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Article

HOW PERSONAL COGNITIVE BOOST THEIR DECISION TO INVEST IN PHARMACY INDUSTRIES DURING PANDEMIC COVID-19: COGNITIVE DISSONANCE THEORY PERSPECTIVE

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ABSTRACT

This study aims to investigate the anomaly of investor behaviour in investment behaviour during the COVID-19 pandemic. This study idealizes investor behaviour as it can be studied through the perspective of signal theory by providing internal information to the market. From the perspective of signal theory, the market responds according to information obtained from within the company, which indicates that market performance is in line with the company's internal performance information. However, the COVID-19 pandemic conditions have led to a decline in the internal performance of most companies, which is in line with the decline in the company's performance. This study highlights that one of the industries that has survived is the pharmaceutical industry, which has had various health supplies during the pandemic. Looking at the perspective of the pandemic conditions, investors tend to behave defensively and "wait and see" related to economic conditions that affect the company's market performance. This study constructs novelty using cognitive dissonance theory, which describes investors' hesitation in making biased investments in uncertain pandemic conditions. Furthermore, this study provides novelty to identifying investor behaviour in Indonesia, especially when experiencing economic uncertainty. This study collected samples from 13 developing countries in the Asia Pacific Region. Hypothesis testing uses generalized least square (GLS) regression to ensure this research model has achieved linear unbiased estimation (LUE), considering this heterogeneous research sample. This study found that when the performance of pharmaceutical companies increased during the pandemic, people still tended to dare to invest in pharmaceutical companies, thus encouraging an increase in the company's external performance. This is interesting because people still dare to invest despite uncertain pandemic conditions. Cognitive dissonance theory emphasizes that individuals will experience a dilemma when facing market pressure from other investments that decline by considering making high-risk investments. Hence, this research becomes a process of legitimizing investor behaviour during the Covid-19 pandemic.

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1. INTRODUCTION

This study investigates investor behaviour in making investment decisions during COVID-19. We suspect the COVID-19 pandemic exerts significant pressure on investors' investment decisions (Huang et al., 2024). However, there seems to be an anomaly in high decision-making for some company stocks, which requires further understanding. The emergence of the COVID-19 outbreak has caused a global disruption (Lee et al., 2021), significantly impacting the entire (Madinga et al., 2023). The COVID-19 pandemic has affected society and unprecedentedly impacted health, the economy, and social life (Shao & Hao, 2020). According to Yuldirum et al (2021), the emergence of the COVID-19 outbreak has led to decreased societal mobility compared to previous conditions. In this context, Covid-19 significantly negatively impacts investment behaviour and creates anomalous conditions in investor decision-making. However, amidst this crisis, there is an intriguing phenomenon where pharmaceutical company stocks have spiked, indicating that investors are willing to take risks.

Mobility restrictions have been implemented to reduce the spread of the virus during COVID-19, which has caused the collapse of the world economy (Ioannides & Gyimóthy, 2020). Three areas are likely to be affected by COVID-19 in the global economy: the primary industrial sector involved in raw material storage, the secondary sector involved in production, and the tertiary sector of all service provision industries (Nicola et al., 2020). With

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these mobility restrictions, activity has decreased due to the high number of COVID-19 transmission cases (Ioannides & Gyimóthy, 2020). This has resulted in the world's GDP (Gross Domestic Product) being estimated to decline from developing countries in 2020 (Maliszewska et al., 2020). Therefore, mobility restrictions during the COVID-19 pandemic have put significant pressure on many companies, so various sectors have experienced losses and decreased income. This is because many people are not allowed to leave their homes, so their performance has decreased, affecting the company.

Covid-19 has brought significant changes in various sectors, especially the pharmaceutical industry. The performance of this industry shows positive economic growth, driven by the increasing need for medical products such as medicines, personal protective equipment (PPE), and vaccines (Sher, 2020). This surge in demand has increased revenue, and the pharmaceutical industry has also received support from investors and the capital market. In contrast, the aviation industry has experienced a sharp decline. Global flight activity fell by 14% in February 2019 due to the implementation of widespread travel bans and reduced aircraft fleet operations. This caused flight demand to fall by around 27% in March 2020. Thus, the pandemic has created instability in several sectors. However, it also underscores the need for adaptation and innovation, as demonstrated by the pharmaceutical industry's growth, in facing global challenges.

Looking at the perspective of Chen & Sih (2024), the COVID-19 pandemic harms every company's performance in various sectors, especially the economic sector. In his research, he also said that this situation reduces productivity and psychological well-being and increases work stress, which impacts the overall decline in work quality. However, in this case, the pharmaceutical sector is an exception due to the increasing demand for health products ranging from medicines, medical devices, personal protective equipment (PPE) and vaccines.

In addition, the pandemic has also accelerated the transition of the pharmaceutical sector towards digitalization, especially in the form of online pharmacies. Before the COVID-19 pandemic, online pharmacies had already emerged in several Western countries, but Miller et al. (2021) noted that the spread of COVID-19 triggered rapid development in this service. The mobility restrictions imposed in various countries have made consumers look for safer and more convenient ways to get their medical needs, making online pharmacies an ideal solution. Due to the COVID-19 pandemic, most pharmacy owners see an excellent opportunity to present their business in a way that is up-to-date and needed by consumers. The benefits received by pharmacists increase significantly if they adjust to online trading conditions to maintain their businesses (Eab-Aggrey & Khan, 2024). With many using digital networks and online trading, pharmacies are encouraged to switch to e-pharmacies to gain profits in the future. This change also affects investor attitudes. The rapidly growing e-pharmacy sector gives investors a positive signal about the potential for growth and stability in times of crisis. With the increasing use of social media during the COVID-19 pandemic by pharmacists, it can provide opportunities for others to engage in drug trading on several other social media platforms (Kim et al., 2017). Thus, the attitude of investors in facing the COVID-19 pandemic by increasing profits in the online pharmacy business makes it easier for consumers to buy drugs when there are mobility restrictions.

In this study, the author presents a unique perspective that differs from previous research. Unlike the traditional signalling theory, which assumes an immediate market response to positive or negative information, the theory used in this study focuses on how market information is interpreted during periods of uncertainty. This study investigates the changes in investor behaviour in Indonesia in the face of pandemic-induced uncertainty. The findings of this study can offer valuable insights into how investors navigate unstable market conditions and exercise caution during challenging times, thereby informing future investment strategies.

2. LITEATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Signalling Theory

Signalling theory is used to understand the information imbalance between two parties, where one party has more limited access to information than the other. According to (Connelly et al., 2011), signalling theory helps explain how information changes occur between parties with unequal access to information. In this case, the less knowledgeable party can observe the signals the more informed party sends to reduce economic uncertainty. Signals can reflect a company's quality or hidden characteristics (Moradi et al., 2024). Wang et al. (2020) stated that signal senders can provide positive information through specific actions, which signal recipients then interpret as an indication of quality or stability. Previous research has shown that signal theory is often associated with the context of companies using signals to show quality to the market. In this context, the COVID-19 pandemic has created significant uncertainty in various economic sectors.

However, the pharmaceutical sector can send positive signals through vaccine research, successful clinical trials, or distribution partnerships with the government (Sher, 2020b). This has attracted investor interest in the pharmaceutical sector, which shows the stability and growth potential of the pharmaceutical sector during the pandemic. The pharmaceutical sector is an exception to the general "wait and see" investor behaviour in conditions of uncertainty. The increasing need for medicines and health products in a pandemic creates positive signals for

investors. These signals can be data from successful clinical trials or vaccine distribution agreements with the government, strengthening pharmaceutical companies' credibility in investors' eyes. This is where the signal theory becomes relevant in this sector. Positive signals from pharmaceutical companies involved in COVID-19 research show a competitive advantage that can reduce investor concerns and strengthen the attractiveness of investing. However, it is crucial to recognize that cognitive factors and the personal subjectivity of investors can influence the perception of signals in this situation. Some investors feel driven by the fear of missing out (FOMO) without conducting an in-depth analysis, so they risk misjudging the signal quality. Although the pharmaceutical sector provides positive signals, the variation in credibility among pharmaceutical companies requires investors to be careful. Investors should research and ensure signal validation through further analysis of financial statements or independent industry assessments.

2.2. Cognitive Dissonance Theory

Cognitive dissonance theory is a theory that focuses on the knowledge of a person's psychological processes. This theory focuses on the relationship between cognition about human behaviour, attitudes, perceptions, and the environment (Telci et al., 2011). According to (Harmon-Jones & Mills, n.d.), cognitive dissonance theory is two different cognitions that can be related or unrelated. When both are related, they are called consonant or dissonant (Sénémeaud & Somat, 2009). Cognitive theory influences investor decisions that are influenced by company performance and the financial reputation of a company (Wei et al., 2024). Based on this, the sound financial reputation of a pharmaceutical company that increases during the pandemic will attract investors to invest. Cognitive uncertainty can be reduced by having an excellent financial reputation, which can be an initial step and help investors evaluate potential risks and returns (Enke & Graeber, 2023). The perspective on compliance is the right way to change human thinking and attitudes towards a person's cognitive condition (Sénémeaud & Somat, 2009). Therefore, cognitive dissonance theory greatly influences investor attitudes during the COVID-19 pandemic and how investors think and behave. Significantly influencing investor behaviour to observe a company's increased performance during the pandemic so that investors are interested and think they will benefit if they invest.

2.3. Internal and External Performance

Internal performance in a company is significant because success can be measured from the internal performance within the company (Sanusi & Johl, 2022). The level of performance success in a company can be measured from the financial ratios owned by each company because each company's financial report can reflect positive or negative performance in a company. During the COVID-19 era, almost all company performance declined, as seen from the decreasing consumer demand and published financial reports. Meanwhile, the pharmaceutical industry is an exception because, during the pandemic, pharmaceutical companies made profits and performed well (Bieske et al., 2023a). This can be measured from the financial ratio and seen from the Return on Assets (ROA), Current Ratio (CR), and Asset Turnover (ATO) in a company. In addition, a Tobins'Q stock factor can influence external views of company performance, which can be seen from the stock market (Faria et al., 2022). Good internal performance in a company will result in good external performance, which can be seen from the company's competitive performance (Salman & Al-Omari, 2022a). In this case, of course, all companies hope that their company's performance is good; this will have an impact on getting good results and assessments from investors who will later invest in their company for the sustainability of their business (D. D. Salman & Al-Omari, 2022). External performance is crucial as it influences investors' perspectives and plays a significant role in attracting them to invest in a company. Positive external performance can increase a company's reputation, which will also increase. Increasing the company's reputation from public satisfaction during the pandemic and stable financial reports will attract investors to invest in pharmaceutical companies (Cabral et al., 2024). Therefore, positive external performance will also positively impact the company and attract investors.

2.4. Investor Cognitive and COVID-19 Pandemic

The COVID-19 outbreak has caused extraordinary changes in various aspects, including health and the economy (Zhang et al., 2020). This causes uncertainty during the pandemic, especially in investment decision-making (Patterson & Daigler, 2014a). Specifically, the research conducted (Patterson & Daigler, 2014a) also discusses the personality and behaviour of disturbed investors who can negatively impact investment decisions. The presence of the COVID-19 outbreak significantly impacts the psychological condition of investors in determining their investment decisions. This is due to the uncertainty in making investment decisions during the pandemic (Klayme et al., 2023).

The presence of the COVID-19 outbreak has caused a crisis in several ways; according to (Borio, 2020), this is a unique crisis because it has never happened before; therefore, in this case, investor caution is needed to make investment decisions because of the uncertainty in the market. With this event, the performance of several industries can decline. According to research (Stokey, 2016), investors should wait and see investment decisions under uncertainty because this can help investors explain the severity of a recession, especially during COVID-19.

2.5. Hypothesis Development

The COVID-19 pandemic is a situation that forces the design of policies and government interventions worldwide. Planned policies such as activity restrictions, economic policies, and health policies. In health policies, there is emergency spending on health care, simultaneous testing policies, and public investment in public development. These policies are steps to reduce the transmission of the Covid-19 virus (Piñeiro-Chousa et al., 2022). Pharmaceutical companies' health sector is in dire demand to develop solutions to prevent and solve problems related to human health. The solution is vaccine development, which is a big bet for governments, companies, and investors (Krammer, 2020). At the beginning of the emergence of COVID-19, many pharmaceutical companies faced significant challenges in maintaining the continuity of drug delivery because of the hazardous impact of the pandemic, which was difficult to resolve (Golan et al., 2021). The pharmaceutical industry performed very well during the pandemic compared to other industries (Bieske et al., 2023b). This can be measured in the performance of pharmaceutical companies, which has significantly increased due to very high demand (Emanuel et al., 2021). In this situation, the company has given a signal regarding their company's performance. However, due to uncertainty, investors preferred to use the information available at that time because a sense of fear arose.

H1: Even in a pandemic situation, when the performance of internal pharmaceutical companies increases, investors will be encouraged to invest in their company.

3. RESEARCH METHOD

This study focuses on the research period of 2017-2022 to be able to describe changes in investment behaviour during the Covid-19 pandemic. The sample in this study includes companies listed on the stock exchanges of developing countries in the Asia Pacific area, including Bangladesh (DSE), China (SSEC), Hong Kong (HKEX), India (NSE), Indonesia (IDX), Japan (TSE), South Korea (KRX), Myanmar (YSX), Pakistan (PSX), Singapore (SGX), Thailand (SET), Taiwan (TSEC), and Vietnam (HOSE). The data sample was taken using a purposive sampling method by considering the following criteria: first, companies listed in 2017-2022. Second, companies have a fiscal year from January to December. Third, sufficient data is needed in this study—finally, companies engaged in the pharmaceutical sector. The final sample includes 5,203 observation years, which are pharmaceutical companies in 13 developing countries in the Asia Pacific, taken from the Bureau Van Dijk (OSIRIS) database.

This study constructs the company's internal performance using Return on Assets ($ROA_{i,t}$), Current Ratio ($CR_{i,t}$), and Asset Turnover ($ATO_{,t}$) (Sumiyana et al., 2023). At the same time, the company's external performance uses Tobins'Q ($TB_{i,t}$) (BOLTON et al., 2011) by considering the factors of firm size ($FZ_{i,t}$), leverage ($LV_{i,t}$), and net profit growth ($NPG_{i,t}$). Furthermore, this study uses generalized least square (GLS) regression to test the hypothesis, divided into two perspectives: the partial perspective described through equations 1, 2, and 3 and the simultaneous perspective through equation 4. GLS regression ensures that the regression model in this study meets the requirements of linear unbiased estimation (LUE) (White, 1980). To ensure the robustness test in this study, we divided the data before and after the pandemic by dividing the period before the pandemic (2017-2019) and the period after the pandemic (2020-2022).

$$TB_{i,t} = ROA_{i,t-1} + FZ_{i,t-1} + LV_{i,t-1} + NPG_{i,t-1} \quad (1)$$

$$TB_{i,t} = CR_{i,t-1} + FZ_{i,t-1} + LV_{i,t-1} + NPG_{i,t-1} \quad (2)$$

$$TB_{i,t} = ATO_{I,t-1} + FZ_{I,t-1} + LV_{I,t-1} + NPG_{I,t-1} \quad (3)$$

$$TB_{i,t} = ROA_{i,t-1} + CR_{i,t-1} + ATO_{i,t-1} + FZ_{i,t-1} + LV_{i,t-1} + NPG_{i,t-1} \quad (4)$$

4. RESULTS

4.1. Statistical Description

Table 1 describes the sample data in this study. The results of descriptive statistical testing show that TBi,t has an average value of 2.035, with the highest value being 74.362 and the lowest being 0.000. Furthermore, the $ROA_{i,t}$ and $CR_{i,t}$ variables have median values of 4.690 and 2.020 and standard deviation values of 15.680 and 5.831. The $Ato_{i,t}$ variable has an average value of 0.914 with the lowest and highest values of 0.000 and 15.900, respectively. A more detailed look at the $Sz_{i,t}$ and $Lev_{i,t}$ variables shows that there are medians of 12.410 and 0.045, accompanied by standard deviation values of 1.908 and 1.119. Finally, the $NPG_{i,t}$ variable shows an average value of -0.629, which indicates that in the study period, the majority of the sample experienced a decline in performance, with the lowest and highest values being -1,347,895 and 386,831, respectively.

Table 1 Descriptive Statistics.

Variables	Obs	Mean	Median	Std.Dev	Min	Max
$TB_{i,t}$	2,967	2.035	1.284	2.763	0.000	74.362
$ROA_{i,t}$	2,967	2.151	4.690	15.680	-99.340	81.280
$CR_{i,t}$	2,967	3.618	2.020	5.831	0.050	99.360
$Ato_{i,t}$	2,967	0.914	0.730	0.851	0.000	16.900
$Sz_{i,t}$	2,967	12.259	12.410	1.908	3.451	18.644
$Lev_{i,t}$	2,967	0.084	0.045	1.119	0.000	1.914
$NPG_{i,t}$	2,967	-0,629	-0.501	26.875	-1347.895	386.831

4.2. Hypothesis Testing

This study hypothesizes that improving the company's internal performance (H1) represented by the variables $ROA_{i,t-1}$, $CR_{i,t-1}$ and $Ato_{i,t-1}$ influences the company's external performance ($TB_{i,t}$) in pharmaceutical companies during the Covid-19 Pandemic. Table 2 shows the results of testing the main hypothesis of this study, which is seen from three variable perspectives. The first model ($ROA_{i,t-1}$) shows that the coefficient value is 0.003 with a t-value of 1.93 and a significance value of 5%. The second model ($CR_{i,t-1}$) shows a coefficient value of 0.014 with a t value of 3.91 and a significance of 1%. Finally, the third model ($Ato_{i,t-1}$) shows a coefficient value of 0.143 with a t value of 1.96 and significance at 1%.

This study provides a broad perspective by providing considerations related to the focus on performance, considered simultaneously through the fourth model (all). The fourth model shows that the variable $ROA_{i,t-1}$ has a coefficient of 0.001 and is insignificant. In contrast, the variable $CR_{i,t-1}$ has a coefficient of 0.016 with a t-value of 4.08 and a significance of 1%, and the variable $Ato_{i,t-1}$ has a coefficient of 0.148 with a t-value of 1.97 and a significance of 5%. Based on the results of the hypothesis testing, hypothesis H1 is supported. This shows that when all variables are considered together, investors will take CR and Ato variables more into account when investing in pharmaceutical companies during the COVID-19 pandemic. This can be seen from the partial consideration that can explain the tendency of investors to invest.

Table 2 Regression Results.

Variables	Pred	$ROA_{i,t-1}$	$CR_{i,t-1}$	$Ato_{i,t-1}$	All
Constanta	?	7.143 [12.50]***	7.054 [12.68]***	6.666 [11.74]***	7.272 [11.93]***
$ROA_{i,t-1}$	H1+	0.003 [1.93]**	-	-	0.001 [1.11]
$CR_{i,t-1}$	H1+	-	0.014 [3.91]***	-	0.016 [4.08]***
$Ato_{i,t-1}$	H1+	-	-	0.143 [1.96]**	0.148 [1.97]**
$Sz_{i,t-1}$	+	-0.441 [-9.37]***	-0.456 [-9.55]***	-0.411 [-8.96]***	-0.466 [-9.45]***
$Lev_{i,t-1}$	-	-0.438 [-1.43]	-0.465 [-1.54]	-0.422 [-1.37]	-0.276 [-0.88]
$NPG_{i,t-1}$	+	0.000 [1.12]	0.000 [1.22]	-0.000 [1.20]	0.000 [1.30]
Wald-Chi^2		23.890***	26.900***	23.920***	19.500***
Obs		*2,967*	*2,967*	*2,967*	*2,967*

, **, and * indicates of significant at 10%, 5% and 1%*

5. DISCUSSION

The results of this study confirm the use of cognitive dissonance theory to explain the phenomenon of investors during the COVID-19 pandemic. During the pandemic, an investor's psychology is influenced by the circumstances that occur because of the uncertainty that causes investors to worry about their investment decisions(Telci et al., 2011; Wei et al., 2024). During COVID-19, investors should have "wait and see", but that did

not apply because investors saw investment growth in the pharmaceutical industry multiplying. The decisions taken by investors during the pandemic because they did not apply "wait and see" actually raised risks that should have made investors alert because of the uncertainty at that time, considering the fall of the country's economy due to large-scale restrictions (Enke & Graeber, 2023; Patterson & Daigler, 2014). However, because of the fear that arises, which affects investor psychology and will affect investment decision-making, investors continue to invest in pharmaceutical companies amid this uncertainty.

A pandemic significantly affects the psychology of an investor's decision-making; amidst the uncertainty, investors certainly hope that their investment decisions are suitable for the sustainability of their investments (Borio, 2020; Stokey, 2016). During the pandemic, "wait and see" does not apply to investors, especially investors who want to invest in pharmaceutical companies. As we know, pharmaceutical companies during COVID-19 performed excellently, and of course, that attracted investors to invest their capital amidst the uncertainty that exists.

In addition, investors can use several internal company performances to assess the company's performance. The first is looking at the company's ROA (Bieske et al., 2023b; K. R. Salman & Hatta, 2020). From this ROA, investors can see how the company processes its assets to make a profit. Second, investors can also consider the Current ratio because the higher the Current ratio of the company, the better it will encourage an increase in the quality of its shares. Furthermore, investors can consider asset turnover when assessing a company. Asset turnover, which measures the company's ability to generate sales based on the total assets owned by the company (Golan et al., 2021), is also a key performance indicator. However, it is essential to note that these three things may cause investors concern during the pandemic. The pandemic has undoubtedly affected the financial performance of many companies, and investors must consider these factors when evaluating a company's performance.

To provide a broader perspective, the fourth model combines all three variables. From the results, investors can assess that the liquidity and asset efficiency variables show a more dominant influence than profitability in this analysis. This reflects that investors prioritize the liquidity and efficiency of using company assets during the pandemic rather than just looking at its profitability. The decrease in the significance of profitability in this context indicates that uncertain market conditions encourage more attention to the company's ability to survive and adapt rather than the results of profits that may be unstable. Remembering the importance of liquidity and asset efficiency is crucial, as these are the key factors influencing investor decisions.

6. CONCLUSION

This study aims to investigate differences in investor behaviour during the pandemic. In this study, the theoretical perspective is the signal theory, where internal company information will be provided to the market, and the market will respond to the signal. The pharmaceutical industry has a variety of health products, which makes this industry survive during the pandemic, as shown in the results of this study. The presence of a pandemic makes investors act defensively and "wait and see" with economic growth that has an impact on the company's market performance. At the same time, the novelty of this study uses cognitive dissonance theory. In this study, it can be seen that investors experience concerns about making investments and decisions during the pandemic with all the uncertainty that exists. This study also found something new about investor behaviour in Indonesia, especially when the economy is unstable. This study uses samples from thirteen developing countries in the Asia Pacific.

This study supports the conclusion that a company's internal performance can positively influence its external performance. Good internal performance in a company will also have a good impact on the external performance that the company will produce. The presence of COVID-19 has caused many companies to suffer losses. However, the pharmaceutical industry is an exception because it experienced more profits during the pandemic than before. This means that investors' desire to invest in pharmaceutical companies is increasing. This study contributes to the literature by providing an understanding of the state of investment decisions during a pandemic with all the existing uncertainties. Importantly, this study provides practical implications for investors, advising on the policies that must be taken when making investment decisions amidst uncertainty to avoid getting caught in a dilemma.

7. LIMITATION AND RECOMMENDATION

While this study has significantly contributed to the theoretical context of investor behaviour during the COVID-19 pandemic, it is vital to acknowledge its limitations. First, the study's sample development is limited to developing countries in the Asia Pacific, which may not fully represent investor behaviour in other countries. Second, the study focuses on pharmaceutical companies that experienced a significant increase in external performance during the COVID-19 pandemic, excluding other companies from the analysis. Lastly, the study's perspective is limited to the COVID-19 pandemic but shares similarities with previous economic recession conditions.

Further research is expected to provide new perspectives on using samples of developing and developed countries in various parts of the world, considering that each country has different characteristics. Furthermore, looking at various types of companies is one of the points of further research development to capture the cognitive anomalies of investors from various types of companies. Finally, a more extended sample period, potentially providing a more comprehensive understanding of investment uncertainty from various phenomena other than the COVID-19 Pandemic, is a reassuring aspect of the research approach.

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