



Digital Financial Innovation's Impact, Cash Holding, and Investment Efficiency on Firm Size as a Moderating Variable and Firm Value via Financial Flexibility

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Abstract

This study aims to examine the effect of Digital Financial Innovation, Cash Holding, and Investment Efficiency on Firm Value, both directly and indirectly through Financial Flexibility as a mediating variable, as well as Firm Size as a moderating variable. A quantitative approach was employed using secondary data from companies listed on the Indonesia Stock Exchange (IDX) during the 2023–2025 period. The sample was selected using purposive sampling, resulting in 30 firms with 90 firm-year observations. Data were analyzed using Structural Equation Modeling based on Partial Least Squares (SEM-PLS) with SmartPLS software. The results show that Digital Financial Innovation and Investment Efficiency do not have a significant direct effect on Firm Value, but both have a positive and significant effect on Financial Flexibility. Cash Holding is found to have a positive and significant effect on both Firm Value and Financial Flexibility. However, Financial Flexibility does not significantly affect Firm Value and does not mediate the relationship between the independent variables and Firm Value. Firm Size also has no significant effect on Firm Value and does not moderate the relationship between Financial Flexibility and Firm Value, acting only as a predictor variable. These findings highlight the importance of liquidity management and digital readiness in strengthening corporate financial resilience. Investors should consider liquidity, digital strategy, and financial structure beyond firm size.

Keywords: Digital Financial Innovation, Cash Holding, Investment Efficiency, Financial Flexibility, Firm Value.



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INTRODUCTION

The rapid advancement of digital technology has fundamentally transformed corporate financial management, business operations, and value creation mechanisms across global markets. The integration of digital financial innovation—including financial technology, artificial intelligence, big data analytics, cloud computing, and digital payment systems—has enabled firms to optimize financial decision-making, improve operational efficiency, strengthen governance, and enhance competitiveness in increasingly dynamic business environments (Liu et al., 2023). Digital transformation no longer functions merely as a technological adaptation but has evolved into a strategic organizational capability that determines long-term corporate sustainability and market performance (Ma et al., 2022). Empirical evidence further demonstrates that firms implementing digital financial innovation tend to achieve superior firm value because digitalization enhances operational transparency, resource allocation, and investor confidence in future corporate prospects (Budiarti & Imania, 2026). In Indonesia, where digital transformation has accelerated across financial institutions and listed companies, digital innovation is increasingly recognized as a critical determinant of corporate competitiveness, although its effectiveness remains contingent upon firms' financial capabilities and strategic resource management (Nurlaela et al., 2026). Despite these developments, the mechanisms through which digital financial innovation contributes to firm value remain insufficiently understood, particularly when internal financial conditions and organizational characteristics jointly shape corporate performance. This complexity necessitates a more comprehensive analytical framework capable of integrating technological innovation with corporate financial policies and strategic flexibility.

Existing literature consistently suggests that firm value is influenced not only by technological capability but also by corporate liquidity management and investment decisions that determine firms' ability to generate sustainable economic returns (Li et al., 2023). Digital financial innovation has been shown to improve investment efficiency through enhanced information processing, better capital allocation, and reduced agency problems, thereby contributing to higher corporate value (Li et al., 2023). Simultaneously, optimal cash holding enables firms to maintain liquidity, finance profitable investment opportunities, and withstand financial uncertainty, resulting in stronger market valuation and shareholder wealth (Akhtar et al., 2023). Investor perception regarding corporate cash reserves is also shaped by firm-specific sentiment, indicating that cash holding creates value only when interpreted as a positive strategic signal rather than excessive liquidity accumulation (Guo et al., 2023). Likewise, investment efficiency has become an increasingly important determinant of firm performance because efficient capital allocation minimizes underinvestment and overinvestment while improving organizational productivity and long-term profitability (Le et al., 2024). Recent evidence from Indonesian technology firms further indicates that cash holding and investment opportunity decisions influence firm value differently across industrial contexts, suggesting that firm-specific characteristics continue to shape the effectiveness of financial policies (Maulana et al., 2025). Nevertheless, these empirical findings remain fragmented because most studies examine these determinants independently without considering the interconnected mechanisms through which digital innovation, liquidity management, and investment efficiency jointly affect corporate value.

The inconsistent findings reported in previous studies reveal important conceptual and empirical gaps regarding the transmission mechanism linking digital financial innovation, cash holding, and investment efficiency to firm value. Several studies argue that digital transformation directly enhances firm value through improved operational capability and innovation performance (Ma et al., 2022), whereas others demonstrate that financial flexibility constitutes a more important mediating mechanism through which digital initiatives generate sustainable corporate value (Liu et al., 2023). Financial flexibility reflects a firm's capacity to obtain, allocate, and reconfigure financial resources in response to market uncertainty, enabling companies to exploit profitable investment opportunities while maintaining financial resilience during economic volatility (Hao et al., 2022). Corporate governance has also been identified as an essential determinant of financial flexibility because effective governance structures improve financing accessibility and managerial decision quality under uncertain business conditions (Islam, 2024). From a theoretical perspective, these relationships are strongly supported by Signaling Theory, Resource-Based View (RBV), Pecking Order Theory, and Financial Flexibility Theory. Digital financial innovation, efficient investment decisions, and prudent cash management collectively function as strategic signals that reduce information asymmetry while simultaneously representing valuable organizational resources capable of generating sustainable competitive advantage. Likewise, internally generated liquidity remains consistent with the Pecking Order Theory, which emphasizes firms' preference for internal financing before relying on external capital. However, previous studies generally investigate these theories separately, resulting in limited understanding of how they collectively explain the interaction among digital transformation, financial flexibility, and firm value within an integrated conceptual framework.

Another issue receiving increasing scholarly attention concerns the moderating role of firm size in strengthening or weakening the relationship between financial flexibility and firm value. Larger firms generally possess greater access to capital markets, more diversified financing sources, stronger technological capabilities, and superior organizational resources that facilitate digital transformation and financial resilience (Oktaviani et al., 2024). These advantages suggest that firm size may amplify the positive contribution of financial flexibility toward firm value because larger organizations can convert financial resources into productive investments more efficiently. Nevertheless, empirical findings remain inconclusive. Several studies indicate that firm size positively moderates corporate value creation by improving resource utilization and market credibility (Santioso, 2025), whereas others report that firm size does not necessarily strengthen firm value unless accompanied by sound financial performance and effective managerial strategies (Serolin, 2023). Similar inconsistencies also emerge in recent Indonesian evidence, where firm size moderates the influence of financial indicators differently across industrial sectors and ownership structures (Purwaningsih & Mukhibad, 2025). Furthermore, recent studies examining investment efficiency continue to demonstrate that organizational characteristics significantly influence firms' ability to allocate resources effectively and create

sustainable value (Rosalina et al., 2025). These mixed findings indicate that firm size should no longer be viewed merely as a control variable but rather as a strategic contingency capable of influencing how financial flexibility translates into superior firm value.

Despite the growing body of literature on digital transformation, corporate finance, and firm valuation, few studies have simultaneously examined the integrated relationships among digital financial innovation, cash holding, investment efficiency, financial flexibility, firm size, and firm value within a single comprehensive framework, particularly in the context of Indonesian listed companies experiencing rapid digital transformation. Previous studies predominantly focus on either digital innovation or financial policies independently, thereby overlooking the possibility that financial flexibility serves as the central mechanism connecting technological capability and corporate value creation while firm size conditions the effectiveness of this relationship. Moreover, empirical evidence from emerging economies remains relatively limited despite their distinctive institutional environments, financing constraints, and varying levels of digital maturity. Addressing these conceptual and empirical limitations requires a more holistic analytical approach capable of capturing the interaction between technological innovation, financial resource management, organizational characteristics, and corporate value creation. Methodologically, this study adopts Partial Least Squares Structural Equation Modeling (PLS-SEM), which is considered appropriate for analyzing complex causal relationships involving mediating and moderating constructs within integrated research models (Hair et al., 2024).

This study aims to analyze the effects of Digital Financial Innovation, Cash Holding, and Investment Efficiency on Firm Value through the mediating role of Financial Flexibility while examining Firm Size as a moderating variable in the relationship between Financial Flexibility and Firm Value. The research contributes theoretically by integrating Signaling Theory, Resource-Based View, Pecking Order Theory, and Financial Flexibility Theory into a unified framework explaining corporate value creation in the digital era. Methodologically, the study develops a comprehensive structural model capable of simultaneously evaluating direct, indirect, and moderating relationships among the proposed variables using a contemporary PLS-SEM approach. Practically, the findings are expected to provide evidence-based recommendations for corporate managers, investors, and policymakers regarding the strategic importance of digital financial innovation, liquidity management, investment efficiency, and financial flexibility in enhancing sustainable firm value amid accelerating digital transformation.

RESEARCH METHODS

This study employs a quantitative research approach using secondary data to empirically examine the causal relationships among Digital Financial Innovation, Cash Holding, Investment Efficiency, Financial Flexibility, Firm Size, and Firm Value. A quantitative approach is considered appropriate because the proposed research model seeks to test theoretically developed hypotheses and evaluate the direct, indirect, and moderating effects among multiple latent constructs through statistical analysis. The use of secondary data obtained from publicly available corporate financial reports ensures the objectivity and reliability of the empirical investigation while enabling comprehensive assessment of corporate financial behavior across the selected sample. The proposed conceptual model is analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) through SmartPLS software. PLS-SEM is selected because it is suitable for estimating complex structural models involving mediating and moderating variables simultaneously while accommodating latent constructs measured by multiple indicators. Furthermore, this analytical technique provides robust parameter estimation for non-normally distributed data and remains effective for studies with relatively small to medium sample sizes. Recent methodological developments also recommend PLS-SEM for predictive and exploratory research models emphasizing causal explanation and theory extension rather than covariance reproduction (Hair et al., 2024).

Population and Sample

The population of this study consists of all companies listed on the Indonesia Stock Exchange (IDX) during the 2023–2025 period. The sample was selected using a purposive sampling technique to ensure that only firms meeting the research objectives were included. The selection criteria required companies to be consistently listed on the IDX throughout the observation period, publish complete audited annual financial reports in Indonesian Rupiah (IDR), remain free from delisting or trading suspension, and provide complete data for all research variables, including Digital Financial Innovation,

Cash Holding, Investment Efficiency, Financial Flexibility, Firm Size, and Firm Value. Based on these criteria, 30 companies were selected, resulting in 90 firm-year observations over the three-year study period. The use of panel data, combining cross-sectional and time-series observations, enhances estimation efficiency, increases the degree of freedom, and provides more reliable statistical inference for examining the proposed structural relationships. The adequacy of the sample and the analytical procedure is consistent with the recommendations for variance-based structural equation modeling using PLS-SEM (Hair et al., 2024).

Hypothesis

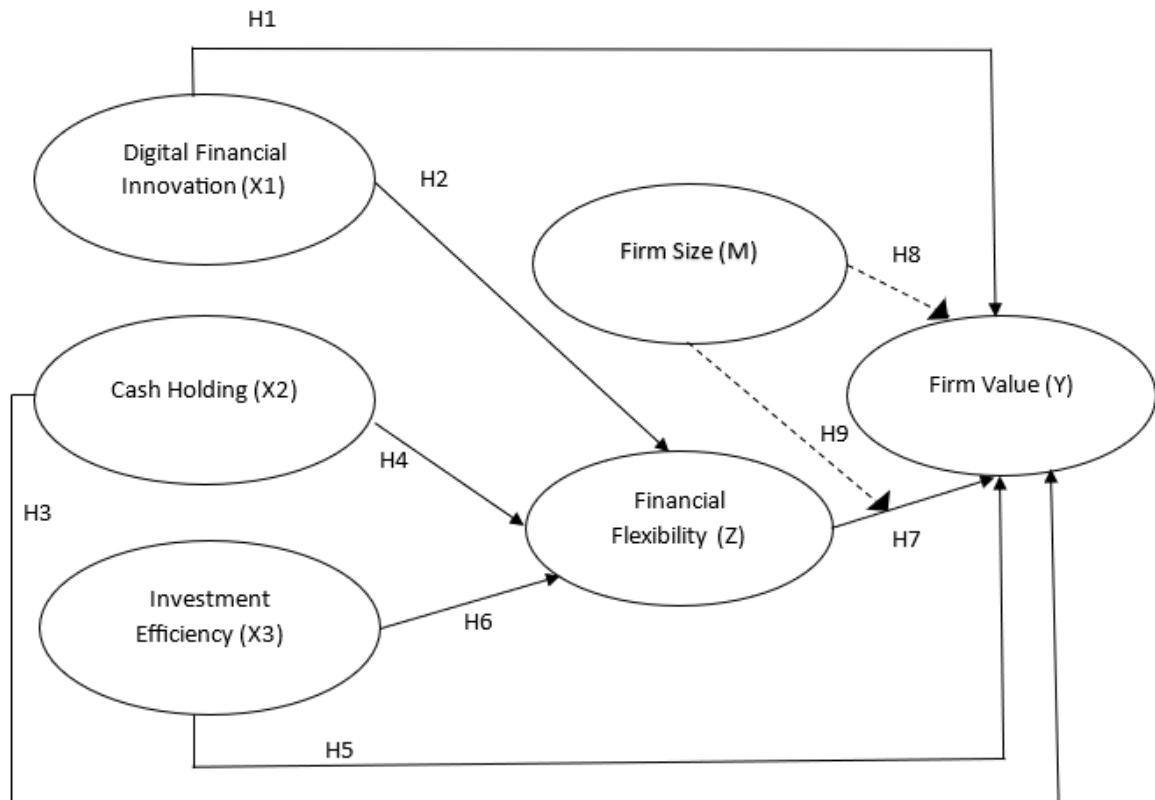


Figure 1. Proposed Research Framework

Table 1. Operational Definition and Measurement of Variables

Variables	Notation	Indicator
Digital Financial Innovation (X1)	X1.1	Growth of digital transactions
	X1.2	Growth of digital active users
	X1.3	Digital payment adoption
	X1.4	Technology platform development
	X1.5	Digital technology investment
Cash Holding (X2)	X2.1	Cash / Total Assets
	X2.2	Cash Growth
	X2.3	Cash Ratio
	X2.4	Liquidity Buffer
	X2.5	Free Cash Flow Availability
Investment Efficiency (X3)	X3.1	CAPEX Efficiency
	X3.2	Asset Utilization
	X3.3	Investment Opportunity Set
	X3.4	Revenue Growth from Investment

Financial Flexibility (Z)	X3.5	Return on Invested Capital
	Z1.1	Debt Capacity
	Z1.2	Financial Slack
	Z1.3	Financing Ability
	Z1.4	Liquidity Flexibility
Firm Value (Y)	Z1.5	Capital Structure Flexibility
	Y1.1	Tobin's Q
	Y1.2	Price to Book Value (PBV)
	Y1.3	Market Capitalization Growth
	Y1.4	Enterprise Value
Firm Size (M)	Y1.5	Market-to-Book Ratio
	M1.1	Ln Total Assets
	M1.2	Ln Total Sales
	M1.3	Ln Market Capitalization
	M1.4	Total Equity
	M1.5	Asset Growth

Based on the research framework and theoretical foundations, this study proposes nine hypotheses to examine the relationships among the variables. It is hypothesized that Digital Financial Innovation positively affects Firm Value (H1) and Financial Flexibility (H2). Cash Holding is also expected to have a positive effect on Firm Value (H3) and Financial Flexibility (H4). Furthermore, Investment Efficiency is hypothesized to positively influence Firm Value (H5) and Financial Flexibility (H6). In addition, Financial Flexibility is expected to positively affect Firm Value (H7). Firm Size is hypothesized to have a positive effect on Firm Value (H8) and to moderate the relationship between Financial Flexibility and Firm Value, such that the strength of this relationship varies according to the size of the firm (H9).

Research Variables and Operationalization

This study employs five categories of variables to examine the relationships among the research constructs. The independent variables consist of Digital Financial Innovation (X1), Cash Holding (X2), and Investment Efficiency (X3), which are hypothesized to influence the dependent variable directly and indirectly. Financial Flexibility (Z) serves as the mediating variable, explaining the mechanism through which the independent variables affect Firm Value (Y) as the dependent variable. In addition, Firm Size (M) is incorporated as the moderating variable to assess whether it strengthens or weakens the relationship between the independent variables, the mediating variable, and firm value. All variables are operationalized using measurement indicators adopted from established literature and relevant financial data sources to ensure the validity and reliability of the research findings.

Data collection technique

Secondary data were employed in this study and collected through documentation techniques from publicly available sources. The data consisted of audited annual reports and sustainability reports of companies listed on the Indonesia Stock Exchange (IDX) for the 2023–2025 period. The primary sources included the official IDX website (www.idx.co.id) and the official websites of the respective sample companies. To complement financial information unavailable in the annual reports, additional data were obtained from reliable financial databases. All collected data were subsequently compiled, verified, and screened to ensure completeness, consistency, and the absence of missing values or significant outliers prior to statistical analysis. This systematic data collection procedure enhances the reliability of the dataset and supports robust empirical analysis using the PLS-SEM approach (Hair et al., 2024).

Data Analysis Techniques

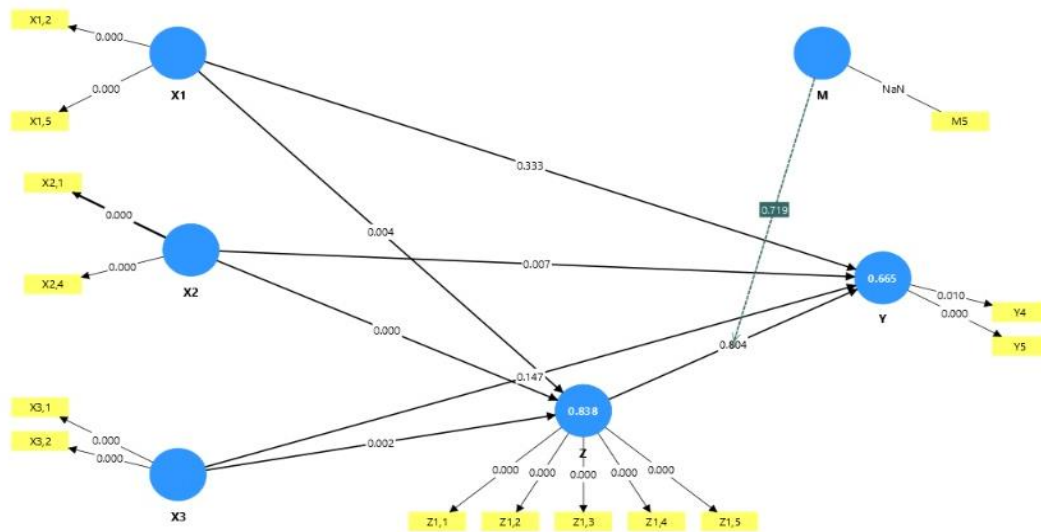


Figure 1. Assessment of the Measurement Model (Outer Model)

All constructs in this study were operationalized using a single-indicator measurement approach, whereby each latent variable was represented by one objectively defined proxy derived from audited financial statements and publicly available corporate data. This approach is appropriate for secondary-data research because the indicators correspond directly to observable financial measures with established theoretical relevance and strong content validity. In variance-based Structural Equation Modeling (PLS-SEM), single-indicator constructs are acceptable when the selected indicators adequately capture the underlying constructs and are supported by prior theoretical and empirical evidence (Hair et al., 2024). Consequently, conventional assessments of internal consistency reliability, convergent validity, and discriminant validity are not required for these constructs, as each latent variable is measured directly by a single observed indicator. Therefore, the evaluation of the measurement model primarily emphasizes the appropriateness of the operational definitions before proceeding to the assessment of the structural model.

The structural model was evaluated to assess the predictive capability of the proposed model and examine the significance of the hypothesized relationships among the latent variables. The evaluation began with the assessment of the coefficient of determination (R^2), which measures the proportion of variance in each endogenous construct explained by its corresponding exogenous variables. Following the guidelines of Hair et al. (2024), R^2 values of 0.19, 0.33, and 0.67 indicate weak, moderate, and substantial explanatory power, respectively. In this study, the explanatory power of the model was evaluated for the endogenous constructs of Financial Flexibility and Firm Value.

The significance of the structural relationships was subsequently examined using the bootstrapping procedure with 5,000 resamples implemented in SmartPLS. The significance of each hypothesized path was determined based on a p-value below 0.05 and a t-statistic greater than 1.96 at the 95% confidence level (Hair et al., 2024). This procedure was applied to evaluate the direct effects of Digital Financial Innovation, Cash Holding, and Investment Efficiency on both Financial Flexibility and Firm Value, as well as the direct effect of Financial Flexibility and Firm Size on Firm Value.

The mediating role of Financial Flexibility was assessed through the indirect effect generated by the bootstrapping procedure in SmartPLS. A mediation effect was considered full when the indirect effect was statistically significant while the direct effect was insignificant, partial when both direct and indirect effects were significant, and absent when the indirect effect was not statistically significant. Accordingly, the mediation analysis examined whether Financial Flexibility mediated the relationships between Digital Financial Innovation, Cash Holding, and Investment Efficiency and Firm Value.

Finally, the moderating effect of Firm Size was examined using the product indicator approach by constructing an interaction term between Financial Flexibility and Firm Size within the PLS-SEM model. A statistically significant interaction coefficient indicates the presence of a moderating effect,

whereas the direction of the coefficient determines whether Firm Size strengthens or weakens the relationship between Financial Flexibility and Firm Value. This approach enables the study to evaluate the conditional effect of firm size on the relationship between financial flexibility and corporate value (Hair et al., 2024).

RESULTS AND DISCUSSION

Live Testing

Table 2. Results of Structural Path Analysis and Hypothesis Testing

Hi		Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistic (O/STDEV)	P- value	Significant
H1	Digital Financial Innovation X1 → Firm Value Y	-0.086	-0.082	0.089	0.969	0.333	Not Significant
H2	Digital Financial Innovation X1 → Financial Flexibility Z	0.167	0.160	0.058	2,892	0.004	Significant
H3	Cash Holding X2 → Firm Value Y	0.902	0.862	0.333	2,712	0.007	Significant
H4	Cash Holding X2 → Financial Flexibility Z	0.628	0.630	0.104	6,040	0,000	Significant
H5	Investment Efficiency X3 → Firm Value Y	-0.422	-0.378	0.291	1,450	0.147	Not Significant
H6	Investment Efficiency X3 → Financial Flexibility Z	0.326	0.333	0.107	3,054	0.0002	Significant
H7	Financial Flexibility Z → Firm Value Y	-1,423	-1,747	5,746	0.248	0.804	Not Significant
H8	Firm Size M → Firm Value Y	16,294	15,202	47,357	0.344	0.731	Not Significant
H9	Firm Size M × Financial Flexibility Z → Firm Value Y	-13,924	-13,391	38,743	0.359	0.719	Not Significant

Digital Financial Innovation and Firm Value

The structural model results indicate that Digital Financial Innovation does not have a statistically significant effect on Firm Value ($\beta = -0.086$; $t = 0.969$; $p = 0.333$), indicating that H1 is not supported. This finding suggests that investments in digital financial innovation have not yet been fully translated into higher market valuation during the observation period because the benefits of digital transformation generally require considerable time before generating measurable financial returns. The substantial costs associated with digital infrastructure development, system integration, and organizational

adaptation may temporarily offset the expected economic benefits, leading investors to perceive digital innovation as a long-term strategic investment rather than an immediate source of firm value. This result differs from the findings of Li et al. (2023), Liu et al. (2023), Wahyuni et al. (2023), and Budiarti and Imania (2026), who reported that digital transformation contributes positively to firm value through enhanced operational efficiency and investor confidence. Nevertheless, the present finding remains consistent with the Resource-Based View, which argues that digital technology alone does not create competitive advantage unless it is effectively integrated with complementary organizational capabilities and strategic resource management.

Digital Financial Innovation and Financial Flexibility

The empirical results demonstrate that Digital Financial Innovation has a positive and statistically significant effect on Financial Flexibility ($\beta = 0.167$; $t = 2.892$; $p = 0.004$), thereby supporting H2. This finding indicates that firms adopting digital financial innovation possess greater capability to enhance liquidity management, accelerate financial decision-making, improve financing accessibility, and respond more effectively to changing business environments. Digital technologies strengthen financial reporting quality and operational efficiency, enabling firms to allocate financial resources more effectively while maintaining greater adaptability under uncertain market conditions. This result is consistent with Liu et al. (2023), who identified financial flexibility as an important mechanism through which digital transformation enhances corporate performance, and with Ma et al. (2022), who found that digital transformation improves enterprise value by strengthening organizational capabilities. Similarly, Hao et al. (2022) demonstrated that financially flexible firms are more capable of sustaining innovation, while the findings also support Signaling Theory, whereby digital financial innovation serves as a positive signal of managerial capability and long-term corporate resilience.

Cash Holding and Firm Value

The results reveal that Cash Holding has a positive and statistically significant effect on Firm Value ($\beta = 0.902$; $t = 2.712$; $p = 0.007$), indicating that H3 is supported. This finding suggests that adequate cash reserves enhance firm value because investors perceive strong liquidity as an indicator of financial stability, lower financial distress risk, and greater capacity to exploit profitable investment opportunities. Firms with sufficient internal funds are less dependent on external financing, allowing management to make strategic investment decisions more efficiently while maintaining financial resilience during periods of uncertainty. This finding supports the Pecking Order Theory, which emphasizes the importance of internal financing in reducing financing costs and information asymmetry. The result is also consistent with Akhtar et al. (2023), who reported that optimal cash holdings increase firm value by strengthening investor confidence, Guo et al. (2023), who found that the value of corporate cash holdings depends on positive investor perceptions, and Moolchandani and Kar (2022), who demonstrated that effective cash management contributes positively to corporate value by reducing agency conflicts and strengthening financial performance.

Cash Holding and Financial Flexibility

The empirical results indicate that Cash Holding has a positive and statistically significant effect on Financial Flexibility ($\beta = 0.628$; $t = 6.040$; $p < 0.001$), indicating that H4 is supported. This finding demonstrates that firms maintaining higher cash reserves possess greater financial flexibility because internally available funds enable management to respond more effectively to unexpected financial needs, investment opportunities, and economic uncertainty without excessive reliance on external financing. Adequate cash holdings provide firms with greater discretion in determining financing strategies, reducing financial constraints while enhancing their ability to preserve operational stability during volatile market conditions. This finding is consistent with the Pecking Order Theory, which suggests that firms prioritize internal financing over external debt or equity because internal funds involve lower financing costs and less information asymmetry. The result supports the findings of Akhtar et al. (2023), who reported that optimal cash holdings strengthen firms' financial capacity and financing decisions, as well as Guo et al. (2023), who emphasized that strategically managed cash reserves improve corporate financial resilience. Furthermore, the findings are in line with Hao et al. (2022), who argued that financially flexible firms are better positioned to withstand uncertainty and exploit future investment opportunities.

Investment Efficiency and Firm Value

The structural model reveals that Investment Efficiency does not have a statistically significant effect on Firm Value ($\beta = -0.422$; $t = 1.450$; $p = 0.147$), indicating that H5 is not supported. This result suggests that efficient investment allocation alone is insufficient to increase market valuation during the observed period because investors tend to evaluate realized corporate performance rather than the efficiency of internal investment decisions. Although efficient investments contribute to improving operational productivity and long-term competitiveness, the economic benefits generated by these investments generally require time before being reflected in stock prices and market valuation. Consequently, investors may place greater emphasis on profitability, earnings growth, and future cash flow than on the efficiency of investment decisions themselves. This finding differs from Le et al. (2024), who found that investment efficiency improves corporate performance by optimizing capital allocation, and Li et al. (2023), who demonstrated that efficient investment contributes to sustainable firm growth. Nevertheless, the present result indicates that the contribution of investment efficiency to firm value may occur indirectly through intermediate mechanisms, particularly improvements in firms' financial capability and flexibility.

Investment Efficiency and Financial Flexibility

The empirical findings demonstrate that Investment Efficiency has a positive and statistically significant effect on Financial Flexibility ($\beta = 0.326$; $t = 3.054$; $p = 0.002$), thereby supporting H6. This finding indicates that firms capable of allocating investment resources efficiently are better able to strengthen their financial flexibility through improved cash flow generation, more effective resource utilization, and reduced financing inefficiencies. Efficient investment decisions enable firms to maximize returns from available resources while minimizing unnecessary expenditures, thereby creating greater internal funding capacity to support future investment opportunities and financial resilience. This finding is consistent with Le et al. (2024), who concluded that investment efficiency enhances organizational performance through better capital allocation, and with Li et al. (2023), who emphasized that efficient investment decisions improve firms' financial sustainability. The finding also supports Financial Flexibility Theory, which argues that effective allocation of financial resources enhances firms' ability to adjust financing decisions and maintain financial stability under changing economic conditions. Consequently, investment efficiency contributes not only to operational effectiveness but also to strengthening firms' long-term financial adaptability.

Financial Flexibility and Firm Value

The results of the structural model indicate that Financial Flexibility does not have a statistically significant effect on Firm Value ($\beta = -1.423$; $t = 0.248$; $p = 0.804$), indicating that H7 is not supported. This finding suggests that although financial flexibility enables firms to manage liquidity and financing decisions more effectively, it does not directly translate into higher market valuation during the observation period. Investors may perceive financial flexibility as an internal managerial capability whose benefits materialize only when accompanied by improvements in profitability, operational performance, or sustainable corporate growth. Consequently, maintaining financial flexibility alone is insufficient to increase firm value unless it is successfully converted into tangible financial outcomes. This result differs from Hao et al. (2022), who found that financial flexibility enhances corporate performance by improving firms' ability to respond to uncertainty and finance profitable investment opportunities. However, the finding is consistent with the notion that financial flexibility functions primarily as a supporting strategic capability rather than as a direct determinant of market value, particularly in firms operating within emerging capital markets where investors tend to prioritize observable financial performance.

Firm Size and Firm Value

The empirical findings reveal that Firm Size does not have a statistically significant effect on Firm Value ($\beta = 16.294$; $t = 0.344$; $p = 0.731$), indicating that H8 is not supported. This result implies that larger corporate size does not necessarily guarantee higher market valuation, as investors tend to place greater emphasis on profitability, growth prospects, operational efficiency, and overall financial performance rather than on the scale of corporate assets alone. Although larger firms generally possess broader access to financial resources and capital markets, these advantages do not automatically

generate additional value unless supported by effective managerial decision-making and sustainable business performance. This finding is consistent with Serolin (2023), who reported that firm size alone does not significantly influence firm value, while differing from Oktaviani et al. (2024) and Santioso (2025), who found that larger firms tend to achieve superior market valuation due to stronger financial capacity and greater investor confidence. The inconsistency suggests that, within the Indonesian capital market, firm value is influenced more by corporate performance than by organizational scale.

The Moderating Effect of Firm Size on the Relationship between Financial Flexibility and Firm Value

The moderating effect analysis demonstrates that Firm Size does not significantly moderate the relationship between Financial Flexibility and Firm Value ($\beta = -13.924$; $t = 0.359$; $p = 0.719$), indicating that H9 is not supported. This finding suggests that the effect of financial flexibility on firm value remains relatively consistent regardless of whether firms are large or small. Although larger firms generally have greater access to external financing and more diversified funding sources, these advantages do not strengthen the contribution of financial flexibility to market valuation. Instead, the effectiveness of financial flexibility appears to depend more on managerial capability in utilizing financial resources efficiently than on firm size itself. This finding differs from Oktaviani et al. (2024) and Purwaningsih and Mukhibad (2025), who reported that firm size strengthens the effectiveness of financial strategies in enhancing corporate performance. However, the present result indicates that organizational scale does not necessarily determine how financial flexibility contributes to firm value, suggesting that financial flexibility operates independently of firm size within the proposed structural model.

Indirect Testing

Table 3. Moderating Effect Analysis Results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Significant
Digital Financial Innovation (X1)×Financial Flexibility (Z) → Firm Value (Y)	- 0.238	- 0.249	0.982	0.242	0.809	Not Significant
Cash Holding (X2)×Financial Flexibility (Z) → Firm Value (Y)	- 0.893	- 1.125	3,725	0.240	0.810	Not Significant
Investment Efficiency (X3)×Financial Flexibility (Z) → Firm Value (Y)	- 0.464	- 0.555	1,976	0.235	0.814	Not Significant

Indirect Effect of Digital Financial Innovation (X1) on Firm Value (Y) through Financial Flexibility (Z)

The mediation analysis indicates that the indirect effect of Digital Financial Innovation on Firm Value through Financial Flexibility is not statistically significant, suggesting that Financial Flexibility does not mediate the relationship between Digital Financial Innovation and Firm Value. This finding implies that although digital financial innovation improves firms' financial adaptability and operational capability, these improvements have not yet been translated into higher market valuation through

financial flexibility. The benefits of digital transformation generally require a longer period before producing measurable financial outcomes that are recognized by investors. This finding differs from Liu et al. (2023), who found that financial flexibility mediates the relationship between digital transformation and corporate performance, but remains consistent with Ma et al. (2022), who argued that the value created by digital transformation depends on firms' ability to effectively utilize technological resources and convert them into sustainable competitive advantages.

Indirect Effect of Cash Holding (X2) on Firm Value (Y) through Financial Flexibility (Z)

The results further reveal that Financial Flexibility does not significantly mediate the relationship between Cash Holding and Firm Value. This finding indicates that although cash reserves significantly enhance financial flexibility, the increased financial flexibility is insufficient to generate additional firm value. Corporate cash holdings are more likely to be maintained to support operational liquidity, meet short-term financial obligations, and reduce financial risk rather than to create immediate market value through greater financial flexibility. This result contrasts with Akhtar et al. (2023), who emphasized that optimal cash holdings improve financial capacity and corporate value, while also differing from Guo et al. (2023), who reported that investors assign higher value to firms maintaining strategic cash reserves. The present finding suggests that financial flexibility alone is not the mechanism through which cash holding contributes to firm value in Indonesian listed companies.

Indirect Effect of Investment Efficiency (X3) on Firm Value (Y) through Financial Flexibility (Z)

The mediation analysis also demonstrates that Financial Flexibility does not significantly mediate the relationship between Investment Efficiency and Firm Value. This result suggests that although efficient investment allocation strengthens firms' financial flexibility, such improvements are insufficient to produce a significant increase in market valuation during the observation period. The economic benefits generated by investment efficiency generally materialize over a longer time horizon and are often reflected first in improvements in profitability, productivity, and operational performance before influencing firm value. Consequently, the indirect relationship remains insignificant. This finding differs from Le et al. (2024) and Li et al. (2023), who found that investment efficiency contributes positively to corporate performance through better resource allocation, indicating that other mediating mechanisms beyond financial flexibility may better explain how investment efficiency enhances firm value.

Impact of Digital Financial Innovation, Cash Holding, and Investment Efficiency on Financial Flexibility and Firm Value

The empirical results of the structural model indicate that Digital Financial Innovation, Cash Holding, and Investment Efficiency exhibit heterogeneous effects on Financial Flexibility and Firm Value within Indonesian listed firms. The findings reveal that not all explanatory variables directly translate into higher firm valuation, although several of them significantly enhance firms' financial adaptability. This suggests that Financial Flexibility operates as an important internal mechanism through which financial and operational decisions are transmitted into corporate outcomes (Liu et al., 2023). The overall pattern confirms that firm value creation in emerging markets is more complex and time-dependent than simple linear relationships. This complexity also reflects the presence of multiple internal and external constraints shaping corporate financial behavior.

Digital Financial Innovation demonstrates a statistically significant positive effect on Financial Flexibility, but its direct effect on Firm Value is negative and insignificant. This indicates that digital transformation improves internal financial management capabilities without immediately influencing market valuation. The implementation of digital systems enhances transaction efficiency, liquidity monitoring, and financial reporting accuracy, which collectively strengthen firms' adaptive capacity. However, the high initial investment costs and organizational adjustment processes delay the realization of tangible market benefits (Ma et al., 2022). As a result, investors may perceive digital innovation as a long-term strategic investment rather than a short-term value driver. This perception reinforces the delayed valuation response in capital markets.

Cash Holding shows the most consistent positive influence across the model, significantly affecting both Financial Flexibility and Firm Value. Firms with higher liquidity levels tend to have stronger financial resilience, lower financial distress risk, and greater ability to exploit investment

opportunities without external financing constraints. This finding aligns with the Pecking Order Theory, which emphasizes internal financing as a priority due to lower information asymmetry and financing costs (Myers & Majluf, 1984). Moreover, adequate cash reserves send a positive signal to investors regarding corporate stability and future growth potential (Akhtar et al., 2023). Consequently, the market tends to reward firms with strong liquidity positions through higher valuation. This underscores the strategic importance of cash management in shaping investor confidence.

Investment Efficiency significantly improves Financial Flexibility but does not have a direct significant impact on Firm Value. This suggests that efficient capital allocation enhances internal resource availability and reduces financial inefficiencies, yet its impact on market valuation is not immediate. Investors appear to prioritize observable financial outcomes such as profitability and cash flow rather than internal efficiency metrics. The economic benefits of investment efficiency are likely realized in the long run through improved operational performance and sustained earnings growth (Le et al., 2024). Therefore, its contribution to firm value is more likely to be indirect and mediated through financial flexibility. This indicates a temporal gap between operational efficiency and market recognition.

Overall, the results indicate that Financial Flexibility functions as a central transmission mechanism linking corporate financial decisions with firm performance outcomes. While Digital Financial Innovation and Investment Efficiency strengthen internal adaptability, only Cash Holding exerts a direct and immediate effect on Firm Value. This highlights the importance of liquidity management in shaping investor perceptions in emerging capital markets. The findings also suggest that digital transformation and investment efficiency require complementary strategic execution to translate into market valuation gains. Hence, firm value formation is not solely driven by operational efficiency but also by financial structure resilience. This reinforces the multi-layered nature of corporate value creation mechanisms.

Finally, the evidence underscores that the relationship between financial decisions and firm value is characterized by temporal and structural delays. The absence of strong direct effects for several variables reflects the lag between strategic financial actions and their market recognition. Financial Flexibility emerges as a crucial but not sufficient condition for value creation, as its effectiveness depends on how firms deploy their flexible resources into productive investments. These findings reinforce the view that corporate value in dynamic environments is shaped by a combination of liquidity strength, strategic resource allocation, and investor perception dynamics (Hao et al., 2022). This also suggests that sustainable value creation requires alignment between internal financial capacity and external market expectations.

The Effect of Financial Flexibility and Firm Size on Firm Value

The empirical results of the structural model indicate that Digital Financial Innovation, Cash Holding, and Investment Efficiency exhibit heterogeneous effects on Financial Flexibility and Firm Value within Indonesian listed firms. The findings reveal that not all explanatory variables directly translate into higher firm valuation, although several of them significantly enhance firms' financial adaptability. This suggests that Financial Flexibility operates as an important internal mechanism through which financial and operational decisions are transmitted into corporate outcomes (Liu et al., 2023). The overall pattern confirms that firm value creation in emerging markets is more complex and time-dependent than simple linear relationships. This complexity also reflects the presence of multiple internal and external constraints shaping corporate financial behavior. Such dynamics indicate that value formation is highly contingent on both structural financial conditions and market perception mechanisms.

Digital Financial Innovation demonstrates a statistically significant positive effect on Financial Flexibility, but its direct effect on Firm Value is negative and insignificant. This indicates that digital transformation improves internal financial management capabilities without immediately influencing market valuation. The implementation of digital systems enhances transaction efficiency, liquidity monitoring, and financial reporting accuracy, which collectively strengthen firms' adaptive capacity. However, the high initial investment costs and organizational adjustment processes delay the realization of tangible market benefits (Ma et al., 2022). As a result, investors may perceive digital innovation as a long-term strategic investment rather than a short-term value driver. This perception reinforces the

delayed valuation response in capital markets. Consequently, the value relevance of digital transformation depends heavily on its maturity stage within firms.

Cash Holding shows the most consistent positive influence across the model, significantly affecting both Financial Flexibility and Firm Value. Firms with higher liquidity levels tend to have stronger financial resilience, lower financial distress risk, and greater ability to exploit investment opportunities without external financing constraints. This finding aligns with the Pecking Order Theory, which emphasizes internal financing as a priority due to lower information asymmetry and financing costs (Myers & Majluf, 1984). Moreover, adequate cash reserves send a positive signal to investors regarding corporate stability and future growth potential (Akhtar et al., 2023). Consequently, the market tends to reward firms with strong liquidity positions through higher valuation. This underscores the strategic importance of cash management in shaping investor confidence. In this context, liquidity functions not only as a buffer but also as a valuation determinant in capital markets.

Investment Efficiency significantly improves Financial Flexibility but does not have a direct significant impact on Firm Value. This suggests that efficient capital allocation enhances internal resource availability and reduces financial inefficiencies, yet its impact on market valuation is not immediate. Investors appear to prioritize observable financial outcomes such as profitability and cash flow rather than internal efficiency metrics. The economic benefits of investment efficiency are likely realized in the long run through improved operational performance and sustained earnings growth (Le et al., 2024). Therefore, its contribution to firm value is more likely to be indirect and mediated through financial flexibility. This indicates a temporal gap between operational efficiency and market recognition. Such lag effects highlight the importance of time horizon differences between managerial decisions and investor reactions.

Overall, the results indicate that Financial Flexibility functions as a central transmission mechanism linking corporate financial decisions with firm performance outcomes. While Digital Financial Innovation and Investment Efficiency strengthen internal adaptability, only Cash Holding exerts a direct and immediate effect on Firm Value. This highlights the importance of liquidity management in shaping investor perceptions in emerging capital markets. The findings also suggest that digital transformation and investment efficiency require complementary strategic execution to translate into market valuation gains. Hence, firm value formation is not solely driven by operational efficiency but also by financial structure resilience. This reinforces the multi-layered nature of corporate value creation mechanisms. Accordingly, corporate financial architecture plays a decisive role in determining the strength of value transmission channels.

Finally, the evidence underscores that the relationship between financial decisions and firm value is characterized by temporal and structural delays. The absence of strong direct effects for several variables reflects the lag between strategic financial actions and their market recognition. Financial Flexibility emerges as a crucial but not sufficient condition for value creation, as its effectiveness depends on how firms deploy their flexible resources into productive investments. These findings reinforce the view that corporate value in dynamic environments is shaped by a combination of liquidity strength, strategic resource allocation, and investor perception dynamics (Hao et al., 2022). This also suggests that sustainable value creation requires alignment between internal financial capacity and external market expectations. Therefore, strategic coherence between financial policy and market signaling becomes essential for long-term valuation sustainability.

Mediation Effect of Financial Flexibility and Moderating Role of Firm Size in the Structural Model

The final structural analysis examines the mediating role of Financial Flexibility and the moderating effect of Firm Size on the relationship between Digital Financial Innovation, Cash Holding, Investment Efficiency, and Firm Value. The results of the bootstrapping procedure indicate that Financial Flexibility does not significantly mediate any of the tested relationships, while Firm Size also fails to moderate the link between Financial Flexibility and Firm Value. This suggests that the transmission mechanism assumed in the conceptual model is not fully supported by the empirical evidence (Hair et al., 2024). Consequently, the influence of the independent variables on Firm Value is largely direct or operates through alternative pathways not captured in the model. This also implies that the proposed integrated financial mechanism is only partially applicable in the observed empirical setting.

The absence of a mediating effect of Financial Flexibility between Digital Financial Innovation and Firm Value indicates that digital transformation does not create firm value through improved financial adaptability in the short term. Although Digital Financial Innovation enhances internal financial processes, its benefits are not sufficiently translated into market valuation through flexibility mechanisms. This condition reflects the delayed nature of digital investment returns, where efficiency gains require time to materialize into financial performance improvements. Prior studies suggest that the value of digital transformation depends on its integration with strategic and operational capabilities (Liu et al., 2023). Therefore, Financial Flexibility alone is not a sufficient channel for value transmission in this relationship. This also strengthens the argument that digital innovation effects are structurally indirect and time-dependent.

Similarly, Financial Flexibility does not mediate the relationship between Cash Holding and Firm Value, despite Cash Holding showing a strong direct effect on both constructs in earlier analysis. This implies that the value relevance of cash reserves is recognized directly by investors rather than through intermediate improvements in financial adaptability. The market appears to interpret liquidity as a standalone signal of financial strength and risk management capability (Guo et al., 2023). As a result, the pathway from cash availability to firm valuation is immediate rather than structurally mediated. This finding reinforces the signaling role of liquidity in capital markets. It also suggests that liquidity effects bypass internal financial transformation mechanisms.

The mediation analysis also shows that Investment Efficiency does not influence Firm Value through Financial Flexibility. Although Investment Efficiency improves internal resource allocation and strengthens financial adaptability, these improvements are not sufficient to generate indirect value effects. The economic benefits of efficient investment decisions likely require a longer realization period before affecting investor perception. This result aligns with the argument that investment efficiency primarily affects long-term performance rather than immediate market valuation (Le et al., 2024). Hence, Financial Flexibility does not function as an effective transmission channel in this context. This further indicates that efficiency gains are absorbed internally before being reflected externally.

In terms of moderation, Firm Size does not significantly alter the relationship between Financial Flexibility and Firm Value. This indicates that the effect of Financial Flexibility on firm valuation is consistent across both large and small firms. Larger firms do not gain additional valuation benefits from financial flexibility compared to smaller firms, suggesting that size does not strengthen or weaken this relationship. This finding contrasts with traditional assumptions that larger firms can better leverage internal financial capabilities due to resource advantages (Purwaningsih & Mukhibad, 2025). Instead, financial flexibility appears to operate independently of organizational scale. This implies a uniform investor response regardless of firm magnitude.

Overall, the results of the mediation and moderation tests confirm that Financial Flexibility acts more as a structural outcome rather than a transmission mechanism toward Firm Value. Likewise, Firm Size functions as a static characteristic rather than a conditioning variable in the model. The absence of significant indirect and interaction effects suggests that firm value formation is primarily driven by direct financial signals rather than layered structural relationships. These findings emphasize that in emerging market contexts, investors respond more strongly to immediate financial indicators than to complex internal financial mechanisms (Sharma et al., 1981). This also highlights the dominance of short-term market perception over structural financial logic in valuation processes.

CONCLUSION

The findings of this study indicate that Digital Financial Innovation and Investment Efficiency do not have a statistically significant direct effect on Firm Value in Indonesian listed firms, although both variables consistently contribute positively to Financial Flexibility. This suggests that the role of these two variables is more internal-oriented, where their main contribution lies in strengthening firms' adaptive financial capacity rather than immediately influencing market valuation. In contrast, Cash Holding emerges as the most dominant determinant because it significantly affects both Firm Value and Financial Flexibility simultaneously. This indicates that liquidity remains a core financial signal that is strongly valued by investors in the Indonesian capital market. Firms with higher cash reserves are perceived as more resilient in facing uncertainty and more capable of sustaining operational stability. The results also show that financial decision-making in firms is not simply driven by technological

advancement or efficiency improvements alone. Instead, investor perception tends to prioritize tangible financial strength, particularly liquidity position, as a primary indicator of corporate value. Therefore, value creation in this context is more closely associated with financial robustness than with structural or technological sophistication.

Furthermore, the results confirm that Financial Flexibility does not function effectively as a mediating variable within the structural model, as all indirect effects through this construct are statistically insignificant. This implies that although Financial Flexibility plays an important role in supporting internal financial adaptability, it does not serve as a transmission channel that connects Digital Financial Innovation, Cash Holding, and Investment Efficiency to Firm Value. In addition, Firm Size is also unable to moderate the relationship between Financial Flexibility and Firm Value, indicating that the influence of financial flexibility on market valuation is consistent regardless of firm scale. This finding suggests that larger firms do not necessarily gain additional valuation advantages from having greater financial flexibility compared to smaller firms. It also implies that investors do not significantly differentiate the effectiveness of financial flexibility based on firm size characteristics. Instead, valuation decisions appear to be driven more by direct financial indicators such as liquidity and cash-generating capability. Consequently, the role of complex structural relationships in determining firm value is relatively limited in this empirical context.

Based on these findings, several managerial implications can be drawn to enhance corporate financial strategy and investment decision-making. Firms are recommended to prioritize maintaining strong and stable liquidity positions as a fundamental financial strategy that directly supports firm value creation. At the same time, the adoption of Digital Financial Innovation should continue to be encouraged, but with a long-term orientation that emphasizes efficiency, integration, and sustainability rather than short-term valuation gains. Investment Efficiency should also be strategically directed toward productive projects that generate measurable returns and strengthen future cash flows. Although Financial Flexibility does not directly influence firm value, it should still be maintained as an important internal buffer that supports financial resilience and strategic responsiveness. For investors, firm evaluation should not be overly dependent on firm size as a proxy for value but should instead focus on liquidity strength, cash management quality, and the effectiveness of digital transformation strategies. This approach provides a more accurate understanding of firm fundamentals in dynamic and uncertain market environments. Overall, both managerial and investment perspectives should emphasize financial quality over structural scale in assessing corporate performance.

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