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A Digital Transformation, R&D Expenditure, and Business Model Innovation: Drivers of Firm Value in the Digital Economy Era

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A B S T R A C T

This study examines the effect of Digital Transformation, R&D Expenditure, and Business Model Innovation on Firm Value among technology companies listed on the Indonesia Stock Exchange for the 2023–2025 period. A quantitative approach with multiple linear regression was employed. Using purposive sampling, 34 companies were selected, yielding 102 observations. Firm value was measured using Tobin's Q. Results indicate that Digital Transformation and Business Model Innovation positively and significantly affect firm value, while R&D Expenditure exerts a significant negative effect. Simultaneously, all variables significantly influence firm value with a model predictive capacity of 77.4%. These findings confirm the Resource-Based View that digital capabilities and business model innovation constitute primary strategic resources driving value creation in technology firms

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INTRODUCTION

The rapid development of the digital economy in Indonesia has fundamentally transformed the national technology industry landscape in recent years. According to the e-Conomy SEA 2024 report published by Google, Temasek, and Bain & Company, Indonesia's digital economy reached a Gross Merchandise Value (GMV) of USD 90 billion in 2024, growing 13% year-on-year and cementing its position as the largest digital economy in Southeast Asia. This growth has been driven by the accelerating adoption of digital technology across multiple sectors, the maturation of the technology startup ecosystem, and the rapid expansion of digital financial services. This phenomenon is reflected in the growing number of technology companies listing their shares on the Indonesia Stock Exchange (IDX), with a total of 47 companies currently registered in the technology sector as of 2025.

Yet behind this impressive growth lies a compelling paradox that warrants serious academic inquiry. Several large technology companies that have gone public on the IDX have experienced significant market value pressure following their initial public offerings. GoTo (GOTO), for instance, recorded a share price decline of more than 80% from its IPO price following its listing in April 2022, making it one of the worst-performing technology IPOs globally in that year. Meanwhile, Bukalapak (BUKA), which achieved the largest IPO in IDX history by raising IDR 21.9 trillion in 2021, similarly experienced a share price decline of more than 85% from its IPO price. These phenomena raise a fundamental question: what factors truly determine the value of technology companies in the Indonesian capital market? Is business scale alone sufficient to guarantee high firm value, or are there other strategic dimensions such as digital transformation, R&D investment, and business model innovation that are more consequential in driving sustainable firm value creation?

The question of what drives firm value in the technology sector has attracted considerable scholarly attention globally, yet empirical evidence in the context of Indonesia's capital market remains sparse. Prior studies in Indonesia have predominantly focused on conventional financial variables such as profitability, leverage, and liquidity as determinants of firm value (Setyadi et al., 2025; Sabarudin & Firdaus, 2021), while technology and innovation-based factors have been relatively underexplored. This gap is particularly significant given that technology companies derive their competitive advantage not from physical assets, but from intangible strategic resources such as digital capabilities, knowledge assets, and the ability to continuously reinvent their business models resources that are not adequately captured by traditional financial metrics alone.

Digital transformation has emerged as the foremost strategic agenda for technology companies operating in Indonesia's rapidly evolving digital economy. The comprehensive integration of digital technology into business operations and strategy is widely believed to enhance operational efficiency, expand market reach, and ultimately create added value for shareholders. Zhao et al. (2024) demonstrated that digital transformation consistently exerts a positive effect on firm performance through mechanisms of operational efficiency improvement and innovation capability development. Chen and

Zhang (2024) further confirmed that companies successfully implementing digital transformation receive positive capital market responses reflected in improved financial performance. Nevertheless, empirical evidence on this relationship specifically within the Indonesian technology sector remains limited and requires further investigation.

Equally critical is the role of Research and Development (R&D) Expenditure as a strategic investment that determines the long-term innovation capacity and competitiveness of technology firms. Companies that consistently allocate significant resources to R&D demonstrate a commitment to product and technological innovation, which investors typically interpret as a positive signal of quality and long-term growth prospects. Chan et al. (2001) demonstrated that R&D intensity correlates positively with firm market value, as investors interpret R&D spending as the creation of highly valuable intangible assets. Tung and Binh (2022) reinforced this finding with empirical evidence from emerging markets, though the direction and magnitude of R&D's effect on firm value have been shown to be contextually dependent. Beyond digital transformation and R&D, Business Model Innovation (BMI) constitutes another critical dimension of firm value creation in the technology sector. A company's ability to continuously renew how it creates, delivers, and captures value from customers represents a source of competitive advantage that is difficult for rivals to replicate (Amit & Zott, 2012). Kraus et al. (2020) confirmed that BMI is a consistent predictor of firm value growth through the creation of sustainable competitive advantage, particularly in dynamic and uncertain environments characteristic of the technology industry.

Although all three variables have demonstrated theoretical and empirical relevance to firm value, research specifically integrating them into a unified analytical model within the context of IDX-listed technology companies remains rare. The cases of GOTO and BUKA Lapak illustrate that large-scale business operations and high market capitalization at IPO do not automatically translate into sustained firm value, suggesting that deeper strategic factors rooted in digital capabilities and innovation may be more decisive determinants of long-term value creation. This research gap, grounded in both theoretical considerations and real-world phenomena observed in Indonesia's technology capital market, constitutes the primary motivation for this study.

Based on the foregoing background, this study aims to analyze the effect of Digital Transformation, R&D Expenditure, and Business Model Innovation on Firm Value in technology companies listed on the IDX for the period 2023-2025, with Firm Size as a control variable. Specifically, this study addresses the following research questions: does Digital Transformation, R&D Expenditure, and Business Model Innovation have a significant effect on Firm Value in technology companies listed on the IDX for the period 2023-2025.

LITERATURE REVIEW

Resource-Based View (RBV) Theory

This study is grounded in the Resource-Based View (RBV) theory developed by Barney (1991), which posits that sustainable competitive advantage and firm value derive from internal resources that are Valuable, Rare, Inimitable,

and Non-substitutable (VRIN). In the context of technology companies, VRIN-based resources are embodied in digital capabilities, R&D investments, and business model innovation three strategic dimensions that collectively shape firm value in the eyes of investors. Companies that optimally manage and develop these strategic resources will outperform competitors, ultimately reflected in higher market value. RBV thus provides the overarching theoretical lens through which all variables in this study are interpreted.

Firm Value

Firm value reflects investors' perception of a company's success in managing its resources, as evidenced by stock price performance in the capital market (Brigham & Houston, 2019). High firm value signals strong growth prospects and the capacity to generate optimal returns for shareholders. Within the RBV framework, firm value represents the ultimate outcome of a company's ability to accumulate and leverage strategic resources superior to those of its competitors. This study measures firm value using Tobin's Q, the ratio of market capitalization plus total debt to total assets - because it captures not only physical asset value but also intangible assets such as technology, reputation, and innovation capabilities that are highly relevant to technology firms (Tobin, 1969). A Tobin's Q value greater than one indicates that the market values the company above its book value, reflecting recognition of intangible assets and future growth potential.

Digital Transformation and Firm Value

Digital transformation is defined as the comprehensive integration of digital technology into all aspects of a company's operations and business strategy, resulting in fundamental changes in value creation for customers (Westerman et al., 2014). Within the RBV framework, digital capabilities constitute VRIN strategic resources that require sustained investments in technology, knowledge, and organizational culture that competitors cannot easily replicate. This study measures digital transformation using the Digital Transformation Index (DTI), computed as the frequency of digital technology-related keywords in annual reports divided by total word count, multiplied by 1,000. Zhao et al. (2024) and Chen and Zhang (2024) demonstrated that digital transformation positively and significantly affects firm performance and financial outcomes, particularly in technology-intensive sectors. Setyadi et al. (2025) further confirmed in the Indonesian context that internal resource capabilities are the primary predictor of innovative activity among IDX-listed technology companies. Based on this theoretical and empirical foundation, the first hypothesis is proposed.

H1: Digital Transformation has a positive and significant effect on Firm Value

R&D Expenditure and Firm Value

R&D Expenditure refers to total spending allocated for research and development activities aimed at creating new products, improving existing technologies, or enhancing business process efficiency. Under PSAK 19 aligned with IAS 38, development costs may be capitalized as intangible assets when specific technical and commercial criteria are met. Within the RBV framework, R&D Expenditure represents strategic investment in knowledge creation and innovation capability-resources that are difficult for competitors to replicate and

capable of generating long-term competitive advantage. This study measures R&D Expenditure using R&D Intensity, defined as the ratio of R&D costs to total revenue, with the ratio of intangible assets to total assets serving as an alternative proxy where R&D is not explicitly disclosed. Chan et al. (2001) and Lev and Sougiannis (1996) demonstrated that R&D intensity correlates positively with firm market value in developed markets, while Tung and Binh (2022) and Sabarudin and Firdaus (2021) confirmed this positive relationship in emerging market contexts. Based on this foundation, the second hypothesis is proposed.

H2: R&D Expenditure has a positive and significant effect on Firm Value

Business Model Innovation and Firm Value

Business Model Innovation (BMI) is defined as the process by which a company creates, renews, or transforms its business model through changes in value proposition, customer segments, revenue structure, or value chain configuration (Amit & Zott, 2012). Within the RBV framework, BMI represents a company's ability to reconfigure its strategic resources to create and sustain competitive advantage that rivals cannot easily imitate. BMI encompasses not only product innovation but also innovation in monetization strategies, partnership ecosystems, and network effect utilization (Osterwalder & Pigneur, 2010). This study measures BMI using the BMI Disclosure Index - a checklist scoring method comprising 18 items across six dimensions (value proposition, revenue model, customer segment, digital channel, partnership, and cost structure) - with scores ranging from 0 to 1. Zott and Amit (2010) found that innovative business model design significantly affects firm market value, while Kraus et al. (2020) and Foss and Saebi (2017) confirmed BMI as a consistent predictor of firm value through sustainable competitive advantage creation. Based on this foundation, the third hypothesis is proposed.

H3: Business Model Innovation has a positive and significant effect on Firm Value

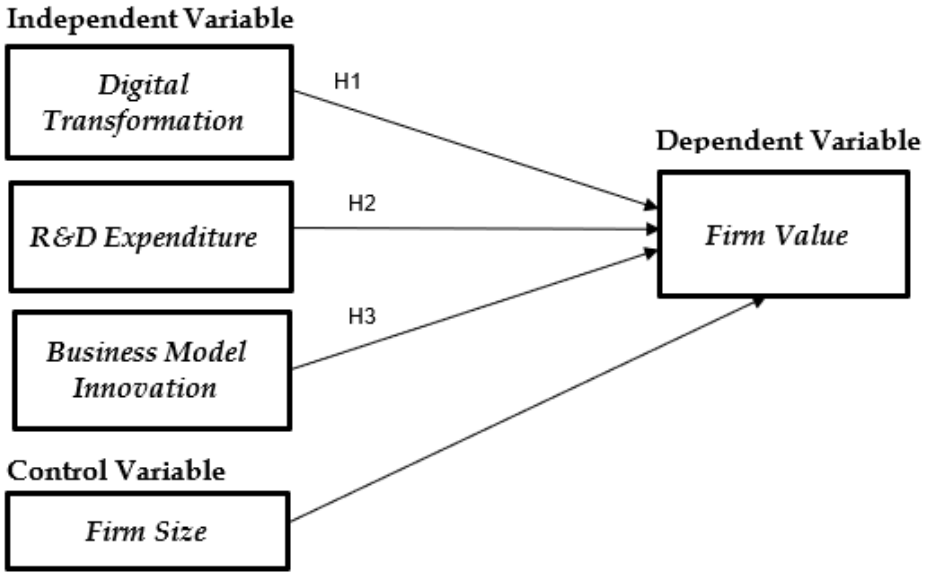

Figure 1. Conceptual Framework

METHODOLOGY

This study employs a quantitative approach with a causal research design to examine the effect of Digital Transformation, R&D Expenditure, and Business Model Innovation on Firm Value. Secondary data were collected from annual financial reports and annual reports of technology companies listed on the IDX, obtained from idx.co.id and the official websites of the respective companies. The population consists of 47 technology sector companies listed on the IDX as of 2025. Using purposive sampling, the final sample comprises 34 companies satisfying two criteria: listed on the IDX prior to 2023 to ensure data completeness across the full three-year observation period (2023-2025), and published complete annual financial reports and annual reports throughout the research period. Thirteen companies were excluded as they only listed in 2023 or 2024. With 34 companies observed over three years, the total number of observations is 102 units of analysis. The research model is expressed as.

$$Y_{it} = \alpha + \beta_1 X1_{it} + \beta_2 X2_{it} + \beta_3 X3_{it} + \beta_4 (\text{Control Variabel})_{it} + \varepsilon_{it} \quad \ldots\ldots\ldots\ldots (1)$$

Where, Y is Firm Value (Tobin's Q), X1 is Digital Transformation, X2 is R&D Expenditure, X3 is Business Model Innovation, (Control) is Firm Size, i denotes company (1 to 34), t denotes year (2023, 2024, 2025), and ε is the error term.
Five variables were operationalized in this study as summarized in Table 2 below.

Table 1. Operational Definition of Variables

Variable	Symbol	Proxy	Measurement Formula	Scale
Firm Value	Y	Tobin's Q	(Market Cap + Total Debt) / Total Assets	Ratio
Digital Transformation	X1	DTI	(Keyword freq. / Total words) × 1,000	Ratio
R&D Expenditure	X2	R&D Intensity	R&D Costs / Total Revenue × 100%	Ratio
Business Model Innovation	X3	BMI Index	Items disclosed / 18 total items	Index
Firm Size	Control	SIZE	Ln (Total Assets)	Ratio

Data analysis was conducted using SPSS through four sequential stages. The first stage involved descriptive statistical analysis to characterize the distribution of all research variables through mean, median, standard deviation, minimum, and maximum values. The second stage comprised classical assumption testing to ensure the model satisfies BLUE (Best Linear Unbiased Estimator) requirements, including the Kolmogorov-Smirnov normality test, Variance Inflation Factor (VIF) multicollinearity test with a threshold of VIF < 10, Glejser heteroscedasticity test, and Durbin-Watson autocorrelation test. The third stage involved multiple linear regression analysis on the pooled panel data of 102 observations. The fourth and final stage comprised hypothesis testing through the

partial t-test for H1, H2, and H3 with a significance threshold of $\alpha = 0.05$, and the coefficient of determination R^2 to assess the model's overall explanatory power.

RESULT AND DISCUSSION

Descriptive Statistics

Descriptive statistical analysis was conducted to provide a general overview of the research data characteristics, encompassing 102 observations from 34 technology companies listed on the IDX over the 2023–2025 period. The results are presented in Table 2 below.

Table 2. Descriptive Statistics Result

Variable	N	Mean	Std. Dev	Min	Median	Max
Tobin's Q (Y)	102	1.655	1.032	0.267	1.361	3.889
DTI (X1)	102	5.583	1.698	2.1	5.225	9.2
R&D Intensity (X2)	102	11.344	7.474	1.2	9.9	26.1
BMI Index (X3)	102	0.699	0.121	0.389	0.722	0.889
SIZE (Control)	102	16.455	1.238	13.541	16.351	18.734

Based on Table 2 above, the mean Tobin's Q of 1.655 indicates that, on average, the sampled technology companies are valued by the market above their book value, suggesting that investors recognize the presence of significant intangible assets in these firms. The minimum Tobin's Q of 0.267 indicates that certain companies are valued well below their book value, while the maximum of 3.889 reflects companies receiving exceptionally high market appreciation. The relatively large standard deviation of 1.032 compared to the mean indicates considerable heterogeneity in firm value across the sample.

The DTI variable has a mean of 5.583 with a standard deviation of 1.698, indicating that on average, technology companies in the sample disclose approximately 5.583 digital keywords per 1,000 words in their annual reports. The minimum DTI of 2.100 reflects companies with low digital disclosure intensity, while the maximum of 9.200 reflects companies with very high digital transformation disclosure. The R&D Intensity variable has a mean of 11.344% with a minimum of 1.200% and a maximum of 26.100%, reflecting considerable variation in R&D investment intensity across technology companies. The standard deviation of 7.474 indicates substantial differences in R&D commitment across firms in the sample.

The BMI Index variable has a mean of 0.699 with a relatively small standard deviation of 0.121, indicating that on average, companies disclose approximately 69.9% of total business model innovation items in their annual reports. The minimum of 0.389 and maximum of 0.889 suggest that no company fully disclosed all 18 items, yet most companies demonstrated reasonably high BMI disclosure levels. The control variable SIZE has a mean of 16.455 with a minimum of 13.541 and a maximum of 18.734, equivalent to total assets ranging from approximately

IDR 761 billion to IDR 138 trillion, reflecting the substantial heterogeneity in firm size across the research sample.

Classical Assumption Test

Prior to multiple linear regression analysis, a series of classical assumption tests were conducted to ensure that the regression model satisfies the requirements of the Best Linear Unbiased Estimator (BLUE). The results are summarized in Table 3 below.

Table 3. Classical Assumption Test Results

Test	Method	Result	Criterion
Normality	Kolmogorov-Smirnov	Sig. = 0.200	Sig. > 0.05
Multicollinearity	VIF — X1 (DTI)	VIF = 1.430	VIF < 10
	VIF — X2 (R&D)	VIF = 1.260	VIF < 10
	VIF — X3 (BMI)	VIF = 1.220	VIF < 10
Heteroscedasticity	Glejser — X1 (DTI)	Sig. = 0.647	Sig. > 0.05
	Glejser — X2 (R&D)	Sig. = 0.081	Sig. > 0.05
	Glejser — X3 (BMI)	Sig. = 0.118	Sig. > 0.05
	Glejser — Z (SIZE)	Sig. = 0.868	Sig. > 0.05
Autocorrelation	Durbin-Watson	DW = 2.230	dU < DW < 4-dU

Based on Table 2 above, the normality test using the Kolmogorov-Smirnov method yielded a significance value of 0.200, which exceeds the threshold of $\alpha = 0.05$, confirming that the model residuals are normally distributed and the normality assumption is satisfied.

The multicollinearity test results show that all independent variables have VIF values well below the tolerance threshold of 10, namely DTI at 1.430, R&D at 1.260, and BMI at 1.220. VIF values approaching 1 indicate the absence of meaningful correlation among independent variables, confirming that the model is free from multicollinearity.

The heteroscedasticity test using the Glejser method shows that all independent and control variables have significance values exceeding 0.05, namely DTI (0.647), R&D (0.081), BMI (0.118), and SIZE (0.868). As no variable exerts a significant effect on the absolute residual values, the model is confirmed to be free from heteroscedasticity.

The autocorrelation test using the Durbin-Watson statistic yields a DW value of 2.230. With $n = 102$ observations and $k = 4$ independent variables, the upper bound dU from the Durbin-Watson table at $\alpha = 0.05$ is 1.758, giving 4-dU = 2.242. The DW value of 2.230 falls between dU (1.758) and 4-dU (2.242), confirming that the model is free from autocorrelation. With all classical

assumptions satisfied, the estimated multiple linear regression model is valid, unbiased, and suitable for further interpretation.

Table 4. Estimated Regression Model

Variabel	B	Std. Error	t-statistik	Sig.	Direction	Decision
Konstanta	9.110	1.252	7.279	0.000		
X1 (DTI)	0.364	0.133	2.732	0.007	Positive	**Accepted**
X2 (R&D)	-0.106	0.009	-11.636	0.000	Negative	**Rejected**
X3 (BMI)	5.091	1.809	2.813	0.006	Positive	**Accepted**
Z (SIZE)	-0.720	0.079	-9.100	0.000	-	
R	0.880	**F**	83.10			
R^2	0.774	**Sig. F**	0,000			
Adjusted R^2	0.765					

Based on Table 4, the regression equation is as follows:

$Y = 9.110 + 0.364X1 - 0.106X2 + 5.091X3 - 0.720(Control)$…… (2)

Hypothesis Testing

The R^2 value of 0.774 indicates that 77.4% of the variation in Firm Value (Tobin's Q) among IDX-listed technology companies can be explained jointly by Digital Transformation, R&D Expenditure, Business Model Innovation, and Firm Size. The remaining 22.6% is explained by other variables not included in this model. The Adjusted R^2 of 0.765 confirms that the model's predictive power remains strong after adjusting for the number of variables and observations, indicating excellent explanatory capacity. The F-test yields an F-statistic of 83.10 with a significance value of 0.000, which is less than $\alpha = 0.05$. Accordingly, meaning that Digital Transformation, R&D Expenditure, Business Model Innovation, and Firm Size simultaneously exert a significant effect on Firm Value among IDX-listed technology companies over the 2023–2025 period. This confirms that the regression model is fit for explaining variation in firm value.

The constant of 9.110 indicates that when all independent and control variables equal zero, Tobin's Q would be 9.110. The DTI coefficient of 0.364 indicates that each one-unit increase in DTI increases Tobin's Q by 0.364, holding other variables constant. The R&D coefficient of -0.106 indicates that each one-percent increase in R&D Intensity decreases Tobin's Q by 0.106, holding other variables constant. The BMI coefficient of 5.091 indicates that each one-unit increase in the BMI Index increases Tobin's Q by 5.091, holding other variables constant. The SIZE coefficient of -0.720 indicates that each one-unit increase in SIZE decreases Tobin's Q by 0.720, holding other variables constant.

The first hypothesis test reveals that Digital Transformation (DTI) has a positive and significant effect on Firm Value, with a coefficient of 0.364 and a significance value of 0.007 (< 0.05), thus H1 is accepted. This finding indicates that higher digital transformation disclosure intensity in technology companies' annual reports is associated with higher firm value, as proxied by Tobin's Q. This result aligns with the Resource-Based View (RBV) , which posits that digital capabilities constitute VRIN (Valuable, Rare, Inimitable, Non-substitutable) strategic resources capable of enhancing competitive advantage and creating shareholder value.

Complementing this perspective, the Dynamic Capabilities View suggests that digital transformation reflects a firm's capacity to integrate, build, and reconfigure resources-such as data, technology infrastructure, and digital talent-in response to rapidly changing environments. This adaptive capacity is precisely what the market rewards, as it signals long-term resilience and growth potential. The finding is consistent with Zhao et al. (2024), who demonstrated that digital transformation enhances firm performance through operational efficiency and innovation capability development, and with Chen and Zhang (2024), who confirmed its positive impact on financial performance in technology-intensive sectors. Contextualization and Practical Implications: In the Indonesian capital market, where the technology sector is still maturing, digital transformation disclosure functions as a credible signal to investors. Firms that articulate a clear digital roadmap-such as the adoption of AI-driven analytics or cloud-based infrastructure-are perceived as future-oriented and proactive. From the lens of Signaling Theory, such disclosures mitigate information asymmetry and build investor confidence. The implication for managers is clear: communicating digital transformation initiatives strategically, not merely as technological adoption but as a value-creation narrative, can generate a valuation premium in emerging markets like Indonesia.

Contrary to the initial hypothesis, the test reveals that R&D Expenditure has a negative and significant effect on Firm Value, with a coefficient of -0.106 and a significance value of 0.000 (< 0.05), thus H2 is rejected. Although statistically significant, the direction of the relationship contradicts the predicted positive effect, underscoring the contextual nature of R&D valuation in emerging markets. Several arguments explain this finding. First, many Indonesian technology firms are in growth or pre-profit stages, leading the market to interpret high R&D spending as a drag on short-term profitability rather than a long-term investment. Second, limited transparency in R&D disclosure impedes investors' ability to assess the quality and potential returns of such investments, resulting in adverse selection and negative market reactions. Third, emerging market investors tend to exhibit short-term orientation, prioritizing immediate financial performance over the latent value of innovation. This finding reinforces Tung and Binh (2022), who argue that the R&D, firm value relationship is context-dependent and often diverges from developed market patterns. Contextualization and Practical Implications: This result can be further understood through the behavior of Indonesian investors, who remain heavily focused on bottom-line earnings. High R&D expenditure, when accompanied by net losses, is often misinterpreted as inefficient capital allocation. From a Signaling Theory perspective, such spending may inadvertently transmit a negative signal-namely, that the firm is trapped in a high-burn-rate trajectory without a clear path to profitability. Moreover, accounting treatments that expense internal R&D while capitalizing acquired intangible assets create a perceptual bias: investors tend to favor acquisitive firms over those investing organically in innovation. This highlights a critical managerial implication: R&D investments must be accompanied by transparent communication regarding milestones, commercialization potential, and alignment with business strategy to reshape market perceptions. The negative coefficient also

suggests a potential market inefficiency in pricing intangible investments within emerging markets, where information asymmetry is more pronounced. This divergence from developed market findings constitutes a key contribution of this study.

The third hypothesis test reveals that Business Model Innovation (BMI) has a positive and significant effect on Firm Value, with a coefficient of 5.091 and a significance value of 0.006 (< 0.05), thus H3 is accepted. Notably, BMI exhibits the largest coefficient among all variables, indicating its dominant influence on firm value. This finding is consistent with RBV theory, which conceptualizes BMI as a firm's ability to reconfigure resources in ways that are difficult to imitate. In the digital economy, competitive advantage increasingly derives not from products alone, but from how value is created, delivered, and captured. BMI-through subscription models, platform ecosystems, or network-based architectures-generates lock-in effects and network externalities that sustain competitive advantage. This aligns with Zott and Amit (2010), who demonstrated that innovative business model design significantly affects market value, and with Kraus et al. (2020), who identified BMI as a consistent predictor of firm performance through sustainable advantage. Contextualization and Practical Implications: In the Indonesian context, the market has rewarded firms that successfully pivot or evolve their business models. Telecommunications firms transitioning into digital financial services, or transport platforms evolving into super-apps, exemplify how BMI unlocks new revenue streams. Investors increasingly recognize the monetization potential of ecosystems and recurring income models. From a Schumpeterian perspective, BMI serves as a vehicle for creative disruption, positioning firms as architects of industry change rather than passive participants. The magnitude of BMI's coefficient offers a powerful managerial implication: for technology firms in emerging markets, strategic communication regarding business model reinvention yields substantially higher market returns than merely disclosing R&D inputs. Investors appear to reward the architecture of value creation (BMI) more than the inputs for future technology (R&D). This finding underscores the primacy of strategic innovation over technological investment alone in driving valuation.

The control variable Firm Size (SIZE) exhibits a negative and significant effect on Firm Value, with a coefficient of -0.720 and a significance value of 0.000 (< 0.05). This finding indicates that larger technology firms tend to have lower Tobin's Q relative to smaller firms-a phenomenon commonly termed the "size discount." From a theoretical standpoint, larger firms often face organizational inertia, bureaucratic structures, and diminishing growth opportunities, consistent with the Corporate Life Cycle Theory. In contrast, smaller firms are typically positioned in growth phases, attracting higher market valuations due to expectations of exponential expansion. Contextualization and Practical Implications: In the Indonesian technology sector, this discount is acutely visible. Large-cap firms such as GOTO and BUKALAPAK possess substantial asset bases yet record operating losses, reflecting the challenges of post-merger integration and market saturation. Their market valuations are consequently suppressed. Conversely, smaller, more agile firms with innovative business models (as

discussed in H3) command high Tobin's Q ratios, as investors price future growth potential rather than historical asset accumulation. This finding also invites methodological reflection: Tobin's Q, as a ratio of market value to asset replacement cost, may be biased for asset-heavy firms. Large technology firms with significant physical or acquired intangible assets may exhibit lower Q ratios despite having viable business models. Thus, the size discount should be interpreted not as a normative judgment of firm quality, but as a reflection of differential growth expectations and risk perceptions in an emerging market context. For managers, this implies that growth-stage firms may benefit from emphasizing scalability and innovation potential, while larger firms must actively communicate reinvention strategies to counteract valuation discounts.

CONCLUSSION AND RECOMENDATION

Based on the results of the analysis and discussion, this study draws the following conclusions.

First, Digital Transformation has a positive and significant effect on Firm Value among IDX-listed technology companies over the 2023–2025 period, thus H1 is accepted. Companies that consistently integrate and communicate their digital transformation agenda receive higher value appreciation from the capital market, confirming that digital capability constitutes a VRIN strategic resource within the Resource-Based View framework.

Second, R&D Expenditure has a negative and significant effect on Firm Value, thus H2 is rejected. This finding suggests that in the Indonesian capital market context, high R&D spending is not necessarily responded to positively by investors, likely attributable to short-term investor orientation, limited R&D disclosure transparency, and the characteristics of Indonesian technology companies that are largely still in growth stages with unstable profitability.

Third, Business Model Innovation has a positive and significant effect on Firm Value with the largest influence among all independent variables, thus H3 is accepted. This finding affirms that a technology company's ability to conduct and communicate business model innovation constitutes the most dominant driver of firm value in the Indonesian technology ecosystem.

Based on the research findings, technology company management is advised to prioritize business model innovation and digital transformation as core strategic agendas communicated transparently and measurably to the market through annual reports. Regarding R&D, companies should improve the quality of R&D expenditure disclosure, including explanations of strategic objectives and projected returns, to elicit more positive investor responses. For investors, non-financial indicators such as DTI and BMI Index are recommended as complements to conventional financial analysis when evaluating the intrinsic value of IDX-listed technology companies.

FURTHER STUDY

This study acknowledges several limitations. The relatively short observation period of three years may be insufficient to capture the long-term impact of R&D investment on firm value. The DTI measurement based on keyword frequency and the BMI checklist-based scoring both carry inherent

subjectivity limitations, as they reflect what is reported rather than what is actually implemented. Furthermore, the inclusion of only one control variable potentially introduces omitted variable bias into the model estimates.

Future research is encouraged to extend the observation period and incorporate R&D lag variables to capture long-term investment effects. The development of more substantive DTI measurement methods based on Natural Language Processing (NLP) is also recommended. Testing moderating variables such as profitability or corporate governance quality in the R&D–firm value relationship, as well as expanding the sample to other technology-intensive sectors, would further enrich the contribution of future studies to the accounting and management literature in Indonesia.

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REFERENCES

Amit, R., & Zott, C. (2012). Creating value through business model innovation. MIT Sloan Management Review, 53(2), 41–49.

Barney, J. (1991). Firm resources and sustained competitive advantage. Journal of Management, 17(1), 99–120.

Brigham, E. F., & Houston, J. F. (2019). Fundamentals of financial management (15th ed.). Cengage Learning.

Chan, L. K. C., Lakonishok, J., & Sougiannis, T. (2001). The stock market valuation of research and development expenditures. Journal of Finance, 56(6), 2431–2456. https://doi.org/10.1111/0022-1082.00411

Chen, Y., & Zhang, Y. (2024). The impact of digital transformation on firm's financial performance: Evidence from China. Industrial Management & Data Systems, 124(5), 2021–2041. https://doi.org/10.1108/IMDS-07-2023-0507

Foss, N. J., & Saebi, T. (2017). Fifteen years of research on business model innovation: How far have we come, and where should we go? Journal of Management, 43(1), 200–227. https://doi.org/10.1177/0149206316675927

Indonesia Stock Exchange. (2025). Listed companies — technology sector. https://www.idx.co.id

Kraus, S., Filser, M., Puumalainen, K., Kailer, N., & Thurner, S. (2020). Business model innovation: A systematic literature review. International Journal of Innovation and Technology Management, 17(06), 2050043. https://doi.org/10.1142/S0219877020500431

Lev, B., & Sougiannis, T. (1996). The capitalization, amortization, and value-relevance of R&D. Journal of Accounting and Economics, 21(1), 107–138. https://doi.org/10.1016/0165-4101(95)00410-6

Osterwalder, A., & Pigneur, Y. (2010). Business model generation: A handbook for visionaries, game changers, and challengers. John Wiley & Sons.

Putra, K. A., Astaginy, N., & Sabarudin, S. (2025). Pengaruh kinerja keuangan terhadap nilai perusahaan perbankan yang terdaftar di Bursa Efek Indonesia periode 2021–2023. Innovative: Journal of Social Science Research, 5(2), 822–837. https://doi.org/10.31004/innovative.v5i2.18303

Sabarudin, & Firdaus. (2021). Model peningkatan kinerja keuangan melalui investasi penelitian dan pengembangan sebagai variabel intervening. Jurnal Akuntansi Kompetif, 4(2).

Setyadi, P., Noviarty, H., & Haryono. (2025). Pengaruh capital expenditure, firm size, dan operating cash flow terhadap tingkat inovasi perusahaan di sektor teknologi yang terdaftar di BEI. Jurnal Akuntansi, Ekonomi dan Manajemen Bisnis, 5(2), 409–420.

Tobin, J. (1969). A general equilibrium approach to monetary theory. Journal of Money, Credit and Banking, 1(1), 15–29. https://doi.org/10.2307/1991374

Tung, L. T., & Binh, Q. M. Q. (2022). The impact of R&D expenditure on firm performance in emerging markets: Evidence from the Vietnamese listed companies. Asian Journal of Technology Innovation, 30(2), 447–465. https://doi.org/10.1080/19761597.2021.1897470

Westerman, G., Bonnet, D., & McAfee, A. (2014). Leading digital: Turning technology into business transformation. Harvard Business Review Press.

Zhao, X., Li, X., Li, Y., & Wang, Z. (2024). The impact of digital transformation on firm performance. Industrial Management & Data Systems, 124(8), 2567–2587. https://doi.org/10.1108/IMDS-09-2023-0661

Zott, C., & Amit, R. (2010). Business model design: An activity system perspective. Long Range Planning, 43(2–3), 216–226.