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Which Fundamentals Differentiate Philippine Stock Winners from Laggards? A Rank-Based Multinomial Analysis of 2025 Price Appreciation

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Abstract

This study examines whether firm-level fundamental indicators observed at the end of 2024 can meaningfully discriminate among Philippine-listed stocks according to their relative price appreciation performance over a one-year horizon in 2025. Rather than predicting continuous stock returns, the analysis adopts a rank-based classification framework to reflect the volatile and heterogeneous nature of short-horizon stock price movements in an emerging market context. Using a purposive sample of 73 actively traded firms, stock price appreciation was operationalized as a five-category ordinal rank based on relative performance. Bivariate screening employed Spearman's rank-order correlation, followed by multinomial logistic regression as the primary inferential model after rejection of the proportional odds assumption required for ordinal regression. Exploratory nonparametric stratification and robustness checks using continuous returns and rank-transformed regression were also conducted. The multinomial model with four predictors (Debt-to-Assets, ROA, Sales CAGR, and Price-to-Cash) significantly improved fit over the intercept-only model (likelihood ratio $\chi^2(16) = 31.455$, $p = .012$) and demonstrated acceptable goodness-of-fit (Pearson $p = .240$; Deviance $p = .996$), with moderate explanatory power (Nagelkerke $R^2 = .369$). Overall classification accuracy reached 43.1% across five performance ranks (chance level = 20%). Price-to-Cash (P/Cash) was the only predictor with a statistically significant overall effect ($\chi^2(4) = 16.308$, $p = .003$) and remained the most stable signal across robustness checks. At the bivariate level, valuation-related indicators dominated the significant rank-to-rank associations, with P/Cash showing the strongest association with appreciation rank ($r = .377$, $p = .001$). Profitability (ROA) significantly differentiated the lowest-performing stocks from the highest-performing group in specific contrasts, while leverage and growth indicators exhibited contrast-specific and weaker effects. The findings indicate that short-horizon fundamental analysis in the Philippine stock market is most informative when framed as a problem of relative performance classification rather than precise return prediction, and they highlight the central role of cash-flow-based valuation in discriminating among stock performance tiers.

Keywords: *Multinomial logistic regression; rank-based classification; nonparametric screening; robustness analysis; fundamental indicators; Philippine stock market; predictive analysis of stock returns; stock price appreciation*

1. Introduction

The ability of fundamental financial indicators to explain and predict stock price movements has long been a central concern in empirical finance. Despite advances in market efficiency and the increasing availability of real-time information, firm-level fundamentals derived from financial statements continue to play a significant role in equity valuation and investor decision-making. Indicators such as earnings per share (EPS), return on assets (ROA), return on equity (ROE), valuation ratios, firm size measures, and leverage ratios are widely examined in the literature as determinants of stock price behavior over varying time horizons (Shih & Hoang, 2021; Hadi & Ratnawati, 2023; Akbar et al., 2025). These indicators are commonly interpreted as proxies for profitability, operational efficiency, financial risk, and growth potential, which collectively shape market expectations about future cash flows and firm value.

Empirical evidence suggests that many fundamental indicators exhibit statistically significant associations with stock prices even over relatively short horizons, including annual periods aligned with financial reporting cycles (Jafar, 2023; Putra et al., 2024). Profitability and efficiency measures, particularly ROA and ROE, are frequently identified as among the more robust correlates of stock price appreciation, reflecting investor preference for firms that demonstrate effective resource utilization and sustainable earnings generation (Almustafa, 2025; Szabó et al., 2025). At the same time, valuation ratios such as price–earnings (P/E) and price-to-book (P/B) show more mixed predictive performance, with their explanatory power often contingent on market conditions, growth expectations, and

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methodological refinements (Sloan & Wang, 2023; Lin et al., 2025).

The literature also emphasizes that the strength and direction of fundamental effects are context-dependent. Sectoral differences, market efficiency, volatility, and liquidity conditions can moderate the extent to which fundamentals are reflected in prices within a given time frame (Chauhan et al., 2024; Lim et al., 2025). Short-horizon analyses may be further complicated by market noise and transient price movements that obscure the gradual incorporation of fundamental information, particularly in emerging markets. Consequently, while annual horizons are frequently employed and empirically defensible, their adequacy depends on the type of indicator examined and the structure of the market under study.

In emerging markets such as the Philippines, these issues are especially salient. The Philippine stock market is characterized by varying levels of liquidity, sectoral concentration, and sensitivity to both firm-specific and macroeconomic conditions. While prior studies provide broad evidence on the relevance of fundamentals across different markets, there remains a need for market-specific examination that identifies which indicators are most informative within the Philippine context. Moreover, limited empirical work focuses explicitly on using end-of-year fundamental indicators to explain stock price movements in the subsequent calendar year, a design that aligns closely with practical investment decision cycles.

Against this backdrop, the present study investigates the relationship between firm-level fundamental indicators measured at the end of 2024 and stock price movements observed during 2025 in the Philippine stock market. By focusing on a one-year forward horizon, the study seeks to assess which categories of fundamentals—profitability, efficiency, valuation, size, and leverage—exhibit predictive relevance for subsequent stock price performance. In doing so, the study contributes to the literature by providing evidence on the short-horizon usefulness of fundamental analysis in an emerging market setting and by clarifying which indicators are most informative for explaining stock price movements in the Philippines.

Objectives of the Study

General Objective

The primary objective of this study is to examine whether firm-level fundamental indicators are associated with, and can discriminate among, relative stock price appreciation outcomes over a one-year horizon in the Philippine stock market.

Specific Objectives

Specifically, the study aims to:

a. Describe the financial characteristics of publicly listed Philippine firms in terms of size, profitability, growth, leverage, and valuation indicators.
b. Examine the bivariate associations between selected firm-level fundamental indicators and stock price appreciation rank.
c. Assess the extent to which profitability and efficiency measures (e.g., ROA and related indicators) differentiate firms across stock price appreciation categories.
d. Evaluate the role of valuation ratios, particularly cash-flow-based and earnings-based multiples, in distinguishing firms with higher versus lower stock price appreciation.
e. Determine whether leverage and solvency indicators contribute to explaining relative stock price performance when evaluated within a multivariate framework.
f. Identify a parsimonious set of financial indicators that meaningfully discriminate among stock price appreciation ranks using multinomial logistic regression.

Through these objectives, the study seeks to clarify the short-term usefulness of fundamental analysis in the Philippine context and to provide empirical guidance on which financial indicators are most relevant for understanding stock price movements from one year to the next.

2. Review of Related Literature

2.1. Fundamental Indicators and the One-Year Horizon in Stock Price Research

Fundamental indicators derived from firm financial statements and market valuation metrics remain widely used to explain and anticipate stock price movements. Empirical studies frequently report that earnings per share (EPS), price–earnings ratio (P/E or PER), and return on equity (ROE) exhibit statistically significant relationships with stock prices over relatively short horizons, including time frames around one year (Hadi & Ratnawati, 2023; Jafar, 2023; Shih & Hoang, 2021). Such findings support the view that accounting-based signals of profitability and performance are

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incorporated into prices within a time window that is practically relevant for annual reporting cycles and year-to-year comparative designs.

However, the evidence also indicates that short-horizon effects are not uniformly observed across all indicators or environments. Some studies find that certain fundamental ratios and selected macroeconomic variables—particularly inflation and interest rates—may show limited or non-significant short-run relationships with stock prices (Jafar, 2023; Shih & Hoang, 2021). This mixed evidence suggests that the informational content and the speed of incorporation differ by indicator type.

Firm-level accounting metrics may be more directly tied to investor expectations of distributable earnings and operational effectiveness, whereas macroeconomic variables can affect discount rates, earnings outlook, and sector conditions through slower transmission channels.

Sectoral and regime heterogeneity further complicate generalization. Research suggests that macroeconomic indicators may influence stock returns in both short and long horizons, but with effects varying across sectors and market conditions (Chauhan et al., 2024; Chauhan et al., 2025). This implies that a uniform one-year horizon may be adequate for detecting relationships in certain sectors but less adequate in others, particularly when sector earnings dynamics are governed by long investment cycles, regulatory constraints, or commodity-driven volatility.

A further methodological constraint is the presence of noisy short-term returns and heightened volatility. Short-horizon returns may be dominated by transient market dynamics—such as sentiment shifts, liquidity shocks, or idiosyncratic news—thereby obscuring the measurable association between fundamentals and realized prices (Lim et al., 2025; Tamilselvan & Karthigeyan, 2025). Under these conditions, a one-year horizon may underestimate the structural role of fundamentals if mispricing or noise delays the convergence between price and fundamental value. Nonetheless, across the reviewed evidence, the one-year horizon remains frequently defensible for many firm-level indicators, while the magnitude and significance of effects are best treated as contingent on market context, sector, and the specific indicators selected (Chauhan et al., 2024; Hadi & Ratnawati, 2023; Lim et al., 2025).

2.2. Profitability and Efficiency Measures: ROA, ROE, and Stock Price Appreciation

Profitability and efficiency indicators are repeatedly identified as strong correlates—and in some designs, predictors—of stock price appreciation. In particular, return on assets (ROA) and return on equity (ROE) are commonly reported to exhibit significant positive relationships with subsequent stock prices across varied markets and sectors (Akbar et al., 2025; Almustafa, 2025; Putra et al., 2024). The conceptual basis for this association is straightforward: higher profitability indicates stronger earnings capacity and potentially higher expected future cash flows, which may raise firm value and investor demand.

Evidence also suggests that ROA may exert a stronger influence on stock prices than ROE in certain contexts, especially when dividend policy is considered jointly (Akbar et al., 2025; Almustafa, 2025). This pattern implies that markets may place premium value on efficient asset utilization and the stability of operating performance, rather than on equity-based returns that can be amplified mechanically through leverage. In settings where investors interpret ROA as a signal of operational resilience and prudent resource deployment, ROA's valuation relevance may exceed that of ROE.

The literature further frames profitability metrics as signals of "quality," where profitability is not only an outcome but also a characteristic used by markets to infer firm strength and sustainability (Da Silva, 2021; Szabó et al., 2025). This view is consistent with empirical observations that profitability factors can be reflected in pricing dynamics, particularly where investors systematically favor firms with durable earnings generation. Nevertheless, the strength of the profitability–price relationship is not invariant. Variation by industry, market efficiency, and firm size is frequently reported, with some evidence indicating that market conditions and liquidity may moderate the predictive power of profitability indicators (Da Silva, 2021; Widana et al., 2025). For example, in less liquid or less efficient markets, profitability signals may diffuse more slowly or be partially discounted due to higher uncertainty and limited arbitrage capacity.

Another important implication is that profitability effects may persist even when some degree of anticipation exists. Studies indicate that continuing fluctuations in ROA and ROE can still influence stock price dynamics, suggesting that markets do not fully and perfectly forecast profitability trajectories, or that new information continuously alters beliefs about earnings persistence (Peter et al., 2025; Syifa et al., 2025). This supports the interpretation that profitability indicators may retain incremental informational value in explaining price changes even in markets where fundamentals are widely tracked.

Overall, the evidence converges on the conclusion that ROA and ROE are among the more reliable fundamental correlates of stock price appreciation, while the consistency and magnitude

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of their effects depend on contextual factors such as sector characteristics, liquidity, and the broader efficiency of information incorporation (Akbar et al., 2025; Almustafa, 2025; Szabó et al., 2025; Widana et al., 2025).

2.3 Valuation Ratios: Mixed Predictability, Refinements, and the Role of Cash-Flow-Based Measures

Valuation ratios such as P/E and price-to-book (P/B) remain central in both academic research and investment practice, yet empirical evidence on their predictive power for future returns is frequently mixed. Studies indicate that the relationship between these traditional multiples and subsequent returns can be weak, inconsistent, or sensitive to market regimes and time horizons (Lin et al., 2025; Sloan & Wang, 2023; Yu et al., 2020). These findings suggest that simple valuation ratios may not, on their own, provide robust short-horizon forecasts of continuous returns across diverse settings.

Research also shows that more refined valuation constructs can improve forecasting performance by addressing the conceptual limitations of simple multiples. Approaches that incorporate expected earnings growth or intrinsic value elements—such as combining book value with discounted future economic profits—are reported to yield improved return forecasts relative to relying solely on P/E or P/B (Bergen et al., 2025; Sloan & Wang, 2023). This implies that valuation measures become more informative when they incorporate forward-looking components and when they more directly reflect expected economic profitability rather than static accounting anchors alone.

The literature further identifies cash-flow-based multiples and cyclically adjusted ratios as potentially more reliable predictors in some contexts. Cash-flow multiples may be less susceptible to earnings management and accrual distortions, while cyclically adjusted measures—such as CAPE-style ratios—may mitigate the effects of temporary earnings fluctuations by smoothing profitability over time (Kenourgios et al., 2021; Yu et al., 2020). Where earnings are highly cyclical or subject to transitory shocks, such adjustments can help align valuation measures with longer-run earning power and thus improve associations with future returns.

Market regime and sector dependence remain important qualifiers. Evidence suggests that low valuation levels may be associated with higher and more stable future returns, while high valuations may signal elevated risk and longer breakeven horizons (Chipunza et al., 2020; Sharma, 2025). This aligns with the interpretation that valuation ratios can capture a tradeoff between expected return and risk, particularly in periods of exuberance or contraction. At the same time, profitability measures may outperform valuation ratios for near-term return prediction in several settings, implying that valuation multiples alone may not sufficiently capture expected returns without complementary information on operating performance (Arshad, 2021; Lin et al., 2025).

Taken together, the evidence supports a cautious interpretation: valuation ratios relate systematically to future returns in some conditions, but their reliability improves when adjusted for earnings growth expectations, cash-flow considerations, and market regime characteristics (Bergen et al., 2025; Kenourgios et al., 2021; Sloan & Wang, 2023).

2.4 Scale, Solvency, and the Limits of Continuous Return Prediction: Size Effects, Leverage Tradeoffs, and Classification Robustness

Balance-sheet scale and firm size indicators—such as total assets, equity, and market capitalization—are often investigated as determinants of stock price movements. Evidence indicates that larger firms tend to attract broader investor attention and may experience higher stock prices, yielding a positive relationship between size/scale and stock price appreciation in multiple settings (Aini et al., 2023; Antonio, 2025; Khoni'ah & Dewi, 2025; Prasetyo & Pertiwi, 2025). However, size effects are not universally consistent. Findings suggest nuance in emerging markets where mid-cap firms may outperform small-cap firms, indicating that size may interact with market structure, liquidity, and growth opportunities (Gurani, 2023). Moreover, some results imply that firm size may function partly as a proxy for risk and liquidity rather than pure operational performance, with liquidity itself sometimes showing counterintuitive associations depending on how it is interpreted by investors (Akuntansi et al., 2023; Prasetyo & Pertiwi, 2025). In some contexts, firm size does not significantly affect stock prices, particularly where profitability, governance, or other firm-specific factors dominate valuation (Murtiasih & Putri, 2025).

Leverage and solvency measures—such as debt-to-equity ratio (DER) and debt-to-assets—show similarly context-dependent relationships with

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stock price appreciation. Some studies report positive effects of leverage, interpreted as markets rewarding debt-financed growth and the potential amplification of returns when debt is deployed productively (Agustin et al., 2025; Victoria & Yuniningsih, 2025). Conversely, other evidence indicates negative or insignificant leverage effects, consistent with interpretations emphasizing financial distress risk, constrained flexibility, and heightened downside exposure when debt burdens rise (Atin & Sunarto, 2025; Ramadhanty & Hariyati, 2025; Safitri & Sumaryati, 2025). A consistent nuance is that profitability can moderate leverage outcomes: leverage may enhance value for profitable firms but magnify risk for weaker firms, producing directionally different results across samples (Hukum et al., 2025; Victoria & Yuniningsih, 2025).

Finally, an important methodological implication concerns the form of the prediction target. Fundamental indicators may be more effective for classification or ranking tasks—distinguishing winners from laggards—than for predicting precise continuous returns. Evidence indicates that meta-indicators built from fundamental data can perform strongly in categorical prediction of outperformance, achieving high precision in identifying benchmark-beating stocks, and that aggregated fundamental indices can forecast excess market returns more robustly than simpler scoring approaches (De Almeida & Castro, 2022; Ze-To, 2021). The stability of rank-based prediction is often attributed to reduced sensitivity to noise, since continuous return prediction is inherently volatile. Additionally, adaptive strategies that switch indicators based on momentum and economic constraints suggest that indicator relevance may change over time, and that model robustness can improve when prediction is framed as identifying relative performance regimes rather than exact return magnitudes (Dai & Zhu, 2021).

Overall, size and leverage indicators contribute meaningfully to explaining stock price appreciation, but their effects are moderated by risk, liquidity, sector, and profitability conditions. Complementarily, evidence supports the methodological advantage of classification-oriented approaches in noisy market environments (De Almeida & Castro, 2022; Hukum et al., 2025; Prasetyo & Pertiwi, 2025).

2.5 Synthesis and Research Gap

The reviewed literature demonstrates extensive scholarly interest in the relationship between firm-level fundamentals and stock market performance. Prior studies have examined profitability measures (e.g., ROA, ROE), valuation ratios (e.g., P/E, P/B, cash-flow-based multiples), growth indicators, leverage, and firm size as potential determinants of stock returns. While long-horizon studies often report statistically significant associations between selected fundamentals and future returns, findings for short-horizon stock price movements remain mixed and frequently inconclusive, particularly in emerging markets.

Several strands of literature suggest that short-term stock price movements are influenced by a combination of accounting fundamentals, market expectations, liquidity, and noise trading, which may dilute the predictive power of traditional financial ratios over brief time intervals. Empirical evidence further indicates that commonly used valuation ratios such as P/E and P/B may lose explanatory strength once firm heterogeneity, market conditions, and multicollinearity among indicators are accounted for. In contrast, cash-flow-based measures and selected efficiency indicators have been shown to retain conditional relevance in specific market contexts, though results are far from uniform.

Moreover, much of the existing research relies on continuous return measures and linear modeling frameworks, which implicitly assume stable and homogeneous relationships across firms. This approach may be ill-suited to markets characterized by volatility, information asymmetry, and non-linear pricing dynamics. Relatively few studies have examined stock performance using rank-based or categorical outcomes, which may better capture relative market positioning rather than precise return prediction—especially over short horizons.

Within the Philippine stock market context, empirical studies focusing on firm-level fundamentals and short-term stock price appreciation remain limited. Existing work often emphasizes long-run valuation effects or cross-sectional return premia, leaving a gap in understanding whether accounting and valuation indicators can meaningfully discriminate among relative stock price performance categories over a one-year period.

Accordingly, this study addresses this gap by examining whether a broad set of firm-level fundamental indicators can differentiate relative stock price appreciation outcomes when performance is operationalized as a ranked categorical variable. By adopting a diagnostics-driven modeling approach and employing multinomial logistic regression, the study contributes to the literature by clarifying the conditional, non-linear, and category-specific roles of profitability, valuation, and leverage indicators in short-horizon stock performance within an emerging market setting.

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3. Methodology

3.1 Research Design

The study employed a quantitative, non-experimental, predictive–discriminative research design. It aimed to identify which firm-level financial indicators observed at the end of 2024 significantly discriminate among Philippine-listed stocks according to their subsequent price appreciation performance in 2025. Rather than estimating continuous price changes, the study focused on classification into ordered performance categories, making the approach suitable for modeling relative investment outcomes rather than point forecasts.

3.2 Population, Sample and Data Sources

The population consisted of 287 actively traded common stocks listed on the Philippine Stock Exchange (PSE), with active trading status as of end-2024. Using purposive sampling, the study selected 73 firms that satisfied the following criteria: (a) availability of complete financial statement data for fiscal year 2024, (b) observable market price data at the end of 2024 and during 2025, and (c) absence of prolonged trading suspension during the observation period.

Firm-level financial indicators were obtained from publicly available annual financial reports and market data sources, while stock price appreciation was computed based on market prices recorded during 2025. All data used were secondary in nature and publicly accessible.

3.3 Variables and Measurement

Dependent Variable: Stock Price Appreciation Rank

The dependent variable was stock price appreciation performance in 2025, operationalized as a five-category ordinal rank. For each firm, percentage price change was computed using end-of-2024 prices as the baseline. The resulting values were then sorted and grouped into five approximately equal-frequency categories (quintiles), representing relative performance:

Rank 1 – Lowest appreciation
Rank 2 – Below-average appreciation
Rank 3 – Average appreciation
Rank 4 – Above-average appreciation
Rank 5 – Highest appreciation

This rank-based operationalization reduces sensitivity to extreme price movements and aligns the analysis with an investment-relevant perspective focused on relative performance rather than absolute returns.

Independent Variables

Independent variables consisted of firm-level profitability, growth, leverage, and valuation indicators, including but not limited to:

Return on Assets (ROA)
Sales Growth (CAGR)
Debt-to-Assets Ratio
Price-to-Cash Flow (P/Cash)
Other valuation ratios initially considered during screening

Profitability, growth, and leverage ratios were entered using their raw metric values as reported in financial statements. Valuation indicators were interpreted with attention to directional desirability: lower valuation ratios were conceptually associated with more favorable investment conditions. Where ranked versions of valuation indicators were used for correlation screening, ranks were directionally adjusted so that higher rank scores consistently represented more favorable conditions.

3.4 Statistical Treatment and Analytical Procedure

Data analysis followed a structured, sequential analytical procedure aligned with the final reported results.

3.4.1 Data Screening and Preparation

Data were screened for completeness, plausibility, and consistency. No imputation was performed. Variables exhibiting extreme skewness were assessed for influence during preliminary analysis. To support rank-based procedures, percentage price changes and selected valuation indicators were transformed into ordinal ranks where appropriate.

3.4.2 Bivariate Association Screening

Given the ordinal nature of the dependent variable and the use of ranked indicators, Spearman's rank-order correlation was employed to examine bivariate associations between stock price appreciation rank and candidate predictors. Only variables demonstrating statistically significant associations ($p < 0.05$) were advanced to

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multivariate modeling. This step served as analytical screening, not as inferential testing.

3.4.3 Exploratory return-based screening and robustness checks

In addition to the primary multinomial logistic regression using five-category stock price appreciation ranks, an exploratory screening sequence was conducted using the continuous one-year stock return (% Change) to examine whether candidate indicators exhibited consistent signals under nonparametric assumptions. First, each indicator was discretized into five ordinal strata (1–5) and treated as a grouping factor in a Kruskal–Wallis test of differences in % Change across strata, with pairwise comparisons examined using the Dwass–Steel–Critchlow–Fligner procedure when omnibus significance was observed. Second, monotonic bivariate associations between continuous indicators and % Change were assessed using Spearman's rank-order correlation. Third, rank-transformed regression models were estimated by converting selected indicators into ascending ranks and regressing % Change on these ranks as a robustness check under heavy-tailed return behavior. Because multiple indicators were screened (n = 25), these results were interpreted cautiously and treated as exploratory. Accordingly, the return-based screening and robustness checks served as triangulation rather than as the study's primary inferential analysis.

3.4.4 Model Selection Rationale

Initial modeling considered an ordinal logistic regression framework due to the ordered nature of the dependent variable. However, formal testing of the parallel lines (proportional odds) assumption indicated violation, rendering the ordinal model inappropriate.

Consequently, the study adopted multinomial logistic regression, which allows predictor effects to vary across outcome categories and does not impose proportionality constraints. This approach is suitable for classification-oriented financial modeling, particularly when performance tiers are the object of interest.

3.4.5 Multinomial Logistic Regression Estimation

Multinomial logistic regression was estimated using maximum likelihood estimation, with Rank 5 (highest appreciation) specified as the reference category. Predictor variables were entered simultaneously following bivariate screening.

During estimation, predictors exhibiting signs of multicollinearity, quasi-complete separation, sparse cell distributions, or coefficient instability were iteratively removed to achieve a parsimonious and stable final model. The retained predictors—Return on Assets, Sales Growth (CAGR), Debt-to-Assets Ratio, and Price-to-Cash Flow—represent distinct financial domains and demonstrated consistent effects across model iterations.

For the multinomial model, valuation ratios (including P/Cash) were entered as directionally adjusted five-level favorability ranks, such that higher values represent more attractive valuation (e.g., lower raw P/Cash corresponds to higher favorability rank).

3.4.6 Model Evaluation and Diagnostics

Model adequacy was evaluated using:

a. Likelihood Ratio Tests comparing the final model to the intercept-only model,
b. Pearson and Deviance goodness-of-fit statistics,
c. Pseudo R^2 measures (Cox & Snell, Nagelkerke, McFadden),
d. Classification accuracy relative to chance benchmarks.
e. Parameter estimates were interpreted using odds ratios (Exp(B)), indicating the change in odds of membership in a given appreciation rank relative to the highest-performance group.

3.5 Ethical Considerations

The study relied exclusively on publicly available secondary data and did not involve human subjects. No confidential or proprietary information was accessed. The research complied with standard ethical practices for financial and market-based empirical studies.

4. Results and Discussion

4.1 Descriptive Statistics of Firms and Financial Indicators

Table 1 summarizes the descriptive statistics for the 73 publicly listed firms included in the analysis. The sample exhibits substantial cross-sectional heterogeneity across firm size, capital structure, profitability, growth dynamics, and valuation characteristics—an expected feature of Philippine listed firms spanning multiple sectors and market segments.

In terms of firm scale, mean total assets were ₱554,218 million (SD = ₱878,935 million), with liabilities averaging ₱400,490 million (SD = ₱746,092 million) and equity averaging ₱151,621 million (SD = ₱187,245 million). The magnitudes of the standard deviations relative to the means indicate pronounced dispersion, implying that the sample

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includes both very large firms and substantially smaller firms.

Capital structure indicators further reflected variability across firms. The mean debt-to-assets ratio was 57.7% (SD = 21.4%) and the mean debt-to-equity ratio was 2.573 (SD = 3.303), suggesting that leverage profiles ranged widely—from relatively conservative balance sheets to highly levered capital structures.

Table 1. Descriptive Statistics of Firms and Financial Indicators (n = 73)

Indicators	Average	Std Dev
Assets (M)	554,218	878,935
Liab (M)	400,490	746,092
Equity (M)	151,621	187,245
Debt to Equity	2.573	3.303
Debt to Assets	57.7%	21.4%
ROA	4.4%	4.7%
ROS	21.5%	23.2%
ROE	11.1%	10.4%
Earnings increase yoy	-30.7%	474.4%
CAGR rev from 2020	21.8%	24.1%
Increase of Sales yoy	8.4%	10.6%
CAGR Sales from 2020	12.9%	8.9%
P/E	14.34	36.22
P/B	1.44	2.09
P/Cash	9.53	22.63
P/FCF	10.12	33.46
PEG	0.24	2.67
PE/G(rev)	5.56	20.16
PE/G(net income)	(0.46)	5.36
Earnings (M)	13,932	18,326
Sales (M)	132,459	224,014
Book Value (M)	123,270	141,271
Div Yield (%)	4.17	3.48
Outs. Shares (M)	7,828	22,740
% Change	1.90	40.48

Note: Monetary values are expressed in Philippine pesos (₱) in millions. Growth and profitability indicators are expressed in percentages.

Profitability measures also showed meaningful spread. Average ROA was 4.4% (SD = 4.7%), ROE was 11.1% (SD = 10.4%), and ROS averaged 21.5% (SD = 23.2%), indicating that profitability varied considerably and that a subset of firms likely experienced either weak margins or unusually high profitability during the observation window.

Growth indicators exhibited the largest dispersion. The mean year-on-year increase in earnings was –30.7% with a very large SD (474.4%), implying extreme variability and the presence of substantial outliers—consistent with the sensitivity of earnings growth measures to low base effects, cyclical shocks, and sector-specific volatility. Sales growth was comparatively more stable, with an average year-on-year increase of sales of 8.4% (SD = 10.6%) and a mean sales CAGR from 2020 of 12.9% (SD = 8.9%). Earnings CAGR from 2020 averaged 21.8% (SD = 24.1%), again indicating wide differences in longer-run earnings trajectories.

Valuation ratios likewise showed pronounced dispersion. The mean P/E was 14.34 (SD = 36.22), P/Cash averaged 9.53 (SD = 22.63), and P/FCF averaged 10.12 (SD = 33.46), suggesting substantial variation in pricing relative to earnings and cash-flow-related metrics across firms. These levels of dispersion support the analytical decision to operationalize the dependent variable as a rank-based outcome and to employ multivariate classification methods, as simple continuous modeling can be overly influenced by extreme values in growth and valuation indicators.

4.2 Bivariate Association Between Ranked Valuation Indicators and Stock Price Appreciation Rank

Table 2. Significant Bivariate Associations Between Valuation Indicators and Stock Price Appreciation Rank

Variable	r	p
Price-Earnings ratio	0.358	0.002
Price-Book ratio	0.243	0.038
Price-Cash ratio	0.377	0.001
Price-Earnings growth (revenue)	0.254	0.030
Price-Earnings growth (net income)	0.367	0.001

Table 2 reports the selected financial indicators that exhibited statistically significant bivariate associations with the stock price appreciation rank (Rank 1 = lowest appreciation to Rank 5 = highest appreciation). Both the independent variables and the dependent variable were operationalized as ranked (binned) measures on a five-point scale. For valuation indicators, the ranking direction was adjusted to reflect theoretical desirability (i.e., lower valuation ratios were coded as better, receiving higher rank scores), thereby aligning the ranking logic across indicators.

The results show that all statistically significant correlations in Table 2 are positive (r =

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0.243 to 0.377), indicating a consistent directional pattern: firms with more favorable valuation ranks—that is, firms positioned closer to the "better" end of each valuation indicator after ranking adjustment—tended to exhibit higher stock price appreciation ranks. In practical terms, this means that firms with relatively more attractive valuation profiles (as defined by the study's ranking rule) were more likely to belong to higher appreciation categories over the one-year observation horizon.

Among the listed indicators, Price-to-Cash ratio displayed the strongest association with stock performance rank ($r = 0.377$, $p = 0.001$), suggesting that cash-based valuation measures may be particularly relevant in differentiating firms that later exhibit stronger price appreciation. This finding is consistent with the idea that cash-related valuation signals can be more robust than earnings-based signals in settings where reported earnings are volatile or subject to transitory effects. Similarly, Price-Earnings ratio was also significantly associated with performance rank ($r = 0.358$, $p = 0.002$), implying that firms with more favorable earnings-based valuation ranks were more likely to achieve higher appreciation ranks, although the strength of association was slightly lower than that of P/Cash.

Two measures related to price–earnings growth were likewise statistically significant: PE/G (revenue) ($r = 0.254$, $p = 0.030$) and PE/G (net income) ($r = 0.367$, $p = 0.001$). The stronger association for the net-income-based PEG suggests that the interaction between valuation and earnings growth may carry informative signals regarding relative stock appreciation, though the underlying volatility of growth metrics should be considered when interpreting these results. Finally, Price-to-Book ratio showed a significant but comparatively weaker association ($r = 0.243$, $p = 0.038$), indicating that book-value-based valuation ranks were related to performance, but less strongly than cash- or earnings-linked valuation ranks.

Overall, Table 2 suggests that, at the bivariate level, valuation indicators dominate the significant associations with stock price appreciation rank, and that the strength of these relationships falls within a modest-to-moderate range. These results should be interpreted as associational evidence rather than prediction, given the ranked nature of the variables and the absence of controls at this stage. Accordingly, these bivariate findings serve primarily as a screening and contextual step preceding multivariate modeling, where the stability of these relationships can be assessed under joint estimation.

All correlations were computed on five-level ranked (binned) scores rather than raw ratio values, with ranking direction adjusted so higher ranks consistently reflected more favorable indicator positions.

4.3 Exploratory Stratification and Robustness Screening Using Continuous Stock Returns

To complement the rank-based analyses and to examine whether candidate indicators exhibited consistent signals when stock performance was measured as a continuous outcome, a series of exploratory nonparametric and robustness checks was conducted using one-year stock returns (% Change) computed from end-of-2024 prices to late-2025 prices. These procedures were intended as triangulation and screening, not as substitutes for the primary multinomial logistic regression.

First, each candidate indicator was discretized into five ordinal strata and treated as a grouping variable in a Kruskal–Wallis test of differences in % Change across groups. Omnibus significance was observed for selected indicators; however, post hoc analysis using the Dwass–Steel–Critchlow–Fligner procedure revealed heterogeneous patterns. In some cases, statistically significant omnibus results were driven primarily by separation between extreme strata (e.g., lowest versus highest groups), while adjacent-group contrasts were not consistently significant. In other cases, omnibus significance could not be localized to specific pairwise differences after adjustment for multiple comparisons. These patterns suggest gradual monotonic shifts in returns rather than sharp threshold effects.

To avoid potential information loss associated with discretization, the analysis proceeded to Spearman's rank-order correlation using continuous indicator values and continuous % Change. Among the 25 indicators screened, four exhibited statistically significant monotonic associations with stock returns: Earnings year-on-year growth showed a positive association, while valuation ratios—Price-to-Earnings (P/E), Price-to-Book (P/B), and Price-to-Cash Flow (P/Cash)—showed negative associations, indicating that lower valuation levels were generally associated with higher subsequent returns. When interpreted with attention to multiplicity risk, the most stable bivariate signals were observed for P/Cash and Earnings year-on-year growth.

Finally, rank-transformed regression models were estimated as a robustness check under heavy-tailed return behavior. In the initial model including multiple ranked valuation indicators and earnings growth, the overall model did not achieve statistical significance, consistent with redundancy among valuation proxies in a limited sample. A parsimonious two-predictor model including ranked P/Cash and ranked Earnings year-on-year growth

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was statistically significant, with ranked P/Cash emerging as the only significant predictor. This finding indicates that, among the screened indicators, cash-based valuation exhibited the most robust and consistent association with subsequent stock returns.

Overall, the exploratory stratification, correlation screening, and rank-based regression analyses converged on a common conclusion: cash-based valuation (P/Cash) represents the most stable return-related signal in the dataset. These results provide convergent support for the inclusion and interpretation of valuation and growth indicators in the subsequent multinomial logistic regression analysis of stock price appreciation ranks.

Detailed results of the Kruskal–Wallis tests, Spearman correlations, and rank-based regression models are provided in Appendix A.

4.4 Model Specification and Rationale

Initial exploratory analyses using multiple correlation and linear regression techniques were conducted to assess the feasibility of predicting a continuous performance score. Automatic linear modeling was also applied as a variable-screening tool. These approaches revealed limited predictive power and unstable coefficient estimates, reflecting the categorical and relative nature of the ranked performance outcome (Rank 1–5). Consequently, the analysis shifted toward categorical regression frameworks better aligned with the dependent variable's properties.

An ordinal logistic regression was initially considered but rejected due to a violation of the parallel lines assumption ($p < .05$), indicating that the effects of predictors varied across different levels of the performance ranking. Therefore, a multinomial logistic regression (NOMREG in SPSS) was selected as the appropriate method, as it estimates separate logit models for each comparison without assuming proportional odds.

The initial multinomial model, specified with the full set of candidate predictors, produced warnings related to quasi-complete separation and yielded unstable coefficients with extremely large odds ratios. This signaled overparameterization and high multicollinearity, particularly among the interrelated valuation ratios. To resolve this, a theory-guided, iterative variable reduction was performed. Redundant and highly collinear variables (e.g., multiple P/E variants, PEG ratios) were removed, retaining one representative indicator per conceptual domain: leverage, profitability, growth, and valuation. This process resulted in a stable, parsimonious final model with four predictors: Debt-to-Assets, Return on Assets (ROA), Sales CAGR from 2020, and Price-to-Cash (P/Cash). The highest performance rank (Rank 5) was set as the reference category.

4.5 Multinomial Logistic Regression Model

4.5.1 Model Fit and Goodness-of-Fit

A multinomial logistic regression model was estimated with Performance Rank 5 (highest performance) as the reference category. As shown in Table 3, the final model with four predictors provided a significantly better fit than an intercept-only model, likelihood ratio $\chi^2(16) = 31.455$, $p = .012$. Goodness-of-fit tests indicated the model was a good fit to the data (Pearson $\chi^2(244) = 259.243$, $p = .240$; Deviance $\chi^2(244) = 190.007$, $p = .996$). Pseudo R-squared values suggested the model explained a moderate proportion of the variance in performance ranks (Cox & Snell = .354; Nagelkerke = .369; McFadden = .136).

Table 3. Multinomial Logistic Regression Model Fit Statistics

Model Fitting Information

Model	Model Fitting Criteria: AIC	BIC	-2 Log Likelihood	Likelihood Ratio Tests: Chi-Square	df	Sig.
Intercept Only	233.856	242.963	225.856			
Final	234.401	279.935	194.401	31.455	16	.012

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	259.243	244	.240
Deviance	190.007	244	.996

Pseudo R-Square

Cox and Snell	.354
Nagelkerke	.369
McFadden	.136

4.5.2 Significance of Predictors and Parameter Estimates

To assess the overall contribution of each predictor to the model, likelihood ratio tests were conducted. These tests compare the fit of the final model to a reduced model that omits each effect, with a significant result indicating that the predictor improves the model fit. The results are presented in Table 4.

As shown in Table 4, Price-to-Cash (P/Cash) was the only predictor that contributed a statistically

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significant overall effect to the model, $\chi^2(4) = 16.308$, p= .003. This indicates that, collectively across all comparisons to the highest rank (Rank 5), a firm's valuation relative to its cash flow significantly distinguishes its performance category. The overall effects of debt-to-assets, ROA, and sales CAGR were not statistically significant (p > .05).

Table 4. Likelihood Ratio Tests for Overall Effect of Each Predictor

Likelihood Ratio Tests

	Model Fitting Criteria			Likelihood Ratio Tests		
Effect	AIC of Reduced Model	BIC of Reduced Model	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	234.848	271.275	202.848	8.447	4	.077
Debt to Assets	232.732	269.159	200.732	6.331	4	.176
ROA	233.772	270.198	201.772	7.370	4	.118
CAGR of sales from 2020	232.204	268.631	200.204	5.803	4	.214
P/Cash	242.709	279.136	210.709	16.308	4	.003

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

However, the non-significant overall effects do not preclude the possibility of significant associations for specific pairwise rank comparisons. The parameter estimates and odds ratios for each comparison (Rank 1 vs. 5, Rank 2 vs. 5, etc.) are therefore examined next to identify these contrast-specific relationships.

4.5.3 Parameter Estimates and Odds Ratios for Rank Comparisons

Table 5. Multinomial Logistic Regression Parameter Estimates (Reference Category: Rank 5)

Parameter Estimates

Rank DV[a]		B	Std. Error	Wald	df	Sig.	Exp(B)
1.00	Intercept	4.390	2.214	3.933	1	.047	
	Debt to Assets	.132	.443	.088	1	.766	1.141
	ROA	-1.044	.478	4.763	1	.029	.352
	CAGR of sales from 2020	.690	.371	3.464	1	.063	1.995
	P/Cash	-1.357	.436	9.681	1	.002	.257
2.00	Intercept	3.510	2.149	2.669	1	.102	
	Debt to Assets	.494	.406	1.483	1	.223	1.639
	ROA	-.968	.451	4.612	1	.032	.380
	CAGR of sales from 2020	.492	.340	2.098	1	.147	1.635
	P/Cash	-1.172	.409	8.197	1	.004	.310
3.00	Intercept	2.183	2.025	1.162	1	.281	
	Debt to Assets	.191	.368	.268	1	.605	1.210
	ROA	-.352	.416	.714	1	.398	.703
	CAGR of sales from 2020	.155	.312	.249	1	.618	1.168
	P/Cash	-.610	.353	2.978	1	.084	.543
4.00	Intercept	-.770	2.371	.105	1	.745	
	Debt to Assets	.832	.395	4.429	1	.035	2.299
	ROA	-.642	.433	2.191	1	.139	.526
	CAGR of sales from 2020	.546	.325	2.826	1	.093	1.726
	P/Cash	-.448	.385	1.354	1	.245	.639

a. The reference category is: 5.00.

While the overall model tests indicated that only P/Cash had a significant global effect, examination of the parameter estimates revealed significant, contrast-specific relationships for other predictors when comparing individual ranks to the top-performing group (Rank 5). The detailed coefficients, odds ratios [Exp(B)], and significance levels are presented in Table 5.

Note here that a negative B coefficient indicates a lower log-odds (and thus a lower probability) of being in the specified rank versus Rank 5.

From the results, we can see distinct patterns for different levels of underperformance relative to the top rank:

1. Profitability (ROA) and Valuation (P/Cash): These were the most consistent discriminators for the lowest-performing firms. For every one-unit increase in ROA, the odds of a firm being in Rank 1 versus Rank 5 decreased by a factor of 0.352 (i.e., a 64.8% reduction), a statistically significant effect (p = .029). Similarly, the P/Cash favorability score (coded such that higher scores indicate a more attractive cash-based valuation, i.e., lower raw P/Cash) showed statistically significant contrast-specific effects in comparisons involving the lowest ranks. For Rank 1 versus Rank 5, the odds ratio was 0.257 (p = .002). Interpreted in light of the coding scheme, this indicates that a one-unit increase in the P/Cash favorability rank (i.e., moving to a more attractive cash-based valuation quintile, corresponding to lower raw P/Cash) is associated with a 74.3% reduction (1 − 0.257) in the odds of being in Rank 1 relative to Rank 5. Similarly, for Rank 2 versus Rank 5 (OR = 0.310, p = .004), a one-unit increase in valuation favorability is associated with a 69.0% reduction (1 − 0.310) in the odds of belonging to Rank 2 relative to Rank 5.
2. Leverage (Debt to Assets): In contrast, leverage played a significant role only in differentiating the second-best performers from the best. For the comparison of Rank 4 vs. Rank 5, a one-unit increase in the debt-to-assets ratio significantly increased the odds of being in Rank 4 by a factor of 2.299 (p = .035). This suggests that among higher-performing firms, those with relatively higher leverage were more likely to be in the tier just below the top performers, rather than in the top rank itself.
3. Growth (Sales CAGR): While not reaching conventional significance levels in any single comparison, the coefficient for Sales CAGR was positive for all ranks and approached significance for Rank 1 vs. Rank 5 (p = .063). This pattern suggests a trend where higher historical sales growth is weakly associated with a higher probability of being in a lower performance rank, contrary to typical expectations.

In summary, the final model shows that the financial profile of a top-performing firm (Rank 5)

International Journal of Health and Business Analytics
Volume I, Issue 2, December 2025
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is most clearly characterized by higher profitability (ROA) and a more attractive valuation based on cash flow (lower P/Cash) when compared to the worst performers. The distinction between the very top firms and the near-top firms, however, is significantly influenced by lower leverage.

4.5.4 Model Classification Accuracy

The practical predictive performance of the final multinomial logistic regression model is summarized in the classification table (Table 6). The model correctly classified 43.1% of the 73 firm-year observations overall, a rate substantially higher than the chance level of 20% expected if classifications were made randomly across five equally likely groups.

Table 6. Classification Table for the Final Multinomial Logistic Regression Model

Classification

	Predicted					
Observed	1.00	2.00	3.00	4.00	5.00	Percent Correct
1.00	6	1	3	1	1	50.0%
2.00	5	2	3	1	2	15.4%
3.00	3	1	4	4	4	25.0%
4.00	1	0	1	10	3	66.7%
5.00	1	1	3	2	9	56.3%
Overall Percentage	22.2%	6.9%	19.4%	25.0%	26.4%	43.1%

Note: Rows represent the actual (observed) performance rank. Columns represent the rank predicted by the model. Bold numbers on the diagonal indicate correct classifications.

Accuracy varied considerably across performance categories, revealing the model's differential ability to discriminate:

The model was most effective at identifying firms in Rank 4 (66.7% correct) and reasonably effective for Rank 1 (50.0%) and Rank 5 (56.3%). This aligns with the parameter estimates, which showed strong, significant signals (especially from P/Cash and ROA) for distinguishing the top (5) and bottom (1) extremes.

Predictive accuracy was lowest for the middle ranks, particularly Rank 2 (15.4% correct) and Rank 3 (25.0% correct). Misclassifications for these firms were most frequently into adjacent ranks (e.g., Rank 2 firms were most often misclassified as Rank 1). This pattern suggests that the financial profiles of firms in the middle performance tiers are less distinct from one another and from their neighboring tiers.

The overall classification rate of 43.1% indicates the model has modest discriminative power. This is consistent with the moderate pseudo R-squared values reported earlier and reflects the inherent challenge of predicting a ranked, multi-category outcome using a limited set of financial ratios. The model's primary utility lies not in flawless prediction, but in identifying which financial characteristics—namely, higher ROA, lower P/Cash, and lower leverage—are systematically associated with a higher probability of belonging to the top performance rank.

4.6 Discussion

This study examined whether firm-level fundamental indicators measured at the end of 2024 could meaningfully discriminate among relative stock price appreciation outcomes over a one-year horizon in the Philippine stock market. Rather than attempting to predict precise continuous returns, the analysis focused on classification into ranked performance categories, reflecting the inherently noisy and heterogeneous nature of short-horizon stock price movements in an emerging market context. The findings offer several substantive insights into the conditional relevance of profitability, valuation, growth, and leverage indicators, as well as into the methodological advantages of rank-based and categorical modeling approaches.

4.6.1 Dominance of Valuation Signals and the Central Role of Cash-Based Measures

Across multiple analytical stages, valuation indicators—particularly cash-flow-based valuation—emerged as the most consistent and robust signals associated with subsequent stock price appreciation. At the bivariate level, ranked valuation indicators dominated the statistically significant associations with stock price appreciation rank, with Price-to-Cash (P/Cash) exhibiting the strongest correlation. This pattern persisted under alternative analytical formulations: P/Cash showed the strongest monotonic association with continuous returns in Spearman screening, remained significant under rank-transformed regression robustness checks, and was the only predictor with a statistically significant overall effect in the final multinomial logistic regression model.

These convergent findings suggest that, within the Philippine market, cash-flow-based valuation measures may provide more stable information than earnings-based multiples over short horizons. This aligns with prior literature noting that earnings

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figures can be volatile, cyclically distorted, or affected by transitory accounting effects, particularly in emerging markets where earnings bases may fluctuate sharply year to year. Cash-flow measures, by contrast, may better capture firms' underlying capacity to generate distributable resources, thereby offering a valuation anchor that investors perceive as more reliable. The prominence of P/Cash in this study is consistent with evidence that refined or alternative valuation metrics—especially those less sensitive to accrual noise—can outperform traditional P/E ratios in certain contexts.

Importantly, while earnings-based valuation indicators such as P/E and PEG variants were significant in bivariate analyses, their effects weakened under joint estimation. This attenuation suggests that their apparent explanatory power may partly reflect shared variance with cash-based valuation or growth measures, reinforcing the interpretation that valuation proxies are highly interrelated and that multicollinearity can obscure their independent contributions when modeled simultaneously.

4.6.2 Profitability as a Discriminator of Extremes Rather Than a Universal Predictor

Profitability, as measured by Return on Assets (ROA), did not exhibit a statistically significant global effect across all performance ranks in the multinomial model. However, ROA played a meaningful role in distinguishing the lowest-performing firms from the top performers. Specifically, higher ROA significantly reduced the odds of belonging to the lowest appreciation ranks relative to the highest rank, indicating that profitability remains an important characteristic separating clear underperformers from elite performers.

This pattern suggests that profitability functions less as a continuous predictor of rank progression and more as a threshold-based discriminator. Firms with weak profitability are disproportionately represented among poor performers, while beyond a certain level, incremental differences in ROA may not strongly differentiate among higher-performing tiers. Such a finding is consistent with literature emphasizing that profitability signals may be most informative when identifying firms at risk of underperformance, rather than when ranking firms within already profitable subsets. In emerging markets, where profitability dispersion is wide and operational shocks are common, this threshold effect may be particularly pronounced.

4.6.3 Leverage and Growth: Contextual and Contrast-Specific Effects

Leverage and growth indicators exhibited nuanced, contrast-specific relationships rather than broad predictive power. Debt-to-assets ratio did not contribute a significant overall effect in the multinomial model, yet it played a statistically significant role in distinguishing near-top performers (Rank 4) from top performers (Rank 5). This suggests that among relatively strong firms, lower leverage may be a distinguishing feature of the very best performers, potentially reflecting investor preference for balance-sheet flexibility and lower financial risk at the upper end of the performance distribution.

Sales growth, measured as CAGR from 2020, showed weak and sometimes counterintuitive associations, with higher historical growth marginally increasing the likelihood of belonging to lower performance ranks. While this result should be interpreted cautiously, it may reflect the risk that past growth—particularly if achieved through aggressive expansion or favorable but non-recurring conditions—does not necessarily translate into superior short-term stock performance. Alternatively, growth firms may already be priced optimistically, limiting further upside over a one-year horizon. These interpretations align with literature cautioning against assuming a monotonic positive relationship between historical growth and near-term returns, especially in volatile or valuation-sensitive markets.

4.6.4 Methodological Implications: Advantages of Rank-Based and Categorical Modeling

A central contribution of this study lies not only in its substantive findings but also in its methodological implications. The exploratory analyses using continuous returns revealed weak and unstable relationships for many indicators, consistent with the heavy-tailed, noisy nature of short-horizon stock returns. By contrast, modeling performance as a ranked categorical outcome yielded clearer and more interpretable patterns, particularly at the extremes of performance.

The rejection of ordinal logistic regression due to violation of the proportional odds assumption further underscores the heterogeneity of predictor effects across performance tiers. The successful application of multinomial logistic regression highlights that financial indicators do not exert uniform effects across ranks; instead, their relevance depends on the specific contrast being examined (e.g., worst vs. best performers, near-top vs. top performers). This finding supports arguments in the literature that classification-oriented approaches may be better suited than continuous return prediction for capturing the structure of stock performance in noisy market environments.

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The consistency between the main multinomial results and the exploratory robustness checks presented in Appendix A strengthens confidence in the substantive conclusions. The convergence of evidence across bivariate screening, nonparametric stratification, rank-based regression, and multinomial classification suggests that the observed prominence of cash-based valuation is not an artifact of a single modeling choice.

4.6.5 Implications for Short-Horizon Fundamental Analysis in Emerging Markets

Taken together, the findings suggest that short-horizon fundamental analysis in the Philippine stock market is most informative when focused on identifying relative performance regimes rather than predicting precise returns. Cash-based valuation emerges as a particularly robust indicator, while profitability helps identify underperformers, and leverage differentiates among high-performing firms. Growth indicators, by contrast, appear less reliable over a one-year horizon when considered in isolation.

These results reinforce the view that fundamental indicators retain relevance in emerging markets, but their effects are conditional, non-linear, and context-dependent. A diagnostics-driven, classification-oriented framework—rather than a purely predictive one—may therefore offer a more realistic and empirically defensible approach to understanding short-term stock price behavior.

5. Conclusions and Recommendations

5.1 Conclusions

This study investigated whether firm-level fundamental indicators observed at the end of 2024 could meaningfully discriminate among Philippine-listed stocks according to their relative price appreciation performance over a one-year horizon in 2025. Using a rank-based outcome framework and multinomial logistic regression as the primary inferential model, the analysis demonstrated that fundamental indicators retain explanatory relevance when stock performance is modeled as categorical performance tiers rather than as continuous returns.

Across multiple analytical stages—including bivariate screening, exploratory nonparametric stratification, rank-transformed robustness checks, and multinomial classification—valuation indicators emerged as the most consistent signals associated with subsequent stock performance. In particular, cash-based valuation, as measured by the Price-to-Cash ratio, exhibited the strongest and most stable relationship with both continuous stock returns and ranked appreciation outcomes. The persistence of this effect across alternative specifications suggests that cash-flow-based valuation captures information that investors perceive as relatively reliable in the Philippine market context.

Profitability, measured by Return on Assets, did not exert a uniform effect across all performance tiers but played a significant role in distinguishing the lowest-performing stocks from the highest-performing group. This indicates that profitability functions primarily as a discriminator of underperformance rather than as a linear predictor of rank progression. Leverage and growth indicators displayed contrast-specific and context-dependent effects, with leverage differentiating among higher-performing firms and growth measures showing limited or unstable associations over the one-year horizon.

Methodologically, the findings underscore the advantages of rank-based and classification-oriented approaches in environments characterized by volatile, heavy-tailed return distributions. The violation of the proportional odds assumption and the successful application of multinomial logistic regression indicate that predictor effects vary across performance strata and should not be assumed to operate uniformly across the distribution of outcomes. The convergence of results across multiple analytical strategies strengthens confidence that the observed patterns reflect structural features of the data rather than artifacts of a single modeling choice.

Overall, the study concludes that short-horizon fundamental analysis in the Philippine stock market is most informative when framed as a problem of relative performance classification, with cash-based valuation serving as a central discriminating factor, supported by profitability and leverage signals in specific performance contrasts.

5.2 Recommendations

Based on the findings of this study, several recommendations are proposed for investors, researchers, and future empirical work.

First, practitioners and analysts operating in the Philippine stock market may benefit from emphasizing cash-flow-based valuation measures when assessing short-horizon investment opportunities. While traditional earnings-based

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ratios remain informative at a descriptive level, cash-based valuation appears to offer greater robustness under conditions of earnings volatility and accounting noise. Incorporating such measures into screening and portfolio construction frameworks may improve the identification of relatively strong and weak performers.

Second, profitability indicators should be interpreted with attention to threshold effects rather than as continuous ranking tools. Return on Assets appears particularly useful for identifying firms at risk of underperformance, suggesting its role may be strongest in downside risk assessment rather than in fine-grained performance ranking among already profitable firms.

Third, researchers examining stock performance in emerging markets are encouraged to adopt rank-based or categorical outcome frameworks, especially when sample sizes are moderate and return distributions exhibit non-normal characteristics. Classification-oriented models, such as multinomial logistic regression, allow for heterogeneous predictor effects across performance tiers and may yield more interpretable insights than conventional linear return models.

Fourth, future studies may extend the present analysis by incorporating longer time horizons, alternative market conditions, or sector-specific subsamples to examine the stability of cash-based valuation effects across cycles. The integration of macroeconomic variables or market sentiment indicators may also help contextualize firm-level fundamentals within broader market dynamics.

Finally, replication studies using comparable methodologies in other emerging markets would contribute to assessing the generalizability of the findings and to refining the role of valuation, profitability, and leverage indicators in short-horizon stock performance analysis.

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Appendix

A. Exploratory Nonparametric Screening and Robustness Checks

Table A1. Kruskal–Wallis Test and Dwass–Steel–Critchlow–Fligner Pairwise Comparisons for % Stock Price Change Across Indicator Strata

One-Way ANOVA (Non-parametric)

Kruskal-Wallis

	χ^2	df	p	ε^2
% Change	13.0	4	0.011	0.180

Dwass-Steel-Critchlow-Fligner pairwise comparisons

Pairwise comparisons - % Change

		W	p
1	2	0.979	0.958
1	3	1.001	0.955
1	4	3.077	0.189
1	5	3.385	0.117
2	3	−0.116	1.000
2	4	2.846	0.260
2	5	3.308	0.133
3	4	3.195	0.158
3	5	3.539	0.090
4	5	0.816	0.979

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Table A2. Spearman Rank Correlations Between Financial Indicators and One-Year Stock Returns (%Change)

Indicator	Spearman's	p-value
Increase of Earnings YoY	0.358	0.002
Price-Earnings	-0.297	0.011
Price-Book	-0.254	0.030
Price-Cash	-0.380	<0.001

Note. Spearman's rank-order correlation (N=73) was used due to non-normal and heavy-tailed return distributions. Only indicators exhibiting statistically significant associations with % Change are reported.

Table A3. Rank-transformed regression estimates for robustness models
(Predictor, B, SE, p-value)

Panel A. Full Rank-Transformed Model (Four Predictors)

(Screening / diagnostic model)

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change
1	.306[a]	.094	.040	39.65710	.094	1.755	4	68	.148

a. Predictors: (Constant), Rank of Earning increase YOY, Rank P/Cash, Rank of PE, Rank of PB
b. Dependent Variable: % Change

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11040.802	4	2760.200	1.755	.148[b]
	Residual	106942.614	68	1572.685		
	Total	117983.416	72			

a. Dependent Variable: % Change
b. Predictors: (Constant), Rank of Earning increase YOY, Rank P/Cash, Rank of PE, Rank of PB

Coefficients[a]

Model		Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1	(Constant)	7.389	14.511		.509	.612		
	Rank of PE	.119	.288	.062	.411	.682	.583	1.714
	Rank of PB	-.124	.332	-.065	-.375	.709	.440	2.272
	Rank P/Cash	-.455	.276	-.239	-1.648	.104	.635	1.574
	Rank of Earning increase YOY	.313	.227	.164	1.381	.172	.945	1.058

a. Dependent Variable: % Change

Panel B. Parsimonious Rank-Transformed Model (Two Predictors)

(Final robustness model)

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Rank of Earning increase YOY, Rank P/Cash[b]	.	Enter

a. Dependent Variable: % Change
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change
1	.301[a]	.091	.065	39.14467	.091	3.499	2	70	.036

a. Predictors: (Constant), Rank of Earning increase YOY, Rank P/Cash
b. Dependent Variable: % Change

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10722.051	2	5361.026	3.499	.036[b]
	Residual	107261.365	70	1532.305		
	Total	117983.416	72			

a. Dependent Variable: % Change
b. Predictors: (Constant), Rank of Earning increase YOY, Rank P/Cash

Coefficients[a]

Model		Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.	Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1	(Constant)	8.103	12.245		.662	.510		
	Rank P/Cash	-.482	.217	-.253	-2.219	.030	1.000	1.000
	Rank of Earning increase YOY	.315	.217	.165	1.449	.152	1.000	1.000

a. Dependent Variable: % Change

Note. Models are presented sequentially to illustrate robustness screening. Panel A shows the initial full model; Panel B shows the reduced parsimonious model retained for interpretation.

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