

The Effect of Liquidity, Leverage, Profitability, and Firm Size on Firm Value in Companies in the Telecommunications Subsector Listed on The Indonesia Stock Exchange, 2020-2024

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Abstract

The telecommunications industry occupies a pivotal position in advancing Indonesia's digital economy, and enterprise value constitutes a key metric reflecting corporate performance and investor assurance. Nevertheless, trends in liquidity, leverage, profitability, and firm size among telecommunications subsector firms on the Indonesia Stock Exchange from 2020 to 2024 do not consistently correspond with movements in enterprise value, warranting deeper examination of the determinants at play. An examination of liquidity, leverage, profitability, and firm size as determinants of firm value constitutes the core of this research, focusing on telecommunications enterprises registered with the Indonesia Stock Exchange from 2020 through 2024. Investor appraisals of corporate performance and prospective endurance are critically captured by firm value. As independent variables, the study employs the Current Ratio to represent liquidity, the Debt-to-Equity Ratio to capture leverage, Return on Equity to gauge profitability, and the natural logarithm of total assets to operationalize firm size. The dependent variable is proxied by Tobin's Q. A quantitative design, combining descriptive analysis with verifactory testing, directs the investigative process. Annual report data for the relevant telecommunications firms over the designated five years provide the secondary source material, and the analytical approach relies upon panel data regression conducted via dedicated computational tools. The anticipated contributions extend to empirical confirmation of the partial and concurrent influences of these financial metrics on valuation, as well as practical recommendations for investor decision frameworks and managerial actions to elevate corporate value through effective financial oversight.

Keywords: Debt to Equity Ratio, Firm Size, Firm Value, Liquidity, Profitability.

1. Introduction

A pivotal role in advancing digital transformation, delivering connectivity infrastructure through fiber optic and satellite systems, and sustaining the digital economy belongs to domestic telecommunications companies, particularly state-owned enterprises such as Telkom Indonesia. Telkomsel, Indosat Ooredoo Hutchison, XL Axiata, and Smartfren stand out as prominent industry participants, together with tower infrastructure providers such as Tower Bersama (TBIG), Sarana Menara Nusantara (TOWR), and Dayamitra Telekomunikasi (MTEL), all publicly traded on the Indonesia Stock Exchange. As the essential foundation for connectivity, this sector fuels expansion within the digital economy and among MSMEs,



generates state tax receipts and dividends totaling tens of trillions of rupiah annually, and meets a core requirement of modern populations.

Maximizing profit constitutes the short-run priority for firms, while the long-run imperative is to elevate value for shareholders. As a barometer of market confidence, firm value rises when performance is favorable, thereby ensuring investor wellbeing, and declines when performance falters. Beyond its reflection of present circumstances, firm value incorporates prospective growth and the expected trajectory of corporate wealth accumulation (Silaban & Kennedy, 2015), it also commands significant attention in the financial performance assessment frameworks used by managers and stakeholders (Harmono, 2022; Meythi, 2013).

A range of factors is believed to affect firm value. The ability to meet short-term obligations, or liquidity, generally affects valuation positively, since it conveys financial health to investors and sustains elevated stock prices; a higher Current Ratio indicates superior liquidity and operational effectiveness. The ability of a firm to produce earnings from assets or equity is captured by profitability (Arifianto & Chabachib, 2016); with increased profitability attracting greater investor interest and commanding premium stock pricing (Kasmir, 2015). Return on Equity values above the 10-15% threshold reflect management's adeptness at generating profits from shareholder investments, rendering ROE an essential metric in the selection of sound stocks.

The Debt-to-Equity Ratio (DER) serves as a measure of capital structure, denoting the extent to which owners' capital can satisfy obligations to external creditors (Harahap, 2010); a rising DER implies a heightened probability of bankruptcy (Prihadi, 2012). A high DER signifies elevated investment risk but also carries the potential to augment firm value through a tax shield, although when it becomes too high, it instead heightens financial risk and reduces firm value; a DER ratio considered good generally ranges from 1 to 1.5 (100%-150%), with a ratio below 1 indicating stronger financial health. Large companies tend to rely more on debt because their size becomes a trusted form of collateral (Loncan & Caldeira, 2014), although the use of large amounts of debt also increases the risk of cash flow being unable to meet obligations (G. M. Sari, 2014). Viewed through total assets, firm size is deemed to exert an influence on firm value, given that larger corporations face heightened public demand for information (Putri et al., 2016) and possess greater facility in securing funding through internal and external channels. However, observational evidence drawn from the telecommunications sector listed on the Indonesia Stock Exchange between 2020 and 2024 exposes anomalies inconsistent with this assertion, as shown in Table 1.

Table 1. Average Liquidity, Leverage, Firm Size, Profitability, and Firm Value in the Telecommunications Sub-sector Listed on the Indonesia Stock Exchange, 2020-2024

	2020	2021	2022	2023	2024
CR	1.043	1.188	1.000	0.759	0.664
DER	2.771	2.349	1.938	1.856	1.963
Size	5.720	5.928	6.169	6.269	6.172
ROE	10.939	19.216	12.835	13.731	11.424
Tobin's Q	1.503	1.469	1.405	1.350	1.405

Source: www.idx.co.id and processed data

CR rose in 2021 and fell in 2024, yet in both periods firm value (Tobin's Q) declined, contrary to theory. DER declined in 2021-2023 and rose in 2024, but firm value still declined in the first period and actually rose when DER rose. A similar pattern also occurred in firm

size and profitability: increases and decreases in these two variables were not followed by firm value movements consistent with theory.

This gap is reinforced by inconsistencies in previous research findings. For liquidity, Jayaningrat et al. (2017) as well as Putra and Lestari (2016) found an effect on firm value, in contrast to Dwiputra and Viriany (2020); Humairah et al. (2021); Purnamasari (2018); Santoso and Junaeni (2022); as well as Tanjung and Moeljadi (2018), who found no effect. For leverage, the majority of studies (Andriani & Rudianto, 2019; Ariestantia et al., 2023; Desmon et al., 2024; Hambali, 2021; Jayaningrat et al., 2017; Khoirina & Sari, 2022; Nadhifah, 2024; Purnamasari, 2018; D. A. Putra & Nurdiansyah, 2022; Sanusi et al., 2025; Wilson, 2020) found a significant positive effect, while Fatimah and Idayati (2024) as well as Humairah et al. (2021) found no effect. For firm size, Dewantari et al. (2020) and Ratnasari (2018) found a positive effect, Octaviany et al. (2019) found no effect, and Ramdhonah et al. (2019) found a negative effect. For profitability, the majority of studies (Arindita & Sampurno, 2015; N. Kurniawan & Mawardi, 2017; Nadhifah, 2024; Pradita & Prihastiw, 2022; Wilson, 2020) showed a significant positive effect, while Farizki et al. (2021) as well as D. N. Sari and Purbowati (2023) found no effect.

Motivated by these empirical discrepancies and theoretical inconsistencies in the existing literature, this study poses several core research questions, namely whether liquidity, the debt-to-equity ratio, profitability, or firm size affect firm value in the telecommunications subsector listed on the IDX from 2020 to 2024, whether examined individually or jointly. Accordingly, this research aims to establish the partial and simultaneous contributions of liquidity, DER, profitability, and firm size to the valuation of telecommunications firms on the Indonesia Stock Exchange over the 2020-2024 period.

By delivering refined perspectives on the linkages between liquidity, profitability, leverage, and firm value, this study holds the potential to enrich theoretical scholarship. In addition, it intends to furnish a scholarly foundation upon which future studies may build. On the practical side, the findings can support telecommunications companies in evaluating their financial practices, help investors gauge corporate performance in pursuit of favorable investment returns, and provide academics with an additional reference for the further development of financial management and investment theory.

2. Literature Review

2.1. Signaling Theory

Signaling Theory, first proposed by Spence (1973), explains that the party holding information (the company) sends signals about its condition to the party receiving information (investors), reducing the information asymmetry between them. Brigham and Houston (2019) describe this as management actions, such as financial statements, dividend policy, or capital structure decisions, that give investors clues about the company's prospects. An increase in profit or dividends is typically read as a positive signal that drives stock prices up, while a new stock issuance is often read as a negative signal. Through credible signals, management builds investor trust, which in turn affects firm value and stock price movements. This theory underlies the hypothesized relationships between each independent variable (liquidity, leverage, profitability, and firm size) and firm value discussed below.

2.2. Firm Value

Firm value represents public trust in a corporation, cultivated over its years of operation (Noerirawan & Muid, 2012), and is generally proxied by its market share price (A. A. N. D. A. Putra & Lestari, 2016), an elevated share price corresponds to heightened shareholder prosperity and firm value, given that price captures the company's investment, funding, and asset management decisions. Additionally, it is characterized as the present value of expected future cash flows (Sudana, 2019) or the amount a buyer would pay to acquire the company (Husnan & Pudjiastuti, 2012). Management increases firm value through good governance and transparent disclosure (Parta & Sedana, 2018). Brigham and Houston (2019) identify liquidity, profitability, capital structure, and growth as its key determinants, a view supported empirically by Cahyani and Wirawati (2019) as well as Dewi and Candradewi (2018). Firm value in this study is measured using Tobin's Q.

2.3. Liquidity and Firm Value

Liquidity ratios gauge a company's capacity to satisfy its short-term liabilities (Hery, 2015; Prastowo, 2011) and additionally facilitate the evaluation of solvency, the adequacy of current assets relative to obligations, and continuous financial planning. The Current Ratio, Quick Ratio, and Cash Ratio rank among the frequently employed metrics (Hery, 2015). For the purposes of this research, the Current Ratio is adopted due to its capacity to reveal how comprehensively current assets cover current obligations and to act as a financial safeguard (A. Kurniawan & Suyanto, 2015). When considered from a signaling standpoint, elevated liquidity communicates financial resilience to the investment community, which tends to bolster firm value. The following hypothesis addresses this connection:

H1: Liquidity has an effect on firm value in the telecommunications sub-sector.

2.4. Leverage and Firm Value

The ratio of external capital to owners' equity constitutes leverage, or capital structure, in the view of Fahmi (2015). Commonly, this relationship is represented by the Debt-to-Equity Ratio, which mirrors the proportion between debt and shareholder financing; an elevated DER denotes that the company relies more extensively on debt financing and proportionally less on equity (Kasmir, 2015); a higher DER indicates a smaller proportion of shareholder funding and a greater debt burden. Jensen and Meckling (1976) argues that debt disciplines free cash flow and limits wasteful investment, while Modigliani and Miller (1963) holds that leverage increases firm value because debt interest reduces taxable income. From a signaling perspective, an increase in debt can signal management's confidence in future prospects, which investors may interpret favorably.

H2: DER has an effect on firm value in the telecommunications sub-sector.

2.5. Profitability and Firm Value

As a gauge of a firm's capacity to produce earnings in relation to its sales volume, asset base, or equity position (Fatmawati, 2017), profitability also indicates management's effectiveness in employing company resources (Kasmir, 2015). Common indicators comprise Return on Assets (ROA), Profit Margin, and Return on Equity (ROE) (Hanafi & Halim, 2016). Profitability communicates operational effectiveness to the market; greater profitability is generally construed as a positive signal that raises investor confidence and, consequently, firm value.

H3: Profitability has an effect on firm value in the telecommunications sub-sector.

2.6. Firm Size and Firm Value

Firm size signifies the dimensional scope of a business entity, regularly operationalized through total assets, turnover, or equity market valuation (Brigham and Houston, 2019). Following Annisa and Kurniasih (2012), this investigation proxies firm size by means of the natural logarithm of total assets, thereby tempering volatility in the data without distorting the underlying composition of assets. Firms of larger scale are generally perceived as more stable, possessing broader stakeholder bases and enjoying facilitated access to funding (Nurbaety, 2014), attracting greater investor interest. The effect of firm size on firm value is grounded in Ross (1977) signaling theory, and is supported empirically by Gill and Obradovich (2012), who find that larger companies exercise stronger control over market conditions and are less vulnerable to economic fluctuations.

H4: Firm size has an effect on firm value in the telecommunications sub-sector.

2.7. Simultaneous Effect of Liquidity, Leverage, Profitability, and Firm Size on Firm Value

Beyond their individual contributions, these four factors, namely liquidity, leverage, profitability, and firm size, are interconnected components of a firm's comprehensive financial status, and together they shape how the market appraises the enterprise. Brigham and Houston (2019) maintain that firm value embodies investors' evaluations of current performance alongside future prospects; consequently, integrated management of these dimensions should collectively influence trust among investors and overall valuation.

H5: Liquidity, DER, profitability, and firm size simultaneously have an effect on firm value in the telecommunications sub-sector.

2.8. Previous Research

Several prior studies inform this research. Indrayani (2020) found that liquidity had no effect while solvency and activity positively affected profitability in retail trade companies on the IDX (2012 to 2018). Comparably, Suwandi et al. (2019) detected no significant influence of solvency and liquidity on profitability among coal mining enterprises, whereas activity exhibited a significant positive effect. In automotive companies, capital structure was found by Lorenza et al. (2020) to affect profitability negatively, while firm size exhibited no significant influence. Among Pakistani chemical firms, Khidmat and Rehman (2014) identified a significant negative effect of solvency on profitability. Supitriyani et al. (2020) found that profitability in hotel, restaurant, and tourism companies was affected by liquidity in a positive but statistically insignificant manner, by leverage negatively but not significantly, and by firm size in a significantly positive way.

2.9. Conceptual Framework

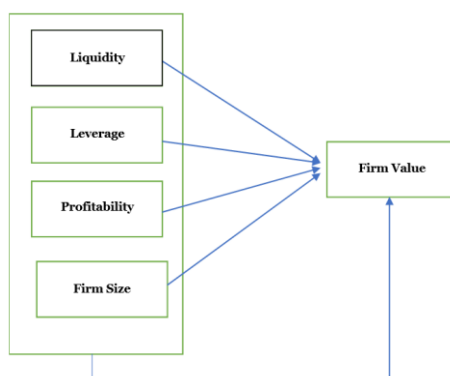


Figure 1. Conceptual Framework

Figure 1, the Conceptual Framework, illustrates the manner in which this study explores the influence of liquidity, leverage, profitability, and firm size, construed as independent variables, on firm value as the dependent variable. Liquidity signifies the company's ability to satisfy near-term obligations, leverage indicates the magnitude of debt reliance in financing, profitability portrays the company's capacity to generate profit, while firm size embodies the company's scale and capacity. These four variables are assumed to have a relationship with firm value because the condition of liquidity, funding structure, ability to generate profit, and firm size can influence investor perception and investment decisions, so that ultimately they have the potential to determine the level of firm value.

3. Methods

The research method constitutes a systematic, scientific process of data collection, analysis, and interpretation directed toward answering the study's central questions; its proper application is essential for producing valid, objective, and accountable results. Given its emphasis on statistical testing of numerical data, this study employs a quantitative methodology, in line with Sugiyono (2018), who states that this approach involves collecting data from a specific population or sample with the help of a research instrument, to then be analyzed statistically.

3.1. Data Source, Place, and Time of Research

The data utilized in this investigation are secondary in character, signifying that they were procured indirectly from external sources and had already been compiled prior to the commencement of the research. These data are drawn from the audited annual statements of telecommunications subsector issuers on the IDX between 2020 and 2024, gathered via the exchange's official website and the companies' own online portals. The dataset embraces liquidity, capital structure, profitability, firm size, and firm value, operationalizing them respectively through the Current Ratio, Debt-to-Equity Ratio, Return on Equity, natural logarithm of total assets, and Tobin's Q. The choice of secondary data reflects their availability to the public, inherent objectivity, and compatibility with quantitative statistical treatment.

The study employed a documentation-based methodology, collecting financial information from telecommunications companies listed on the Indonesia Stock Exchange. The place of research is administratively not limited to a specific physical location, but was conducted online by accessing official sources such as websites, in accordance with the characteristics of quantitative research based on secondary data. The research took place from April 2026 to May 2026, covering the stages of problem identification, proposal design, secondary data collection, statistical data analysis, and drawing conclusions and preparing the thesis report.

3.2. Population and Sample

Sugiyono (2018) defines a population as a generalized region containing objects or individuals with particular attributes and features established by the researcher for study and conclusion. This study derives its population from the 21 firms in the telecommunications subsector listed on the Indonesia Stock Exchange, which are detailed in Table 2.

Table 2. Population of Telecommunications Sub-sector Companies Listed on the IDX, 2020-2024

No.	Stock Code	Company Name
1.	BALI	PT Balitowerindo Sentra Tbk
2.	BTEL	Bakrie Telecom Tbk
3.	CENT	PT Centratama Telekomunikasi Indonesia
4.	EXCL	PT XLSMART Telecom Sejahtera Tbk.
5.	GOLD	PT Visi Telekomunikasi Infrastruktur Tbk.
6.	IBST	Inti Bangun Sejahtera Tbk.
7.	ISAT	PT Indosat Tbk.
8.	KBLV	First Media Tbk.
9.	LINK	PT Link Net Tbk.
10.	SUPR	Solusi Tunas Pratama Tbk.
11.	TBIG	PT Tower Bersama Infrastructure Tbk.
12.	TLKM	PT Telkom Indonesia (Persero) Tbk.
13.	TOWR	Sarana Menara Nusantara Tbk.
14.	OASA	PT Maharaksa Biru Energi Tbk.
15.	MORA	PT Mora Telematika Indonesia
16.	LCKM	PT LCK Global Kedaton Tbk.
17.	GHON	PT Gihon Telekomunikasi Indonesia Tbk.
18.	JAST	PT Jasnita Telekomindo Tbk.
19.	MTEL	PT Dayamitra Telekomunikasi Tbk.
20.	INET	PT Sinergi Inti Andalan Prima Tbk.
21.	DATA	PT Remala Abadi Tbk.

Source: www.idx.co.id (processed data)

Sugiyono (2018) defines a sample as a subset of the population, possessing a specified size and characteristics, selected to represent the whole population while acknowledging constraints of time, resources, and expense. In determining the sample for this study, purposive sampling was utilized, guided by the criteria enumerated below.

Table 3. Sample Criteria for Telecommunications Sub-sector Companies Listed on the IDX, 2020-2024

No.	Criteria	Number
1.	Telecommunications sub-sector companies listed on the IDX	21
2.	Companies that conducted an IPO during the 2020-2024 period	(4)
3.	Companies that did not meet the criteria (inconsistent financial statements, delisted/inactive, merged, suspended, or acquired)	(9)
	Companies that met the criteria and were determined as the sample	8
	Observation period 2020-2024	5 years
	Total firm-year observations	40

Source: Processed data (2026)

Guided by the sample selection criteria, this investigation encompassed 8 telecommunications sub-sector companies listed on the Indonesia Stock Exchange (IDX) throughout the 2020-2024 observation period. Annual observation of each company for five successive years produced a balanced panel dataset consisting of 40 firm-year observations. The sampled companies remained listed throughout the observation period and met the criteria regarding data availability and listing status, with companies undergoing IPO, delisting, merger, suspension, or acquisition during the observation period excluded from the sample. The complete list of sampled companies and observation years is presented in Table 3.

3.3. Operational Definition of Variables

Variable operationalization entails the translation of abstract theoretical constructs into quantifiable indicators that align with the specific research setting (Sugiyono, 2018). This process encompasses the specification of operational definitions, the selection of appropriate indicators, and the establishment of measurement protocols for each variable under investigation. The present study features a single dependent variable, Firm Value (Y), alongside four independent variables: Liquidity (X1), DER (X2), Profitability (X3), and Firm Size (X4). A comprehensive presentation of these variables appears in Table 4.

Table 4. Operationalization and Measurement Scale of Variables

No.	Variable	Indicator	Formula	Scale
1.	Firm Value (Y)	Reflects the value of company assets including securities (Risman, 2021)	Tobin's Q = (Market Value of Equity + Total Debt) / Total Assets	Ratio
2.	Liquidity (X1)	Current assets divided by current liabilities (Hery, 2015)	CR = Current Assets / Current Liabilities	Ratio
3.	DER (X2)	Total debt divided by total equity (Kasmir, 2015)	DER = Total Debt / Total Equity	Ratio
4.	Profitability (X3)	Net profit after tax divided by total capital (Munawir, 2014)	ROE = Net Profit After Tax / Total Capital	Ratio
5.	Firm Size (X4)	Total assets owned by the company for operating activities (Prasetia et al., 2014)	Size = Ln(Total Assets)	Ratio

Source: Processed data (2026)

3.4. Data Analysis Method

To scrutinize the relationship linking liquidity, DER, profitability, and firm size to firm value, the study draws on panel data regression analysis performed through EViews, subsequent to descriptive and classical assumption examinations. As noted by Widarjono (2009), estimation may adopt one of three models: the Common Effect Model, which merges cross-section and time-series data through OLS without accounting for individual or temporal heterogeneity; the Fixed Effect Model, which uses dummy variables to allow intercepts to vary across individuals while slopes remain fixed; or the Random Effect Model, which incorporates error components to overcome the degrees-of-freedom issue in FEM. The Chow test, Hausman test, and Lagrange Multiplier test serve to determine the appropriate model. The regression specification employed takes the form $Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + e$, where Y captures Firm Value, X1 captures Liquidity, X2 captures DER, X3 captures Profitability, and X4 captures Firm Size.

4. Results and Discussion

4.1. Research Results

4.1.1. Panel Data Regression Model Selection

A. Chow Test (Common Effect vs Fixed Effect)

The Chow Test determines the choice between the Common Effect Model and the Fixed Effect Model, with the null hypothesis asserting the superiority of the former. If the p-values from the F-test and Chi-Square Test are below 0.05, the null hypothesis is rejected in favor of the Fixed Effect Model as the more suitable framework. The results of the Chow Test for firm value are presented in Table 5.

Table 5. Chow Test Results (Firm Value as the Dependent Variable)

Effects Test	Statistic	d.f.	Prob.
Cross-section F	21.427319	(11,53)	0.0000
Cross-section Chi-square	125.839408	11	0.0000

Source: Processed data (2026)

The Chow Test, producing probability values for both the F-test and the Chi-Square Test under the $\alpha = 0.05$ threshold, warrants rejection of the null hypothesis in favor of its alternative. Accordingly, at this stage of the analysis, the Fixed Effect model is held to be preferable to the Common Effect model.

B. Hausman Test (Fixed Effect vs Random Effect)

The Hausman Test determines the appropriate model between the Fixed Effect and Random Effect Models. A probability value below 0.05 supports the Fixed Effect Model, while a value above 0.05 supports the Random Effect Model (Hausman, 1978).

Table 6. Hausman Test Results (Firm Value as the Dependent Variable)

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	11.125914	7	0.1757

Source: Processed data (2026)

As shown in Table 6, the Cross-section random test produces a probability value of 0.1757, which is greater than the 0.05 significance level. Therefore, the null hypothesis is not rejected, indicating that the Random Effect Model is more appropriate than the Fixed Effect Model.

C. Lagrange Multiplier Test

The Breusch-Pagan Lagrange Multiplier Test determines the appropriate model between the Common Effect and Random Effect Models. The results for firm value are presented in Table 7.

Table 7. LM Test Results (Firm Value as the Dependent Variable)

	Cross-section	Test Hypothesis Time	Both
Breusch-Pagan	77.76147 (0.0000)	3.334381 (0.1265)	69.09585 (0.0000)
Honda	9.170769 (0.0000)	-1.527868 --	4.697240 (0.0000)
King-Wu	8.170769 (0.0000)	-1.527868 --	3.300757 (0.0005)
Standardized Honda	12.29111 (0.0000)	-1.378134 --	2.964973 (0.0015)
Standardized King-Wu	12.29111 (0.0000)	-1.378134 --	1.267123 (0.1026)
Gourieriou, et al.*	--	--	66.76147 (< 0.01)

*Mixed chi-square asymptotic critical values:

1%	7.289
5%	4.321
10%	2.952

Source: Processed data (2026)

With a Breusch-Pagan LM test probability registering at 0.0000, a value considerably lower than $\alpha = 0.05$, rejection of H_0 obtains, and H_1 accordingly receives support. As a result, the Random Effect model is deemed preferable to the Common Effect model at this stage of the analytical process.

D. Conclusion of Model Selection

Table 8. Conclusion of Panel Data Regression Model Testing

No.	Method	Test	Result
1.	Chow Test	Common Effect vs Fixed Effect	Fixed Effect
2.	Hausman Test	Fixed Effect vs Random Effect	Random Effect
3.	Lagrange Multiplier	Random Effect vs Common Effect	Random Effect

Source: Processed data (2026)

The results of the Chow, Hausman, and Lagrange Multiplier tests are summarized in Table 8. On the basis of the Chow, Hausman, and Lagrange Multiplier tests, the Random Effect Model (REM) was adopted as the suitable panel data specification for investigating how Liquidity (CR), Leverage (DER), Profitability (ROE), and Firm Size (SIZE) relate to Firm Value. All three model estimations were conducted using the same set of defined variables and the same dependent variable, Tobin's Q, to ensure consistency in the model selection process.

4.1.2. Estimation Results of Each Model

A. Common Effect Model

Table 9. Panel Data Regression Estimation, Common Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-10.33905	2.629343	-3.932179	0.0002
CR	0.216132	0.312449	0.691735	0.0016
Leverage	4.325723	1.100044	3.932318	0.0002
SIZE	0.276508	0.075436	3.665441	0.0005
ROE	0.145365	0.044992	3.230931	0.0020

R-squared	0.881213	Mean dependent var	2.835288
Adjusted R-squared	0.873784	S.D. dependent var	2.688545
S.E. of regression	1.742825	Akaike info criterion	4.053331
Sum squared resid	194.3961	Schwarz criterion	4.306294
Log likelihood	-137.9199	Hannan-Quinn criter.	4.154036
F-statistic	14.99437	Durbin-Watson stat	0.447755
Prob(F-statistic)	0.000000		

Source: Processed data (2026)

As shown in Table 9, all four variables exert a significant influence on Firm Value, each possessing a p-value below 0.05. The F-test establishes joint significance, generating an F-statistic of 14.99437 that exceeds the critical F-table value of 4.09, accompanied by a p-value of 0.0000. With an R^2 of 0.881213, 88.12% of Firm Value's variance is explained by the independent variables, while 11.88% remains unaccounted for; the Adjusted R^2 of 87.38% offers a comparable figure after adjustments for degrees of freedom.

B. Fixed Effect Model

Fixed Effect assumes that the intercept differs across companies but the slope remains the same, because there are variables not fully included in the model equation (Djalal, 2006).

Table 10. Panel Data Regression Estimation with Fixed Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-359.9992	449.5010	-0.800886	0.4268
CR	-11.62047	5.676253	-2.047208	0.0456
Lev	687.6586	907.9259	0.757395	0.4522
SIZE	1.003904	0.473216	2.121451	0.0386
ROE	0.161761	0.066403	2.436063	0.0182
Fixed Effects (Cross)				
_TLKM—C	72.89544			
_BALI—C	-257.7816			
_EXCL—C	-57.86382			
_GOLD—C	-213.6242			
_IBST—C	-8.010952			
_ISAT—C	-213.4662			
_TBIG—C	104.2750			
_TOWR—C	190.8947			
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.937858	Mean dependent var		2.835288
Adjusted R-squared	0.916753	S.D. dependent var		2.688545
S.E. of regression	0.775716	Akaike info criterion		2.551343
Sum squared resid	31.89198	Schwarz criterion		3.152130
Log likelihood	-72.84836	Hannan-Quinn criter.		2.790518
F-statistic	44.43772	Durbin-Watson stat		1.315479
Prob(F-statistic)	0.000000			

Source: Processed data (2026)

Evidence from the Fixed Effect model shown in table 10, reflected in a Prob F-statistic of 0.0000, establishes that all four predictors, Liquidity, DER, Firm Size, and Profitability, attain significance at the 5% level. The independent variables, with an Adjusted R² of 0.916753, account for 91.68% of the variance in Firm Value, whereas 8.32% remains unexplained.

C. Random Effect Model

In the Random Effect model, differences in intercept and slope across individuals and across time are accommodated through the error component, taking into account the possible correlation between the error and the regression coefficients (Sriyana, 2014). The estimation results are presented in Table 11.

Table 11. Panel Data Regression Estimation with Random Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-6.997022	5.810420	2.376324	0.1735
CR	-1.150933	0.155337	3.327887	0.0441
Lev	4.986529	2.624303	3.900135	0.0319
SIZE	0.537665	0.177010	3.342669	0.0041
ROE	0.745388	0.059409	3.447258	0.0171
Random Effects (Cross)				
_TLKM—C	-0.172727			

Variable	Coefficient	Std. Error	t-Statistic	Prob.
_BALI—C	-3.077031			
_EXCL—C	0.275086			
_GOLD—C	-0.964292			
_IBST—C	-1.622544			
_ISAT—C	5.012519			
_TBIG—C	-0.228729			
_TOWR—C	0.227132			
Effects Specification				
			S.D.	Rho
Cross-section random			1.966565	0.8564
Idiosyncratic random			0.805379	0.1436
Weighted Statistics				
R-squared	0.943034	Mean dependent var		0.467548
Adjusted R-squared	0.920164	S.D. dependent var		0.906971
S.E. of regression	0.826653	Sum squared resid		43.73478
F-statistic	10.066713	Durbin-Watson stat		1.123785
Prob(F-statistic)	0.007556			
Unweighted Statistics				
R-squared	0.933105	Mean dependent var		2.835288
Sum squared resid	290.9349	Durbin-Watson stat		0.168933

Source: Processed data (2026)

The Random Effect specification produces p-values below 0.05 for CR, DER, SIZE, and ROE, demonstrating that all four independent variables are statistically significant at the 5% level. The model's joint significance is also signaled by the F-test, whose probability value stands at 0.007556. According to the R² of 0.943034, 94.30% of the variation in Firm Value is explained by the independent variables incorporated in the model, while the remaining 5.70% is attributable to factors outside it. Following adjustment for the model's degrees of freedom, the Adjusted R² of 0.920164 indicates that 92.02% of the variation in Firm Value is explained.

4.1.3. Analysis of the Selected Panel Data Regression Model Estimation

Selection of the Random Effect Model as the appropriate panel specification follows from the Chow, Hausman, and LM test results, enabling assessment of Liquidity, DER, Firm Size, and Profitability impacts on Tobin's Q for IDX-listed telecommunication firms across the 2020-2024 period. By using the facility of white heteroscedasticity cross-section standard errors and covariance, the model's standard error has accommodated the problems of heteroscedasticity and multicollinearity so that they do not need to be tested again. The autocorrelation problem was also not tested further, because autocorrelation testing on panel data cannot determine with certainty the source of autocorrelation, whether it occurs across individuals, across time, or both. The panel data regression model equation formed is as follows:

$$\text{Tobin's Q} = (C_i - 6.997022) - 1.150933 \text{ CR} + 4.986529 \text{ Lev} + 0.537665 \text{ SIZE} + 0.745388 \text{ ROE}$$

where C_i is the fixed effect constant for each company ($i = 1, \dots, 8$).

The regression coefficients may be interpreted in the following manner. The negative coefficient for Liquidity (CR), at -1.150933, implies that Firm Value declines by 1.150933 for every one-point increase in CR when other variables are held constant. Leverage (DER), with a positive coefficient of 4.986529, indicates that Firm Value increases by 4.986529 per unit increase in DER under the same conditions. With a coefficient of 0.537665, Firm Size (SIZE)

indicates that each additional unit of size augments Firm Value by 0.537665, other factors remaining unchanged. Profitability (ROE), with a coefficient of 0.745388, reveals that every unit increment in ROE lifts Firm Value by 0.745388, holding all else equal.

The estimation equation for each sample company is as follows:

- 1) TLKM: Tobin's $Q = -0.172727 - 1.150933 \text{ CR} + 4.986529 \text{ Lev} + 0.537665 \text{ SIZE} + 0.745388 \text{ ROE}$
- 2) BALI: Tobin's $Q = -3.077031 - 1.150933 \text{ CR} + 4.986529 \text{ Lev} + 0.537665 \text{ SIZE} + 0.745388 \text{ ROE}$
- 3) EXCL: Tobin's $Q = 0.275086 - 1.150933 \text{ CR} + 4.986529 \text{ Lev} + 0.537665 \text{ SIZE} + 0.745388 \text{ ROE}$
- 4) GOLD: Tobin's $Q = -0.964292 - 1.150933 \text{ CR} + 4.986529 \text{ Lev} + 0.537665 \text{ SIZE} + 0.745388 \text{ ROE}$
- 5) IBST: Tobin's $Q = -1.622544 - 1.150933 \text{ CR} + 4.986529 \text{ Lev} + 0.537665 \text{ SIZE} + 0.745388 \text{ ROE}$
- 6) ISAT: Tobin's $Q = 5.012519 - 1.150933 \text{ CR} + 4.986529 \text{ Lev} + 0.537665 \text{ SIZE} + 0.745388 \text{ ROE}$
- 7) TBIG: Tobin's $Q = -0.228729 - 1.150933 \text{ CR} + 4.986529 \text{ Lev} + 0.537665 \text{ SIZE} + 0.745388 \text{ ROE}$
- 8) TOWR: Tobin's $Q = 0.227132 - 1.150933 \text{ CR} + 4.986529 \text{ Lev} + 0.537665 \text{ SIZE} + 0.745388 \text{ ROE}$

4.2. Discussion

4.2.1. Effect of Liquidity on Firm Value

A t-statistic of -3.327887, together with a probability of 0.0441 falling below the 0.05 significance threshold, emerges from the Current Ratio when it is employed as a proxy for liquidity. Hence, H_0 is overturned and H_a upheld, a decision that underscores the significant bearing liquidity has on Firm Value. Such a result concurs with Jayaningrat et al. (2017) and Putra and Lestari (2016), though it conflicts with the findings of Humairah et al. (2021) and Purnamasari (2018), who reported no significant effect. This negative effect highlights a condition deserving attention in the telecommunications context. Heightened liquidity does not necessarily reflect an improving financial condition, as a Current Ratio that is excessively high can signal current funds left unproductively employed. This condition is relevant for telecommunications companies, which are capital intensive and require sustained investment in infrastructure, networks, and technology. When more funds are held in current assets rather than allocated to productive investment, investors may assess this condition as an indication of less than optimal asset management, which has the potential to depress firm value.

Such a result likewise indicates that the influence of liquidity on firm value can vary from one sector to another. In the banking sector, the level of liquidity has different characteristics because liquidity is an important part of a bank's ability to meet obligations and maintain customer trust, whereas in the manufacturing sector, high liquidity may be more related to the ability to meet working capital needs and short-term obligations. In contrast, in the telecommunications sector, the large need for long-term investment causes high liquidity not to always be perceived positively by investors. Therefore, an increase in liquidity accompanied by a fall in firm value can occur when the accretion of current assets is not matched by enhanced productivity or improved growth prospects. The results of this study therefore indicate that investors assess not only the level of liquidity but also how effectively the company allocates resources to foster growth and economic value.

4.2.2. Effect of Leverage (DER) on Firm Value

The DER test produces a t-statistic of 3.900135 alongside a p-value of 0.0319, which lies beneath 0.05, H_0 is rejected, indicating that leverage affects Firm Value positively and significantly. Such a finding indicates that escalating debt at telecommunications companies is not always construed as mounting risk, but may instead mirror the company's ability to employ external funding sources for network expansion, digital infrastructure, and greater service capacity. Hence, a rise in DER followed by a rise in Firm Value may occur when debt is utilized productively to underpin the company's investment and growth.

Compared with other sectors, this relationship may reflect characteristics specific to the telecommunications industry. In the banking sector, leverage is structurally high because third-party funds are the main source of funding, so its effect on firm value is more related to capital adequacy and risk management. Meanwhile, in the manufacturing sector, debt is more often used to finance fixed assets, working capital, and production capacity expansion. In telecommunications companies, the large need for investment in long-term networks and infrastructure can make the use of debt viewed as a strategic instrument to support growth. Therefore, the positive result in this study shows that the market may assess leverage more positively when its use supports the company's growth prospects.

This result chimes with the studies of Wilson (2020), Nadhifah (2024), and Hambali (2021), which affirmed a positive and significant leverage effect on Firm Value, while it stands at odds with Fatimah and Idayati (2024), whose work reported no significant DER effect on Firm Value. This difference may be influenced by sector characteristics and how companies manage their debt. An appropriate capital structure can also provide tax shield benefits through a reduction in the tax burden on debt interest, as proposed by Modigliani and Miller (1963). Thus, debt can increase firm value as long as it is managed optimally and used for activities that generate economic benefits, rather than merely increasing the company's obligations.

4.2.3. Effect of Firm Size on Firm Value

Firm Size, recording a t-statistic of 3.342669 together with a probability of 0.0041 that rests below the 0.05 significance threshold, thereby occasions the rejection of H_0 and the acceptance of H_a , such that Firm Size wields a significant effect on Firm Value. As a proxy for company scale, frequently measured by total assets, sales, or market capitalization (Brigham & Houston, 2019), larger corporations ordinarily command broader access to internal and external funding sources alike (Nurbaety, 2014). Because large companies tend to harbor greater resources, a stronger market position, and an extended capacity to pursue strategic investments, this condition can lift firm value. The findings of this study are consonant with Dewantari et al. (2020) and Ratnasari (2018), who reported a positive relationship between firm size and firm value.

However, the effect of Firm Size needs to be understood by considering the characteristics of each industry sector. In the banking sector, firm size can increase firm value through economies of scale, higher customer trust, and the ability to expand financial services. Meanwhile, in the manufacturing sector, firm size can provide advantages through increased production capacity, operational efficiency, and greater utilization of resources. In the telecommunications sector, the effect of firm size becomes increasingly relevant because this industry is capital intensive and requires large investment in the construction and maintenance of network infrastructure, technology development, and expansion of the customer base. Therefore, telecommunications companies of larger size tend to have a stronger ability to maintain competitiveness and undertake expansion, which ultimately can enhance investor perceptions of the company's prospects and firm value.

Nevertheless, an expansive firm size does not necessarily translate into a rise in firm value. An increase in asset scale may also be accompanied by higher operational costs, large investment needs, and increasingly complex financial obligations. Thus, the positive outcome of this study signifies that, throughout the observation period, the advantages conferred by company scale at telecommunications firms tended to outweigh the potential costs associated with managing a large-sized enterprise. This shows that the characteristics of the telecommunications industry, which requires infrastructure and technology investment on a large scale, may be one of the reasons why Firm Size contributes positively to Firm Value.

4.2.4. Effect of Profitability on Firm Value

A t-statistic of 3.447258 and a p-value of 0.0171, falling below 0.05, emerge from the test results, establishing that profitability as proxied by ROE significantly affects Firm Value. Accordingly, H_0 is discarded and H_a is embraced. Profitability reflects the company's ability to produce profit from shareholders' capital; hence, an increase in ROE may therefore transmit a positive signal to investors regarding corporate performance and efficiency, thereby elevating investor confidence and, in turn, firm value. However, this relationship in the telecommunications sector needs to be understood based on the industry's capital intensive characteristics and its need for large investment in the construction of network infrastructure and technology development. Thus, greater profitability does not always translate into a proportional gain in firm value if the earnings produced remain committed to funding long-term investment and operational needs.

When compared with other sectors, profitability's effect on firm value can display varying patterns. In banking, profitability is typically associated closely with the ability to manage productive assets, the efficiency of intermediation, and the quality of risk management, while in manufacturing it relates more to production efficiency, cost control, and capacity utilization. Meanwhile, in the telecommunications sector, investors also consider capital expenditure needs, technological developments, network quality, industry competition, and customer growth prospects. Therefore, while profitability remains a significant indicator, investors in telecommunications firms may appraise firm value not merely through current profit, but additionally through the sustainability of cash flow and the company's ability to deliver long-term growth.

While Wilson (2020) aligns with this study's findings through the establishment of a positive and significant relationship between profitability and firm value, Sari and Purbowati (2023) and Farizki et al. (2021) diverge from them by reporting no significant effect. This difference may occur because sector characteristics, market conditions, and the way investors assess profit sustainability differ between industries. Thus, the results of this inquiry imply that, within the telecommunications domain, profitability ranks among the salient determinants in the constitution of firm value, though its influence must nonetheless be appraised in conjunction with additional elements such as investment requirements, financing composition, sectoral risk, and the enterprise's growth trajectory.

4.2.5. Effect of Liquidity, Leverage, Firm Size, and Profitability Simultaneously on Firm Value

That Liquidity, DER, Firm Size, and Profitability are simultaneously significant in relation to Firm Value indicates that these four financial dimensions collectively account for variations in firm value. When contemplated through an investor's lens, liquidity reflects the company's ability to discharge short-term obligations, profitability manifests the capacity to generate earnings, leverage as proxied by DER signifies financing policy, and firm size portrays the company's magnitude and resources. The market's evaluation of a company's performance

and future prospects is what firm value represents (Brigham & Houston, 2019). However, the linkage between financial indicators and firm value can vary among sectors because of disparities in business characteristics, funding structure, asset intensity, and market conditions. In the banking sector, for example, leverage is an inherent part of the business model and funding structure, whereas in the manufacturing sector, liquidity and asset management tend to be closely related to operational efficiency. Meanwhile, telecommunications companies require large and sustained investment in network infrastructure and technology, so funding decisions and investment prospects play an important role in shaping investor perceptions.

The study's results also demonstrate that the linkage between each financial indicator and firm value does not consistently proceed in a uniform direction. An increase in liquidity coupled with a decrease in firm value can materialize when growth in current assets fails to be accompanied by productive resource utilization aimed at generating profit. Excessively high liquidity can also be perceived by investors as an indication of funds that have not been optimally utilized. Conversely, an increase in DER occurring together with an increase in firm value can indicate that the use of debt is directed toward financing network expansion, technology development, or productive investment that has the potential to generate cash flow and growth in the future. Thus, this pattern does not always indicate inconsistency, but may reflect the characteristics of the telecommunications industry, which requires large capital and sustained investment. Therefore, rather than evaluating each indicator separately, investors additionally weigh how liquidity, leverage, firm size, and profitability are collectively managed to sustain the firm's longevity and growth outlook.

5. Conclusion

The Random Effect specification reveals that Current Ratio, Debt-to-Equity Ratio, Firm Size, and Return on Equity each exert a significant independent influence on Tobin's Q, given p-values under 0.05. These four predictors jointly account for notable Firm Value variation in the telecommunications subsector across the 2020-2024 period, with 94.30% of the variance explained by the model.

These findings support Signaling Theory, in which increasing profitability and firm size are captured by the market as positive signals that boost firm value, while also confirming Trade-Off Theory, in which investors in the telecommunications sector tend to tolerate a high level of leverage as long as it is used for asset expansion and can be converted into profit. Nevertheless, the declining trend of the Current Ratio to below 1.00 in 2023-2024 demands caution on the part of management in maintaining short-term cash flow, while fluctuations in ROE indicate the need for sustainable operational cost efficiency so that profitability remains stable as a driver of the company's market value.

Based on these findings, it is suggested that companies consider establishing an optimal capital structure and exercise caution in debt-based funding, given that high leverage has the potential to become a negative signal for investors. Companies also need to maintain a stable level of liquidity, while investors, particularly those using fundamental analysis, are advised to consider various financial ratios comprehensively, with Profitability and Liquidity as the main aspects in assessing the prospects of Firm Value in the telecommunications sub-sector.

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