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Research Article

# Impact of Behavioral Finance on Employee Productivity: Mediating Role of Financial Decision Making

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## Abstract

This research aims to better comprehend the impact of behavioral finance on employee productivity by investigating the mediating effect of financial decision-making. A part of financial decision-making is the link between behavioral finance and employee productivity observed with the help of prospect theory, heuristic theory, and rational decision-making theory. In this research, the researcher initially constructed a theoretical framework and subsequently formulated hypotheses. The findings of this study have explained the positive and significant effect of behavioral finance on employee productivity, along with the significant positive mediating impact of financial decision-making on behavioral finance and employee productivity. After this, the research has described a positive and significant mediating impact of financial decision-making between behavioral finance and employee productivity; all hypotheses are positive and significant except that representativeness bias, overconfidence, and herding have no significant relationship. Keywords: behavioral finance, employee productivity, and financial decision-making

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## Introduction

The behavioral finance field was recognized in the 1990s. It's the combination of emotional and psychological thoughts that represent the individual biases in decision making (Ricciardi & Simon, 2000). Behavioral finance is the process of understanding why, what, and how individuals make decisions for financial purposes (Ricciardi & Simon, 2000). The past 5 decades indicate that individuals face difficulties in the decision-making process. Behavioral scholars develop the discipline of behavioral finance to understand financial decisions. These biases are part of human psychological factors that may sometimes be helpful or even hurtful in financing (Byrne & Utkus, 2013). According to Ricciardi and Simon (2000) behavioral finance is structured of psychological, financial, and sociological factors, in which psychological factors concern the exterior factors and psyche of a human being, and financial factors influence the dissemination and utilization of money, and sociological factors emphasize the social interaction of individuals and groups of people. The overconfident biases tend to demonstrate that it's psychologically unfavorable confidence that affects financial decisions. Overconfidence is a consequential trait that may lead to over judgment of one's talent (De Bondt & Thaler, 1995). Moore and Healy (2008) explain overconfidence biases in three different processes. The first trait, overconfidence, is the overestimation of the chance of occurrence or the level of capabilities. Employees overestimate the productivity or work they have done, and they overestimate their speed of performance.

Approximately 64% of research evidence examined the overestimation. The second trait of overplacement happens when individuals assume that they are superior to others; they think that they have more abilities and capabilities than others do not have, and based on these traits, they invest in it, which will affect the decision-making process. Around 5% empirical evidence examined this phenomenon. The third is overprecision, in which individuals excessively and highly believe in their accuracy. Nearly 31% examined the phenomenon of overprisonment. In recent years, loss aversion has become a more challenging behavior (Sokol-Hessner & Rutledge, 2019). Loss aversion is one of the most crucial biases in behavioral finance (Blavatskyy, 2008). Loss aversion is a psychological factor that Kahneman and Tversky first proposed in 1979 (Schmidt & Zank, 2005). It is a condition in which individuals feel guilty when they experience any loss. This happens because individuals feel greater disappointment rather than the heavy gain (Ardini et al., 2023). Generally, the gain of a reward is less satisfying, and the fear of loss is approximately stronger (Gal & Rucker, 2018). Gain and loss are psychological emotions that emphasize the individual's behavior in decision-making (Gal & Rucker, 2018). Individuals take losses more sensitively and neglect the return and reward (Byrne & Utkus, 2013). The two important factors in loss aversion reflect the behavior of individuals. First, loss aversion is a crucial bias, and it should be generalizable rather than circumstantial.

At present, achieving employee productivity is the biggest challenge in the workplace (Hanaysha, 2016). Employees play a vital part in productivity. Organizational and accomplishments depend on productivity (Hanaysha, 2016). Sometimes employees make incorrect estimations, so they can't achieve their target, which will affect the productivity as well as the performance of an organization (Tarigan et al., 2022). Productivity comprises three ways. First, it consists of the business's production. Second, it will depend on employee effectiveness. Third, how employees use the tools and achieve the maximum level of productivity, and accomplish the assigned tasks and responsibilities for organizational success (Muttaqien et al., 2022). If the organization increases employee productivity, it will focus on employee motivation (Ali et al., 2016). Those companies that have high competition in the market will focus on boosting productivity among their employees (Sawaji et al., 2023). Over the past few decades, technology has rapidly changed the economy, grown day by day, which has led to the significance of financial decisions (Zopounidis & Doumpos, 2002). Currently, financial decision-making is a crucial factor for behavioral trait learning (Hilary & McLean, 2023). Financial decision-making is a complex behavior.

Every organization faces the problem of productivity. For institutions to achieve productivity, their output will be more than the expenses (Basahal et al., 2022). There is a big transformation in the first century organization, more concentrated on productivity to achieve tasks (Hussain, et al., 2018). Therefore, productivity is a combination of fulfilling the required task and enhancing performance (Muazzam et al., 2020). The organization's performance will depend on the objective of the institutions (Theng, 2023). In this context, it is expected that organizations will face the challenge of enhancing productivity if employee performance is not satisfactory, resulting in a negative impact on productivity. In the 21st century, decision-making plays a crucial role in organizations. Many businesses face the difficulty when making financial decisions for institutions. The organization must utilize the proper information when making decisions (Rauf et al., 2024). Financial decision-making directly relates to the individual's resources. Different types of financial decisions related to the organization, such as psychological decisions that are problematic for the institutions, because they are based on individual behavior (Greenberg & Hershfield, 2019; Lynch Jr, 2011). Individuals who have properly planned their resources and budget them evenly face less difficulty when making decisions (Robb & Woodyard, 2011). In such scenarios, an effective decision will positively influence the organization, and an ineffective decision will negatively influence the business. Overconfidence is a self-obsessed or extreme level of imagination that makes the condition effective in decision-making (Adiputra et al., 2024). Therefore, institutions believe that they have enough information to make a decision, but they make the situation worse, and employee performance will be affected (Adiputra et al., 2024; Bickersteth et al., 2018). Overconfident behavior will also influence the company's productivity (Mahjoubi & Henchiri, 2024). An overconfident investor underrated the peril element (Sudirman et al., 2024). Representativeness bias is a crucial behavior.

### *Justification and rational*

The framework of the study was constructed utilizing insights and methodologies from prior research. Previous studies on behavioral finance, employee productivity, and financial decision making have yielded contradictory findings, demonstrating both positive and negative consequences. Based on previous studies, this paper proposes behavioral finance as an escape to alleviate individual behavior in an organization, focusing on employee productivity. In this study, the researcher has established a new relationship by introducing employee productivity as a dependent variable, concerning behavioral finance and financial decision-making as a mediator between behavioral finance and employee productivity. The primary aim of this study is to investigate the role of behavioral finance on employee productivity, with the focus on the mediating role of financial decision making.

This study has exclusively focused on employees within institutions, conducting empirical inquiries into the impact of behavioral finance on employee productivity. It has specifically explored this relationship through the mediating role of financial decision-making. This study has specifically aimed to investigate within the context of Pakistan. To the scholar's familiarity, this particular study has not been extensively explored with the organizations across Pakistan from a cross-disciplinary perspective. Previous researchers have endeavored to comprehend the behavioral factors that are truly driven by finance, employing a range of theoretical frameworks. Researchers in this study widely apply theories such as the prospect theory (Kartini & Nahda, 2021; Levy, 1992) and the Heuristic theory (Kartini & Nahda, 2021), and rational theory (Scott, 2000) to gain insight into cross-disciplinary. In summary, previous studies identified behavioral finance in respective finance and perceived behavior, attitude as a significant role of behavioral finance. This research is similar to prior work, which has supported these theories in terms of a variety of dimensions, providing both applied and theoretical contributions. Behavioral finance has hence become widespread as a social issue since in an organization, there is a rise in performing research and numerous tasks in the workplace. Employers allow their employees to use the resource in the best way to increase performance. However, despite the availability of such a resource, employees get easily distracted since some of them use such a resource to undertake unrelated business activity, which influences productivity. Therefore, wasting so much time on decision-making slows down productivity and efficiency of work. Consequently, behavioral finance plays an important role for organizations and employees' productivity in carrying out a study on financial decision-making, and thus helps in reducing the problems related to various types of individual behavior in an organization and problems related to financial decisions, which makes the company's situation worse, and it will also enhance the performance of employees. Studies on behavioral finance have been conducted, and they have received as follows results: Therefore, the study of behavioral finance gives an understanding of the phenomenon and measures to manage individual behavior in a company that influences the performance of employees.

## Literature Review

Prospect theory was established by psychologists Kahneman and Tversky in 1979 (Kartini & Nahda, 2021). Prospect theory explains how individuals make decisions in such circumstances when risks are involved (Levy, 1992). The theory further explains that people focus only on the reference frame rather than the actual wealth. Moreover, they rely on the rewards and risk association outcome rather than the actual value (Levy, 1992). Furthermore, it explains that it is a psychological bias in which some individuals take risks too seriously, and the same wealth also gives them a gain, but they neglect the reward and rely on the loss, which makes them guilty (Kartini & Nahda, 2021). Individuals think that they make a wrong decision, and such investors also face the fear of loss and risk as well (Kartini & Nahda, 2021). In the last 3 decades, prospect theory has been extensively cited for investment in doubtful wealth (Barberis, 2013). The heuristic theory was developed by psychologists Kahneman and Tversky in 1979 (Kartini & Nahda, 2021). Heuristic theory is a psychological bias that affects the decisions made about uncertain events. Furthermore, they are unpredictable occurrences or uncertain events (Kartini & Nahda, 2021). Furthermore, heuristic theory explains how individuals make decisions quickly and invest in them.

### *Rational theory*

In 21 century, rational theory has become crucial for decision making, playing a significant role in decision making (Oppenheimer, 2008). The theory explained how individuals make decisions based on their norms, beliefs, and judgment bias, and based on their actions, how the maximum outcome will be utilized for the organization's benefit (Doyle, 1999). Furthermore, the theory explains productive and reasoning decisions (Doyle, 1999). The theory posits making a decision when an individual has multiple opportunities or alternatives available (Doyle, 1999). Furthermore, considering the best alternative and capturing the best opportunity for the organization's growth (Oppenheimer, 2008). It explains how to tackle the complexity and provides an effective solution for the underlying problem (Doyle, 1999). Behavioral finance is a psychological field based on individual behavior and financial market phenomena (Fromlet, 2001). Behavioral finance is related to psychology, sociology, and other research tools that explain individual behavior and show how investors take action (Zhang & Zheng, 2015). Multitudinous behavioral finance studies explain the investor behavior in decision-making based on investor irrationality, cognitive psychology, and partially related to individual preferences (Subramaniam & Velnampy, 2017). The most renowned theories in behavioral finance are Prospect theory and Heuristic theory (Subramaniam & Velnampy, 2017). Prospective theory demonstrates regret aversion, loss aversion, and mental accounting (Waweru et al., 2008). Risk aversion is a psychological phenomenon (Saad Zafar, 2024). Risk aversion is one of the popular indispensable attributes in human temperament (Zhang et al., 2014). Risk is an unpredictable component in decision-making (Choi, 2024). Risk aversion is a propensity that leads to inadequate decision-making (Saad Zafar, 2024). Risk aversion is one of the most comprehensive and economic biases. Mental accounting is a state in which individuals separate their accounts; these types of decision-making mutilate the consumption and investment (Khoshnood & Khoshnood, 2011). The researcher also supported that individuals could not know when these accounts are connected in decision-making researchers also gave an example such as a household that distinct the funds for groceries and food Those funds separated for grocery they did not rather want to save more money by buying less expensive grocery for home but in a restaurant would not mind buying expensive food (Ritter, 2003). These investors should work on principles and rules rather than separate the accounts (Ritter, 2003). Similarly, investor manage their resources into different accounts (Ritter, 2003). It has been investigated that overconfidence has a direct relation with investor decision-making; on the other hand, loss aversion and mental accounting have no influence. The heuristic theory is that investors decide in difficult and ambiguous situations (Ritter, 2003). Representativeness, availability biases, overconfidence, and anchoring are forms of heuristics. Past studies explained that the heuristic method is one of the applicable biases; it can be worse when investor decision-making is not properly judgmental (Waweru et al., 2008). Heuristic is one of the time-saving as well as easiest methods of decision-making for those investors who have blurry expectations for investment (Baker & Nofsinger, 2010). Representativeness biases indicate that people tend to use a specific event and believe in past information that is classified as new information (Tversky & Kahneman, 1974).

Setayesh and Janani (2014) conducted a survey in which 302 individual investors in the Tehran Stock Exchange were involved and concluded that there is a link between overconfidence biases of individuals and investment decisions. Availability biases are a psychological aspect in which investors truly believe in market information (Ngoc, 2014). Availability biases occur when investors easily rely on public information as well as market available information; in short, they likely give more weight to currently available information for financial purposes than the actual degree of the relevant process. Tversky and Kahneman (1974) explain that anchoring biases express that individuals make their decision process based on certain values. This approach affects the actual estimation of the investment.

Herding biases can be defined as psychological behavior in which investors are predisposed to chase the actions of other investors in the market. The researcher further explains that experts are anxious about such investors because of their follow-up action, and such investor did not investigate their private information for investment.

### *Employee productivity*

Employee productivity is a performance tool that measures efficiency and effectiveness. Higher productivity organizations provide a healthy work environment that encourages employee involvement. Therefore, employees are willing to get involved in decision-making problem problem-solving activities and other performance functions (Patterson, 1998). In modern style businesses, encouraging employees in work workplace enhances employee productivity (Guest et al., 2000). Employee productivity encompasses the mental abilities of an individual in the workplace. Such mental abilities or attitudes will strengthen and focus on work abilities in which individual develop themselves and increase their work abilities for improvement (Siswadi, 2016; Istiqomah, 2020). Productivity of an employee can be measured through how much contribution they make to the fulfillment of the specific work accomplished (Safrida & Syah, 2024). Financial decisions in the last few decades have become a complex problem for investment purposes. For comprehensive financial decisions, people should have a great knowledge of finance and the competence to process the financial knowledge in the most properly. However, in some occurrences, financial decision-making depends on how an individual utilizes the market information and forecasts the prediction. Financial decision-making is more complex for Individuals due to the use of realistic assumptions or the construct of actual information (Garcia, 2013).To ameliorate financing, educating the individual and amplifying the propensity to select the financial decision prudently is important (Hadar et al., 2013). When an individual is more knowledgeable and has information related to financing are more efficient (Hadar et al., 2013). An overview that consumers who have financial knowledge are more efficient researchers proved by the empirical evidence collecting the data from Italian banks(Calcagno, 2015). Researchers used rational theory for financing rational assumptions and argued that individuals follow up on the available information for financial decisions (Garcia, 2013).

Representativeness bias is a cognitive bias in which investors focus on particular information that may be deleterious to productivity. When decision makers are stereotyped, they feel disdained, which will affect productivity. Decision makers focus on specific factors that limit the diversity of thought and give the employee less opportunity for growth, which may affect productivity. Nizar and Daljono (2024) found that representativeness biases have a positive impact. People who anchor may perceive themselves as more defended and working on boosting productivity. Observing past analyses and working on stability will increase efficiency. Individuals make quick decisions based on references. Furthermore, anchoring biases individuals to overlook the beneficial financing that affects employee productivity. Overvaluing the financing leads to inefficient productivity. Individuals who use mental accounting in the organization to manage their funds and time may enhance productivity. Through mental accounting, individuals estimate their tasks and make decisions based on appraisal and bonuses, which may boost productivity. Individuals are mentally assigned financial decisions and tasks that enhance efficiency.

Individuals rely on easily available information, which affects the employee's productivity. People who ignore the new strategies in financing will lead to inefficient productivity. Furthermore, encouraging people to work and focus on multiple sources of financing will increase productivity.

H4: Availability bias has a positive relationship with employee productivity.

Overconfident individuals excessively believe in their capabilities and overestimate their skills, which compresses employee productivity. Overconfident persons highly believe in their attitude and overestimate the actual result, which leads to reduced employee productivity. A prodigal attitude may lead to dissension and lower employee productivity. Individuals with extreme confidence are more fascinated by their work and competence in long-term financing and long-term forecasting, increasing overall productivity. Herding biases phenomenally affect employee productivity. Individuals feel confident to follow the majority norms and regulations, which leads to an eloquent impact on employee productivity. Individuals feel more secure following up on senior behavior rather than their own opinion, which affects productivity. Mayora and Lestari (2024) investigated the relation of herding biases. They collected the data from 111 respondents and indicated that Herding biases have no significant effect.

H6: Herding behavior has a positive relationship with employee productivity.

Risk aversion behavior plays an important role in determining employee productivity. Risk aversion is a behavior of employees to react in an uncertain situation. Risk-averse employees follow the core rule and maintain stable performance. An individual avoids taking a high-risk project due to fear of failure. Loss aversion has an immeasurable impact on employee productivity. Loss-averse individuals stew about probable loss, which leads to reduced employee productivity. Employees are excessively worried about loss, which leads to a decline in employee productivity. Additionally, loss-averse people focus more on financing and excessively contemplate higher output and avoid mistakes to enhance productivity. Availability bias occurs when a decision maker believes in spontaneous information rather than actual information (Dervishaj, 2021). An individual judges the probability of a recent performance, so the perception of risk might be wrong, and financial decisions are inadequate (Dervishaj, 2021). Safitri and Hariyanto (2023) researched the effect of financial literacy, overconfidence, and Representativeness Bias on Financial Behavior and Decisions to Continue Decisions in investing as Intervening Variables. Representative bias happens when individuals make financial decisions on limited surrounding information rather than actual information, which may affect productivity (Kartini & Nahda, 2021; Shefrin, 2002). Erratically representative individuals make decisions based on false information, which dramatically affects productivity(Kartini & Nahda, 2021). Representative bias is a stereotypical behavior in which individuals expect gains for past winners in financing(Kartini & Nahda, 2021). The bias occurs when individuals make good and immoral decisions based on recent performance (Dervishaj, 2021). Vaid and Chaudhary (2022) examined a Review paper on the impact of behavioral biases in financial decision-making.

H10 Financial decision-making has no significant mediation of the relationship between representativeness bias and employee productivity. Their belief in enough information will have an effect on individuals' basis as well as organizational basis(Ahmad et al., 2021). Therefore, organizational productivity is affected as well (Ahmad et al., 2021). Ahmad et al. (2021) researched anchoring bias.

Individual psychological behavior extensively affects financial decisions (Mahapatra & Mishra, 2020). Mental accounting is a bias in which individual categorize their outcome (Mahapatra & Mishra, 2020; Thaler, 1980). Comprehending knowledge about mental accounting helps individuals to balance their financial decisions, and it also affects productivity (Mahapatra & Mishra, 2020). Individuals who categorize their mental accounts of the same source will also be impacted by financial decisions (Dervishaj, 2021). When an overconfident individual makes any financial decision is not rational because they overvalue the actual outcome, and it also affects employee productivity (Qasim et al., 2019). Qasim et al. (2019) studied the Impact of herding behavior and overconfidence bias on investors' decision-making in Pakistan. The result indicates that overconfidence has a positive effect on decision-making. An overconfident individual with an immoderate belief in oneself results in an inordinately optimistic attitude about one's own predictions, which has a dissatisfactory effect on decision-making and productivity (Grežo, 2021). Grežo (2021) investigates the relationship between overconfidence and financial decision-making.

Herding bias occurs when individuals follow the behavior of others and disregard their thoughts in the decision-making process. Burke et al. (2010) researched the impact of personality on herding in financial decision-making. The findings of this research revealed that herding bias has a significant effect on the decision-making process. In a herding bias decision, the choice of an individual from all available information means choosing the best information for investment, which will also increase productivity(Qasim et al., 2019). When individuals make financial decisions, they need a huge amount of proper information, and accurate information will boost productivity (Qasim et al., 2019).

Risk is an unreliability that affects the individual's loss and gain (Logitama et al., 2021). Risk aversion occurs when decision maker allocate the risk to their thought and past behavior. Such a type of decision-making process affects productivity (Ardini et al., 2023). Risk is the psychological component that may influence the financial decision (Sihotang & Pertiwi, 2021).

Financial decision-making is indispensable because it affects employee productivity (Kanapickienė et al., 2024). Financial decision-making is complex due to persistent risk factors (Kamberi & Haxhimustafa, 2024). Financial decision-making influenced the loss aversion bias. But the degree of behavior is contrasted with individual decisions(Arora & Kumari, 2015). The significance of financial decisions in behavioural biases is paramount for productivity (Kanapickienė et al., 2024). In financial decision-making, loss aversion is a crucial challenge for effective productivity (Omar El Ghmari, 2024).

## Methodology

As explained, research methods are the various techniques used by the researcher to direct a particular issue or research problem. He further elaborated that there is a comprehensible contrast between research methodology and research method. Methods refer to research procedures. Research methodology refers to various strategies and processes systematically adopted by the researcher to address the research problem. He clarified that methodology is a series of logical steps that are generally adopted by the researcher to identify the particular problem. Saunders et al. (2009) developed the research onion concept. According to the concept, the onion has many layers, and each layer has its own properties. Research methodology is also like an onion; each research chapter has its idiosyncrasies.

In this research, the researcher initially constructed a theoretical framework and subsequently formulated hypotheses. By deriving a concept from general theories and then refining it to specific relationships for testing, this study followed a deductive approach to analyzing the significance of the developed hypotheses. Furthermore, this study relied on theories of the Prospective theory, Heuristic theory, and the Herding and rational theory for conceptual construction and established relationships for empirical testing. Many researchers (Saunders et al., 2009) have directed that research methodology has two major components: quantitative research methodology and qualitative research methodology. Quantitative research methods assist in examining and understanding the association among the variables that would constitute the transparent result (Williams, 2011). Quantitative research method is primarily related to natural science to identify natural phenomena. For the duration of the time period, they are well recognized in the social sciences (Saunders et al., 2009).In the quantitative method, researchers involve theory testing and new variables. Quantitative methodologies encompass experiments, surveys, interviews, and numerical methods (Saunders et al., 2009). Quantitative is a kind of data gathering. The concept of a target population refers to a cohort of individuals sharing distinct interests and homogenous attributes. The population consisted of general employees from various sectors, including services, banking, and education in Pakistan. They offered insight into their behavioral finance concerning employee productivity and financial decision-making. Based on quantitative data provided by respondents, this study formulated 16 hypotheses and assessed the significance of each.

The questionnaire for this research was crafted using items gleaned from various prior studies to gauge the variables effectively. Behavioral finance is one of the important debatable topics that can influence the productivity of employees in the workplace. It helps the company to make polices to enhance the performance of employees. Five items were utilized to assess employee productivity, employing a five-point Likert scale. These items were adopted from (Chen & Tjosvold, 2008; Hanaysha, 2016). With regard to the measurement of financial decision-making in this study, an 18-item scale was used by Khurshid et al. (2024). Respondents were asked to pick their response on a five-point Likert scale. Representativeness biases in this study were measured by 3 items adopted from Safitri and Hariyanto (2023).

## Results and Discussion

This chapter of the dissertation focuses on presenting an assessment of the study based on the obtained data from the target population. This chapter of the research is founded on various analyses conducted using different data analysis software tools. The purpose of this section is to evaluate the validity of the study, which is grounded on the proposed hypothesis. Initially, the researcher commenced the analyses with preliminary

data screening, including a check for outliers, missing values, data normality, validity, reliability, and factor loading of items and variables.

### *Demographic Statistics*

According to the above demographic variables, as in Table 1, the researcher has used employees from different organizations related to the services sector, banking sector, and educational sector for data collection, as the targeted population focuses.

Table 1. Gender.

| Gender | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Male | 180 | 72.0 | 72.0 | 72.0 |
| Female | 70 | 28.0 | 28.0 | 100.0 |
| Total | 250 | 100.0 | 100.0 | |

Demographic breakdown of the targeted respondents, totaling 250 participants, as shown in Table 2.

Table 2. Age.

| Age | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Under 30 | 27 | 10.8 | 10.8 | 10.8 |
| 30 - 50 | 157 | 62.8 | 62.8 | 73.6 |
| 50+ | 66 | 26.4 | 26.4 | 100.0 |
| Total | 250 | 100.0 | 100.0 | |

It shows that there are 3 stages of age variable; the first stage is under 30 years with 27 and 10.8%of respondents who filled out the survey.

Table 3. Marital status.

| Marital Status | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Single | 132 | 52.8 | 52.8 | 52.8 |
| Married | 112 | 44.8 | 44.8 | 97.6 |
| Widowed | 6 | 2.4 | 2.4 | 100.0 |
| Total | 250 | 100.0 | 100.0 | |

Table 3 is about the marital status of respondents who completed the questionnaire.

Table 4. Qualifications status.

| Qualifications | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| F.A | 38 | 15.2 | 15.2 | 15.2 |
| Bachelors | 122 | 48.8 | 48.8 | 64.0 |
| Masters | 69 | 27.6 | 27.6 | 91.6 |
| M.Phil | 21 | 8.4 | 8.4 | 100.0 |
| Total | 250 | 100.0 | 100.0 | |

The last and 4th table of demographics is related to the educational status. It shows that there are 4 stages of qualification variable; the first stage is F.A. 38 respondents with 15.2% who filled out the survey. An initial

summary of the dataset is given by descriptive statistics, which also include a summary of important metrics like mean, standard deviation, minimum, maximum, and the range of the variable studied. These statistics provide information about the distribution patterns, dispersion, and central tendency of the data. Researchers can learn more about the distribution and fluctuation of the data by examining these descriptive statistics. This knowledge is essential for directing further statistical analyses and deciphering correlations between variables. The dataset's middle point is shown by the mean, which is the average value for each variable. It aids in locating board patterns or average values. When examining employee productivity, for example, a great mean may indicate that people feel highly satisfied overall, whereas a lower mean may suggest the opposite.

Table 5. Descriptive statistics.

| Variables | N | Minimum | Maximum | Mean | Std. Deviation | Skewness | | Kurtosis | |
|---|---|---|---|---|---|---|---|---|---|
| | Statistic | Statistic | Statistic | Statistic | Statistic | Statistic | Std. Error | Statistic | Std. Error |
| EP | 250 | 1.00 | 5.00 | 3.5160 | 1.16446 | -.599 | .154 | -.634 | .307 |
| FD | 250 | 1.00 | 5.00 | 3.5237 | .99114 | -.638 | .154 | -.037 | .307 |
| RB | 250 | 1.00 | 5.00 | 3.6920 | 1.00413 | -.625 | .154 | -.123 | .307 |
| HRD | 250 | 1.00 | 5.00 | 3.0427 | 1.10492 | -.129 | .154 | -1.078 | .307 |
| LA | 250 | 1.00 | 5.00 | 3.5027 | 1.11107 | -.502 | .154 | -.671 | .307 |
| MA | 250 | 1.00 | 5.00 | 3.4093 | 1.09764 | -.367 | .154 | -.802 | .307 |
| RA | 250 | 1.00 | 5.00 | 3.4547 | 1.23135 | -.604 | .154 | -.767 | .307 |
| ANB | 250 | 1.00 | 5.00 | 3.4190 | 1.09567 | -.378 | .154 | -.720 | .307 |
| AVB | 250 | 1.00 | 5.00 | 3.4640 | 1.14453 | -.390 | .154 | -.816 | .307 |
| OC | 250 | 1.00 | 5.00 | 3.5120 | 1.13839 | -.497 | .154 | -.529 | .307 |

The investigator directed a descriptive examination to recognize the response trends for the computed variables after reviewing the demographic overview of the data, as shown in Table 5.

Indicate the total number of respondents (250) and provide the minimum and maximum response values, along with the mean values for these variables, which demonstrate the normality of the data collected from the targeted population.

### *KMO and Bartlett's test*

The Kaiser-Meyer-Olkin (KMO) and Bartlett's Test are two important tests to check the sustainability of the data for factor analysis in the case of a variable like Employee productivity.

Table 6. KMO and Bartlett's Test.

| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .941 |
|---|---|---|
| Bartlett's Test of Sphericity | Approx. Chi-Square | 8108.981 |
| | df | 903 |
| | Sig. | .000 |

Using the Kaiser-Mayer-Olkin (KMO) and Bartlett's tests, the researcher further assessed sample adequacy and data redundancy to confirm that the collected data sample was appropriate for modelling the desired empirical model. The exploratory factor analysis (EFA) test, another term for factor analysis, is a technique that loads items based on their self-concept Table 6.

Table 7. Principal Components Analysis.

| PCA | Component | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| RB1 | | | | | | | .847 | | | |
| RB2 | | | | | | | .834 | | | |
| RB3 | | | | | | | .840 | | | |
| HRD1 | | | | | .796 | | | | | |
| HRD2 | | | | | .774 | | | | | |
| HRD3 | | | | | .791 | | | | | |
| LA1 | | | | | | | | | .601 | |
| LA2 | | | | | | | | | .633 | |
| LA3 | | | | | | | | | .706 | |
| MA1 | | | | | | | | | | .625 |
| MA2 | | | | | | | | | | .576 |
| MA3 | | | | | | | | | | .672 |
| RA1 | | | | | | | | .690 | | |
| RA2 | | | | | | | | .585 | | |
| RA3 | | | | | | | | .690 | | |
| FD1 | .711 | | | | | | | | | |
| FD6 | .691 | | | | | | | | | |
| FD7 | .723 | | | | | | | | | |
| FD8 | .713 | | | | | | | | | |
| FD9 | .717 | | | | | | | | | |
| FD10 | .735 | | | | | | | | | |
| FD11 | .696 | | | | | | | | | |
| FD12 | .722 | | | | | | | | | |
| FD13 | .747 | | | | | | | | | |
| FD14 | .662 | | | | | | | | | |
| FD15 | .710 | | | | | | | | | |
| FD16 | .791 | | | | | | | | | |
| FD17 | .792 | | | | | | | | | |
| ANB1 | | | .789 | | | | | | | |
| ANB2 | | | .744 | | | | | | | |
| ANB3 | | | .730 | | | | | | | |
| ANB4 | | | .748 | | | | | | | |
| OC1 | | | | .828 | | | | | | |

| | | | | |
|---|---|---|---|---|
| OC2 | | .818 | | |
| OC3 | | .814 | | |
| AVB1 | | | .736 | |
| AVB2 | | | .727 | |
| AVB3 | | | .786 | |
| EP1 | .670 | | | |
| EP2 | .716 | | | |
| EP3 | .707 | | | |
| EP4 | .672 | | | |
| EP5 | .661 | | | |

A measurement instrument's consistency is evaluated through reliability analysis to see if it consistently yields reliable data under various circumstances, as shown in Table 7. However, alternative techniques like split-half reliability and test-retest reliability can also be utilized, depending on the type of data and research methodology.

Table 8. The Cronbach's alpha values for the variables.

| Name of variable | No. of items | Cronbach alpha values |
|---|---|---|
| Behavioral Finance | 25 | .920 |
| Employee Productivity | 5 | .956 |
| Financial Decision Making | 13 | .948 |

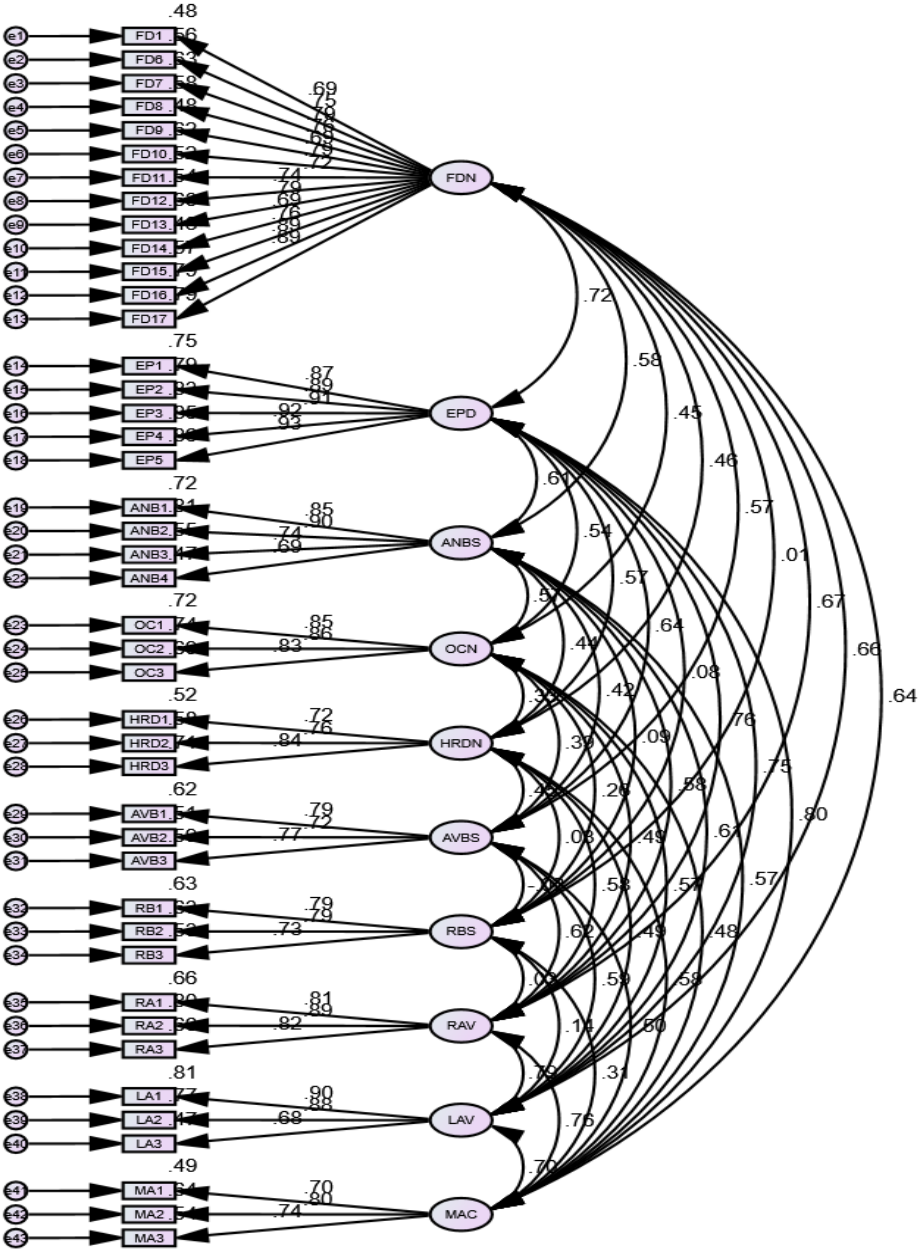
The researcher utilized Cronbach's alpha value, a widely recognized and highly functional method, to calculate the reliability of items and variables. Validity analysis is a fundamental concept in research and evaluation, focusing on the degree to which a test, measure, or study accurately reflects or assesses the specific construct or variable it is designed to examine, **as** shown Table 8. In essence, it determines whether the conclusions derived from the data are both sound and reliable, ensuring that the findings align with the intended research objective and provide a credible basis for inference and decision-making.

Table 9. Convergent and discriminant validity.

| | CR | AVE | FDN | EPD | ANBS | OCN | HRDN | AVBS | RBS | RAV | LAV |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MAC | 0.790 | 0.557 | | | | | | | | | |
| FDN | 0.949 | 0.589 | 0.768 | | | | | | | | |
| EPD | 0.956 | 0.814 | 0.716 | 0.902 | | | | | | | |
| ANBS | 0.874 | 0.637 | 0.579 | 0.605 | 0.798 | | | | | | |
| OCN | 0.885 | 0.720 | 0.447 | 0.538 | 0.566 | 0.848 | | | | | |
| HRDN | 0.818 | 0.601 | 0.457 | 0.573 | 0.436 | 0.329 | 0.775 | | | | |
| AVBS | 0.802 | 0.575 | 0.568 | 0.643 | 0.421 | 0.387 | 0.453 | 0.758 | | | |
| RBS | 0.816 | 0.596 | 0.006 | 0.081 | 0.094 | 0.260 | 0.031 | 0.017 | 0.772 | | |
| RAV | 0.879 | 0.707 | 0.672 | 0.761 | 0.579 | 0.490 | 0.582 | 0.619 | 0.033 | 0.841 | |
| LAV | 0.863 | 0.681 | 0.661 | 0.753 | 0.614 | 0.573 | 0.492 | 0.591 | 0.136 | 0.789 | 0.825 |

In this analysis, the researcher conducted a validity test to assess the data's validity. Utilizing the advanced software technique Amos, along with its postponement plugin of master validity, the researcher calculated both convergent and discriminant validity status in the data. The presence of validity issues in the data is carefully considered, as they can potentially render the conclusion of the main hypothesis analysis vague and irrelevant Table 9. In order to test both the usefulness and the accuracy of the developed framework, as well as the data collected by the researcher, model fitness test and master validity analyses were performed. As such, the researcher applies CFA to check if the model applied fits the data or not. Model`s fitness for further hypothesis testing.

Table 10. Model Fitness Measures.




Structural Equation Modelling (SEM)

Table 11. Structural Equation Modelling.

| Measure | Estimate | Threshold | Interpretation |
|---|---|---|---|
| CMIN | 1161.997 | -- | -- |
| DF | 815.000 | -- | -- |
| CMIN/DF | 1.426 | Between 1 and 3 | Excellent |
| CFI | 0.955 | >0.95 | Excellent |
| SRMR | 0.039 | <0.08 | Excellent |
| RMSEA | 0.041 | <0.06 | Excellent |
| PClose | 0.997 | >0.05 | Excellent |

A methodology known as structural equation modeling or SEM is used to analyze complex relationships of latent and manifest variables. It combines elements of multiple regression and component analysis, enabling researchers to evaluate theoretical models. SEM helps research cause and effect interactions in the social sciences, psychology, and economics since it looks at both direct and indirect links within a system of variables. Following the initial data screening and verification of all reliability and validity analyses, the researcher proceeded to the main and final step of analyses, which involved hypothesis testing. The researcher utilized Amos software to conduct structural modeling for hypothesis testing. In the initial chapter of the research, the author formulated research aims that served as the basis for synthesizing the study's hypothesis. In light of the responses from the respondents, the structured relationship espoused in the initial hypothesis of the study was analyzed.

According to the research, it was revealed that (RB) representativeness bias has not enhanced employee productivity; the beta value is -.044 and the significance value is more than 0.05, which means that H1 is not supported and the hypothesis is rejected. Research reveals that (ANB) anchoring biases have no effect on employee productivity, the beta value is .060, and the significance value is more than 0.05, which means that H2 is rejected.

Table 12. The regression value of SEM (Direct effect).

| Estimated relationships | | | Beta | Lower | Upper | p-value | Decision |
|---|---|---|---|---|---|---|---|
| EP | <--- | RB | -.044 | -.109 | .012 | .190 | Not-Supported |
| EP | <--- | ANB | .060 | -.013 | .135 | .194 | Not-Supported |
| EP | <--- | MA | .273 | .197 | .350 | .001 | Supported |
| EP | <--- | AVB | .132 | .059 | .198 | .001 | Supported |
| EP | <--- | OC | .095 | .023 | .171 | .037 | Supported |
| EP | <--- | HRD | .096 | .027 | .168 | .023 | Supported |
| EP | <--- | RA | .114 | .031 | .201 | .023 | Supported |
| EP | <--- | LA | .165 | .081 | .255 | .002 | Supported |

### *The mediating effect of financial decision-making*

The data analysis for the mediation impact of (AVB) availability biases with a beta value of 0.026 and a significance value of 0.017. Consequently, the H9 was also accepted. Representativeness biases (RB) with a beta value of -0.014 and a value of 0.100; consequently, the H10 was not accepted. Anchoring biases (ANB) with a beta value of 0.037 and a significance value of 0.001. Consequently, the H11 was also accepted. Mental

accounting (MA) with a beta value of 0.033 and a significance value of 0.006.

### *SEM results (indirect effect)*

Table 13. The regression value of SEM (In Direct effect).

| Indirect Path | Beta | Lower | Upper | P-Value | Decision |
|---|---|---|---|---|---|
| AVB --> FD --> EP | 0.026 | 0.007 | 0.058 | 0.017 | Supported |
| RB --> FD --> EP | -0.014 | -0.042 | 0.000 | 0.100 | Not-Supported |
| ANB --> FD --> EP | 0.037 | 0.020 | 0.067 | 0.001 | Supported |
| MA --> FD --> EP | 0.033 | 0.014 | 0.067 | 0.006 | Supported |
| OC --> FD --> EP | 0.007 | -0.009 | 0.028 | 0.445 | Not-Supported |
| HRD --> FD --> EP | 0.003 | -0.013 | 0.020 | 0.738 | Not-Supported |
| RA --> FD --> EP | 0.026 | 0.005 | 0.052 | 0.041 | Supported |
| LA --> FD --> EP | 0.043 | 0.022 | 0.077 | 0.001 | Supported |

## Conclusions

This study has reviewed the impact of behavioral finance on employee productivity with the mediating role of financial decision-making within the banking and service sector in Pakistan. To achieve the main objective, the researcher employed a positivist research design along with a deductive research approach and quantitative methods. Data were gathered from respondents using a survey questionnaire. The investigator collected data from a total of 250 respondents who are employees in the general sectors, such as the service sector and the banking sector in Pakistan. In this research study, the researcher formulated 16 hypotheses to observe the relations among variables, and the results were generated accordingly based on these hypotheses. With the support of the rational theory, heuristic theory, and prospect theory, employee productivity has been shown to increase performance. This research has embraced both theoretical and applied suggestions.

The primary objective of every study is to provide valuable insights into the clarified topics for individuals' behaviors involved in the various types of organizations. Therefore, this study has provided the literature and researchers with a deeper understanding of employee behavior and performance, as well as how they make effective decisions. By examining all these variables within a single framework, this study has enriched the body of literature and made a novel contribution relevant to the banking and services sectors in Pakistan. This research has highlighted the detrimental impact of behavioral finance on employee productivity and the mediating role of financial decision-making. Apart from the theoretical contribution of this research, this study has included several theoretical and practical propositions for general employees, such as those in the banking and services sector in Pakistan. This research has practically examined the role of behavioral finance on employee productivity using valid responses, offering business owners across various industries an effective approach to enhancing their business performance. The theoretical model in this study and its empirical findings will help develop more practical recommendations for the organization. After discussing all the contributions, implications, significances, and beneficial integrations, it's important to acknowledge that every study has its limitations. Firstly, this study employed a quantitative data collection approach using primary data and cross-sectional techniques. The researcher did not prioritize an interview-based approach, which could have provided a more nuanced understanding of the targeted variables. The research has formulated several recommendations and proposals based on the study‘s limitations. These can be utilized by prospective future researchers to explore this area of the topic further and uncover additional relevant data and insights. Firstly, further researchers can use all these variables with the same model in different extensive dimensions of employee productivity and financial decision-making, and give more support to the literature.

## References

Adiputra, I. G., Bangun, N. A., & Graceilla, B. (2024). The influence of financial socialization, overconfidence and mental accounting on investment decisions. Jurnal Manajemen, 28(1), 200-221.

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.

Ali, A., Bin, L. Z., & Piang, H. J. (2016). The impact of motivation on the employee performance and job satisfaction in it park (software house) sector of Peshawar, Pakistan. International Journal of Academic Research in Business and Social Sciences, 6(9), 297-310.

Ardini, F., Achyani, F., & Si, M. (2023). The Influence of Overconfidence, Regret Aversion, Loss Aversion, and Herding Behavior on Investment Decision in the Capital Market with the Moderating Role of Risk Perception in Generation Z Students. Int. j. of Social Science and Economic Research, 8(5), 936-950.

Arora, M., & Kumari, S. (2015). Risk taking in financial decisions as a function of age, gender: mediating role of loss aversion and regret. International Journal of Applied Psychology, 5(4), 83-89.

Baker, H. K., & Nofsinger, J. R. (2010). Behavioral finance: investors, corporations, and markets (Vol. 6): John Wiley & Sons.

Barberis, N. C. (2013). Thirty years of prospect theory in economics: A review and assessment. Journal of Economic Perspectives, 27(1), 173-196.

Basahal, A., Jelli, A. A., Alsabban, A. S., Basahel, S., & Bajaba, S. (2022). Factors influencing employee productivity–A Saudi manager's perspective. International journal of business and management, 17(1), 39-51.

Bickersteth, P., Zhang, X., & Guo, Q. (2018). Empirical Evidence for a New Class of Personality Disorder: The Safety-Oriented Personality Style or Phobicentric Psychopathology (SOPS/PCP) and Impact on Personality Psychology. Psychology, 9(07), 1630.

Blavatskyy, P. R. (2011). Loss aversion. Economic Theory, 46(1), 127-148.

Burke, C. J., Tobler, P. N., Schultz, W., & Baddeley, M. (2010). Striatal BOLD response reflects the impact of herd information on financial decisions. Frontiers in Human Neuroscience, 4, 948.

Byrne, A., & Utkus, S. P. (2013). Behavioural finance. Understanding how the mind can help or hinder investment success, UK. Retrieved March, 20, 2019. https://whitingswm.co.uk/pdf/Behavioural_finance_paper_vanguard.pdf.

Calcagno, R. M. (2015). . Financial literacy and the demand for financial advice. Journal of Banking and Finance, 50, 363–380.

Chen, Y., & Tjosvold, D. (2008). Collectivist values for productive teamwork between Korean and Chinese employees. https://commons.ln.edu.hk/capswp/3/.

Choi, W. (2024). Risk Aversion, Occupation Choice, and Earnings Dynamics. https://woosukchoi.github.io/files/risks_woosuk.pdf.

De Bondt, W. F., & Thaler, R. H. (1995). Financial decision-making in markets and firms: A behavioral perspective. Handbooks in operations research and management science, 9, 385-410.

Dervishaj, B. (2021). Psychological biases, main factors of financial behaviour-A literature review. European Journal of Medicine and Natural Sciences, 4(1), 27-44.

Doyle, J. (1999). Rational decision making. MIT encyclopedia of the cognitive sciences, 701-703. https://www.csc2.ncsu.edu/faculty/jdoyle2/publications/rdm99.pdf.

Fromlet, H. (2001). Behavioral finance-theory and practical application: Systematic analysis of departures from the homo oeconomicus paradigm are essential for realistic financial research and analysis. Business economics, 63-69. https://elibrary.ru/item.asp?id=6144350.

Gal, D., & Rucker, D. D. (2018). The loss of loss aversion: Will it loom larger than its gain? Journal of Consumer Psychology, 28(3), 497-516.

Garcia, M. J. R. (2013). Financial education and behavioral finance: new insights into the role of information in financial decisions. Journal of Economic Surveys, 27(2), 297-315.

Greenberg, A. E., & Hershfield, H. E. (2019). Financial decision making. Consumer Psychology Review, 2(1), 17-29.

Grežo, M. (2021). Overconfidence and financial decision-making: a meta-analysis. Review of Behavioral Finance, 13(3), 276-296.

Guest, D., Michie, J., Sheehan, M., & Conway, N. (2000). Getting inside the HRM-Performance Relationship.https://ora.ox.ac.uk/objects/uuid:141daf8b-9022-41e8-81ec-c58602168685/files/m8f59c0c3a7de79356b6d4c6f990687e8.

Hadar, L., Sood, S., & Fox, C. R. (2013). Subjective knowledge in consumer financial decisions. Journal of Marketing Research, 50(3), 303-316.

Hanaysha, J. (2016). Testing the effects of employee empowerment, teamwork, and employee training on employee productivity in higher education sector. International Journal of Learning and Development, 6(1), 164-178.

Hilary, G., & McLean, D. (2023). Financial decision making: an overview. Handbook of Financial Decision Making, 2-14. https://doi.org/10.4337/9781802204179.00007.

Hussain, S., Shujahat, M., Malik, M. I., Iqbal, S., & Mir, F. N. (2018). Contradictory results on the mediating roles of two dimensions of trust between transformational leadership and employee outcomes. Journal of organizational effectiveness: People and performance, 5(1), 39-63.

Istiqomah, N. (2020). The Effect of Education and Training in Increasing Employee Work Productivity. Journal of Tools Management, 12(2), 184–191.

Kamberi, A., & Haxhimustafa, S. (2024). Loss aversion: the unseen force shaping investment decisions. Economic vision International Scientific Journal in Economics, Finance, Business, Marketing, Management and Tourism, 11(21-22), 33-41.

Kanapickienė, R., Vasiliauskaitė, D., Keliuotytė-Staniulėnienė, G., Špicas, R., Omeir, A. K., & Kanapickas, T. (2024). A comprehensive review of behavioral biases in financial decision-making: from classical finance to behavioral finance perspectives. Journal of Business Economics and Management, 25(5), 1006–1029-1006–1029.

Kartini, K., & Nahda, K. (2021). Behavioral biases on investment decision: A case study in Indonesia. The Journal of Asian Finance, Economics and Business, 8(3), 1231-1240.

Khoshnood, M., & Khoshnood, Z. (2011). Behavioral finance: A new paradigm in finance. Information and Finance, 21, 96-100.

Khurshid, M., Zahid, R., & Nisa, M. U. (2024). Factors affecting financial decisions of university students: evidence from Pakistan. Managerial Finance, 50(2), 297-312.

Levy, J. S. (1992). An introduction to prospect theory. Political psychology, 171-186. https://www.jstor.org/stable/3791677.

Logitama, A., Setiawan, L., & Hayat, A. (2021). Control behaviors affecting investors investment decision making (studies on students at higher education South Kalimantan). International Journal of Economics, Business and Accounting Research (IJEBAR), 5(1), 275-288.

Lynch Jr, J. G. (2011). Introduction to the journal of marketing research special interdisciplinary issue on consumer financial decision making. Journal of Marketing Research, 48(SPL), Siv-Sviii.

Mahapatra, M. S., & Mishra, R. (2020). Behavioral influence and financial decision of individuals: A study on mental accounting process among Indian households. Cogent Economics & Finance, 8(1), 1827762.

Mahjoubi, M., & Henchiri, J. E. (2024). Adaptive market hypothesis and overconfidence bias. Innovation Economics Frontiers, 27(1), 8-16.

Mayora, G. M., & Lestari, W. (2024). The effect of risk perception, recency bias, herding behavior and regret aversion bias on investment decision making among the younger generation in Surabaya. Ekspektra: Jurnal Bisnis Dan Manajemen, 8(1), 80-94.

Moore, D. A., & Healy, P. J. (2008). The trouble with overconfidence. Psychological review, 115(2), 502.

Muazzam, A., Anjum, A., & Visvizi, A. (2020). Problem-focused coping strategies, workplace bullying, and sustainability of HEIs. Sustainability, 12(24), 10565.

Muttaqien, F., Abrori, I., & Cahyaningati, R. (2022). Analysis of compensation and work environment on employee productivity in regional water drinking companies, Lumajang District. Muhasabatuna: Jurnal Akuntansi Dan Keuangan Islam, 4(2), 57-62.

Ngoc, L. T. B. (2014). Behavior pattern of individual investors in stock market. International Journal of Business and Management, 9(1), 1-16.

Nizar, M., & Daljono, D. (2024). The impact of availability bias and representative bias on investment decisions and performance: the role of fomo as an intervening variable. Jurnal Apresiasi Ekonomi, 12(1), 71-89.

Omar El Ghmari, I. E. G. (2024). Impact Of Behavioural Finance On Risk Perception, Psychological Behaviour, And Financial Decisions Of Moroccan Investors. Financial and credit activity problems of theory and practice, 5(58), 244-263.

Oppenheimer, J. A. (2008). Rational choice theory. Encyclopedia of Political Theory, 3(1), 1150-1159.

Patterson, J. D. (1998). Performance appraisal: Managing the process and perceptions of supervisor efficiency in the test department at Lockheed Martin Astronautics-Denver. Colorado Technical University,

Qasim, M., Hussain, R., Mehboob, I., & Arshad, M. (2019). Impact of herding behavior and overconfidence bias on investors' decision-making in Pakistan. Accounting, 5(2), 81-90.

Rauf, M. A., Shorna, S. A., Joy, Z. H., & Rahman, M. M. (2024). Data-driven transformation: Optimizing enterprise financial management and decision-making with big data. Academic Journal on Business Administration, Innovation & Sustainability, 4(2), 94-106.

Ricciardi, V., & Simon, H. K. (2000). What is behavioral finance? Business, Education & Technology Journal, 2(2), 1-9.

Ritter, J. R. (2003). Behavioral finance. Pacific-Basin finance journal, 11(4), 429-437.

Robb, C. A., & Woodyard, A. (2011). Financial knowledge and best practice behavior. Journal of Financial Counseling and Planning, 22, 1.

Saad Zafar, S. A. T. R. (2024). The Investment Decision-Making Investment: Understanding Overconfidence,Herding and Risk Aversion Among Invidual Investor Journal of social sciences development, 3, 1.

Safitri, H., & Hariyanto, D. (2023). The effects of financial literacy, overconfidence, representativeness bias on financial behavior and decisions to continue investing as intervening variables. International Journal Papier Public Review, 4(2), 62-70.

Safrida, S., & Syah, A. (2024). Role Employee Work Productivity: Education, Job Training and Job Placement. Paper presented at the Proceeding Medan International Conference on Economic and Business. https://proceeding.umsu.ac.id/index.php/Miceb/article/view/850.

Saunders, M., Lewis, P., & Thornhill, A. (2009). Research methods for business students: Pearson Education India.

Sawaji, J., Suyuthi, N. F., Saleh, M., & Safar, I. (2023). The role of leadership moderation in explaining the influence of talent management & culture organization on employee productivity of Pt. Sucofindo (Persero) Makassar Branch. Journal of Economics, Finance and Management Studies, 6, 11.

Schmidt, U., & Zank, H. (2005). What is loss aversion? Journal of risk and uncertainty, 30, 157-167.

Scott, J. (2000). Rational choice theory. Understanding contemporary society: Theories of the present, 129, 126-138. https://www.torrossa.com/gs/resourceProxy?an=4913824&publisher=FZ7200#page=145.

Setayesh, M. R., & Janani, M. H. (2014). Assessing Impacts of Investors' Overconfidence Bias on Investment in Tehran Stock Exchange Market. International Journal of Research in Management, 4(4), 1-10.

Sihotang, A., & Pertiwi, T. (2021). Stock investment decision analysis on investors in Surabaya. Jurnal Ekonomi Balance, 17(1), 42-54.

Siswadi, Y. (2016). The influence of training and discipline on employee work productivity at PT. Jasa Marga Branch (Belmera) Medan. Scientific Journal of Management and Business, 17(01), 124-137.

Sokol-Hessner, P., & Rutledge, R. B. (2019). The psychological and neural basis of loss aversion. Current Directions in Psychological Science, 28(1), 20-27.

Subramaniam, A., & Velnampy, T. (2017). The role of behavioural factors in the investment decisions of household investors. International Journal of Accounting and Financial Reporting, 7(1), 392-412.

Sudirman, W., Nurnasrina, N., Syaipudin, M., & Priyatno, A. (2024). The Effect of Overconfidence Bias on Investment Decision: Sharia Stock Considerations. Jurnal Teknik Industri Terintegrasi (JUTIN), 7(2), 867-876.

Tarigan, J., Cahya, J., Valentine, A., Hatane, S., & Jie, F. (2022). Total reward system, job satisfaction and employee productivity on company financial performance: evidence from Indonesian Generation Z workers. Journal of Asia Business Studies, 16(6), 1041-1065.

Thaler, R. (1980). Toward a positive theory of consumer choice. Journal of economic behavior & organization, 1(1), 39-60.

Theng, B. P. (2023). The Impact of Employee Motivation on Productivity. International Journal of Health, Economics, and Social Sciences (IJHESS), 5(1), 209-221.

Tversky, A., & Kahneman, D. (1974). Judgment under Uncertainty: Heuristics and Biases: Biases in judgments reveal some heuristics of thinking under uncertainty. science, 185(4157), 1124-1131.

Vaid, A. J., & Chaudhary, R. (2022). Review paper on impact of behavioral biases in financial decision-making. World Journal of Advanced Research and Reviews, 16(2), 989–997.

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.

Williams, C. (2011). Research methods. Journal of Business & Economics Research (JBER), 5, 3.

Zhang, R., Brennan, T. J., & Lo, A. W. (2014). The origin of risk aversion. Proceedings of the National Academy of Sciences, 111(50), 17777-17782.

Zhang, Y., & Zheng, X. (2015). A study of the investment behavior based on behavioral finance. European Journal of Business and Economics, 10, 1.

Zopounidis, C., & Doumpos, M. (2002). Multi-criteria decision aid in financial decision making: methodologies and literature review. Journal of Multi-Criteria Decision Analysis, 11(4-5), 167-186.