021). This result is probably obtained because entrepreneurs with basic financial literacy do not assist them in the uncertain financial environment. Moreover, according to another study,

behavioural biases and financial literacy have no link (Sezer & Demir, 2015). Another reason could be that financial literacy may act as a mediator.

An entrepreneur's heuristics are helpful and advantageous when decision-makers have limited information or time to work with (Waweru et al., 2008). However, they may result in judgment blunders (Ritter, 2003). To avoid the negative effects of heuristics, entrepreneurs should use quantitative project selection methods, e.g. cost-benefit analysis, payback period, net present value, etc., to make a good decision and select the best option instead of relying on heuristics. People may learn to counteract the harmful effects of heuristic biases through time and experience (Anandarajan et al., 2008). This study could improve entrepreneurial managers' knowledge of the impact of heuristic-driven biases. This study will greatly benefit entrepreneurs, managers, investors, and businesses. Entrepreneurs can make better decisions and follow effective strategies for better business opportunities by controlling the impact of their heuristic-driven biases. In addition, they will avoid costly blunders. Regarding the relationship between project selection and heuristics, this work will likely be one of the first in Pakistan because studies on heuristic-driven biases in Pakistan are scarce.

5.0 CONCLUSION AND RECOMMENDATIONS

This article in Pakistan observes the impact of heuristic-driven biases on project selection. The study also studied financial literacy as a moderator to check the relationship between heuristic-driven biases and project selection. To help entrepreneurs avoid making costly mistakes that may result from heuristic biases, we have proposed solutions to overcome their negative effects. A deductive approach was used since this study is grounded on the theoretical framework of behavioural finance.

It was found that while overconfidence and anchoring significantly influence project selection, the other heuristic-driven biases examined do not have a significant impact. Therefore, the study concludes that the heuristic approach is unsuitable when selecting a project, and entrepreneurs should focus on scientific studies and calculations. Additionally, financial literacy was found to have no moderation impact between these biases and project selection. These findings contribute to understanding how entrepreneurs make decisions and navigate biases in their decision-making processes.

Entrepreneurs should employ quantitative project selection methods such as cost-benefit analysis, payback period, and net present value to mitigate the negative effects of heuristic-driven biases. Additionally, continuous learning and experience can help individuals counteract the harmful effects of biases over time. This study underscores the importance of improving financial literacy among entrepreneurs and managers and the need for further research. By recognizing and addressing heuristic biases, entrepreneurs can make more informed decisions and capitalize on better business opportunities, ultimately avoiding costly mistakes. Moreover, this study highlights the significance of exploring heuristic-driven biases in the context of Pakistan, which remains an understudied area in the literature. Further research in this field can contribute to a more comprehensive understanding of decision-making processes in entrepreneurial settings.

Author(s) Contributions: Conceptualization, Hira Asif; Methodology, Mariam Mansoor and Hira Asia; Software and Validation, Hire Asif; Formal analysis, Hira Asia; Investigation, Mariam Mansoor; Writing—original draft preparation, Hira Asif; Writing Review and Editing, Mariam Mansoor; Supervision; Mariam Mansoor; Project administration, Mariam Mansoor. All authors have read and agreed to the published version of the manuscript.

Ethical Statement: This study received written consent and ethical approval from Bahria University Islamabad and the University advisory board. All participants were formally informed, and their consent was taken, which is confidential.
Consent to Participate: This study deals with human participants, and human data or human rights issues are discussed and evaluated.
Competing Interests: The author declares that this work has no competing interests.
Grant/Funding information: The author declared that no grants supported this work
Data Availability Statement: Not Applicable
Declaration Statement of Generative AI: The author(s) of this work declared that they did not use any AI tools or program/software to draft this paper.

REFERENCES

Adielyani, D., & Mawardi, W. (2020). The influence of overconfidence, herding behaviour, and risk tolerance on stock investment decisions: The empirical study of millennial investors in Semarang City. *Jurnal Maksipreneur: Manajemen, Koperasi, dan Entrepreneurship*, *10*(1), 89-101. https://doi.org/10.30588/jmp.v10i1.691.

Adil, M., Singh, Y., & Ansari, M. S. (2021). How does financial literacy moderate the association between behaviour biases and investment decisions? *Asian Journal of Accounting Research*, *7*(1), 17-30. https://doi.org/10.1108/ajar-09-2020-0086

Adiputra, I. G. (2021). The influence of overconfidence, representative Bias, and risk tolerance in investment decision making: Evidence on stock investors in Indonesia. *Journal of Hunan University Natural Sciences*, *48*(4).

Adomako, S., & Danso, A. (2014). Financial Literacy and Firm Performance The moderating role of financial capital availability and resource flexibility. *International Journal of Management & Organizational Studies, 3(4).*

Adomako, S., Danso, A., & Ofori Damoah, J. (2016). The moderating influence of financial literacy on the relationship between access to finance and firm growth in Ghana. *Venture Capital*, *18*, 43-61. https://doi.org/10.1080/13691066.2015.1079952

Ahmad, M. (2020). Does underconfidence matter in short-term and long-term investment decisions? Evidence from an emerging market. *Management Decision*, *59*(3), 692–709. https://doi.org/10.1108/MD-07-2019-0972

Ahmad, M., Shah, S. Z. A., & Abbass, Y. (2021). The role of heuristic-driven biases in entrepreneurial strategic decision-making: Evidence from an emerging economy. *Management Decision*, *59*(3), 669–691. https://doi.org/10.1108/MD-09-2019-1231.

Alquraan, T., Alqisie, A., & Al Shorafa, A. (2016). Do behavioural finance factors influence the stock investment decisions of individual investors? (Evidence from Saudi Stock Market). *American international journal of contemporary research*, *6*(3), 159-169.

Alrabadi, D. W. H., Al-Abdallah, S. Y., & Aljarayesh, N. I. A. (2018). Behavioural biases and investment performance: Does gender matter? Evidence from Amman Stock Exchange. *Jordan Journal of Economic Sciences*, *5*(1), 77-92.

Anandarajan, A., Kleinman, G., & Palmon, D. (2008). Novice and expert judgment in the presence of going concern uncertainty: The influence of heuristic biases and other relevant factors. *Managerial Auditing Journal*, *23*(4), 345-366. https://doi.org/10.1108/02686900810864309

Armansyah, R. F. (2021). Overconfidence, mental accounting, and loss aversion in investment decisions. *Journal of Auditing, Finance, and Forensic Accounting*, *9*(1), 44-53. https://doi.org/10.21107/jaffa.v9i1.10523

Aziz, B., & Khan, A. (2016). Behavioural factors influencing individual investor's investment decision and performance, Evidence from Pakistan Stock Exchange. *International journal of research in finance and marketing*, *6*(7), 74–86. http://euroasiapub.org/current.php?title=IJRFM

Bandura, A. (Ed.). (1997). The anatomy of stages of change. *American Journal of Health Promotion, 12*(1), 8–10. https://doi.org/10.4278/0890-1171-12.1.8

Baron, R. A. (1998). Cognitive mechanisms in entrepreneurship: Why and when entrepreneurs think differently. *Journal of Business Venturing*, *13*(4), 275–294. https://doi.org/10.1016/S0883-9026(97)00031-1

Bruch, E., & Feinberg, F. (2017). Decision-making processes in social contexts. *Annual Review of Sociology*, *43*, 207-227. https://doi.org/10.1146/annurev-soc-060116-053622

Brundin, E., & Gustafsson, V. (2013). Entrepreneurs' decision making under different levels of uncertainty: The role of emotions. *International Journal of Entrepreneurial Behavior & Research*, *19*(6), 568-591. https://doi.org/10.1108/IJEBR-07-2012-0074

Busenitz, L. W., & Barney, J. B. (1997). Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making. *Journal of Business Venturing*, *12*(1), 9-30. https://doi.org/10.1016/S0883-9026(96)00003-1

Chao, R. O., & Kavadias, S. (2008). A theoretical framework for managing the new product development portfolio: When and how to use strategic buckets. *Management Science*, *54*(5), 907-921. https://doi.org/10.1287/mnsc.1070.0828

Chin, W. W. (1998). The partial least squares approach to structural equation modelling. *Modern Methods for Business Research*, *295*(2), 295–336.

Dangol, J., & Manandhar, R. (2020). Impact of heuristics on investment decisions: The moderating role of locus of control. *Journal of Business and Social Sciences Research*, *5*(1), 1-14. https://doi.org/10.3126/jbssr.v5i1.30195.

Eisenhardt, K. M. (1999). Strategy as strategic decision making. *MIT Sloan Management Review*, *40*(3), 65-72. https://doi.org/10.1002/smj.4250130904

Eisenhardt, K. M., & Zbaracki, M. J. (1992). Strategic decision making. *Strategic Management Journal*, *13*(S2), 17-37. https://doi.org/10.1002/smj.4250130904.

Ekolu, S. O., & Quainoo, H. (2019). Reliability of assessments in engineering education using Cronbach's alpha, KR and split-half methods. *Global Journal of Engineering Education*, *21*(1), 24-29.

Eniola, A. A., & Entebang, H. (2016). Financial literacy and SME firm performance. *International Journal of Research Studies in Management*, *5*(1), 31-43. https://doi.org/10.5861/ijrsm.2015.1304

Fenton-O'Creevy, M., Soane, E., Nicholson, N., & Willman, P. (2011). Thinking, feeling and deciding: The influence of emotions on the decision making and performance of traders. *Journal of Organizational Behavior*, *32*(8), 1044–1061. https://doi.org/10.1002/job.720

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, *18*(1), 39-50. https://doi.org/10.1177/002224378101800104.

George, B. A. (2007). *Strategic decision making in new ventures: The relationship between decision comprehensiveness and growth in differing environments* (Doctoral dissertation, Indiana University).

Gigerenzer, G. E., Hertwig, R. E., & Pachur, T. E. (2011). *Heuristics: The foundations of adaptive behaviour*. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195388435.003.0001

Gigerenzer, G., & Gaissmaier, W. (2011). Heuristic decision-making. *Annual Review of Psychology*, *62*, 451-482. https://doi.org/10.1146/annurev-psych-120709-145346.

Goodie, A. S., & Crooks, C. L. (2004). Time pressure affects performance in a base-rate task. *The Journal of General Psychology*, *131*(1), 18–28. https://doi.org/10.3200/GENP.131.1.18-28

Gudmundsson, S. V., & Lechner, C. (2013). Cognitive biases, organization, and entrepreneurial firm survival. *European Management Journal*, *31*(3), 278-294. https://doi.org/10.1016/j.emj.2013.01.001

Hackman, J. R., & Wageman, R. (1995). Total quality management: Empirical, conceptual, and practical issues. *Administrative Science Quarterly*, *40*(2), 309-342. https://doi.org/10.2307/2393640

Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial least squares structural equation modelling (PLS-SEM) using R: A workbook (1st Edition).* Springer Nature. https://doi.org/10.1007/978-3-030-80519-7

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., & Thiele, K. O. (2017). Mirror, mirror on the wall: A comparative evaluation of composite-based structural equation modelling methods. *Journal of the Academy of Marketing Science*, *45*, 616-632. https://doi.org/10.1007/s11747-017-0517-x

Hammedi, W., van Riel, A. C., & Sasovova, Z. (2011). Antecedents and consequences of reflexivity in new product idea screening. *Journal of Product Innovation Management*, *28*(5), 662-679. https://doi.org/10.1111/j.1540-5885.2011.00831.x

Hayat, A., & Anwar, M. (2016). Impact of behavioural biases on investment decision; The moderating role of financial literacy. *SSRN Repository.* https://dx.doi.org/10.2139/ssrn.2842502

Heydarian, R. J.,(2020). The belt and road: China as the new vanguard of globalization. *The Indo-Pacific: Trump, China, and the New Struggle for Global Mastery*,119-147. Palgrave Macmillan, Singapore https://doi.org/10.1007/978-981-13-9799-8_5

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modelling. *Journal of the academy of marketing science*, *43*, 115-135. https://doi.org/10.1007/s11747-014-0403-8

Hirshleifer, D. (2001). Investor psychology and asset pricing. *The Journal of Finance*, *56*(4), 1533-1597. https://doi.org/10.1111/0022-1082.00379

Hjeij, M. (2022). The heuristics applied by tech entrepreneurs in the Middle East during opportunity evaluation. *Journal of Entrepreneurship in Emerging Economies*, *15*(6), 1354–1372. https://doi.org/10.1108/JEEE-07-2021-0294

Hunguru, P., Sibanda, V., & Tadu, R. (2020). Determinants of investment decisions: A study of individual investors on the Zimbabwe Stock Exchange. *Applied Economics and Finance*, *7*(5), 38-53. https://doi.org/10.11114/aef.v7i5.4927

Huston, S. J. (2010). Measuring financial literacy. *Journal of Consumer Affairs*, *44*(2), 296-316. https://doi.org/10.1111/j.1745-6606.2010.01170.x

Ikram, Z. (2016). An empirical investigation on behavioural determinants, impact on investment decision making, moderating role of locus of control. *Journal of Poverty, Investment and Development*, *26*, 44–50.

Irshad, S., Badshah, W., & Hakam, U. (2016). Effect of representativeness bias on investment decision making. *Management and Administrative Sciences Review*, *5*(1), 26–30.

Ishfaq, M., & Anjum, N. (2015). Effect of anchoring Bias on risky investment decision. Evidence from Pakistan equity market. *International Journal of Engineering and Management Research 5*(4), 32-38.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decisions under risk. *Econometrica*, *47*(2), 263-293. https://doi.org/10.2307/1914185

Khalid, R., Javed, M. U., & Shahzad, K. (2018). Impact of Behavioral Biases on Investment Decision Making with Moderating Role of Financial Literacy. *Jinnah Business Review*, *6*(2), 34–41. https://doi.org/10.53369/rkxa7855

Khan, I., Afeef, M., Jan, S., & Ihsan, A. (2021). The impact of heuristic biases on investors' investment decision in Pakistan stock market: The moderating role of long-term orientation. *Qualitative Research in Financial Markets*, *13*(2), 252-274. https://doi.org/10.1108/QRFM-03-2020-0028

Khan, M. U. (2017). Impact of availability bias and loss aversion bias on investment decision making, moderating role of risk perception. *Management & Administration (IMPACT: JMDGMA)*, *1*(1), 17–28.

Kigen, P. S. (2020). *The Effect of Behavioral Biases on Investment Decision Making by Unit Trust Investors in Kenya* (Doctoral dissertation, University of Nairobi).

Kubilay, B., & Bayrakdaroglu, A. (2016). Empirical research on investor biases in financial decision-making, risk tolerance, and personality. *International Journal of Financial Research*, *7*(2), 171-182. http://dx.doi.org/10.5430/ijfr.v7n2p171

Kudratova, S., Huang, X., & Zhou, X. (2018). Sustainable project selection: Optimal project selection considering sustainability under reinvestment strategy. *Journal of Cleaner Production*, *203*, 469-481. https://doi.org/10.1016/j.jclepro.2018.08.259

Kuria, A. M. (2019). *Behavioural Biases of Real Estate Investors And Investment Performance in Kenya* (Doctoral dissertation, Dedan Kimathi University of Technology). http://repository.dkut.ac.ke:8080/xmlui/handle/123456789/4644

Loch, C. H., Solt, M. E., & Bailey, E. M. (2008). Diagnosing unforeseeable uncertainty in a new venture. *Journal of Product Innovation Management*, *25*(1), 28-46. https://doi.org/10.1111/j.1540-5885.2007.00281.x

Lyytinen, K., Mathiassen, L., & Ropponen, J. (1998). Attention shaping and software risk—a categorical analysis of four classical risk management approaches. *Information Systems Research*, *9*(3), 233-255. https://doi.org/10.1287/isre.9.3.233

Manimala, M. J. (1992). Entrepreneurial heuristics: A comparison between high PL (pioneering-innovative) and low PI ventures. *Journal of Business Venturing*, *7*(6), 477-504. https://doi.org/10.1016/0883-9026(92)90021-I

Menike, L. M. C. S. (2018). Effect of financial literacy on firm performance of Small and Medium Enterprises in Sri Lanka. *SSRN Electronic Journal*. http://dx.doi.org/10.2139/ssrn.3306719.

Merikas, A. A., Merikas, A. G., Vozikis, G. S., & Prasad, D. (2004). Economic factors and individual investor behaviour: The case of the Greek stock exchange. *Journal of Applied Business Research. 20*(4). https://doi.org/10.19030/jabr.v20i4.2227

Mitchell, R. K., Busenitz, L., Lant, T., McDougall, P. P., Morse, E. A., & Smith, J. B. (2002). Toward a theory of entrepreneurial cognition: Rethinking the people side of entrepreneurship research. *Entrepreneurship Theory and Practice*, *27*(2), 93–104. https://doi.org/10.1111/1540-8520.00001

Nareswari, N., Balqista, A. S., & Negoro, N. P. (2021). The impact of behavioural aspects on investment decision making. *Jurnal Manajemen Dan Keuangan*, *10*(1), 15-27.

https://doi.org/10.33059/jmk.v10i1.3125

Nouri, P., Imanipour, N., Talebi, K., & Zali, M. (2018). Most common heuristics and biases in nascent entrepreneurs' marketing behaviour. *Journal of Small Business & Entrepreneurship*, *30*(6), 451-472. https://doi.org/10.1080/08276331.2018.1427406

Novianggie, V., & Asandimitra, N. (2019). The influence of behavioural bias, cognitive bias, and emotional bias on investment decisions for college students with financial literacy as the moderating variable. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, *9*(2), 92-107. http://dx.doi.org/10.6007/IJARAFMS/v9-i2/6044.

Owusu, S. P., & Laryea, E. (2022). The impact of anchoring bias on investment decision-making: Evidence from Ghana. *Review of Behavioral Finance*, *15*(5), 729–749. https://doi.org/10.1108/RBF-09-2020-0223

Parveen, S., & Siddiqui, M. A. (2018). Anchoring heuristic, disposition effect and overconfidence bias in investors: A Case of Pakistan stock exchange. *Abasyn Journal of Social Sciences*, *11*(2), 280-294.

Parveen, S., Satti, Z. W., Subhan, Q. A., & Jamil, S. (2020). Exploring market overreaction, investors' sentiments and investment decisions in an emerging stock market. *Borsa Istanbul Review*, *20*(3), 224–235. https://doi.org/10.1016/j.bir.2020.02.002

Parylo, O. (2012). Qualitative, quantitative, or mixed methods: A research design analysis in articles on principal professional development (1998–2008). *International Journal of Multiple Research Approaches*, *6*(3), 297–313. https://doi.org/10.5172/mra.2012.6.3.297

Pettigrew, A. M. (2014). *The politics of organizational decision-making*. Routledge.

Pikulina, E., Renneboog, L., & Tobler, P. N. (2017). Overconfidence and investment: An experimental approach. *Journal of Corporate Finance*, *43*, https://doi.org/10.1016/j.jcorpfin.2017.01.002

Pinto, J. (2014). Entrepreneurs' cognitive biases and heuristics in entrepreneurial team recruitment. In *Academy of Management Proceedings*, *Vol. 2014*(1), 13976. Academy of Management Journal. https://doi.org/10.5465/ambpp.2014.5

Pokharel, P. R. (2020). Behavioural factors and investment decision: A case of Nepal. ~~*Available at*~~ *SSRN Repository.* https://dx.doi.org/10.2139/ssrn.3687104

Pompian, M. M. (2012). *Behavioural Finance and Wealth Management: How to Build Investment Strategies that Account for Investor Biases (2nd Edition).*

Qasim, M., Hussain, R., Mehboob, I., & Arshad, M. (2019). Impact of herding behaviour and overconfidence bias on investors' decision-making in Pakistan. *Accounting*, *5*(2), 81–90. http://dx.doi.org/10.5267/j.ac.2018.7.001

Quaicoe, A., & Eleke-Aboagye, P. Q. (2021). Behavioural factors affecting investment decision-making in bank stocks on the Ghana stock exchange. *Qualitative Research in Financial Markets*, *13*(4), 425-439. https://doi.org/10.1108/QRFM-05-2020-0084

Quddoos, M. U., Rafique, A., Kalim, U., & Sheikh, M. R. (2020). Impact of behavioural biases on investment performance in Pakistan: The moderating role of financial literacy. *Journal of Accounting and Finance in Emerging Economies*, *6*(4), 1199-1205. https://doi.org/10.26710/jafee.v6i4.1512

Rasheed, M. H., Rafique, A., Zahid, T., & Akhtar, M. W. (2018). Factors influencing investor's decision making in Pakistan: Moderating the role of locus of control. *Review of Behavioral Finance*, *10*(1), 70-87. https://doi.org/10.1108/RBF-05-2016-0028

Raut, R. K., Das, N., & Mishra, R. (2020). The behaviour of individual investors in stock market trading: Evidence from India. *Global Business Review*, *21*(3), 818-833.

https://doi.org/10.1177/0972150918778915
Rehan, R., & Umer, I. (2017). Behavioural biases and investor decisions. *Market Forces*, *12*(2).
Reinartz, W., Haenlein, M., & Henseler, J. (2009). An empirical comparison of the efficacy of covariance-based and variance-based SEM. *International Journal of Research in Marketing*, *26*(4), 332- 344. https://doi.org/10.1016/j.ijresmar.2009.08.001
Ritter, J. R. (2003). Behavioral finance. *Pacific-Basin Finance Journal*, *11*(4), 429-437. https://doi.org/10.1016/S0927-538X(03)00048-9
Sezer, D., & Demir, S. (2015). Investors' financial literacy and cognitive ability levels and their relationship with psychological illusions. *Journal of Accounting & Finance*, *4*(1), 57-73.
Shah, A. K., & Oppenheimer, D. M. (2008). Heuristics made easy: an effort-reduction framework. *Psychological bulletin*, *134*(2), 207. https://psycnet.apa.org/doi/10.1037/0033-2909.134.2.207
Shah, S. Z. A., Ahmad, M., & Mahmood, F. (2018). Heuristic biases in investment decision-making and perceived market efficiency: A survey at the Pakistan stock exchange. *Qualitative Research in Financial Markets*, *10*(1), 85–110. https://doi.org/10.1108/QRFM-04-2017-0033
Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, *25*(1), 217–226. https://doi.org/10.5465/amr.2000.2791611
Shefrin, H. (2008). *A Behavioural Approach to Asset Pricing (2nd Edition)*. In Series: Academic Press Advanced Finance. Elsevier. https://doi.org/10.1016/B978-0-12-374356-5.X5001-3
Sherazi, S. K., Iqbal, M. Z., Asif, M., Rehman, K., & Shah, S. H. (2013). Obstacles to small and medium enterprises in Pakistan. Principal component analysis approach. *Middle-East Journal of Scientific Research*, *13*(10), 1325-1334.
Simon, H. A. (1991). Bounded rationality and organizational learning. *Organization Science*, *2*(1), 125–134. https://doi.org/10.1287/orsc.2.1.125
Simon, M., Houghton, S. M., & Aquino, K. (2000). Cognitive biases, risk perception, and venture formation: How individuals decide to start companies. *Journal of Business Venturing*, *15*(2), 113–134. https://doi.org/10.1016/S0883-9026(98)00003-2
Islam, S. (2012). Behavioural finance of an inefficient market. *Global Journal of Management and Business Research*, *12*(14), 12–34.
Ranaweera, S., & Kawshala, B. (2021). Influence of behavioral biases on investment decision making with moderating role of financial literacy and risk attitude: A study based on Colombo stock exchange. In *Proceedings of the 12th International Conference on Business & Information (ICBI 2021)*. SSRN Electronic Journal. https://dx.doi.org/10.2139/ssrn.4116979
Suresh, A. (2013). Understanding behavioural finance through biases and traits of trader vis-à-vis investor. *Journal of Finance, Accounting and Management*, *4*(2), 11–25. https://ssrn.com/abstract=2349672
Toma, F. M. (2015). Behavioural biases of the investment decisions of Romanian investors on the Bucharest stock exchange. *Procedia Economics and Finance*, *pp. 32*, 200–207. https://doi.org/10.1016/S2212-5671(15)01383-0.
Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, *5*(2), 207-232. https://doi.org/10.1016/0010-0285(73)90033-9.
UlAbdin , S. Z., Farooq, O., Sultana, N., & Farooq, M. (2017). The impact of heuristics on investment decision and performance: Exploring multiple mediation mechanisms. *Research in International Business and Finance*, *42*, 674–688. https://doi.org/10.1016/j.ribaf.2017.07.010.

Waweru, N. M., Munyoki, E., & Uliana, E. (2008). The effects of behavioural factors in investment decision-making: A survey of institutional investors operating at the Nairobi stock exchange. *International Journal of Business and Emerging Markets*, *1*(1), 24-41. https://doi.org/10.1504/IJBEM.2008.019243

West, R. F., Toplak, M. E., & Stanovich, K. E. (2008). Heuristics and biases as measures of critical thinking: Associations with cognitive ability and thinking dispositions. *Journal of Educational Psychology*, *100*(4), 930. https://psycnet.apa.org/doi/10.1037/a0012842

Zhang, H., Bij, H. V. D., & Song, M. (2020). Can cognitive biases be good for entrepreneurs? *International Journal of Entrepreneurial Behavior & Research*, *26*(4), 793–813. https://doi.org/10.1108/IJEBR-03-2019-017