



# Belief Adjustment Model of Digital Investors to Stocks Liquidity at IDX With Moderation Digital Reference

Niken Savitri Primasari<sup>(✉)</sup> and Mohammad Ghofirin

Faculty Economic Business and Technology Digital, University Nahdlatul Ulama Surabaya,  
Surabaya, Indonesia  
niken@unusa.ac.id

**Abstract.** This research objective is to studied whether this sustainability reporting factor can be stimulated by a belief adjustment model with digital references available to investors in choosing stocks on the Indonesia Stock Exchange, which is marked by an increase in the issuer's share price, especially when publicly announce stocks that are included in the ESG Quality 45 index criteria in every six months the performance of all stocks, this research was conducted starting from the period of 2020 – 2021. (IDX). Social media as a Digital Reference for Belief Adjustment Investor for moderating factor ( $Z$ ). Sustainability Reporting, which acts as a stand-in for the ESG Risk Value in the ESG Report, is the independent variable. The level of dependence is the dependent variable in this study.

**Keywords:** Belief Adjustment · Digital Reference · Sustainability Reporting · Index · Stocks

## 1 Introduction

The pandemic at first quarter 2019 until last 2021 accelerate, digital trade and social media based as the way to get all information. The activity with the internet of things (IoT) in social media seems to be the only things that connect to others, in order to conduct education and literacy massively, which then becomes a digital reference centre for investors for making their investment decisions. The IoT in financial markets represents financial data historic which is presence company perform that urge to interpret more for investors, also demanding to potential investors as well as investment managers and the investor communities to running some fundamental analysis.

Published financial reports through the website or company apps mobile, will provide many benefits for them. It will become a source of information that can be used by investors. Web base connection is a completely media for provide information, either financial conversely non-financial information [1]. Before pandemic, the IoT or in these statement is the website, used as a medium for display their products, but now the website mostly used more as a medium for communicate with other parties, either shareholders, stakeholders, and others, specifically investors which accidentally propagate company financial information [2].

Digitalization phenomenon at pandemic era in IDX is marked at significant retail investors increase which are dominated by millennial generation. Total single investor identification (SID) in 2020 at IDX are 448,717 SID. Total number of single investor identification state for a person who had officially registered as an investor in the capital market. At the other hands, information at the new trend millennium to communicate actively in social media, such as Instagram, YouTube and Tiktok, become trusted media for gathered information, specially analysing to various option before decided.

Before millennials took over, investment decisions were still solely dependent on financial performance, news, and corporate advancement, which had the potential to result in profit. The ability of the company to implement Environmental, Social, and Governance (ESG) as one of its policies must now be taken into account when evaluating the performance of the company, according to a recent trend among investors. Increased business performance and effective ESG implementation are said to be able to drive up the price of the issuer's stock, which will ultimately raise the number of shares that are liquid on the capital market, signalling a high degree of demand for these shares.

The quantity of shares reflects how frequently actively traded on the exchange market are moved. Then it will fluctuate over time, and this change will determine the demand for the shares themselves. The object of this study is the stocks which are listed on the ESG Quality 45 index. This index evaluated every six months, with minor and significant assessments of the stock's and company's performance being made every three months.

Based on this fact, this study examines how financial reporting and ESG reports, which use digital references as a moderator to increase the number of stocks listed on IDXs, would affect the Belief Adjustment Model of Digital Investors (liquidity stocks). These study constraint coding treatment of digital reference variables to drifting out separately.

## 2 Literature Review

### **Signalling Theory**

Signalling theory [3] shows the existence of asymmetry information between company's management and interested parties. Signalling theory puts forward how companies inform their performance through historical data signals to their users [4]. Signalling Theory suggests that companies provide signals through their strategic movement operation and inform it to public. The company adopted these signals to reveal hidden attributes for stakeholders.

### **Efficient Market Hypothesis Theory**

According to The Efficient Market Hypothesis, stock price reflects the information action strategy and how the company perform. When a security's price is at its equilibrium level and represents all available information at all times, the market is efficient. There is no chance for investors to receive an abnormal return on the variance in the value of a stock security at the optimum price of the stock [5].

### **Behavioural Finance Theory**

Investors have a desire to examine individual investment separately, which provides the basis for considering each investment independently. First of all, disposition bias might

result from mental accounting. Selling the declining stock results in regret and concludes the mental accounting [6]. Additionally, because of psychological accountancy, people act differently when confronted with varying amounts of money [7].

### **Clean Surplus Theory**

According to the Clean Surplus hypothesis, the information in the income statement and balance sheet used to describe market value of the company. It often used to evaluate then to estimated how much worth of company's shares. The value then will be compared with the actual market value. The final value will show whether the market may have been overestimated. The clean surplus theory places a strong emphasis on the value of current financial statement data in predicting future earnings. According to this idea, the value of businesses should be related and consistent between value base on in accounting with the viewpoint of value measurement [8].

### **Stakeholders Theory**

The idea of stakeholder theory is a company would not just seek out for itself; the real business also needs to satisfy all of their stakeholders, which are shareholders, creditors, consumers, suppliers, governments, the public, analysts, and other parties. That's why their potential action must heighted their business value creations proportionately and minimized potential stakeholder losses [9].

### **Association Among Financial Performance (Fundamentals) and Stock Liquidity**

Numerous factors influence whether an organization's financial performance and liquidity are related. Therefore, it won't just be unusual for liquidity and performance to have a positive relationship [10]. Additionally, it states that liquidity facilitates stock trading by third-party shareholders (investors) [11]. According to the feedback theory, performance and liquidity have a good relationship. Institutional investors will be drawn to the companies that disclose operational results more effectively. In order to make the company appear to have appoinitive value in the name of their stakeholders, the company seeks to divulge all-inclusive information about the company, specifically by disclosing its financial information, in order to determine how their business activities can obtain welfare for stakeholders. The business will be capable of raising its operations support funds, the company will be able to grow its working capital, which will have an unimpeded return on sales of the company's products [12].

### **Association Among ESG Reports and Stock Liquidity**

ESG disclosure, for example, might be seen as a positive signal that is anticipated to be received by other parties that have the power to influence decision-making. Investors may respond favourably when a corporation discloses non-financial information regarding the environment, society, and corporate governance. The company will gain a favourable valuation in the eyes of investors thanks to a rise in stock demand transactions, which will lead to an increase in stock price and a consequent increase in the company's value [13]. Throughout order to serve the interests of stakeholders who will afterwards help to improve the performance of the company, non-financial disclosures like ESG are anticipated to be a social investment. Since it captures the interest of the organization's stakeholders, sustainability initiatives will lead to higher demand and greater growth for the company.

## Digital Reference's Moderating Impact on Financial and ESG Reports and Stock Liquidity

Actively traded stocks are referred to as liquid stocks. The frequency of stock trading, transaction volume, and share transaction value all contribute to the calculation of stock liquidity. A website's level of information disclosure will serve as a digital resource for investors and affect how frequently stocks are traded [14]. It affects the liquidity of stocks that are associated with the frequency of stock trading if the information disclosed on a website or social media becomes a digital reference for investors and potential investors. The two findings of the research discussed above are consistent with earlier studies that found that one of the numerous factors affecting the frequency of stock trading is the level of website information disclosure for digital references [15]. Information that is given may take the shape of financial reports or non-financial reports (ESG Reports).

## 3 Research Methods

### Population and Samples

The population for this study are all the issuer stocks which included on the ESG Quality 45 index for the 2020–2021 time frame, and minor major data are taken from each quarterly report. The samples were selected through purposeful sampling. The sample was chosen based on the following standards:

1. The issuer's shares for the 2020–2021 term passed the major and minor assessment of the ESG Quality 45 criteria and are represented in the ESG Quality 45 index.
2. The issuer's shares publish quarterly financial statements on the official website of the Indonesia Stock Exchange, idx.co.id.

The company is providing information on its Environmental, Social, and Governance (ESG) performance in its annual report or sustainability report on the website [esg.idx.co.id](http://esg.idx.co.id). The firm includes information on its Environmental, Social, and Governance (ESG) performance in its annual report or sustainability report on the website [esg.idx.co.id](http://esg.idx.co.id).

### Operation Variables

The fluctuating stock price is measured utilizing the increase in share price during major and small evaluations that are reported along with the stock price prior to the assessment. This proxy for the difference in stock prices is used to determine if there will be gains when the financial and ESG report results show a good sustainability value in the future, and vice versa, when they indicate a decrease. The following is a possible form for the dependent variable proxy:

$$Y = \frac{(\text{Stock Price}_t - \text{Stock Price}_{t-1})}{\text{Stock Price}_{t-1}} \quad (1)$$

The premise for financial performance measurement will comprise the percentage changes in the ROE value of each issuer sampled for the study. As the first independent variable, the proxy Financial Performance can be described as follows,

$$X_1 = \frac{ROE_t - ROE_{t-1}}{ROE_{t-1}} \tag{2}$$

The ESG value of the index generated by Sustainalytics will be used as the basis for the ESG measurement as the independent variable, or users can obtain the findings of the major and minor assessment from the indexing product details on the website idx.co.id. Based on the digital track record of suggestions made by each of these moderators on the day the main minor publication is released, the measurement of moderation variables, or digital references, will be done. The past history of opinions of investment managers who have been listed on the IDX will serve as the foundation for digital references. Every issuer recommendation that is a component of the research sample is assigned a value of 1.

## 4 Result

### The F-Test and Partial Test

The F test or The Goodness of Fit test, commonly know also as model feasibility test, measures how accurately the sample regression function predicts actual values. By calculating the statistical value of F, the Goodness of Fit test can be performed statistically. To demonstrate if every free (independent) variable included in the model has an overall impact on the constrained (dependent) variables, the statistical test F is used. The study’s model is as follows:

**Model 1.** The study determine the impact of changes in trading liquidity included in the ESG Quality 45 index list on the Financial and ESG Report. Table 1 displays the results of multiple liner regression model 1. It’s indeed clear from the significant level of 0.016, which is less than 0.05, here that model 1 is accepted and can continue to be evaluated as a modified model 1 for additional analysis.

Based on the results of the partial test in Table 2, The model (1) can be written as follows:

$$Y = -0,007 + 0,013.X_1 + 0,001.X_2 + 0,010$$

**Table 1.** F Test Model 1

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0,002	2	0,001	1,301	0,016 <sup>b</sup>
	Residual	0,037	43	0,001		
	Total	0,039	45			

a. Dependent Variable: CAPG

b. Predictors: (Constant), FINRT, FESGQ

**Table 2.** Partial Test Model 1

Model		Unstandardized Coefficients		Std Coefs	t	Sig.
		B	S.E	Beta		
<b>1</b>	(Constant)	-0,007	0,010		-1,136	0,043
	FINRT	0,013	0,004	0,189	1,630	0,016
	FESGQ	0,001	0,001	0,146	1,254	0,011

**Table 3.** F Test Model 2

Model		Sum of Squares	df	Mean Square	F	Sig.
<b>2</b>	Regression	0,011	5	0,003	3,585	0,012 <sup>b</sup>
	Residual	0,038	40	0,000		
	Total	0,049	45			

a. Dependent Variable: CAPG

b. Predictors: (Constant), M1.X2, M1.X1, ESGQ45, FINRT, DIGIRF

The minus constant (a) value indicates if the issuer does not publish Financial and ESG Report, share liquidity will be reduced 1%.

**Model 2.** To emphasize the relationship between financial and ESG reports on changes in the liquidity of stock trading, specifically issuers included in the ESG Quality 45 index list, the regression function in this model has included elements of moderation in an effort to determine how big the first moderation variable, namely digital references. The following can be used to write the test model F (2):

$$Y = a + b_1.X_1 + b_2.X_2 + b_3.M_1 + b_4.|X_1.M_1|_4 + e$$

As for the results of the F test of the second regression model, it can be seen in Table 3.

When the fault tolerance result is less than 0.05, a significance value of 0.012 is shown. Model 2 is acceptable, and it may continue to be used to analyze each independent variable in relation to its dependent variable.

In this model 2, the moderation variable have been included. The results in Table 4 show that the Digital Reference is a moderation as evidenced has signification 0.005 on the financial report and 0.034 on ESG Report. From Table 4, it can also be written the regression formulation as follows:

$$Y = 0,0023 + 0,028M_1 + 0,016|X_1.M_1|_4 + 0,003.|X_2.M_1|_5 + 0,031$$

The significance value for both tests for models 1 and 2 is less than 5%. F-test model 1's significant result is 0.016, and model 2's significant result is 0.012. The lower

**Table 4.** Partial Test Model 2

Model		Unstandardized Coefficients		Std Coef	t	Sig.
		B	S.E			
2	(Constant)	0,023	0,031		1,052	0,046
	FINRT	0,083	0,001	0,073	0,621	0,404
	FESGQ	0,013	0,051	0,203	1,059	0,233
	DIGI	0,028	0,014	1,107	1,377	0,034
	M1.X1	0,016	0,004	0,438	1,103	0,028
	M1.X2	0,003	0,000	1,024	1,326	0,032

significant value in model 2 demonstrates that the rise in the volume of stock transactions on the stock exchange market at that time can have a modestly favorable impact from digital references from investment managers.

**Discussion**

Moreover, the findings of the statistics regression analysis might be summarized as follows when associated to the following hypotheses:

1. The test results for model 1 showed that each of the independent variables has a significant and influencing impact on changes in stock liquidity in the stock exchange market. This indicates that if financial information is disclosed, the company will be perceived as having a good value for stakeholders’ welfare as it increases share liquidity and the number of stock purchases. As a result, hypothesis 1 is accepted.
2. The partial regression test result for model 1 in Table 2 indicated that hypothesis 2 is accepted. According to the analysis, ESG disclosure provides good signals for investors in the form of corporate value disclosure, which influences investors’ decision-making.
3. The Table 4 in the model 2 test gives an overview of digital references from investment managers and how they have affected individual investors. Digital references have also moderated the influence of financial and ESG disclosure on stock market liquidity. It shows that one of the numerous factors affecting the frequency of stock trading is digital references, hence either hypothesis 3 is supported.

**Acknowledgments.** This work is ostensibly supported by University Nahdlatul Ulama Surabaya (UNUSA) through LPPM UNUSA Financing Programme to improve Tri Dharma especially for UNUSA internal lecturers. Greatfull thank to PT. Indo Premier, Surabaya Branch to handfull supporting their data investment managers, without that these result cannot be done.

**Authors’ Contributions.** Niken Savitri Primasari have made substantial idea conception design, phenomenon to raise in these research, analysis and interpretation data. Mohammad Ghofirin contributed to final result approval to published.

## References

1. Reskino, and Nova Ninda Jufrida Sinaga. 2016. "Kajian Empiris Internet Financial Reporting Dan Praktek Pengungkapan." *Media Riset Akuntansi, Auditing dan Informasi* 16(2): 161-180.
2. Hasugian, P. S. (2018). Perancangan website sebagai media promosi dan informasi. *Journal Of Informatic Pelita Nusantara*, 3(1).
3. Akerlof, G. A. (1970). *The Market for Lemons. Quality Uncertainty and the Market Mechanism*, 84.
4. Brigham, E. F., & Houston, J. F. (2009). *Fundamentals of financial management, concise Edition*. Cengage Learning.
5. Fakhry, B. (2016). A literature review of the efficient market hypothesis. *Turkish Economic Review*, 3(3), 431-442.
6. Baker, H. K., & Nofsinger, J. R. (Eds.). (2010). *Behavioral finance: investors, corporations, and markets* (Vol. 6). John Wiley & Sons.
7. Pompian, Michael M. (2006). *Behavioral Finance and Wealth Management: How to Build Optimal Portfolios That Account for Investor Biases*, New Jersey, John Wiley & Sons
8. Brief, R. P., & Peasnell, K. V. (Eds.). (2013). *Clean surplus: A link between accounting and finance*. Routledge.
9. Kristen, J. (2015). Stakeholders theory-how they influence the business policy. *Scholedge International Journal of Business Policy & Governance*, 2(4), 14-17.
10. Coffe, C., & Nydegger, U. E. (1991). Report from the European Society for Haemapheresis. *Transfusion Science*, 12(1-2), 85-86.
11. Bhide, A. (1993). The hidden costs of stock market liquidity. *Journal of financial economics*, 34(1), 31-51.
12. Buallay, A. (2019). Is sustainability reporting (ESG) associated with performance? Evidence from the European banking sector. *Management of Environmental Quality: An International Journal*.
13. Safriani, M. N., & Utomo, D. C. (2020). PENGARUH ENVIRONMENTAL, SOCIAL, GOVERNANCE (ESG) DISCLOSURE TERHADAP KINERJA PERUSAHAAN. *Diponegoro Journal of Accounting*, 9(3).
14. Muliana, Ela, Maslichah, and M.Cholid Mawardi. 2018. "Pengaruh Internet Financial Reporting Dan Tingkat Pengungkapan Informasi Website Terhadap Frekuensi Perdagangan Saham Perusahaan Di Bursa Efek Indonesia Tahun 2015- 2017." *E-Jra* 07(11): 62-70.
15. Prasasti, Kadek Arin, I Made Pradana Adiputra, and Nyoman Ari Surya Dharmawan. 2014. "Pengaruh Internet Financial Reporting Dan Tingkat Pengungkapan Informasi Website Terhadap Frekuensi Perdagangan Saham (Studi Pada Perusahaan Finansial Yang Terdaftar Di BEI Tahun 2008–2012)." *e-journal S1 Ak Universitas Pendidikan Ganesha* 2(1) : 1-11.



**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

