Behavioural Bias and Investment Decisions of Dangote Sugar Refinery Plc.

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Abstract

The study examines the relationship behavioural bias and investment decisions of Dangote Sugar Refinery Plc. The study formulates two hypotheses and applied multiple regression technique to analyze the relationship between the dependent variable investment decisions and independent variable behavioural bias. The independent variable was proxy by anchoring bias and disposition effect. Primary data was used, the data was collected from the individual shareholders of Dangote Sugar Refinery Plc through adapted questionnaires, the sample size was 383. The collected data was analyzed by using Smart-PLS version 3. The findings of the study showed that anchoring bias effect has a significant effect on investment decisions on shareholders of Dangote Sugar Refinery Plc and disposition effect has no significant effect on investment decisions on shareholders of Dangote Sugar Refinery Plc. The study recommends that shareholder should obtain the opinion of stock brokers/fund managers regarding the profitability of a certain stock in which they desire to purchase. Individual investors should be educated in stock market activates, because this will help them surmount unfavorable investment returns induced by behavioural biases.

Keywords: Anchoring bias, Behavioural Bias, Disposition effect, Investment Decisions & Shareholders

Introduction

Investing in capital markets is becoming more common in recent time as financial knowledge among ordinary investors has grown, and the technology used in the business has also advanced dramatically. Investment decisions must be made based on corporate facts and analysis to determine its financial situation in the future; yet, they are sometimes made based on current news or mood rather than logic (Umer, Kashif, Rehan & Bai, 2018). Through cognitive psychology, the shareholder's emotions and feelings throughout the investment decision-making procedure are investigated in order to determine the impact of such psychological elements on the investment decision-making method.

Behavioural biases, which is described as "a predisposition or a capacity to take decisions despite already being persuaded by an inherent belief have an effect on investment decision-making (Rekik & Yosra, 2013). The psychology of thinking, often known as behavioural bias, examines the emotional responses associated with every financial decision-making process. Because this is a cutting-edge field of modern finance, experts believe that enthusiasm, together

with vision and critical thinking, are critical in all aspects of logical decision-making (Oprolu & Mitroi, 2014). Rationality, according to Chandra and Wilkinson (2008), can be defined as being reasonable and making decisions that are in one's best interests. Additionally, Somil (2007) described shareholder rationality as the premise that an investor has complete knowledge of his business context and takes decisions solely for the purpose of maximizing profits. Furthermore, regardless of the accessible knowledge budget limits, or possibilities, such investors are consistently in their decisions and will aim to achieve the best potential profit or benefit.

Decision making is both an intellectual and an emotional task. Choosing the ideal choice from a list of choices is how decision-making is defined. (Bhatia *et al*, 2020). Investment decisions are the procedure of selecting an investment from a variety of options that are influenced by previous investment results as well as predicted anticipated outcomes (Subash, 2012). When it comes to financial decisions, investors can be divided into two categories: irrational and reasonable. Rational investors form decisions only on the basis of reason and knowledge regarding the investment opportunity. Irrational investors, on the other hand, make decisions based on their emotional makeup that leads to biases in financial decisions. Several shareholders make decisions based on their emotions rather than a thorough review of the corporation's fundamentals Lin (2013).

The number of corporations/businesses seeking admission or listing on the Nigeria Stock Exchange has increased dramatically. Investors, on the other hand, responded positively, as seen by the regular over-purchasing of shares. A few more stockholders had to endure the anguish of financial loss as a result of following the crowd and being overconfident, as the Transcorp Initial Public Offerings proved (Omoruyi & Ilaboya, 2019).

In Nigeria, the majority of behavioural bias and investment decisions studies were based on prospect theory, regret theory, planned behaviour theory, fuzzy-tracce theory; such as Usmanarshad (2018); Bankole (2019); Omoruyi and Ilaboya (2019) and Akinkoye and Bankole (2020). This study seek to use another theory, which is attribution theory, to validate the theoretical underpinning of the independent variables. It's significant because attribution theory explains why shareholders act the way they do. Equally none of these studies was conducted on Nigerian Multinational industrial conglomerate. As a result, this study's goal is to investigate the relationship of behavioural bias and investment decisions of Dangote Sugar refinery PLC. The primary aim of this study is to investigate the relationship of behavioural bias and investment decisions of Dangote Sugar refinery Plc.

There are five sections to the paper. The introduction is covered in the first section, the literature review is discussed in the second section, and the methodology is described in the third section. The fourth and fifth sections deal with the study's findings, conclusions, and recommendations, respectively.

Literature Review and Hypotheses Development

Alfredo and Vicente (2010) describe investment decision as how investors observe, foresee, analyze, and measure decision-making procedures such as investment reasoning, information acquisition, identification, and interpretation, investigation, and evaluation. The study of behavioral cognition concentrates on the market behavior of shareholders, as well as how investors analyze securities before buying, selling, or holding them. This investor market behavior is based on a number of factors, including equity investments, the habits and views of other commercial entities, market price sensitivity, and when related to conventional market behavior (Chandra & Sharma, 2010).

The alternative for a shareholder to employ his or her cash for future use rather than for immediate use is known as an investment decision. Individuals actually select the choice that benefits them the greatest. According to Harper (2012), the risk and return aspects of an object are the most important factors in investing decision-making. Bodie, Kane and Marcus (2008) offered an overview of investor decision-making in terms of the expected long-term gain from the utilized resource, as well as an analysis of the benefits and drawbacks before making investment decisions (Akintoye, 2006).

This study's concept is based on Ahmed, Bwisa, and Otieno's (2012) description, which defined investment decisions as the procedure of assessing and selecting the best option among options for a certain objective. Because it necessitates critical and reasonable reasoning, it is commonly referred to as a behaviorism.

According to Pompian (2012), behavioural bias in finance is defined as the human inclination to make decisions that result in irrational poor financial decisions prompted by flawed emotion, corrupted logical thinking, and/or rationalization. The rise of a topic in behavioral finance research has sparked interest in stereotypes induced by faulty logical argumentation or feelings determining individual financial outcomes. Behavioral bias is defined by Schinckus (2011) as how psychology influences finance and, more precisely, how individual conduct affects share prices (taking individual interests and ambitions into account).

The study adopted Scot's (2018) definition of behavioural bias, which defines it as "contradicting beliefs or behaviors that can unknowingly impair human decision-making procedure." Anchoring bias is a behavioral bias that relates to people's inclination to estimate and take basing judgments on the initial source of input (anchor) it obtains or concentrate on (Tversky & Kahneman, 1974, 1975). Cherry (2020) that characterize anchoring bias as humans tend to rely substantially on the very first piece of information they hear, that could produce a big effect on their decision.

The disposition effect is a cognitive psychology phenomenon. This is the desire of shareholders to sell shares whose value has increased in order to keep value-decreasing properties (Boebel & Taylon, 2000). Shefrin and Statman (1985) also found that investors' need to avoid sorrow

and find dignity encourages them to sell successes soon and hold losers for too long. The disposition effect, which is based on the idea of mental accounting, underpins this propensity.

Odhiambo and Ondigo (2018) investigated how behavioral factors affected real estate investment choices in Nairobi County. The study's goal is to ascertain how behavioral factors affect real estate investment choices in Nairobi County. The study employed inferential statistics using regression models and correlation coefficient. The study's findings revealed that representativeness, herd behavior, anchoring, and overconfidence all exhibit correlation coefficients that are significant. The regression's multiple R indicated a strong positive correlation.

A research conducted by Bankole (2019) on the impact of mental mistakes on investors' choices in Nigeria. Primary data used in the analysis. The population comprised of investors from the ten (10) best stockbroking companies listed in the Nigeria stock exchange. Data were obtained via a formal questionnaire provided to 30 customers of each stockbroking company totaling 300. The analysis found that cognitive biases, triggered by representativeness bias, anchoring and adjustment bias, control bias distort hindsight bias, framing bias and gambler fallacy, greatly affected the decision-making of shareholders in Nigeria.

Madaan and Singh (2019) analyzed Behavioral biases in investment decision-making. This research is part of a larger attempt to evaluate the influence of behavioral biases on investing decision-making at the National Stock Exchange. A questionnaire was created, and 243 investors' replies were gathered using survey responses. Inferential statistics and descriptive statistics were used in this study. Overconfidence, anchoring, disposition effect, and herding behavior are the four behavioral biases examined in the current study. Overconfidence and herding bias take a considerable favorable influence on investment decisions, according to the findings. Overall, the findings showed that individual investors have little expertise and are more likely to make psychological mistakes. The study's findings also suggest that these four behavioral biases influence individual investment decisions.

Owusu (2020) a review of the human influence on decision-making: Investor behavior and anchoring bias. The study's goal was to determine whether anchoring affects investor decision-making processes with regard to mutual funds and whether this bias differs by gender and level of monetary education. To discover the correlation between the variables, an experimental research strategy was used, which included the use of a questionnaire with an integrated condition. Pearson's chi-square test and two-way analysis of variance were used to examine the study's data. The findings revealed a link between respondents' sensitivity to anchoring and their gender as well as their amount of financial knowledge.

Kartini and Nahda (2021) examined Behavioral biases on investment decision: A Case Study in Indonesia. The goal of this research is to look into the influence of several psychological elements on examining decision-making. The psychological components under investigation are divided into two categories: cognitive and affective. The study looks at the impact of anchoring, representativeness, loss aversion, overconfidence, and optimism biases on investor

decisions from a cognitive standpoint. Meanwhile, the impact of herding behavior on investment decisions was investigated from an emotional standpoint. A quantitative methodology was applied, with 165 questionnaires collected from individual investors in Yogyakarta using a survey method and snowball sampling. Anchoring bias, representativeness bias, loss aversion bias, overconfidence bias, optimism bias, and herding behavior all form a major impact on investment decisions, according to the findings. Hence, it leads to the development of Hypotheses one.

HO^1 Anchoring bias has no significant effect on investment decisions.

Parveen, Siddique and Malik (2016) study examined disposition effect and overconfidence in Pakistani investors in KSE. The objective of the study was to evaluate the impact of different the influence of various overconfidence and disposition effects on investors' financial decisions. The study gathered data from 229 companies listed in all categories of the Karachi stock exchange over a ten-year period (2005-2014). There is correlation between disposition effect and investor overconfidence in the Pakistani stock market was investigated using Logit regression. The study discovered that Pakistani investors use the disposition effect in their business decision and that it aids them in generating profits, overconfidence has a negative yet significant impact on investors' investment outcomes.

Usmanarshad (2018) evaluated the impact of cognitive biases on investment decision-making in property market in Plateau state, Nigeria. Consequently, the objectives of the research were to define the cognitive biases that impart investment decision-making in the property market in Plateau state, Nigeria. The sample size were 312 respondents. Utilizing regular questionnaires, primary data was obtained for both closed and open-ended queries. The findings indicated that a strong positive linear correlation exist among anchoring bias, overconfidence, narrow framing with representation in investor decision-making in the real estate market in Plateau state, Nigeria.

Jennifer Li, Massa, Zhang and Jian Zhang (2019) explored air pollution, behavioral bias, and the disposition effect in Chin. The study examines whether air pollution can enhance the cognitive bias exhibited relying on current health science studies revealing how air pollution influences mental health and cognition, the stock market. The study found that air pollution considerably affects investors' disposition effects, relying on a private data set gathered from a prominent Chinese mutual fund family that includes comprehensive trade data for over 773,198 accounts spread over 247 cities.

Pertiwi, Yuniningsih and Anwar (2019) studied biases in investor behavior during stock market trading. The goal of this study was to see how overconfidence, disposition effect, and risk tolerance affect investor trading behaviors on the Indonesian Stock Exchange. They studied two categories while analyzing the qualitative output component in the study. A Multi-nominal Logistic Regression Model was used. Securities consumers made up a portion of the shareholders chosen to be the focus of this investigation. The study handed out 170 questionnaires and received 141 completed ones for this study. The results of the testing, which

used simultaneous multi-nominal logistic regression, showed that the model's cumulative significance was relatively high. Part of the tests revealed that the only excessively optimistic shareholders impacted by trade actions. Furthermore, the overconfident shareholder's trading opportunity was judged moderate, with 0.177 increased from the "rare" classification. Hence it leads to the development of Hypotheses two.

HO^2 Disposition effect has no significant effect on investment decisions.

The study adopts Attribution Theory by Heider (1958), the term "attribution" simply denotes the award of accountability and seeks to justify the attributed actions to an individual or circumstance. A theory which aims to understand the interpretative mechanism via how individuals take decisions on the influence of their own actions and others' behaviours. Heirder (1958) break the correlation of actions into in inner (internal) and outer (external) influences. Inner attribution defines a person's behavior and qualities such as character, temperament, competence, and intelligence are influences. The condition is linked to causes of specification in the event of outer attribution, the assumption of environmental condition or climate to cause and effect.

Much later Weiner (1974) push forward a three-stage process which underpin an attribution. Stage one, Observation: The individual shall recognize the conduct or experience it. The person has to witness the action first-hand. This involves observing others' conducts, the setting, and responses or behaviors of others in the circumstance. Second stage, belief, the person should assume that, regardless either inadvertently or unwillingly, the conduct and action was done deliberately. Third stage. Cause, to decide if the conduct was induced by internally or externally attribution variables, the person must analyze their feelings and thoughts. They could connect it to the scenario or the atmosphere if the action occurred accidental. If the conduct was deliberate, they could relate it to the internal attribute's motivators, desires and values. The individual also must assume that the actions have been executed deliberately.

Materials and Methods

The research is quantitative in character, and the data is primary in form. The term "quantitative study" refers to a circumstance in which an existing hypothesis is put to the test. The goal of the research is to determine the behavioral bias and investment decisions of Dangote Sugar refinery Plc, the research is descriptive in nature. The participants of the research are all shareholders of Dangote Sugar refinery Plc quoted in the Nigeria Stock Exchange (NSE). As of December 31, 2019, the total number of registered Dangote Sugar Refinery Plc shareholders in the DSR Plc registration was 99,065. Using the sample size table, 383 samples from all Dangote Sugar Refinery Plc shareholders would be used in the study (Krejcie & Morgan 1970). The mean between 75, 000 (382) and 999, 999 (384) for a population size ranging from 75, 000 to 999, 999 is 382 + 384 divided by two, which is 383. Based on the chart, a population size of 383 is considered plausible. The researcher used the convenience sampling approach, which is the most effective method for collecting data from respondents (Saunders, Lewis & Thornhill, 2012). The data were gathered using a questionnaire that was modified from earlier

investigation of Usmanarshad (2018) containing three main constructs. Among these constructs are disposition effect, anchoring bias and investment decisions. The questionnaire's dimensions are all predicated on a five likert scale that ranges from 1 to 5. The study's research design is as follows:

$$IV_i = \alpha + \beta_1 AB_i + \beta_2 DE_i + \varepsilon_i$$

$\underline{\alpha}$ = Constant representative value of DV when all other explanatory variables are held constant.
β_1- β_2 = Coefficient of the independent variable used.
IV = Investment decisions
AB = Anchoring bias.
DE = Disposition Effect.
e_i = Stochastic Error term (Disturbance term)

Smart-PLS 3.2.8 was employed to access the data to ascertain the relationship between behavioural bias and investment decisions of Dangote Sugar refinery PLC.

Data Analysis

Table 1: Demographics Particular	**Group**	**No. of Respondents**	**Percentage**
Gender	Male	181	58.4 %
	Female	129	41.6 %
Age	18 – 20	21	6.8 %
	20 – 29	61	19.7 %
	30 – 39	110	35.5 %
	40 – 49	66	21.3 %
	50 and above	52	16.8 %
Marital Status	Married	134	43.2 %
	Single	130	41.9 %
	Divorced	10	3.2 %
	Separated	12	3.9 %
	Widow	24	7.7 %
Educational qualification	First school leaving certificate	46	14.8 %
	O' Level/Diploma certificate	85	27.4 %
	OND/ND/NCE	77	24.8 %
	HND/Decree	67	21.6 %
	Post Graduate Decree	35	11.3 %

Source: Field survey (2022)

The data was obtained from individual investors by the researcher directly. The respondent was informed about the study's goal before the data was collected, and they were also assured that their information would be kept private. After obtaining the investor's consent, the questionnaire was given to them to complete. The data was collected from individual shareholders including different gender, age, education qualification and marital status. 383

questionnaires in all were given out to individual investors, out of which 330 was received and only 310 questionnaires were valid. Male investors responded with 181 responses, accounting for 58.4 percent of all responses, while female investors responded with 129 responses, accounting for 41.6 percent of all responses. The reason for such a large disparity is because males are predominant in our community, and they are typically the ones who make financial decisions. Furthermore, the respondents came from a variety of age group, marital status and educational backgrounds. Partial Least Squares was employed in the investigation, structural equation modeling, and Smart PLS 3.2.7 to fulfill the research objectives. Hair, Sarstedt, Hopkins and Kuppelwieser (2014) proposed using two methodologies in the current study: analysis of measurement model and structural model (Hair *et al*, 2014). Moreover, Hair *et al* (2014) compare PLS-SEM to multiple regression analysis in that it examines probable associations with less focus on the measurement model. Prior to the structural model, the measurement model should satisfy all of the criteria via convergent validity, discriminant validity, and discriminant validity. Convergent validity focuses on the level to which multiple items used to test the same idea in a study agree (E.g. Abdul Halim, & Ramayah, 2013). Composite reliability and average variance extracted utilized to evaluate convergent validity factor loading (Hair, Black, Babin & Anderson, 2010).

Table 2: Measurement Model Construct Reliability and Validity

Items	**Factor Loadings**	**Cronbach's Alpha**	**Composite Reliability**	**Average Variance Extracted (AVE)**
Anchoring bias		**0.887**	**0.914**	**0.639**
AB1	0.757			
AB2	0.878			
AB3	0.814			
AB4	0.793			
AB5	0.798			
AB6	0.749			
Disposition Effect		**0.926**	**0.942**	**0.730**
DE1	0.84			
DE2	0.815			
DE3	0.865			
DE4	0.876			
DE5	0.877			
DR6	0.851			
Investment Decisions		**0.923**	**0.939**	**0.721**

ID1	0.864
ID2	0.855
ID3	0.837
ID4	0.844
ID5	0.835
ID6	0.858

Source: Smart-PLS

It is recommended that the factor loading of each construct be greater than 0.6 (Chin & Härdle, 2010). The AVE stands for the overall average squared loading value, which must be 0.5 or above to show that the latent variables constructions account for more than half of the variation. When compared to Cronbach's alpha, composite reliability is employed to assess reliability of measurement items, and 0.70 is the recommended rate or higher, as stated by PLS- SEM (Hair *et al*, 2010). All of the measurements in the table above are above the required rates, indicating that the measurement model has sufficient convergent validity.

Table 3: Fornell-Larcker Criterion

	AB	**DE**	**ID**
AB	**0.799**		
DE	0.388	**0.854**	
ID	0.493	0.203	**0.849**

Source: Smart-PLS

The table above depicts discriminant validity, which is specified as a condition in which two or more separate procedures were no association with one another (Sekaran & Bougie, 2013). The Fornell and Larcker (1981) criterion was used to evaluate the constructs discriminant validity, it implies that discriminant validity exists in the constructs by stating that the top level in each column ought to be greater than the lesser levels within this column.

Table 4: Discriminant Validity (HTMT 0.90 Criterion)

	AB	**DE**	**ID**
AB			
DE	0.424		
ID	0.538	0.215	

Source: Smart-PLS

The Heterotrait-monotrait (HTMT) ratio of correlation can also be utilized to evaluate discriminant validity, with a criterion that is nearly 1 indicating a lack of discriminant validity. The study used a structural model to evaluate the existing hypotheses upon obtaining positive outcomes from the measurement model. For each of the study's hypotheses, R square beta and correlating t-values are determined.

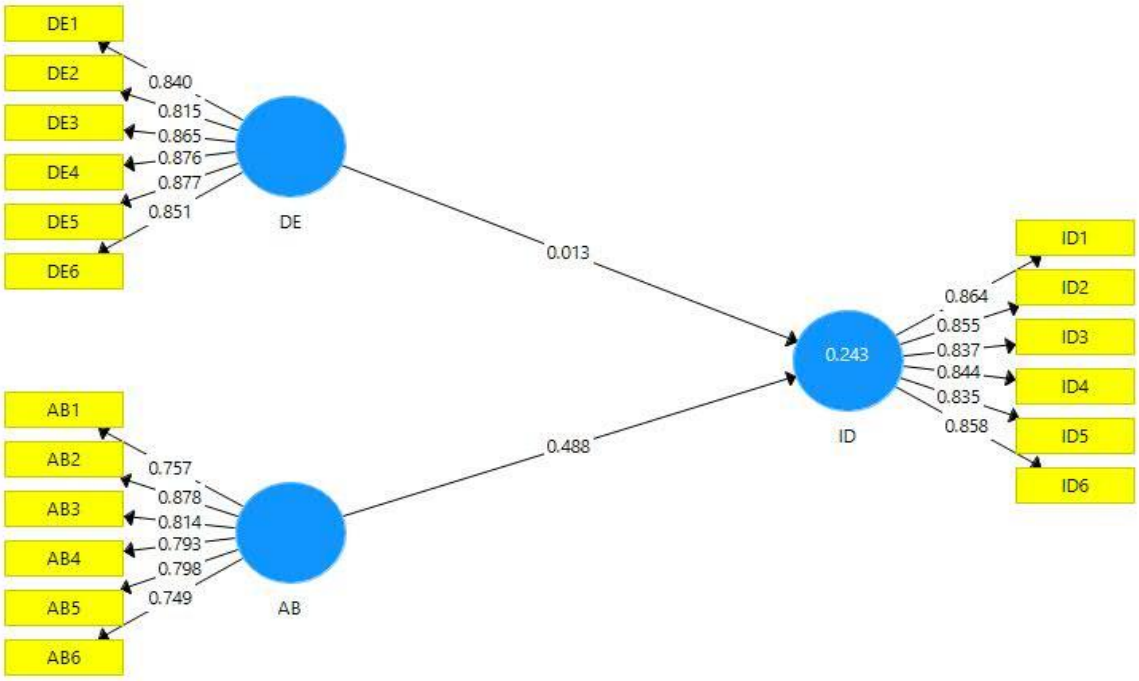

Figure 1: Measurement Model with Loadings, Beta, and R-Square values

The independent variables, such as anchoring bias, disposition effect, and dependent variable investment decisions, are shown in the above conceptual model, as well as their loadings, beta, and r-square values.

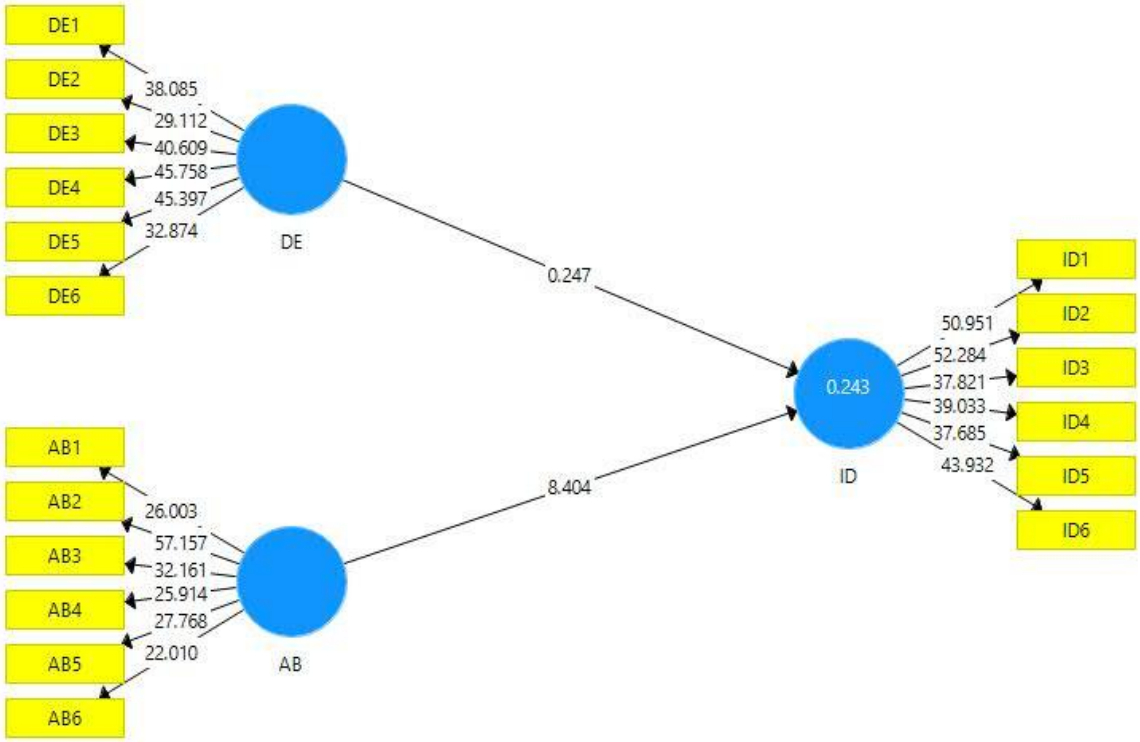

Figure 2: Structural Model

Table 5: Summary of the Structural Model

	Path Coefficient	Standard Deviation	T Statistics	P Values
AB -> ID	0.488	0.058	8.404	0.000
DE -> ID	0.013	0.051	0.247	0.805

Source: Smart-PLS

The structural model shows the connections (paths) connecting the constructs on the chosen research model. H1 determines whether AB is has no strong connection to ID. The outcomes showed that AB does have a substantial effect on ID (β 0.488, t 8.404, p < 0.000). H1 was therefore not accepted. H2 determines if DE has no discernible effect on ID. The findings indicate that DE has no influence on ID (β 0.013, t 0.247, p < 0.805). As a result, H2 was accepted. The results are presented in Table 5.

Discussion

Anchoring bias has a substantial effect on the investment decisions of Dangote Sugar refinery Plc shareholders in Nigeria, according to the study's results. However, the disposition effect and investment decisions have no significant impact on Dangote Sugar refinery Plc shareholders'

investment decisions in Nigeria. According to the study, anchoring bias had a significant impact on investing decisions. As a result, the research concluded that the most current purchase cost, sales cost, or selling cost of shares in the Nigerian Stock Market, it functions as a foundation for shareholders in its decisions, is frequently determined by the most current sale value, value of acquiring, or cost of shares in the Nigerian Stock Market. A range of behavioural biases influence investors' procedures for reaching decisions. Substantial changes in worldwide indexes and equity values have resulted from awful and expectation, making life tough for a prudent investor. Investor attitude has been discovered to swing fast from optimistic to pessimistic and back in the shortest durations, such as weeks, days, and hours. In this scenario, it's more vital than it's ever been to anticipate uncertain investor behavior. The outcome is in line with the findings of Odhiambo and Ondigo (2018), Bankole (2019), Owusu (2020) and Kartini and Nahdo (2021) It, on the other hand, contradicts the findings of Madaan, and Singh (2019) they identified no link between anchoring bias and investment decisions. Similarly, the disposition effect has no relevance on financial decision-making, according to the research. The study discovered that shareholders may not always adhere to the disposition effect assumption. The findings of Madaan, and Singh (2019) Parveen, Siddique and Malik (2016), Jennifer Li, Massa, Zhang and Jian Zhang (2019) and Pertiwi, Yuniningsih and Anwar (2019) support the insignificant value relevancy of disposition effect. On the other hand, it goes against the results of Usmanarshad (2018) which supported a significant relationship between disposition effect and investment decisions.

Recommendations

The study recommend that shareholders should determine the kind of anchor that will quite probably have an impact on how they decide to invest. In order to minimize the anchoring bias, it was also advised that investors get comprehensive information while taking decisions**.** Investors could also seek the advice of stock brokers/fund managers on the profitability of a particular stock they wish to purchase. The implication is that such brokers/fund managers are educated about the market and its movers and shakers, and so charge a price for their services. Future researchers could look into behavioral bias in other areas of the Nigerian economy, using more diversified data; also, the investment behavior of different conglomerates should be examined to discover what the key distinctions in their financial decision-makings are.

Areas for Further Research

Research could be expanded to include other behavioural biases that potentially influence investors' investment decisions, equally, either by adding a moderator or a mediator in the future studies. It is suggested that future researchers perform study in the field of behavioral bias in other sectors of Nigerian economy using a wider range of data. Additionally, the investment behavior of different conglomerates/companies may be contrasted to see what is the relevant differences in their financial decision-making processes.

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