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**Digital Transformation, Sales Growth, and Intellectual Capital as
Determinants of Financial Performance: The Moderating Role of Good
Corporate Governance in Indonesian Retail Firms**

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Abstract:

Financial performance in Indonesia's retail sector has remained volatile amid post-pandemic changes in consumption, competitive pressure, and accelerated digital adoption. This study examines the effects of digital transformation, sales growth, and intellectual capital on financial performance, while testing the moderating role of good corporate governance (GCG). Using a quantitative explanatory design, the study analyzes panel data from 27 retail firms listed on the Indonesia Stock Exchange over 2020-2024, yielding 135 firm-year observations. Data were obtained from audited financial statements and annual reports and were analyzed using panel-data moderated regression analysis in EViews 13. The random-effects model shows that digital transformation, sales growth, and intellectual capital have positive and significant effects on return on assets. GCG, proxied by the proportion of independent commissioners, has no direct significant effect on financial performance. GCG also does not significantly moderate the digital transformation-financial performance relationship. However, it significantly strengthens the positive effect of sales growth and significantly weakens the positive effect of intellectual capital. These findings indicate that retail firms should combine effective digital investment, sales expansion, and knowledge-based resources with governance practices that are substantive rather than merely formal.

Keywords: *digital transformation, sales growth, intellectual capital, good corporate governance, financial performance, retail firms*

BACKGROUND

The retail sector is highly exposed to changes in consumer spending, technology, and competitive intensity. The COVID-19 period intensified these pressures by disrupting store operations, accelerating digital channels, and changing the way customers interact with retailers. The resulting adjustment has not been uniform. Financial performance, represented by return on assets (ROA), fluctuated markedly across Indonesian retail firms during 2020-2024. For example, some firms recovered through stronger omnichannel operations and distribution capabilities, while others experienced continued pressure from lower store productivity, operating costs, and competition from digital platforms.

Digital transformation has become a strategic response to these changes. It extends beyond merely digitizing administrative tasks and includes integrating technology into customer engagement, inventory management, payment systems, data-driven decision-making, and business models (Verhoef et al., 2021). In retail businesses, technology-enabled processes can reduce transaction and coordination costs, improve service speed, and expand market reach. However, the financial payoff from digital investment is not automatic because it depends on a firm's ability to integrate technology with operational capabilities and customer value creation (Guo & Xu, 2021; Zeng et al., 2022).



Sales growth is another central determinant of financial performance because it reflects a firm's ability to capture market demand and generate revenue. Growth in sales may improve ROA when firms are able to convert additional revenue into margins through efficient procurement, inventory control, distribution, and cost discipline. Yet, sales growth may not always translate into higher profitability when growth is generated at a high promotional, logistics, or administrative cost. Therefore, sales growth needs to be interpreted alongside managerial capacity to turn revenue expansion into sustainable profit.

Intellectual capital provides an additional lens for understanding retail performance. Human capital, structural capital, and capital employed support the creation of value through employee competence, organizational systems, innovation, supplier relationships, and the effective use of operational resources. The VAIC approach developed by Pulic (1998) captures the efficiency with which these resources create value. In a retail setting, intellectual capital can improve service quality, process reliability, and the speed of adaptation to changes in customer behavior.

Good corporate governance is expected to guide these strategic resources toward stakeholder value. In this study, GCG is proxied by the proportion of independent commissioners. Independent commissioners are expected to provide objective oversight, reduce agency-related risks, and encourage transparent decision-making. Nevertheless, prior evidence remains mixed regarding the direct impact of GCG and its ability to shape the effects of digital transformation, sales growth, and intellectual capital on financial performance (Arifin, 2023; Ulandari et al., 2025).

This study addresses that empirical inconsistency by examining retail firms listed on the Indonesia Stock Exchange from 2020 to 2024. It contributes by integrating digital transformation, sales growth, and intellectual capital in one panel-data model and by testing whether independent commissioners modify the relationship between these factors and ROA.

THEORETICAL FRAMEWORK

Stakeholder Theory and Financial Performance

Stakeholder theory argues that a firm creates sustainable value when it manages resources and decisions in ways that meet the interests of shareholders, employees, customers, suppliers, lenders, regulators, and society (Freeman, 1984). This perspective is relevant to retail firms because financial performance is not generated solely by financial capital. Digital capabilities, sales relationships, knowledge-based assets, and governance arrangements can all improve the firm's capacity to create and distribute value. Accordingly, higher digital transformation, sales growth, and intellectual capital are expected to be associated with stronger financial performance.

Digital Transformation, Sales Growth, and Intellectual Capital

Digital transformation refers to the strategic integration of digital technologies into core business processes, customer interfaces, and value-creation mechanisms (Verhoef et al., 2021). A higher digital-intangible-asset ratio indicates greater investment in technology-related intangible resources and is expected to improve operational efficiency and ROA. Sales growth reflects the percentage change in revenue from one year to the next; when revenue expansion is efficiently managed, it should improve profitability. Intellectual capital is measured through the Value Added Intellectual Coefficient (VAIC), which captures the value-creation efficiency of capital employed, human capital, and structural capital (Pulic, 1998; Bontis et al., 2000). Thus, this study proposes H1: digital transformation positively affects financial performance;



H2: sales growth positively affects financial performance; and H3: intellectual capital positively affects financial performance.

Good Corporate Governance as a Direct and Moderating Mechanism

Good corporate governance is a mechanism for ensuring transparency, accountability, responsibility, independence, and fairness in organizational decision-making (KNKG, 2006). The proportion of independent commissioners is used as the GCG proxy because independent commissioners are expected to monitor managerial decisions objectively. Accordingly, H4 proposes that GCG positively affects financial performance. Governance may also shape whether strategic resources are transformed into financial results. Effective oversight may improve the allocation of digital investment, ensure that sales expansion is profitable, and support the productive deployment of intellectual capital. Therefore, H5-H7 propose that GCG moderates the relationships of digital transformation, sales growth, and intellectual capital with financial performance, respectively.

METHOD

This study uses a quantitative explanatory design with panel data. The population consists of 65 retail-sector firms listed on the Indonesia Stock Exchange (IDX) during 2020-2024. Purposive sampling was applied to select firms that were continuously listed and published complete audited financial statements and annual reports throughout the observation period. The final sample consists of 27 firms, producing 135 balanced firm-year observations.

Secondary data were obtained from annual reports and audited financial statements available through the IDX and company websites. Financial performance is measured by ROA. Digital transformation is measured using the digital intangible asset ratio, sales growth is measured by annual revenue growth, intellectual capital is measured using VAIC, and GCG is measured by the proportion of independent commissioners. The study applies descriptive analysis, diagnostic tests, panel-model selection tests, and moderated regression analysis (MRA) using EViews 13.

Table 1. Operational Definitions and Measurements

Variable	Measurement	Formula / Proxy	Source
Financial performance (ROA)	Profitability and asset-use efficiency	Net income after tax / total assets	Qomariah & Alwi (2021)
Digital transformation (DT)	Digital-intangible-asset intensity	Digital intangible assets (software) / non-current assets	Lantip & Daljono (2023)
Sales growth (SG)	Annual change in revenue	(Sales _t - Sales _{t-1}) / Sales _{t-1}	Hakim & Farida (2025)
Intellectual capital (IC)	Value-creation efficiency	VAIC = VACA + VAHU + STVA	Pulic (1998)
Good corporate governance (GCG)	Board independence	Independent commissioners / total commissioners	KNKG (2006)

$$ROA_{it} = \alpha + \beta_1 DT_{it} + \beta_2 SG_{it} + \beta_3 IC_{it} + \beta_4 GCG_{it} + \beta_5 (DT \times GCG)_{it} + \beta_6 (SG \times GCG)_{it} + \beta_7 (IC \times GCG)_{it} + \varepsilon_{it}$$

RESULT

Descriptive Statistics and Model Diagnostics

Table 2 presents the descriptive statistics. The mean ROA is 0.023790, indicating that the sample firms generated modest average returns on assets during the period, while the minimum ROA of -0.180000 shows that some firms experienced substantial losses. The mean proportion of independent commissioners is 0.469556, with a minimum of 0.200000 and a maximum of 0.800000. Digital transformation, sales growth, and intellectual capital show meaningful variation across firm-year observations.



Table 2. Descriptive Statistics

Variable	Mean	Median	Minimum	Maximum	Std. Dev.
ROA	0.023790	0.040000	-0.180000	0.140000	0.068233
DT	0.155032	0.057100	0.000100	0.568200	0.189030
SG	0.146012	0.118900	-0.456900	0.736170	0.248845
IC (VAIC)	3.155881	2.752000	-1.721000	7.696000	2.246667
GCG	0.469556	0.500000	0.200000	0.800000	0.132737

Panel-model selection favored the random-effects model. The Chow test selected the fixed-effects model over the common-effects model, whereas the Hausman test favored the random-effects model over the fixed-effects model. The Breusch-Pagan Lagrange Multiplier test also favored the random-effects model over the common-effects model.

Table 3. Panel-Model Selection

Test	Comparison	Probability	Selected Model
Chow	Common effects vs. fixed effects	0.0000	Fixed effects
Hausman	Fixed effects vs. random effects	0.5655	Random effects
Breusch-Pagan LM	Common effects vs. random effects	0.0000	Random effects

The diagnostic results support the use of the selected model. Centered VIF values for the main explanatory variables are below 1.17, indicating no material multicollinearity. The Glejser test has a cross-sectional probability of 0.1323, suggesting no heteroskedasticity problem. The weighted Durbin-Watson statistic is 1.870438, which lies within the relevant no-autocorrelation range used in the study.

Moderated Regression Results

Table 4 reports the random-effects MRA estimates. The overall model is statistically significant (F-statistic = 16.28235; Prob. F = 0.000000), with a weighted R-squared of 0.472978 and an adjusted R-squared of 0.443929. The explanatory variables and their interaction terms therefore explain approximately 47.30% of the variation in ROA.

Table 4. Random-Effects Moderated Regression Results

Variable	Coefficient	t-Statistic	Probability	Decision
Constant	0.023957	3.419813	0.0008	—
DT	0.057335	2.366478	0.0195	H1 supported
SG	0.064024	3.774717	0.0002	H2 supported
IC	0.013077	6.946474	0.0000	H3 supported
GCG	0.039450	1.232335	0.2201	H4 not supported
DT × GCG	0.007864	0.043295	0.9655	H5 not supported
SG × GCG	0.350788	2.455006	0.0154	H6 supported
IC × GCG	-0.029451	-2.056604	0.0418	H7 supported (negative moderation)

DISCUSSION

Digital Transformation and Financial Performance

Digital transformation has a positive and significant effect on ROA (beta = 0.057335; p = 0.0195). This result suggests that retail firms that invest more intensively in digital intangible assets can obtain financial benefits through better process integration, operational efficiency,



and customer access. The result is consistent with the argument that digital technologies create value when they are embedded in core business processes rather than treated as stand-alone tools (Verhoef et al., 2021; Lantip & Daljono, 2023). In the Indonesian retail context, digital capabilities can support omnichannel operations, faster inventory decisions, and more responsive customer service.

Sales Growth and Financial Performance

Sales growth also has a positive and significant effect on ROA ($\beta = 0.064024$; $p = 0.0002$). The finding indicates that revenue expansion is associated with stronger profitability when firms are able to manage the cost and asset implications of growth. Sales growth can raise financial performance by improving asset turnover, generating greater operating leverage, and strengthening customer demand. This result is aligned with evidence that sales growth can improve performance when it is accompanied by sound operating management (Lestari et al., 2025; Ratnasari & Pandin, 2025).

Intellectual Capital and Financial Performance

Intellectual capital has the strongest direct statistical association with ROA among the three focal resources ($\beta = 0.013077$; $p < 0.001$). The result supports the stakeholder perspective that firms create value by mobilizing employee competence, organizational systems, and capital employed. In retail firms, these resources may improve service reliability, innovation, operational coordination, and the ability to respond to changing customer preferences. The finding is consistent with prior research that links VAIC-based intellectual capital efficiency to superior financial performance (Qonita et al., 2023; Yuliana et al., 2024).

The Direct and Moderating Role of Good Corporate Governance

GCG, measured through the proportion of independent commissioners, has a positive but non-significant direct effect on ROA ($\beta = 0.039450$; $p = 0.2201$). This finding does not imply that independent commissioners are unimportant. Rather, it indicates that the board-independence proxy alone did not directly translate into short-term profitability during the observation period. Board effectiveness may depend on substantive oversight quality, competence, meeting intensity, information access, and the interaction of commissioners with other governance mechanisms.

The $DT \times GCG$ interaction is not significant ($\beta = 0.007864$; $p = 0.9655$). Thus, independent commissioners did not statistically strengthen or weaken the relationship between digital transformation and financial performance. A plausible interpretation is that digital transformation outcomes are more immediately shaped by technological integration, managerial capability, and operational execution than by the proportion of independent commissioners alone. A broader governance construct may produce a different result.

The $SG \times GCG$ interaction is positive and significant ($\beta = 0.350788$; $p = 0.0154$). This result shows that governance strengthens the conversion of sales growth into ROA. Effective independent oversight may encourage management to align sales expansion with cost control, working-capital discipline, risk management, and transparent performance monitoring. In this sense, governance helps ensure that higher revenue becomes profitable growth rather than merely higher business volume.

In contrast, the $IC \times GCG$ interaction is negative and significant ($\beta = -0.029451$; $p = 0.0418$). The result indicates that the positive relationship between intellectual capital and ROA becomes weaker at higher levels of the independent-commissioner proxy. This outcome should be interpreted cautiously. It may reflect that formal or restrictive monitoring can slow discretionary investment in innovation, employee development, or knowledge-based experimentation. It may also indicate that independent commissioners alone do not capture the



governance capabilities required to help firms exploit intellectual capital. Future research should test alternative governance measures, including board expertise, audit-committee effectiveness, institutional ownership, and meeting frequency.

CONCLUSION

This study finds that digital transformation, sales growth, and intellectual capital positively and significantly affect the financial performance of Indonesian retail firms during 2020-2024. GCG, proxied by the proportion of independent commissioners, does not have a significant direct effect on ROA and does not significantly moderate the digital transformation-ROA relationship. However, GCG strengthens the positive effect of sales growth on ROA and weakens the positive effect of intellectual capital on ROA.

The findings imply that retail managers should prioritize digital initiatives that are integrated with business processes, pursue revenue growth with disciplined cost and asset management, and develop human, structural, and capital-employed capabilities. Governance practices should move beyond board composition toward effective oversight that supports strategic execution. The study is limited to the retail sector, a five-year period, a single profitability measure, and one proxy for GCG. Future studies can extend the period and sectors, use ROE, Tobin's Q, or market-based measures, and employ broader governance indicators.

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