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# **STUDY OF THE BEHAVIOURAL DETERMINANTS OF INVESTMENT IN THE ERA OF THE COVID-19 PANDEMIC AMONG SOCIALLY RESPONSIBLE INVESTORS IN MOROCCO**

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**Abstract:** Behavioral economics shows the important role of behavioral and psychological determinants in explaining investment decisions and market anomalies. This study aims to examine the behavior of socially responsible individual investors in Morocco in the era of the COVID-19 crisis. This paper contributes to the existing literature on behavioral economics in the Moroccan context. To this end, we conducted a survey of socially responsible investors in Morocco after the initial phase of this pandemic between August and October 2022. The data was gathered through the use of a questionnaire. They were analysed to identify the psychological aspects that may influence socially responsible investors' investment decisions. The SPSS 21 software package was used to perform Cronbach Alpha, factor analysis, descriptive analysis, and multiple regression procedures. This article aims to investigate the psychological features of behaviour in reaction to fear, risk propensity, risk perception, market volatility anxiety, herd behaviour and the impact of vaccination updates. The results found showed that during the COVID-19 pandemic, behavior responses to fear, market volatility anxiety, risk propensity, and herd behavior influenced the decision-making of socially responsible investors in Morocco.

**Key words:** Psychological factors; Investment decision; Health crisis; COVID-19.

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## Introduction

Choosing where to invest, how much to invest and when to invest are all decisions that investors make in order to profit from a variety of financial instruments. Investors need a deeper knowledge of the factors impacting current investment decisions to avoid future investment blunders (Bakarand Yi, 2016). Typically, the risk and return of an investment are used to validate investors' decisions (Kahneman and Tversky, 1992).

Investors' risk perceptions can influence their decisions and investors' risk-taking behavior impacts high-risk stocks (Keller and Siegrist, 2006). According to Kahneman (2003), the decision of human judgment is uncertainty. Since the emergence of COVID-19, stock market performance has been extremely volatile all across the world and this was a high-risk situation in the perspective of investors (Ashraf, 2021). Ozili and Arun (2020) discovered on their studies that monetary policy decisions and travel restrictions have a significant impact on economic activity. Investment decisions are influenced by a variety of psychological and technical variables. Individual investment decisions are affected by market changes (Shiller, 1987).

Nudge theory (Suter, 2008), behavioral portfolio theory (Lo and Wang, 2000), behavioral game theory (Smith, 1970) and many more theories have addressed the behavior of individual investors. Therefore, it is necessary to research the psychological tendencies of investors and how they make decisions under diverse circumstances.

In the pandemic case, psychological factors may influence the investment decision. Financial specialists generally follow announced estimates, but they also employ personal intuitions (Riaz and Hunjra, 2015). As a result, it can be argued that psychological factors influenced by the situation, such as COVID-19, SARS, or swine flu, can have a major impact on investors in general (Ali, 2020). This also applies to the Ebola virus (Ichev and Marinc, 2018).

However, Kartobi and Oubida (2022) made a contribution to the literature on the response of financial markets to the COVID-19 pandemic.

They saw how the major variables characteristic of the stock market evolved under high uncertainty. Then, they presented the potential resilience factors of stock markets in the face of pandemics as well as the measures taken by the government to revive the economy and curb the fall of stock markets. They also focused on the investment and issuance policy expected in this recession.

The purpose of this research will therefore be to provide some answers to the following question: **What is the impact of behavioral factors on the decisions of socially responsible investors in Morocco in the era of the COVID-19 pandemic?**

To study the impact of behavioral factors on the investment decision of socially responsible investors in the era of COVID-19, in the first section, we will present a review of the existing literature on the constructs of our topic. In the second section, we will present the research methodology. Finally, the results will be presented, analyzed, and discussed in the last section.

## **1. Literature review**

Behavioral factors have been identified by several researches including fear (Wagner,2020; Taylor et al., 2020), risk perception (Zajac, 2004; White and Fan, 2006), risk propensity (Pablo,1997; Sitkin and Weingart, 1995), herd behavior (Christie and Huang, 1995 ; Graham, 1999), anxious behavior about market volatility (FitzGerald, 1999 : Plasmans, 1975), vaccination update (Potesman and Mahani, 2004 ; Braun et al., 1995).

### **1.1 Fear**

In a variety of situations, Plamens (1975) and Jorgenson (1965) described anticipatory behavior in investment decision making. Fear relates to how investors will respond to a decline in the value of their investments. Wagner (2020) suggested that investors should avoid inherently dangerous situations, even if they offer opportunities. In addition, Taylor et al., (2020) discussed how COVID-19 affected people's anxiety levels.

### **1.2 Risk propensity**

This concept describes an investor's readiness to take or avoid risks (Pablo, 1997). This study focuses on how investors avoid risky investing decisions as a result of COVID-19. Furthermore, Linciano and Soccorso (2012) showed that investors prefer to invest in volatile markets since they are more likely to gain a larger return. They demonstrated that when there is more danger, the profit is greater. Bairagi and Chakraborty (2021) discussed the

significance of risk propensity in the decision-making process of individual investors.

### **1.2 Risk perception**

Zajac (2004) suggested that risk perception is an assumption by an investor about future risk based on his own experiences. Hamid (2013) demonstrated how investors' perception behavior can influence their investment decisions. This, however, does not entirely influence the investment decision.

### **1.4 Anxious behavior on market volatility**

The micro-production model developed by Plasmans in 1975 characterized the anxious behavior of investors when making investment decisions. FitzGerald (1999) discussed how market volatility affects investment portfolios. A study on the effects of COVID-19 on the Chinese and American financial markets was carried out by Sansa (2020). A month's worth of financial market data from the Chinese and American equities markets were used for the research. The study's findings demonstrate that COVID-19 significantly impacted the financial markets. Ali et al., (2020) examined the COVID-19 related worldwide financial collapse by examining the performance of the stock markets in China, Europe and the United States. In the United States and Europe, the markets began to fall as the virus began to spread in those countries. Ichev and Marinc (2018) looked at how Ebola affected the stock markets of the United States and West African countries. The analysis of geographic proximity data from 2014 to 2016 revealed that stock volatility rose following the epidemic of Ebola.

### **1.5 Herd behavior**

Investors often follow other investors' investment ideas (Graham, 1999). This is known as herd behavior. According to Dewan and Dharni (2019), the financial market is affected by herd behavior. The impact of herd behavior on investment decision-making during the 2008 financial crisis was documented by Shekhar and Prasad (2015). According to Satish and Padmasree (2018), stock market participants frequently engage in herd behavior.

### **1.6 Vaccine update**

The COVID-19 outbreak has highlighted the susceptibility of emerging illness and vaccination is still an effective way to regain normalcy. Vaccination against COVID-19 was associated with a general sense of hesitancy and its arrival increased fear and economic anxiety. Awijen et al, (2022)

examined the impact of COVID-19 vaccination on fear and economic anxiety using a global sample of 194 countries observed from December 1, 2020 to March 4, 2021. The effect of the COVID-19 immunization on India's mortality rate and stock market performance was studied by Behera et al., in 2022. According to the empirical study, vaccination lowers death rates and has a significant beneficial impact on the stock market. Along with the COVID-19 vaccine, other recommendations made by the monetary and governmental institutions helped the stock market recover throughout the pandemic of COVID-19.

### **1.7 Investment decisions**

The psychological factors that affect investment decisions are discussed by Slovic (1972). The study carried out by Lyn and Zychowicz on 2010 supports the idea that the impact of investment choice depends on belief and investment performance. According to Ngoc (2014), the choice to invest is heavily influenced by market conditions, the investment goal being to make money with the invested capital. Ziky and Ouali (2021) identified the impact of some psychological factors on the decision making and investment performance of individual investors in the Casablanca Stock Exchange. The results indicate that the impact of heuristics on decision making and investment performance is significant. Market conditions also affect investment decision and performance. On the other hand, from the factors of prospect theory, herd behavior does not have a significant impact on the investment decision and performance of the individual investor in Morocco.

## **2. Research Methodology**

### **2.1 Conceptual framework of the study**

The explanatory variables were chosen for the study based on those used by previous researchers to define the impact of psychological factors on the decisions of the investor. Herd behavior, risk perception and risk propensity were the components that Nukpezah and Blankson (2017) employed in their factor analysis approach. Additionally, Kiruba and Vasantha's study on 2021 examined how psychological factors such as fear, risk perception, risk propensity, investor anxiety regarding market volatility, herd behavior, and vaccination affect behavior of investors in the era of COVID-19 in the Indian context.

## **2.2 Data collection and socio-demographic characteristics of the sample**

Data was collected using a questionnaire survey conducted online between August 6 and October 6, 2022. Participants were screened for age, occupation, salary, geographic location and marital status to obtain an appropriate profile. Incomplete responses were eliminated.

Our sample consists of 120 socially responsible investors in Morocco, who were selected based on the responses received to the questionnaire circulated. The latter contains a question about the investor's interest in Corporate Social Responsibility (CSR) and the consideration of (CSR) dimensions in their investments.

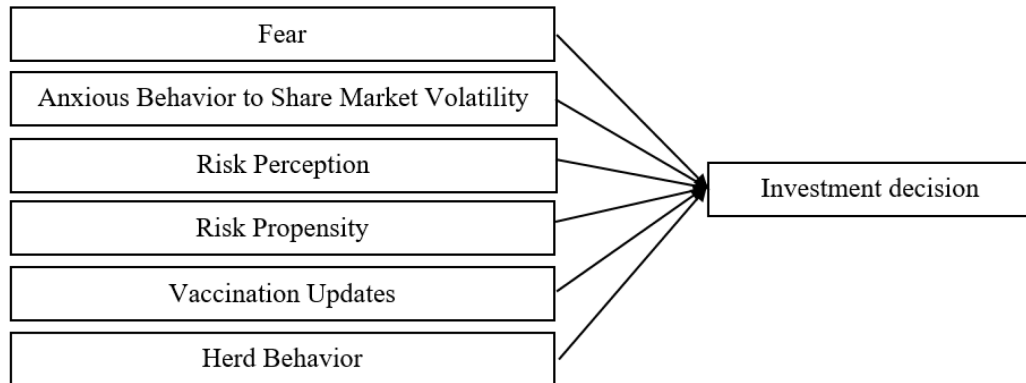
Respondents are over 18 years old, 54% are men and 46% are women and 52% have an income exceeding 10000 Dirhams. Overall, 16% are investors with a level of education of Bac+5 in finance, 46% with a level of education higher than Bac+5, 38% were not able to pursue their studies and 53% of the respondents are married.

Our sample is concentrated in Casablanca and Marrakech, while individual investors are normally found throughout Morocco. Our sample includes respondents in 11 cities in Morocco, as our population is represented as follows: (37%) for Casablanca, (31%) for Marrakech, (7%) for Oujda, (2.5%) for Agadir, Beni Mellal, Berrechid, Fez and Meknes, (2%) for Rabat. Most investors used the Internet, Facebook, television and conversations with relatives and friends to obtain information about COVID-19.

## **2.3 The measuring instruments**

In addition to questions about behavior throughout. Measures of demographics, current issues, risk, and various traits were included in the survey. Data was collected after the pandemic's initial phase.

To measure the variables that constitute our research object, we reviewed the existing literature (Taylor et al., 2020; Kiruba and Vasantha, 2021) and had a thorough discussion with experts on stock market investing to identify the following questionnaire items: COVID-19 fear behavior (5 items); Market volatility (5 items); Risk perception (5 items); Risk propensity (5 items); Vaccination updates (5 items); Herd behavior (5 items). Opinions from professionals in the sector and regular investors were collected in order to facilitate the assessment process. 35 items were included in the evaluation as a result.



Source: Developed by the authors

*Figure 1. Conceptual model of the investment decision*

## **2.4 Research results**

### **2.4.1 Reliability of items**

A variety of quality factors were looked at together, these standards had nothing to do with COVID-19. Investors were asked to react to these actions as though COVID-19 had just started. The measurements were combined in order to evaluate the influence of stock market-related savings and investment decisions as well as the significance of whether or not investors in the Moroccan setting are committed to COVID-19.

#### **2.4.1.1 Investor fear behavior**

Taylor et al., (2020) include five items that are rated on a Likert scale from 1 (strongly disagree) to 5 (strongly agree) and briefly explore fear behaviors with reference to savings, investments and health. Participants' initial levels of worry regarding investments, their health and their safety were rated. An examination of the factors supporting investor fear behavior confirmed the findings. The outcomes demonstrated good dependability. Our study's dependability rating (Cronbach Alpha = 0.81) was excellent.

#### **2.4.1.2 Stock Market Volatility Anxiety Behavior**

The stock market volatility anxiety scale, which consists of five items scored on a Likert scale 1 (strongly disagree) to 5 (strongly agree), was used to assess how stock market volatility affects investment decision-making. Statements like, "I am concerned about market volatility", checking daily, and

stock market trade volatility affected anxiety-related behavior in pandemic environment. According to Kiruba and Vasantha (2021), the market condition scale was proven to be accurate and dependable. The reliability score for our study (Cronbach Alpha= 0.81) was excellent.

#### **2.4.1.3 Risk perception**

The characteristics of risk-taking and investment behavior are evaluated by risk perception. In this study, we employed five scales with values ranging from 1 (strongly disagree) to 5 (strongly agree), encompassing investment opportunity (for example, “I consider COVID-19 to be an investment opportunity”) and investment gain (for example, “High risk can support my potential gain”). The risk perception items shown strong association and reliability (Anitha and Bhargavi, 2014; Hoffman et al., 2015). The survey’s goal is to ascertain how the COVID-9 pandemic’s risk perception relates to it. The present study’s reliability (Alpha=0.90) was extremely high.

#### **2.4.1.4 Risk propensity**

This concept of risk propensity used five Likert items with a scale of 1 (strongly agree) to ask about acceptability of the risk environment (for example, “I would never prefer a high-risk investment”) (Rana and al., 2014; Alleyne et al., 2014). The risk propensity results have demonstrated good reliability. The survey was carried out during the COVID-19 pandemic to gauge risk propensity behavior. Our study’s reliability (Alpha=0,86) was quite high.

#### **2.4.5 Vaccine updates**

The statement “I invest based on vaccination updates and the change in investment depends on vaccination timeliness” is an example of an investment activity based on vaccine information used five items, each of which was evaluated using a scale of 1 (strongly disagree) to 5 (strongly agree). According to how pertinent they were to COVID-19 pandemic, items were added. Our study’s reliability (Alpha= 0,87) was very good.

#### **2.4.1.6 Herd behavior**

Herd behavior emphasizes the traits of imitating other investors’ financial choices. This study used scaled responses to questions about adopting other investors’ investment strategies (e.g. “I follow other investors in developing my investment strategy”) and accepting other investors’ opinions (for example “I always receive an opinion from other investors about my



investment”). The responses ranged from 1 (strongly disagree) to 5 (strongly agree). (Alpha=0,86) Our study’s reliability was very high.

#### 2.4.1.7 Investment decision

The term of investment decision describes how investors behaved in the COVID-19 pandemic era with relation to investments (e.g. “I am not concerned about stock market fluctuations due to COVID-19”). Rated on a scale of 1 to 5 (strongly disagree to strongly agree). The original scales were elaborated by Riaz and Hunjra (2015) and they showed that the investment decision has previously shown to be highly reliable. After the initial COVID-19 period, a survey was undertaken to assess general investment decision-making practices. Our study’s reliability (Alpha=0,77) was excellent.

#### 2.5 Evaluation process

The goal was to create a short study (two months). The scales were chosen to describe investor behavior so that they may later be inter-correlated to provide a logical condition. The factor chosen for each scale consisted of five elements, and the six most important factors related to investor decisions and anxious behavior were chosen based on earlier research. The six components were used because they demonstrated good balance and reliability in earlier studies (Abul 2019; Taylor et al., 2007). On the chosen scales, the item selection was same across all countries.

The reliability of the data was verified using the Cronbach’s Alpha test, and the latent dimension of the variables used for the study was discovered using principal component analysis.

To determine the final number of extracted factors, Eigen values (>1), Communality value (>0,50), Anti-image (>0,50) and Loding factor (>0,70) were employed.

Table 1

#### *Cronbach’s Alpha Results*

| Variables                                | Cronbach’s Alpha |
|--|------------------|
| Fear                                     | 0.81             |
| Anxiety behavior about market volatility | 0.81             |
| Risk perception                          | 0.90             |
| Risk propensity                          | 0.86             |
| Vaccination Update                       | 0.87             |
| Herd behaviour                           | 0.86             |
| Investment decision making               | 0.77             |

Source: SPSS software output

Table 2

**Results of the KMO index and Bartlett test**

| KMO index and Bartlett test                       |          |
|---|----------|
| Precision measure of Kaiser-Meyer-Olkin sampling. | .725     |
| Approximated khi-two                              | 1756.325 |
| Bartlett Sphericity Test                          | ddl 253  |
| The meaning of Bartlett                           | .000     |

Source: SPSS software output

Table 3

**KMO, Factor loading, Anti-image, Eigen, %of Variance and Value  
Communality**

| Dimension                             | Questionnaire No | KMO-value | Value of factor loading | Value of anti-image | Eigen value | % Variance | Value of communality |
|---------------------------------------|------------------|-----------|-------------------------|---------------------|-------------|------------|----------------------|
| Fear                                  | F4               | 0.816     | 0.809                   | 0.688 <sup>a</sup>  | 0.832       | 57.61      | 0.838                |
|                                       | F5               |           | 0.709                   | 0.697 <sup>a</sup>  | 0.683       |            | 0.783                |
| Risk Perception                       | PE1              | 0.872     | 0.821                   | 0.832 <sup>a</sup>  | 0.514       | 72.42      | 0.744                |
|                                       | PE2              |           | 0.858                   | 0.722 <sup>a</sup>  | 0.403       |            | 0.979                |
|                                       | PE3              |           | 0.812                   | 0.785 <sup>a</sup>  | 0.401       |            | 0.725                |
|                                       | PE4              |           | 0.812                   | 0.715 <sup>a</sup>  | 0.403       |            | 0.727                |
|                                       | PE5              |           | 0.875                   | 0.782 <sup>a</sup>  | 0.221       |            | 0.816                |
| Risk Propensity                       | PR1              | 0.794     | 0.849                   | 0.758 <sup>a</sup>  | 0.311       | 65.81      | 0.822                |
|                                       | PR2              |           | 0.788                   | 0.625 <sup>a</sup>  | 0.269       |            | 0.693                |
|                                       | PR3              |           | 0.714                   | 0.820 <sup>a</sup>  | 0.550       |            | 0.640                |
|                                       | PR4              |           | 0.771                   | 0.785 <sup>a</sup>  | 0.610       |            | 0.726                |
|                                       | PR5              |           | 0.840                   | 0.770 <sup>a</sup>  | 0.205       |            | 0.758                |
| Anxiety bahavior on market volatility | AN1              | 0.794     | 0.852                   | 0.606 <sup>a</sup>  | 0.084       | 58.95      | 0.788                |
|                                       | AN2              |           | 0.781                   | 0.721 <sup>a</sup>  | 1.144       |            | 0.774                |
| Herd behaviour                        | HE2              | 0.801     | 0.806                   | 0.695 <sup>a</sup>  | 2.353       | 65.80      | 0.840                |
|                                       | HE3              |           | 0.736                   | 0.716 <sup>a</sup>  | 1.993       |            | 0.798                |
|                                       | HE4              |           | 0.756                   | 0.764 <sup>a</sup>  | 3.999       |            | 0.825                |
| Vaccination Update                    | VA2              | 0.844     | 0.844                   | 0.737 <sup>a</sup>  | 5.841       | 66.40      | 0.858                |
|                                       | VA3              |           | 0.814                   | 0.744 <sup>a</sup>  | 1.725       |            | 0.781                |
|                                       | VA4              |           | 0.861                   | 0.663 <sup>a</sup>  | 0.105       |            | 0.800                |
| Investment decision-making            | ID3              | 0.708     | 0.862                   | 0.695 <sup>a</sup>  | 0.129       | 53.10      | 0.780                |
|                                       | ID4              |           | 0.815                   | 0.593 <sup>a</sup>  | 0.165       |            | 0.813                |
|                                       | ID5              |           | 0.827                   | 0.670 <sup>a</sup>  | 0.187       |            | 0.780                |

Source: SPSS software output

Table 1 illustrates the dependability of the individual investor's decision, the adequacy of which was assessed by the Cronbach's Alpha test. The above result explains in detail the reliability of the chosen variable with regard to the psychological behavior related to investment decision-making. This study is based on 120 responses to an online survey. This Cronbach test offers evidence of the reliability of the factors chosen for investment decision. Table 2 presents the indices (KMO) and Bartlett's Test, our results show that the index is 0.725 which can be called excellent. As well as Bartlett's test of sphericity is significant ( $p < 0.0005$ ). As a result, we can rule out the null hypothesis that the population from which our data are drawn would produce an identity matrix. Therefore, not every correlation is equivalent to zero. For that reason, we can carry on with the analysis. The precise factor extraction of the study's variables is shown in Table 3. The dimension was set to seven and the number of questions was decreased from 35 to 23, according to the results of the factor analysis.

Table 4

***Results of the multiple regression analysis of investor behaviour***

| Model | R                 | R-squared | R- squared adjusted | Standard error of the estimate |
|-------|-------------------|-----------|---------------------|--------------------------------|
| 1     | .652 <sup>a</sup> | .425      | .395                | .5210                          |
| 2     | .652 <sup>b</sup> | .425      | .400                | .5188                          |
| 3     | .649 <sup>c</sup> | .421      | .401                | .5184                          |

Remark:

- a. Predicted values: (constants), Herd behaviour, risk propensity, risk perception, vaccination updates, stock market volatility, Fear
- b. Predicted values: (constants), Herd behaviour, Risk Propensity, Vaccination updates, Stock market volatility, Fear
- c. Predicted values: (constant), Herd behaviour, Risk Propensity, Stock market volatility, Fear

**Source:** SPSS software output

Table 4 presents the results of a multiple regression study that examines how investors who are socially responsible make investing decisions. This verifies whether or not all of the chosen variables have an impact on investors decision-making. The findings suggest that factors like herd behavior, risk propensity, stock market volatility and fear have a big impact on how investors investing decisions are unaffected by their perceptions of risk and the vaccination variable.

## **Discussion**

The results obtained reflect the behavior of 120 individual investors who consider CSR in their investment decisions on the Casablanca Stock Exchange. The reliability test implies that the variables were correctly chosen for the study. Similarly, the results of this study reflect the fear of socially responsible investors towards investing in the stock market during the pandemic of Covid-19.

The results of our research are contradictory to the result of the research conducted by Ngoc (2014) who found that there was a moderate effect of risk perception on investment decision-making. According to research on the influences of risk propensity in developing markets (Hamid and al., 2013), risk propensity has a moderate influence on investment decision-making.

In contrast to the findings of our study, Naomi and al., (2018) asserted that herd behavior was not an important consideration when making investment decisions. The study's findings also demonstrate how concern over stock market volatility affects investing decisions, which is in line with earlier studies on the subject (Cronshaw and Alexander, 1985; Ngoc, 2014). Herd behavior, risk propensity, stock market volatility, and fear all have a substantial impact on investors decision-making, according to the overall assessment of the effects of psychological behavior. Risk perception and vaccine information. However, had no influence on the COVID-19 investment decisions made by socially responsible investors.

## **Conclusion**

To analyze the behavior of socially responsible investors, the selection of items was based on previous research (Taylor et al., 2020; Kiruba and Vasantha, 2021). To evaluate the decision-making of socially responsible investors throughout the COVID-19 pandemic, the following six criteria were used: behavioral response to risk propensity, fear, stock market volatility anxiety, risk perception, herd behavior and vaccine updates.

The study's objective is to determine how investors' psychological aspects affect their decision of investments in the COVID-19 context which could be the cause of the psychological tendencies of socially responsible investors in Morocco being discovered.

The results of the multiple regression analysis show the impact of herd behavior, risk appetite, stock market volatility and fear. However, risk

perception and vaccination update had no impact on investment decision making among socially responsible investors during COVID-19.

In conclusion, this study will assist socially responsible individual investors in investing in future pandemic contexts. One recommendation for investors is to assess and perceive the risk of future investments based on their own experiences in developing their investment strategies. Given that herd behavior and following the strategies of others in the COVID-19 era for making decision of investment was determined from the regression results, it is best to proceed appropriately. As well as the behavior of risk propensity has been favored, which means that socially responsible investors dare to invest in such situations. In addition, governments should take the necessary precautions to ensure security in the financial markets to reduce the sense of fear among these investors and for them to develop relevant policies and strategies. This study is limited to examining only the relevance of psychological behavior on investment decision making. The investigation could be expanded to include investors' investment decision making based on demand outlook, input costs, profitability, financing constraints and government responses during pandemics, which may influence the decisions of investment. It is predicted that this research will contribute to ethical investors' decisions in potential pandemic crises.

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