

Impact of Big Data, Profitability, and Free Cash Flow to Company Value

Denisha Nurul Aisyah¹, Yovita Angeline², Toto Rusmanto³

¹Bina Nusantara University

denisha.aisyah@binus.ac.id

²Bina Nusantara University

yovita.angeline@binus.ac.id

³Bina Nusantara University

trusmanto@binus.edu

Abstract

This research examined into firms in the cyclical sector that were listed on the Indonesia Stock Exchange among 2018 to 2021. The study sample was 40 companies from the cyclical sector, as classified by the Indonesian Stock Exchange. In this study, big data technology will be represented by software intangible assets, and the device ratio will be derived by comparing the investment in software to the overall assets of the organization. Profitability will be measured by Return on Assets, while free cash flow will be calculated using the FCF formula and firm value will be calculated using the Price to Book Value ratio. The research was conducted using multiple regression approach. Based on the results of the analysis, all independent variables have a positive impact on firm value.

Keywords: Big Data, Company Value, Free Cash Flow, Profitability.

INTRODUCTION

There is much wisdom in this proverb attributed to both W. Edwards Deming and Peter printer, and explains why the recent explosion of digital data is so important. Simply put, why of Big Data managers can measure and therefore know radically more about their activities and direct Translate this knowledge into better decisions manufacturing and performance. The big data of this revolution is far more powerful than the analytics that were used in the past. We can measure and control more precisely than ever. We can make better predictions and make wiser decisions. We can seek more effective interventions, and we can

do so in areas that have hitherto been dominated by instinct and intuition rather than data and accuracy (Mikalef et al., 2019).

Companies must change more swiftly and audaciously in order to thrive in today's fast evolving and intensely competitive global economy. Companies are increasingly trying to figure out what limitations are preventing them from meeting market needs (Agarwal & Dhar, 2014). According to studies already conducted, organizations should concentrate on increasing organizational agility so they can adjust quickly and effectively to a variety of environmental and business changes (Chakravarty et al., 2013), which, in turn, helps them to react appropriately and quickly to a variety of economic and environmental developments. The traits of agility are that businesses coordinate their business processes in a way that enables them to successfully investigate new opportunities as well as to exploit those chances efficiently, to increase firm performance (Chakravarty et al. 2013).

Big data is becoming increasingly important for companies as they seek to understand and capitalize on the trends shaping their industries. By understanding the impact of big data on company value, investors can gain a better understanding of which companies are likely to be most successful in the future. Additionally, profitability and free cash flow are two of the most important metrics on company value, investors can better assessing a company's financial health. By understanding the impact of these metrics on company value, investors can better asses a company's financial prospects and make more informed investment decisions (P. Mikalef et al., 2020).

Price to book value (PBV), Tobin's q, and stock price indicators can all be used to determine a company's value. Investors use a variety of elements when determining whether a company has the potential to increase firm value (McAfee & Brynjolfsson, 2012). These management policies and activities represent how the company was managed during a specific time period (Auschwitzky et al., 2014). As the financial ratio technique, which is derived from financial statements, is typically used to measure firm performance, it is frequently referred to as financial performance (Das & Kumar, 2023). The size of a company's performance depends not only on how effectively it runs, but also on the market in which it competes, or what is known as financial stability in the financial world (H. Chen et al., 2012).

An evaluation of a company's financial performance is done to see how well its financial implementation guidelines have been followed (X. Chen & Siau, 2011). The company is able to operate effectively and efficiently due to business management, policies, working conditions, and business

ethics (Abreu, 2016). This results in high profitability, which will affect the rise in stock prices above their book value. The more the stock price, the greater the price to book value (PBV), and the greater the firm's success in enhancing the owner's wealth. According to Barney (1991), the higher the price to book value (PBV), the more the relative investors value the company in relation to the capital invested in it. Therefore, this research will use price to book value (PBV) to determine firm value.

Research Question(s):

- 1) How is the effect of implementing big data on the company developed into an effective driver so that it affects company value?
- 2) Does cash flow affect the value of the company significantly?
- 3) Does company's profitability affect the value of the company significantly?

1. Literature Review

1.1. Big Data Technology

Big Data can help in the development of an effective and efficient management control system (Grover et al., 2018). Big Data in financial accounting can assist increase the quality and relevance of accounting information, boosting business stakeholders' transparency and decision making (Popovič et al., 2018). Big Data may assist build and revise accounting standards, ensuring that the accounting profession continues to give meaningful information as the global economy evolves in real time (Wen et al., 2021).

Big data is a type of data that cannot be processed, collected, or handled by traditional software tools in a reasonable amount of time (Andiola et al., 2020), and necessitates the use of novel processing modes in order to provide meaningful insight, decision-making (Jacobs & Bayerl, 2015), and process optimization ability to adapt to rapid development, huge and diverse information resources (Kang & Ampornstira, 2021).

Big data is classified into three categories, sometimes known as the 3Vs: volume, velocity, and variety (Cabrera-Sánchez & Villarejo-Ramos, 2020a). Volume, or big data, can process data with very huge capacities, whereas velocity, or processed data, has a very high frequency of changes, and variety, or big data, has a lot of useful data variations (Akter et al., 2016). According to some academics, big data technology has a substantial impact on firm performance (Pappas et al., 2018). But, as technology advances, big data has evolved into 5V, with the addition

of veracity and value requirements (Kitchin, 2015). Based on those explanation, the hypothesis that is formed in this study are as follows:

H₁: Big Data Technology has a positive effect on firm value.

1.2. Free Cash Flow

Free Cash Flow (FCF) is a metric used to assess a company's growth, financial performance, and overall health (Yeo, 2018). This is typically cash left over from corporate operations that can be utilized for dividend payments, expansion, or debt servicing (Giriati, 2016). The higher a company's free cash flow value, the better (Ha, 2019). These elements can be very valuable indications for determining a company's genuine profitability (Bukit & Nasution, 2015). Free cash flow is the cash that remains from a company's activities after deducting dividends and capital expenses is known as free cash flow (Dogru et al., 2020). Investors can use free cash flow as a tool to assess a company's capacity to pay dividends. Businesses with significant free cash flow will boost investor confidence that the company can generate high dividend payouts (Kolmakov & Polyakova, 2019). The higher the company's free cash flow, the healthier the company, because the company has free cash available (Kadioglu & Yilmaz, 2017). Which can signal that the company is in good shape (Wang, 2010). Based on those explanation, the hypothesis that is formed in this study are as follows:

H₂: Free Cash Flow has a positive effect on firm value.

1.3. Profitability

High profitability indicates that investors expect the firm's future prospects to be profitable, therefore investors will be interested in investing in the company, increasing the company's worth (Aydoğmuş et al., 2022). Because profitability defines the company's performance in getting profit using all available resources such as sales activities, cash, and capital, the amount of the resultant profitability affects the company's worth (Cabrera-Sánchez & Villarejo-Ramos, 2020b). Profitability is the company's ability to generate profits. High profitability shows the future prospects of the company will be predicted to be profitable by investors so that investors will be interested in responding to the positive signal given (Brooks & Oikonomou, 2018). So that the value of the company increase and play a key part in ensuring the company's long-term viability (Mansikkamäki, 2023). If the company can improve profits, it shows that it is capable of performing well enough to elicit a positive response from investors and raise the stock price (Chauvin & Hirschey, n.d.). Based on those explanation, the hypothesis that is formed in this study are as follows:

H₃: Profitability has a positive effect on firm value.

1.4. Firm Value

Company value is determined from several factors, one of which is the company's stock market price (Choi & Yoo, 2022). Because the stock market price reflects investors' estimate of the company's whole equity (Iqbal et al., 2022). Firm value is the price that investors are willing to pay for a company, which is typically evaluated by the price to book value ratio (Tarjo et al., 2022). The stock price is used in this study to determine a company's value because it can be influenced by a variety of internal and external factors (Ntim, 2016). From external influences, particularly changes in the rupiah's value relative to other currencies and governmental policy (Fang et al., 2023). While this is going on, shares from firms with strong fundamentals will cause the trend of their stock prices to climb due to internal reasons, specifically the company's basic aspects (Ilyas & Osiyevskyy, 2022). In the meantime, the stock prices of companies with weak fundamentals will trend lower (Nam & Uchida, 2019). Corporate business actions, such as acquisitions, mergers, or rights problems, are additional internal factors that might impact stock prices (Sáenz et al., 2022). If the company faces those factors and can maintain a stable stock price, then the company can create a good image in the eyes of investors (Sullivan et al., 2012).

2. Research Methodology

2.1. Types of Research

This study uses a quantitative method using secondary data, specifically using the annual financial statements of companies in the consumer cyclicals sector that have been published for the 2018-2021 period accessed through the IDX's official website. Because the consumer cyclicals sector consists of various companies such as furniture, high-end clothing retailers, and car manufacturers which, although they are not staple goods, are still widely used by the public. The four variables used in this study include the dependent variable, firm value, and three independent variables: big data, profitability, and free cash flow.

2.2. Population and Sample

There are 40 companies that will be used as samples in this study. This study will take data from the consumer cyclicals sector. This procedure is founded on two requirements:

- 1) Businesses listed on the IDX (IDX website) in the cyclical sector from 2018 to 2021.
- 2) Financial reports from 2018 to 2021 have been published.

This research also requires a firm report showing the value of their intangible assets as an extra requirement.

2.3. Data Analysis Technique

Return On Assets (ROA) was chosen as a proxy for profitability in this study because it can be seen how effectively a company generates profits based on its assets, so that the greater the Return On Assets (ROA), the more effectively the company uses its assets to operate, which will increase the company's value. The formula for calculating Return On Assets (ROA) is:

$$ROA = \frac{\text{Net Income}}{\text{Average Assets}}$$

Source: Financial

Accounting: IFRS, Page 677

FCF (Free Cash Flow) is available cash in a corporation that is free of taxes and other costs (Mojtahedzadeh et al., n.d.). The following formula approximates free cash flow:

$$FCF = \frac{\text{Net Cash Provided by Operating Activities} - \text{Capital Expenditure}}{\text{Total Asset}}$$

Source: (Widiastari & Yasa, 2018)

Big data technology in this research will be proxied by the intangible asset ratio because this ratio demonstrates the effectiveness of the company's intangible asset. An increase in the ratio's value is defined as a rise in the efficiency with which intangible assets are used (Prasanna Tambe, 2014). The higher the value, the higher the intangible assets owned by the company in the form of software. The intangible asset (software) ratio is calculated using the intangible asset to total asset ratio with the formula:

$$\text{Intangible Asset Ratio} = \frac{\text{Intangible Asset}}{\text{Total Asset}}$$

Source: (Muchlis et al., 2021)

Firm value in this study is proxied by the Price to Book Value Ratio using the measurement of the market price per share divided by the book value per share. Because the stock price can be influenced by a range of internal and external factors, it is employed in this study to estimate a company's value. If the company can deal with these problems while maintaining a stable stock price, it can build a positive image in the eyes of investors (Saurabh Ghosh et al., n.d.). The formula for the Price to Book Value Ratio is as follows:

$$PBV \text{ Ratio} = \frac{\text{Market Price per Share}}{\text{Book Value per Share}}$$

Source: (Ramadhani, 2016)

2.4. Research Model

The following framework will be used to outline the research process in this study:

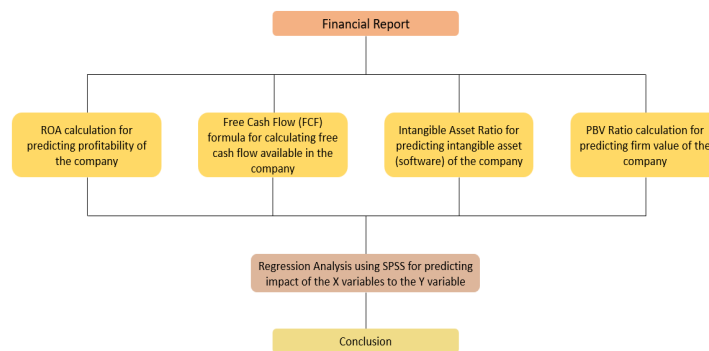


Figure 1: Research Model

3. Data Analysis and Discussion

3.1. Normality Test

Table 1

Normality Test Kolmogorov-Smirnov Test		
One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		160
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	.14661385
Most Extreme Differences	Absolute	.062
	Positive	.062
	Negative	-.033
Test Statistic		.062
Asymp. Sig. (2-tailed)		.200 ^{c,d}

Source: developed by the author

From the table above, it can be seen that the significance value is 0.200. This means that the significance value is greater than 0.05. The test criteria used is failed to reject H_0 if significance value is greater than value α which is 5% (0.05). Therefore, it can be concluded that the data has normal distribution.

3.2. Multicollinearity Test

Multicollinearity test is purposely implemented to examine the correlation among the tested independent variables. Multicollinearity test is conducted by looking at the value of tolerance and Variance Inflation Factor (VIF). A regression model can be concluded as free from multicollinearity when the tolerance value is ≥ 0.10 and the VIF value is ≤ 10 . Below are the results of the multicollinearity test:

Table 2

Coefficients ^a		
Collinearity Statistics		
Model	Tolerance	VIF
1		
(Constant)		
X1	.691	1.446
X2	.604	1.656
X3	.627	1.595

Source: developed by the author

From the table above, it is showed that all the independent variables have tolerance value above 0.1 and all the VIF value are under 10. Therefore, it can be concluded that there is no multicollinearity issues among all the independent variables with the dependent variables.

3.3. Autocorrelation Test

Table 3

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.585 ^a	.342	.329	.14802	1.948

Source: developed by the author

Based on table, it can be seen that the value of Durbin- Watson is 1.948. The value of dL taken from the DW table with $n=160$ and $k=3$ is 1.7035 and the value of dU is 1.7798. So, the value of Durbin-Watson from table 4.6 is between the value of dU and $4-dU$ ($1.7798 < 1.948 < 2.052$) So, there is no positive nor negative autocorrelation from the data. Therefore, it can be concluded that there is no auto correlation occurred.

3.4. Heteroscedasticity Test

Heteroscedasticity test is used to find out whether in the regression model there is a residual inequality of variance from one observation to another observation. If the independent variables are significant ($\text{sig} < 0.05$), then there is an indication of heteroscedasticity. If the

independent variables are not significant ($\text{sig} > 0.05$), the model is free from heteroscedasticity.

Table 4

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	.110	.008		13.372
	X1	.169	.093	.172	1.820
	X2	-.118	.078	-.153	1.516
	X3	.170	.175	.097	.973

Source: developed by the author

From the table above, it is showed that all the independent variables have sig value greater than 0.05 therefore, it can be concluded that there none of the independent variables contain heteroscedasticity issue. Moreover, to support the result from Glejser Test that there is no heteroscedasticity issue, Scatterplot analysis can be done. If the data are scattered in the graph, it means that there is no heteroscedasticity issue.

3.5. Multiple Linear Regression

Table 5

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	.117	.013		8.730
	X1	.523	.150	.272	3.482
	X2	.367	.126	.243	2.906
	X3	.672	.283	.195	2.375

Source: developed by the author

Based on the Unstandardized Coefficient Beta from table, it can be determined that the equation of multiple linear regression is as follow:

Firm Value = **0.117 + 0.523 Profitability + 0.367 Free Cash Flow + 0.672 Big Data**

From the equation above, it can be explained that:

- The constant amount is 0.117 which shows that if the Profitability, Free Cash Flow, and Big Data is zero, then the Firm Value will be 0.117.
- The value of regression coefficient of Profitability obtained is 0.523. It means that if there is increasing

Profitability of 1 unit, while Free Cash Flow and Big Data are assumed to remain fixed, then the Firm Value will increase by 0.523

- c) The value of regression coefficient of Free Cash Flow obtained is 0.367. It means that if there is increasing Free Cash Flow of 1 unit, while Profitability and Big Data are assumed to remain fixed, then the Firm Value will increase by 0.367
- d) The value of regression coefficient of Big Data obtained is 0.672. It means that if there is increasing Big Data of 1 unit, while Profitability dan Free Cash Flow are assumed to remain fixed, then the Firm Value will increase by 0.672

3.6. Partial T Test

Table 6

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	.117	.013		8.730
	X1	.523	.150	.272	3.482
	X2	.367	.126	.243	2.906
	X3	.672	.283	.195	2.375

Source: developed by the author

In order to determine whether the hypotheses are rejected or accepted, the value of the t-count from table 6 can be compared with the value of t-table at the significance level of 5% (0.05). The value of t-table in this research is 1.975. By comparing t-count and t-table, it can be concluded that:

- a) Profitability has a value (t count =3.482) > (t table = 1.975). This means that H0 is rejected and H1 is accepted. This hypothesis is supported by the sig. value (0.001) which is less than 0.05. Therefore, it can be concluded that Profitability has significant effect on Firm Value for the 2018-2021 periods. It means that if there is increasing Profitability, then the Firm Value will increase. The value of regression coefficient of Profitability is positive therefore there is a positive significant effect of Profitability towards Firm Value.
- b) Free Cash Flow has a value (t count =2.906) > (t table= 1.975). This means that H0 is rejected and H2 is accepted. This hypothesis is

supported by the sig. value (0.004) which is less than 0.05. Therefore, it can be concluded that Free Cash Flow has significant effect on Firm Value for the 2018-2021 periods. It means that if there is increasing Free Cash Flow, then the Firm Value will increase. The value of regression coefficient of Free Cash Flow is positive therefore there is a positive significant effect of Free Cash Flow towards Firm Value.

- c) Big Data has a value ($t \text{ count} = 2.375$) $>$ ($t \text{ table} = 1.975$). This means that H_0 is rejected and H_3 is accepted. This hypothesis is supported by the sig. value (0.019) which is less than 0.05. Therefore, it can be concluded that Big Data has significant effect on Firm Value for the 2018-2021 periods. The value of regression coefficient of Big Data is positive therefore there is a positive significant effect of Big Data towards Firm Value.

3.7. Simultaneous F Test

The F test known as the Simultaneous Test aims to see the simultaneous impact of Profitability, Free Cash Flow, And Big Data towards Firm Value. The results of F test can be seen below:

Table 7

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.777	3	.592	27.043	.000 ^b
	Residual	3.418	156	.022		
	Total	5.195	159			

Source: developed by the author

From table above, it can be seen that the amount of F-count is 27.043. While the value of F-table seen from Table Values for Distribution F is 2.66 ($df_1 = 3$; $df_2 = 156$). Therefore, the value of F- count (27.043) $>$ the value of F-table (2.66). So it can be concluded that all of the independent variables have significance effect on Firm Value.

4. Discussion

T test aims to see the effect of the independent variables (Profitability, Free Cash Flow, And Big Data) toward the dependent variable (Firm Value). The hypotheses of this research are as follows:

H1 : There is a positive significant effect Profitability of towards Firm Value

H2 : There is a significant partial impact of Free Cash Flow towards Firm Value

H3 : There is a significant partial impact of Big Data towards Firm Value

Table 6 demonstrates that all hypotheses can be accepted. By comparing the t-count value from table 6 to the t-table value at a 5% (0.05) significance level. In this study, the t-table value is 1.975. The data processing findings show that the t-count value of the three variables is more than the t-table, namely 1.975. As a result, it is possible to conclude that all variables have a significant impact on the value of the company.

5. Conclusion

This research purposed to analyze the effect of implementing big data on the company developed into an effective driver so that it affects company value, to analyze the effect of cash flow on the value of the company and to analyze the effect of company's profitability on value of the company. Based on the data analysis, it can be concluded that: (1) Profitability has significant effect on Firm Value for the 2018-2021 periods. It means that if there is increasing Profitability, then the Firm Value will increase. The value of regression coefficient of Profitability is positive therefore there is a positive significant effect of Profitability towards Firm Value. (2) Free Cash Flow has significant effect on Firm Value for the 2018-2021 periods. It means that if there is increasing Free Cash Flow, then the Firm Value will increase. The value of regression coefficient of Free Cash Flow is positive therefore there is a positive significant effect of Free Cash Flow towards Firm Value. (3) Big Data has significant effect on Firm Value for the 2018-2021 periods. The value of regression coefficient of Big Data is positive therefore there is a positive significant effect of Big Data towards Firm Value.

Limitations and Further Study

The limitation of this research is that this research uses the actual data for 2021 as at the time of the research the 2022 financial statements of the sampled companies were still in the audit process so they could not be used. Therefore, the researchers took 2021 as the financial reports are ready to use. And the research and forecast results only focus on the cyclical sector, which may be different when used in other sectors. Examining other industries due to their different nature can provide further study.

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