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Driving Shareholder Value through Technopreneurship Innovation

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ABSTRACT

The Food and Beverage (F&B) industry in Southeast Asia faces challenges such as raw material price volatility, high debt burden, and changes in consumer preferences, so companies need to manage their financial performance well through financial ratio analysis and product innovation to remain competitive amidst the instability of the ASEAN market and policies. **This study analyzes** the effect of Return on Assets/ROA, Cash Ratio/CR, Debt to Asset Ratio/DAR, Asset Turnover/ATO, and Price Earnings Ratio/PER on managerial ownership and their impact on stock returns. We assess how product development costs and financial distress moderate the relationship. **The objects of the study** were F&B sector companies in Southeast Asia listed on the stock exchange, data period 2012 to 2023. **The method** used was panel data regression. The results showed that ROA and CR positively and significantly affected managerial ownership. Conversely, DAR and PER did not show a significant effect. Moderation of product development costs weakened the impact of ROA on managerial ownership, while financial distress weakened the relationship between DAR and managerial ownership. **This study suggests** the importance of efficient management of assets, cash, and liabilities and the need for strategic product innovation to maintain and increase managerial ownership. Combining various financial ratios with managerial ownership and their effects on stock returns offers a more comprehensive perspective than previous studies.

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1. INTRODUCTION

Southeast Asia's Food and Beverage (F&B) industry significantly contributes to GDP and employment [1–4]. Financial ratio analysis covering liquidity, profitability, efficiency, and solvency is vital for assessing company performance. Key challenges include raw material price volatility, high debt, and shifting consumer preferences. Major firms like Indofood and CP Foods face profitability pressures from global instability and cost fluctuations. Effective cash flow, debt, and cost management, along with strong product innovation, are essential for competitiveness amid seasonal and policy variations across ASEAN markets.

This study aims to investigate the impact of managerial ownership on financial performance in the F&B sector across ASEAN [5]. According to agency theory, managers who hold shares in their company are more motivated to improve firm performance, aligning their interests with those of the shareholders. However,

the relationship between managerial ownership and financial metrics, such as Return on Assets (ROA), Current Ratio (CR), and Debt-to-Asset Ratio (DAR), remains unclear in the context of Southeast Asian markets. Previous research has shown both positive and negative outcomes regarding this relationship [6].

Managerial ownership is a condition in which a company's managers also own shares in the company [7, 8] in agency theory states that managerial ownership can reduce conflict between shareholders and managers because managers who own shares have greater incentives to improve company performance [9]. Good company performance is expected to positively impact stock returns, which is an important indicator for investors. This ownership can affect company performance because management who owns shares tends to be more committed to increasing the company's value. In the context of the F&B sector in ASEAN, managerial ownership can be an important factor influencing company strategy and performance.

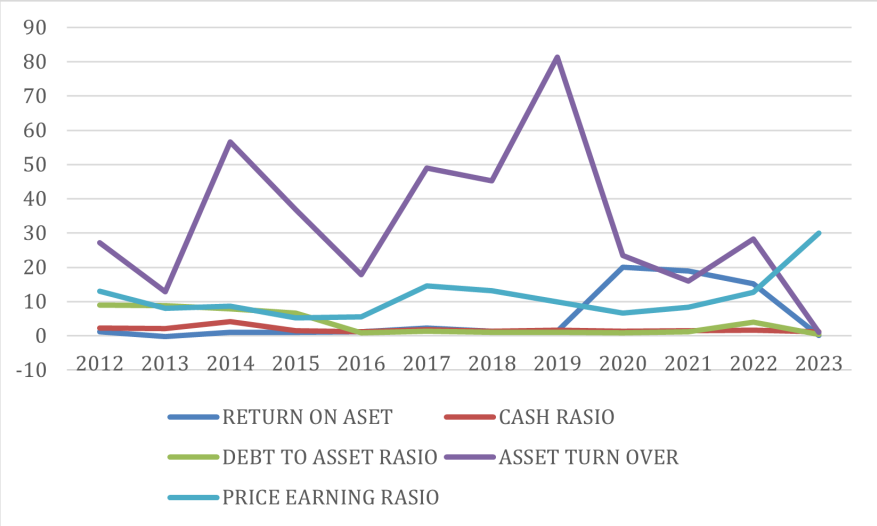

Figure 1. Financial Ratio Trends in Southeast Asia's F&B Industry (2012-2023)

Figure 1 shows the trend of key financial ratios in the Southeast Asian F&B industry from 2012 to 2023. ROA remains stable and low, indicating inefficient use of assets to generate insignificant profits. CR has been very low throughout the period, indicating that the company has limited cash reserves. DAR is stable at a low level, indicating that the company uses little debt in its financing. ATO fluctuates greatly, with a sharp increase in 2019 and a drastic decline thereafter. This decline in efficiency indicates challenges in asset management after 2019. PER increases until 2022, reflecting investor confidence in the company. However, the P/E Ratio drops sharply in 2023, indicating investor concerns about earnings prospects. The main issue identified is low liquidity, reflected in the cash ratio approaching zero. The decline in operational efficiency is evident from the decline in AT after 2019. In addition, negative investor perceptions about the company's future are evident from the decline in P/E Ratio in 2023.

Figure 2 shows the trend of managerial ownership, stock returns, financial distress, and product development costs in the Southeast Asian F&B industry between 2018-2024. Managerial ownership has been consistently increasing, reflecting managers trust and involvement in decision-making. Stock returns dropped sharply in 2020 due to the pandemic, but recovered thereafter. Financial distress peaked in 2020 and declined thereafter, while product development costs continued to increase, highlighting the importance of innovation. The negative correlation between stock returns and financial distress suggests that the crisis affected firm performance, but innovation remains key to success. These dynamics are closely aligned with Sustainable Development Goals (SDGs), particularly SDG 8 (Decent Work and Economic Growth), as resilient business practices and increasing managerial ownership promote sustainable economic recovery and support stable employment opportunities [10]. SDG 9 is reflected in the rising product development costs that highlight innovation as a key driver of competitiveness and long-term performance, while SDG 12 is addressed through improved resource efficiency and operational sustainability, ensuring environmentally responsible growth. These efforts show how managerial involvement and innovation support both firm performance and the broader regional sustainability agenda [11].

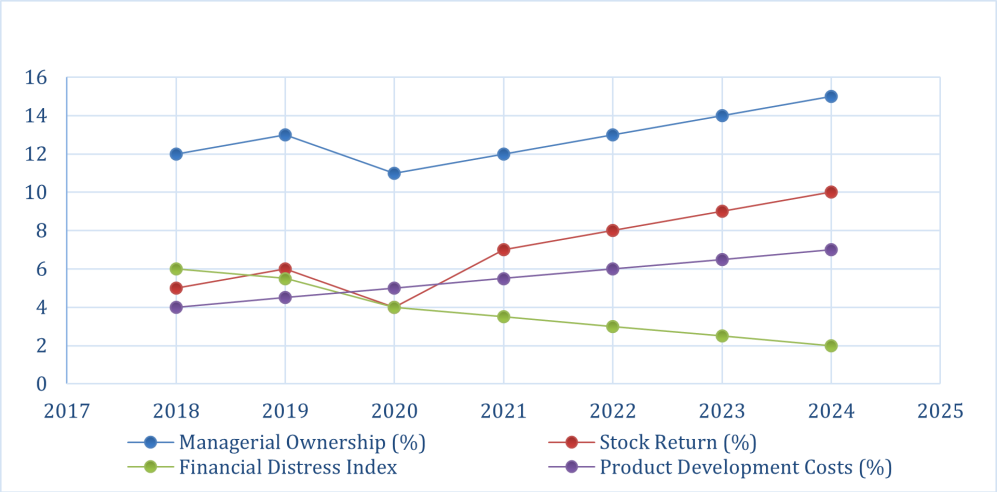

Figure 2. Trends in managerial ownership & financial performance of Southeast Asia's F&B Industry (2018-2024)

Although existing studies have explored the role of managerial ownership across various sectors, there is limited research specifically examining its influence in the F&B industry within ASEAN. This gap is especially notable considering the unique market dynamics and challenges that emerged after 2019. The COVID-19 pandemic further disrupted financial performance, highlighting the need to investigate how managerial ownership affects strategic decisions, product innovation, and stock returns during volatile periods. Therefore, this study aims to fill that gap by evaluating both the direct and moderated effects of financial distress and product development costs on managerial ownership and firm performance.

Studies show mixed effects of ROA, CR, DAR, ATO, and PER on managerial ownership, moderated by product development costs and financial distress. ROA generally has a positive effect [12, 13], though not always [14, 15]. CR tends to be positive [16], but excess liquidity can reduce incentives [17, 18]. DAR often has a negative effect [19, 20], while ATO and PER are mostly insignificant [21]. Financial distress weakens the DAR–ownership link, while product innovation strengthens ownership under good liquidity [22]. Higher managerial ownership improves stock returns [23, 24], yet F&B firms face low efficiency and liquidity. This study explores how managerial ownership influences financial performance in the ASEAN F&B sector, with financial distress and product development costs as key moderators an area often overlooked in prior research. It highlights how ASEAN's economic landscape shapes these dynamics and offers insights to help managers and policymakers improve F&B sector competitiveness and strategic decision-making.

This study investigates the unique influence of managerial ownership on financial performance in the ASEAN F&B sector, emphasizing the novel integration of financial distress and product development costs as moderating variables in this relationship. By doing so, it fills a critical gap in the literature, as prior research has often overlooked these dynamics within this specific context. Furthermore, this research highlights how the broader economic landscape of ASEAN shapes the interplay between managerial ownership and these moderating factors. The ultimate goal is to provide actionable recommendations for managers and policymakers to enhance the competitiveness of F&B companies in the region, thereby contributing to a better understanding of strategic decision-making in a rapidly evolving market.

2. RESEARCH METHOD

This research employs a quantitative positivist method to analyze the influence of ROA, cash flow, DAR, ATO, and PER on managerial ownership and its implications for stock returns. Product development costs and financial distress are also introduced as moderating variables to explore how they impact the relationship between managerial ownership and financial performance. The study focuses on manufacturing companies in the F&B subsector listed on Southeast Asian stock exchanges between 2012 and 2023. From a population of 55 companies, 38 were selected as samples using a purposive sampling technique.

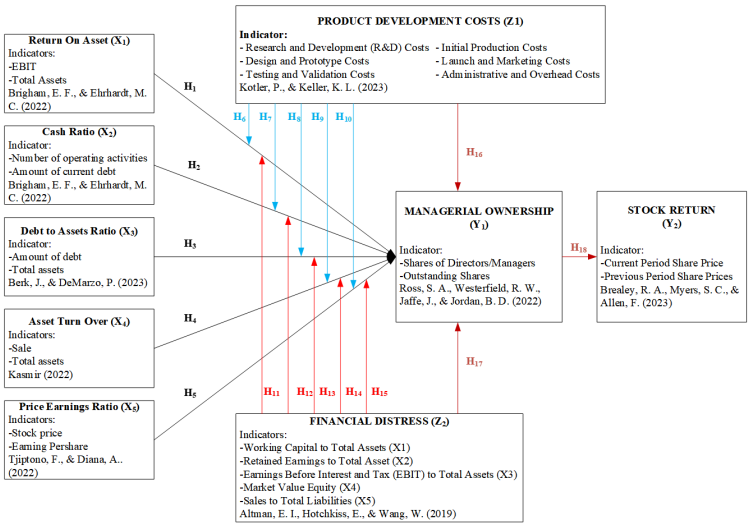

Figure 3. Research Model

This study differs by using financial distress and product development in Figure 3 costs as moderating variables, a perspective rarely explored in the F&B sector. Variables are clearly defined in tables for clarity: ROA measures asset-based profitability, cash flow shows liquidity, DAR reflects debt reliance, ATO measures asset use efficiency, and PER indicates investor growth expectations (see Figure 2). Managerial ownership shows managers shareholding, stock returns reflect investor gains, product development costs indicate innovation efforts, and financial distress captures liquidity and solvency challenges. This framework provides insights for managers and policymakers to improve ASEAN F&B performance and competitiveness. We use panel data regression, combining time series and cross-sectional data, applying common, fixed, and random effect models. Additional tests include multicollinearity to detect variable correlation, R^2 to measure explanatory power, t-tests for individual significance, and F-tests for overall model significance.

The equations produced by this model include:

$$MO_{it} = \beta_0 + X_1 ROA_{it} + X_2 CR_{it} + X_3 DAR_{it} + X_4 ATO_{it} + X_5 PER_{it} + \mu(MO) \quad (1)$$

$$MO_{it} = \beta_0 + \beta_1 (ROA)_{it} + \beta_2 (PDC)_{it} + \beta_3 (ROA)(PDC)_{it} + \mu(MO) \quad (2)$$

$$MO_{it} = \beta_0 + \beta_1 (CR)_{it} + \beta_2 (PDC) + \beta_3 (CR)(PDC)_{it} + \mu(MO)_{it} \quad (3)$$

$$MO_{it} = \beta_0 + \beta_1 (DAR)_{it} + \beta_2 (PDC)_{it} + \beta_3 (DAR)(PDC)_{it} + \mu(MO) \quad (4)$$

$$MO_{it} = \beta_0 + \beta_1 (ATO)_{it} + \beta_2 (PDC)_{it} + \beta_3 (ATO)(PDC)_{it} + \mu(MO)_{it} \quad (5)$$

$$MO_{it} = \beta_0 + \beta_1 (PER)_{it} + \beta_2 (PDC)_{it} + \beta_3 (PER)(PDC)_{it} + \mu(MO) \quad (6)$$

$$MO_{it} = \beta_0 + \beta_1 (ROA)_{it} + \beta_2 (FD)_{it} + \beta_3 (ROA)(FD)_{it} + \mu(MO) \quad (7)$$

$$MO_{it} = \beta_0 + \beta_1 (CR)_{it} + \beta_2 (FD)_{it} + \beta_3 (CR)(FD)_{it} + \mu(MO) \quad (8)$$

$$MO_{it} = \beta_0 + \beta_1 (DAR)_{it} + \beta_2 (FD)_{it} + \beta_3 (DAR)(FD)_{it} + \mu(MO) \quad (9)$$

$$MO_{it} = \beta_0 + \beta_1 (ATO)_{it} + \beta_2 (FD)_{it} + \beta_3 (ATO)(FD)_{it} + \mu(MO) \quad (10)$$

$$MO_{it} = \beta_0 + \beta_1 (PER)_{it} + \beta_2 (FD)_{it} + \beta_3 (PER)(FD)_{it} + \mu(MO) \quad (11)$$

$$MO_{it} = \beta_0 + \beta_1 (PDC)_{it} + \beta_2 (FD)_{it} + \mu(MO) \quad (12)$$

$$MO_{it} = \beta_0 + \beta_1 (SR)_{it} + \mu(MO) \quad (13)$$

Where MO is managerial ownership at the company i in year t, ROA is Return on Assets at the company i in year t, CR is Cash Ratio at the company i in year t, DAR is Debt to Asset Ratio at the company i in year t, ATO is Asset Turnover at the company i in year t, and PER is Price Earnings Ratio at the company i in year t.

This study uses panel data regression with a focus on PDC and FD to ensure transparency and reliability. PDC, measured as annual R&D spending on product innovation or major improvements, moderates the relationship between financial performance and managerial ownership. FD, based on standardized liquidity and debt ratios, captures financial distress and its moderating effect on ownership decisions. Interaction terms between PDC, FD, and key financial indicators (ROA, CR, DAR, ATO, PER) are included to better understand managerial ownership dynamics in Southeast Asia's F&B industry.

3. FINDINGS

3.1. Descriptive Statistical Analysis

The descriptive statistics for each variable are shown in Table 1. The average ROA of 531.054 indicates good performance, though values range widely from -6272.829 to 71600. The mean CR of 179.1837 suggests good liquidity, despite some firms showing issues (minimum -558.1). The debt-to-asset ratio of 356.9913 reveals high debt dependence, while the asset turnover average of 3301.648 reflects efficiency with some underperformers (minimum -2071.9). These variations indicate differing financial and operational strategies, implying that managerial ownership and innovation may help reduce performance gaps and enhance stability.

Table 1. Descriptive Statistics

Variables	Obs	Mean	Std. dev	Min	Max
ROA	456	531.05	5147.43	-6272.83	71600
CR	456	179.18	442.37	-558.10	4057.8
DAR	456	356.99	2525.29	-109	29810.05
ATO	456	3301.64	12487.43	-2071.90	98000
PER	456	1078.13	3616.23	-11845	36511.63
PDC	456	148.35	286.54	0	3055.49
FD	456	4.61	5.43	-3.71	73.551
MO	456	35.83	29.21	0	87.06
SR	456	73.54	264.11	-339	2460

The average PER of 1078.127 indicates high market expectations, but negative values indicate some companies are in trouble. Product development costs and the level of financial distress show variations between companies, while stock returns show large fluctuations. The Decisions are based on the recommendations, and the Hausman test is based on the Chi-Square probability value.

Table 2. Hausman Test

Hausman test	Chi-square test	
	Value	P-Value
M1 to with M5	-54.35	0.0000
M6	1.08	0.7813
M7	0.37	0.9470
M8	2.26	0.5210
M9	1.74	0.6284
M10	80.68	0.0000
M11	0.58	0.9007
M12	-13.63	0.0000
M13	4.02	0.2591
M14	1.66	0.6470
M15	30.86	0.0000
M16 & M17	0.29	0.8654
M18	-11.08	0.0000

Table 2 shows that the Hausman test favors the Fixed Effect Model (FEM) over the Random Effect Model (REM), with strong support for FEM from hypotheses 1–5, 10, and 15. The fixed effect model was chosen because it is more appropriate to the data tested and is significant in most important hypotheses.

Table 3. Lagrange Multiplier Test

Lagrange Multiplier Test	Chi-square test	
	Value	**P-Value**
M1 to with M5	13.66	0.0001
M6	19.22	0.0000
M7	23.63	0.0000
M8	21.47	0.0000
M9	17.42	0.0000
M10	0.00	1,0000
M11	22.59	0.0000
M12	19.05	0.0000
M13	22.53	0.0000
M14	20.98	0.0000
M15	15.44	0.0000
M16 & M17	22.78	0.0000
M18	17.00	0.0000

The results of the Lagrange Multiplier test in Table 3 show that the FEM is superior and more significant than the REM, so FEM was chosen for the overall analysis.

Table 4. Fixed Effect Model

Model	Variables	Coefficient	Std. dev	t	P>t	[95% conf.	Interval	Significance
M1	ROA	.0007779	.0002538	3.07	0.002	.0002792	.0012766	**
M2	CR	.013383	.003128	4.28	0.000	.0072353	.0195307	***
M3	DAR	-.0005769	.0005158	-1.12	0.264	-.0015907	.0004369	
M4	ATO	.0000277	.0001109	0.25	0.803	-.0001902	.0002456	
M5	PER	-.0005806	.0003622	-1.60	0.110	-.0012924	.0001313	
	Constantine	33.82569	1.48339	22.80	0.000	30.91025	36.74114	
M6	ROA	.0049408	.001384	3.57	0.000	.0022207	.007661	***
	PDC	.0127995	.0046582	2.75	0.006	.0036445	.0219545	
	X1Z1	-4.92e-06	1.57e-06	-3.13	0.002	-8.01e-06	-1.83e-06	
	Constantine	33.12882	1.471756	22.51	0.000	30.23629	36.02135	
M7	CR	.009238	.003446	2.88	0.004	.0031513	.0166963	***
	PDC	.0081026	.0053894	1.50	0.133	-.0024896	.0186947	
	X2Z1	.000073	.0000282	2.59	0.010	.0000176	.0001285	
	Constantine	31.35152	1.555765	20.15	0.000	28.29389	34.40916	
M8	DAR	.00 02971	.0012646	0.23	0.814	-.0021882	.0027825	***
	PDC	.0 151722	.0046857	3.24	0.001	.005963	.0243814	
	X3Z1	-7.94e-06	9.59e-06	-0.83	0.409	-.0000268	.0000109	
	Constantine	3 3.82345	1.501142	22.53	0.000	30.87317	36.77374	
M9	ATO	.00 01624	.0001272	1.28	0.203	-.0000877	.0004125	***
	PDC	.0 147112	.0047111	3.12	0.002	.0054522	.0239702	
	X4Z1	1.34e-06	1.48e-06	0.90	0.367	-1.57e-06	4.25e-06	
	Constantine	3 2.77986	1.536955	21.33	0.000	29.75919	35.80052	
M10	PER	-.0006658	.0005639	-1.18	0.238	-.001774	.0004424	***
	PDC	.0 178464	.0063994	2.79	0.006	.0052693	.0304236	
	X5Z1	-6.98e-07	1.96e-06	-0.36	0.722	-4.55e-06	3.15e-06	
	Constantine	3 4.18718	1.58936	21.51	0.000	31.0635	37.31086	
M11	ROA	.000229	.0006014	0.38	0.703	-.0009529	.001411	***
	FD	-1.07833	.2412036	-4.47	0.000	-1.552382	-.6042789	
	X1Z2	-0002902	.0003051	0.95	0.342	-.0003096	.0008899	
	Constantine	40.46489	1.710586	23.66	0.000	37.10297	43.8268	

Model	Variables	Coefficient	Std. dev	t	P>t	[95% conf.	Interval	Significance
M12	CashRatio	.0181483	.0042638	4.26	0.000	.0097684	.0265283	***
	FD	-.9022061	.2501864	-3.61	0.000	-1.393912	-.4105003	
	X2Z2	-.001963	.0011252	-1.74	0.082	-.0041744	.0002484	
	Constantine	3 7.94565	1.806371	21.01	0.000	34.39549	41.49581	
M13	DAR	.0075153	.0025252	2.98	0.003	0025524	.0124782	***
	FD	.9980613	.2449621	-4.07	0.000	-1.479499	-.5166231	
	X32Z	.0005683	.000179	-3.17	0.002	-.0009201	-.0002164	
	Constantine	39.80176	1.746716	22.79	0.000	36.36884	43.23468	
M14	ATO	.0004002	.0001902	2.10	0.036	0000264	.000774	**
	FD	-1.081893	.245846	-4.42	0.000	-1.563496	-.60029	
	X42Z	-.0000461	.000035	-1.32	0.184	-.0001149	-.0000227	
	Constantine	40.17079	1.756682	22.87	0.000	36.71829	43.6233	
M15	PER	.0001781	.0006586	-0.27	0.787	0014725	.0011164	***
	FD	-1.095346	.2494749	-4.39	0.000	-1.585657	-.6050358	
	X52Z	-.0000689	.000101	-0.68	0.495	-.0002674	-.0001295	
	Constantine	41.54916	1.776305	23.39	0.000	38.05806	45.04026	
M16	PDC	.0191954	.0045678	4.20	0.000	0102181	.0011164	***
&	FD	-1.326986	.2411597	-5.50	0.000	-1.800948	-.6050358	
M17	Constantine	39.09751	1.747534	22.37	0.000	35,663	42.53201	
M18	SR	.0263473	.0049331	5.34	0.000	.0166521	.0360424	***
	Constantine	33.88824	1.341648	25.26	0.000	31.25145	36.52502	

The fixed effect regression shows that Managerial Ownership (MO) positively impacts profitability (ROA), liquidity (CR), and market valuation (PER), but has no significant effect on leverage (DAR) and asset utilization (ATO). Product Development Cost (PDC) is linked to higher Financial Distress (FD) in the short term but boosts stock returns (SR) in the long term, suggesting long-term value creation. These results highlight the strategic role of managerial ownership and innovation investment in improving firm performance, aligned with SDGs on economic growth (SDG 8), innovation (SDG 9), and resource management (SDG 12).

3.2. ROA on Managerial Ownership

The ROA coefficient in Table 4 is positive and significant (0.0007779, P-value 0.002), showing that ROA positively influences managerial ownership. ROA reflects asset profitability and signals operational efficiency, which boosts managers confidence in the firm's prospects. In Southeast Asia's emerging markets where information asymmetry and corporate governance challenges are common a high ROA serves as a reliable indicator of strong performance. This encourages managers to increase their share ownership as a commitment to align interests with shareholders and reduce agency conflicts, consistent with agency theory.

Southeast Asia's business culture, emphasizing long-term relationships and stability, encourages managers to increase share ownership when profitability is strong. Managerial ownership acts as a self-monitoring mechanism and long-term investment, showing confidence in the firm's sustainability. In the F&B sector, high profitability reflects effective cost management and product innovation, increasing company value and motivating managers to strengthen their position through ownership. However, factors like ownership structure, market regulations, and macroeconomic conditions may also affect these decisions. Further research with broader data is recommended to explore these influences in depth, reinforcing the link between profitability and managerial behavior in Southeast Asia's capital markets. This statement refers to the findings of [7, 25]. To ensure that ROA continues to positively and significantly affect managerial ownership, companies must manage assets efficiently, implement good corporate governance, and focus on increasing long-term profitability. As supported by research, avoiding poor investment decisions and weak governance practices will help maintain this positive relationship [26].

Table 5. Determination Coefficient Test

Type	R-Squared												
	M1-5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16-17	M18
Within	0.08	0.06	0.09	0.09	0.03	0.03	0.07	0.10	0.08	0.06	0.05	0.09	0.06
Between	0.28	0.22	0.08	0.08	0.26	0.30	0.10	0.44	0.13	0.14	0.20	0.10	0.46
Overall	0.08	0.06	0.09	0.09	0.04	0.04	0.07	0.10	0.07	0.06	0.06	0.08	0.07

The coefficient of determination (R-squared) test results in Table 5 show that the regression model cannot explain data variability. The coefficient of determination value ranges from 0.0328 to 0.0932, indicating that the model can only explain a small part of the entity variation. Between value is higher, reaching 0.4649, indicating a better ability to explain entity variation. However, the overall value remains low, the highest at 0.0854, indicating that the model as a whole does not explain much variation in the data. This model requires further refinement to improve its accuracy.

3.3. Relationship CR, DAR, ATO, PER to Managerial Ownership

The cash ratio coefficient is positive and significant, showing liquidity's influence on managerial ownership in Southeast Asia. High liquidity signals financial stability, increasing managers confidence to raise share ownership as commitment and alignment with shareholders. Liquidity also serves as a resilience indicator in volatile markets, motivating managers to strengthen their position. Southeast Asia's stability-oriented business culture supports managerial ownership as a self-monitoring tool and long-term investment. Other factors such as ownership structure, regulations, and macroeconomic conditions may also affect decisions, requiring further research. This interpretation aligns with findings from [27, 28] and confirms that well-managed liquidity positively impacts managerial ownership. Companies should maintain optimal liquidity without excessive cash hoarding through efficient management and strategic investment, consistent with research by [29].

The DAR coefficient is negative and insignificant, showing limited influence on managerial ownership in Southeast Asia. Debt is less relevant due to macroeconomic fluctuations, high interest rates, and stability-oriented corporate culture, while profitability and liquidity play a greater role. High financial risk makes managers cautious, and external factors like politics and minority shareholder rights are more influential than debt ratios [30]. Efficient debt management, healthy ratios, and strong operations are needed, as wise debt use can increase firm value and attract managerial ownership [7, 20, 31].

The ATO coefficient is positive, but the P value is not significant, so this variable does not have a significant effect on managerial ownership. Asset Turnover has a positive coefficient of 0.000277, but the P value of 0.803 indicates that its effect is insignificant on managerial ownership. This means that although ATO tends to have a positive impact, its impact is not statistically strong enough to influence organizational decisions regarding stock ownership. Several studies, such as by [32, 33], also support the finding that asset turnover efficiency does not always determine stock ownership decisions. To ensure that ATO positively and significantly affects managerial ownership, companies must increase asset use efficiency, manage investments properly, reduce operating costs, and focus on growing sales. Research from [34] supports that effective asset management can improve firm performance and make stock ownership more attractive to managers.

The PER coefficient is negative with a P-value of 0.110, showing no significant effect on managerial ownership. In Southeast Asia, PER often fails to reflect company fundamentals due to market volatility, economic uncertainty, and limited transparency, making it a less reliable indicator for managerial share decisions. In the F&B sector, factors like profitability, liquidity, and ownership structure play a greater role, reducing PER's impact. This insignificance may also stem from data variability, requiring broader research. Studies [35, 36] confirm financial ratios, including PER, often have little influence on managerial decisions. To enhance PER's effect, firms should improve profitability, maintain stable growth, and ensure transparency and risk management, as supported by [37].

3.4. Product Development Costs Moderate The Interaction of ROA, CR, DAR, ATO, and PER on Managerial Ownership

ROA interaction on managerial ownership moderated by PDC has a coefficient of -4.92e-06 with a P-value of 0.002, indicating that the interaction is negative and significant. This means high product development cost weakens the positive effect of ROA on managerial ownership. ROA itself has a positive and significant

impact on managerial ownership, as supported by previous studies stating that the higher the financial performance, the greater the incentive for managers to own company shares [38–45]. However, the influence of product development cost is negative and significant on ownership, so high costs can reduce the attractiveness of stock ownership. These results also show that the interaction between ROA and product development cost is negative, where high development cost weakens positive ROA on managerial ownership, in harmony with research discussing moderation of operational cost to financial performance and organizational ownership [46–49], [50–53]. Companies must manage product development costs effectively, improve operational efficiency, and focus on long-term innovation to ensure the interaction between ROA and development costs positively affects managerial ownership. Research from [7, 54] supports that good cost management and high-quality innovation can strengthen the positive connection between ROA and managerial ownership, improving company performance.

The interaction between CR and PDC (coef. 0.000073; P=0.010) is positive and significant, showing PDC strengthens CR positive effect on managerial ownership. Although PDC alone is not significant, its interaction enhances ownership, requiring effective cash management, cost control, and innovation focus [7, 55]. Meanwhile, the interaction of DAR and PDC (coef.-7.94e-06; P = 0.409) is negative and insignificant, where high PDC reduces managerial share interest while DAR and its interaction remain insignificant, increasing risk and discouraging ownership [7, 56]. Efficient debt use, cost control, and profitability improvement are needed to reverse this effect [7, 57].

The coefficient of 1.34e-06 with a P-value of 0.367 shows no significant effect, meaning the interaction of ATO and product development costs (PDC) does not influence managerial ownership. PDC significantly reduce managerial ownership, while ATO and its interaction remain insignificant. Factors like profitability, risk, liquidity, and innovation strategy play a stronger role, with PDC having greater impact. Companies need to improve asset efficiency and manage development costs strategically to create stronger incentives for managerial ownership, as supported by [7, 58].

The coefficient of -6.98e-07 with a P-value of 0.722 shows no significant effect, meaning the interaction between PER and PDC does not influence managerial ownership. PDC positively affects managerial ownership, while PER is insignificant due to its speculative nature. No synergistic interaction is found. Companies should improve profitability, manage development costs efficiently, and reduce risks to strengthen this relationship, consistent with research showing effective cost management and stable PER can enhance managerial influence [7, 59, 60].

3.5. The Interaction of ROA, CR, DAR, ATO, PER on Managerial Ownership Moderated by Financial Distress

Financial distress significantly and negatively affects managerial ownership, indicating managers reduce share ownership during financial difficulties. ROA and its interaction with financial distress are insignificant, suggesting factors like company risk, management policies, and economic conditions influence this relationship. Companies should improve profitability through operational efficiency and financial risk management, while concentrated ownership and capital optimization can mitigate financial distress and enhance performance, as supported by [61]. The coefficient of -0.001963 with a P-value of 0.082 shows no significant effect, meaning the interaction between cash ratio and financial distress does not influence managerial ownership. Both variables negatively affect ownership individually, but their interaction is insignificant, consistent with [62, 63]. To improve results, companies should manage liquidity efficiently, reduce financial risk, and enhance operations, as supported by [7, 62, 64].

CR and financial distress each have a significant negative effect on managerial ownership, showing managers tend to sell shares when companies are highly liquid or financially distressed. Their interaction is insignificant, indicating no combined effect. DAR increases managerial ownership but weakens under financial distress, as debt risk in difficult conditions prompts managers to reduce ownership. Positive moderation can be achieved through efficient debt management, productive investment, and strong risk control, supported by [7].

The coefficient of -0.0000461 with a P-value of 0.189 shows no significant effect, meaning the interaction between ATO and financial distress does not influence managerial ownership. ATO strengthens, while financial distress weakens managerial ownership, but their interaction is insignificant, indicating asset efficiency does not change the impact of financial risk on ownership decisions. Strengthening the positive and significant effect of the interaction of ATO and financial distress on managerial ownership can be achieved through improving model specifications, developing stronger theoretical concepts, and improving data qual-

ity and statistical methods. Recent research shows that effective managerial ownership can improve company performance and reduce the negative impact of financial distress through efficient asset management. This summary refers to various theories and studies, such as [7] related to agency theory, [65] in the resource-based view, as well as recent studies by [66, 67] which discuss the interaction of asset turnover and financial distress in the context of managerial ownership.

Financial distress significantly and negatively affects managerial ownership, as managers sell shares to reduce risk during financial difficulties. PER has a negative but insignificant effect, and its interaction with financial distress is also insignificant, indicating both work independently. Strengthening this interaction requires better model specifications, stronger theory, and improved data quality, as shown by [63] where managerial ownership can strengthen PER's impact on distress through strategies like R&D investment [63, 68].

3.6. Product Development Costs versus Managerial Ownership

Recent studies show a positive relationship between product development costs and managerial ownership, where increased investment boosts managerial confidence in company prospects and encourages stock ownership. This aligns with research emphasizing innovation and R&D as drivers of managerial involvement [55] and agency theory, which states that managerial ownership aligns interests with shareholders [7]. Innovation and long-term R&D investment incentivize managers, especially in firms with low R&D intensity, to increase ownership. Firm size, economic conditions, and internal strategies should be considered to maintain this positive effect, supported by agency theory [7] and resource theory [65].

3.7. Relationship Financial Distress and Stock Returns on Managerial Ownership

Financial distress negatively affects managerial ownership as managers tend to sell shares to protect personal assets during periods of risk and uncertainty. This occurs because financial difficulties lower stock values and shift focus to short-term stability. Research supports that financial distress weakens managerial ownership [63]. Mitigating this impact requires debt restructuring, improved liquidity, and capital diversification. Strengthening managerial commitment, investing in innovation, and applying organizational resilience theory [69] and transformational leadership theory [70] can also moderate this negative effect.

Stock returns have a positive and significant relationship with managerial ownership, where higher managerial ownership increases stock returns. The coefficient of 0.263473 with a P-value of 0.000 confirms this strong effect [23, 24, 71–76]. This supports prior findings that aligning manager and shareholder incentives improves firm performance and stock returns. To sustain this positive relationship, companies must prevent conflicts of interest, overconfidence, and weak governance, ensuring managerial decisions effectively enhance performance and returns.

3.8. Managerial Implications for Cost and Risk Management

Agency theory explains the relationship between owners (principals) and managers (agents), where conflicts arise from differing goals and information asymmetry. In Southeast Asia's competitive F&B industry, managers must balance long-term investments such as product development with short-term financial performance measures like ROA and liquidity. Managerial ownership aligns managers and shareholders interests, promoting sustainable value creation. Product development costs moderate this relationship, as high costs can pressure short-term profits and discourage ownership, while perceived growth opportunities can increase managerial investment. Financial distress adds risk, often leading managers to reduce ownership and weakening the positive effect of financial performance. Empirical results show profitability and liquidity positively influence managerial ownership, while product development costs and financial distress negatively moderate this relationship. Managing development costs and financial risks effectively is crucial to maintaining ownership incentives. Good corporate governance also reduces conflicts, builds trust, and supports managerial investment even during financial challenges. Combining agency theory with the resource-based view offers a comprehensive understanding of managerial ownership dynamics in Southeast Asia's F&B sector, emphasizing the moderating roles of product development costs and financial distress.

3.9. Strategy to Improve Company Performance

Strategies to improve firm performance include optimizing return on assets, developing human resources, diversifying revenue, maintaining strong liquidity, controlling product development costs, and managing the price-earnings ratio. These efforts enhance profitability and long-term financial strength by maximizing resource use and technology to raise ROA, improving cash management and emergency funds to strengthen liquidity, and applying prudent debt management to reduce financial risk and build shareholder confidence.

4. MANAGERIAL IMPLICATIONS

The results show that profitability (ROA) and liquidity (CR) significantly increase managerial ownership, while financial distress and high product development costs weaken these effects. Managers should maintain strong operational performance and liquidity to signal stability and align interests with shareholders. Product development costs must be managed strategically to balance innovation with financial stability, ensuring R&D supports long-term value without harming short-term performance. Firms are encouraged to strengthen risk management, adopt prudent debt policies, and optimize asset use to reduce financial distress. Emphasizing good governance, innovation strategy, and financial discipline can enhance resilience, shareholder value, and sustainable growth aligned with SDG 8, SDG 9, and SDG 12.

5. CONCLUSION

This study reveals that higher profitability motivates managers to increase their stock ownership, suggesting a stronger alignment between managerial and shareholder interests as company performance improves. In contrast, when financial distress intensifies, managers become less inclined to hold shares due to increased risks. The findings also show that stock returns have a positive and significant relationship with managerial ownership, indicating that managers with greater ownership tend to contribute more effectively to improving firm value and shareholder wealth.

Furthermore, the research identifies that profitability, liquidity, and stock returns play a crucial role in encouraging managerial ownership, whereas financial risks and high debt levels tend to discourage it. This highlights the delicate balance between opportunity and risk that shapes managerial decisions regarding equity participation. By analyzing these dynamics, the study provides deeper insights into how financial performance indicators drive ownership behavior among managers in the corporate context.

Importantly, the inclusion of financial difficulties and product development costs as moderating variables offers a novel perspective on managerial ownership dynamics. These factors refine the understanding of how internal and external conditions influence ownership patterns. The practical implication is that firms, especially in Southeast Asia's F&B industry, should maintain strong liquidity and focus on innovation while managing risks effectively. Such strategies are expected to enhance managerial engagement, improve company performance, and strengthen long-term shareholder value.

6. DECLARATIONS

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Conceptualization: DS, EP, SP, and HH; Methodology: DS, EP, SP, and HH; Software: DS; Validation: DS and SP; Formal Analysis: EP and HH; Investigation: DS, EP, SP, and HH; Resources: DS, EP, SP, and HH; Data Curation: HH; Writing Original Draft Preparation: DS, EP, SP, and HH ; Writing Review and Editing: DS, EP, SP, and HH; Visualization: DS, EP, SP, and HH; All authors, DS, EP, SP, and HH, have read and agreed to the published version of the manuscript.

6.3. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

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6.5. Declaration of Conflicting Interest

The authors declare that they have no conflicts of interest, known competing financial interests, or personal relationships that could have influenced the work reported in this paper.

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