

Analysis of the Difference in Returns and Risks of Technology Sector Stocks on the Stock Exchanges of ASEAN Countries-6

Dian Ayu Puspitasari, Langgeng Prayitno Utomo*

Faculty of Economics and Business, Accounting Study Program, Institut Teknologi dan Bisnis PGRI Dewantara, Jombang, Indonesia

Jl. Prof. M. Yamin No. 77, Pandanwangi, Jombang, Jawa Timur 61471, Indonesia

Email: ¹dianayu040122@gmail.com, ^{2,*}lan99en9.pu36@gmail.com

Correspondence Author Email: lan99en9.pu36@gmail.com

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Abstract—This study analyzes the differences in the return performance and risk level of technology sector stocks in six Southeast Asian (ASEAN-6) stock exchanges, namely Indonesia, Singapore, Malaysia, Thailand, Vietnam, and the Philippines, during the 2020–2024 period. The technology sector was chosen for its high volatility and its crucial role in the transformation of the regional digital economy. Using a comparative quantitative approach and purposive sampling method, this study analyzed 60 technology companies based on annual stock price data. Returns and risks are calculated in local currencies, reflecting the performance of the domestic market. Due to the abnormal distribution of data, a non-parametric Kruskal–Wallis test is used. The results showed a statistically significant difference in stock returns ($p = 0.001$), with Vietnam having the highest average rating, reflecting the rapid development of digital infrastructure and strong government support for the digital economy. Significant differences in stock risk were also identified ($p = 0.016$), with the Philippines exhibiting the highest risk volatility, indicating higher exposure to market inefficiencies and structural constraints. These findings highlight the heterogeneity of the performance of technology stocks across ASEAN-6 and emphasize the importance of cross-border diversification strategies for investors.

Keywords: Return of Stock; Stock Risk; Technology Sector; ASEAN-6; Kruskal-Wallis

1. INTRODUCTION

The technology sector has transformed into one of the main determinants of economic growth in the past decade (Rolos & Onibala, 2023), with the Southeast Asia region emerging as one of the world's most dynamic digital growth hubs. This development is driven by increased internet penetration, rapid internet economy, growth of the middle class, and government policy support for the digital economy. The acceleration of digitalization triggered by the COVID-19 pandemic has further accelerated changes in the region's economic structure, fundamentally changed consumer behavior, and encouraged the adoption of platform-based services ranging from e-commerce, fintech, health-tech, to ed-tech. This transformation is reflected in the increase in investment activity and the surge in the market capitalization of technology companies listed on the regional stock exchange. However, the sector has unique characteristics with high potential returns accompanied by significant risks due to extreme price volatility. In this study, the main focus is directed to the Market Risk of the technology sector in each country to distinguish it from company-specific risk (idiosyncratic risk). The differences in characteristics between countries show that despite being within the same digital transformation framework, the level of return and risk is greatly influenced by the maturity of the digital ecosystem and the macroeconomic stability of each exchange.

The observation period of 2020–2024 is a very crucial phase to analyze because it reflects the dynamics of the market which is in a condition of high uncertainty. This period includes the initial phase of the pandemic, the economic recovery period, and the era of global monetary policy tightening. International Monetary Fund (IMF) (Scully & Miles, 2021) noted that the increasing global inflationary pressures post-pandemic prompted the world's major central banks to raise their benchmark interest rates aggressively, ultimately leading to a tightening of global liquidity. This condition has a direct impact on the price correction of risky assets in emerging markets, including technology sector stocks. Capital market fluctuations during the global health crisis have been a major highlight in the recent financial literature. (Khan et al., 2024) provides empirical evidence that the pandemic has caused persistent and extreme volatility in both developed and emerging stock markets. On the other hand, the effectiveness of the public authorities' response in reducing the turmoil was evaluated by (Narayan et al., 2021), which found that stimulus policies act as a cushioning effect for the stock market in the face of pandemic pressures and government intervention in general has had a significant positive impact on stock yields in ASEAN markets (Tran et al., 2024). Technology stock valuations, which rely heavily on future cash flow growth expectations, are becoming more vulnerable to changes in interest rates, creating increasingly complex risk-return trade-off dynamics for regional and international investors.

At the regional level, each country in Southeast Asia exhibits different characteristics and market responses to these global shocks. (IDX Official Website, 2020) Indonesia has experienced a significant structural phenomenon with the entry of a number of large-scale technology companies into the Indonesia Stock Exchange (IDX). The presence of technology issuers in depth and diversification of the national capital market (Indonesia, 2020), but on the other hand it also brings a relatively high level of volatility compared to the traditional sector. Fluctuations in the rupiah exchange rate, reliance on external funding, and domestic regulatory challenges, including cybersecurity and data protection issues, are additional risk factors affecting the performance of technology stocks in Indonesia (The World Bank, 2023). Interestingly, although interest rate hikes are often considered a negative sentiment for technology issuers, (Rolos & Onibala, 2023)

found that the relationship between interest rate hikes in Indonesia and the return on technology stocks is not necessarily significant, suggesting the sector's resilience to certain monetary policy changes.

Meanwhile, Singapore continues to cement its position as a key technology and financial link in Southeast Asia through a mature digital ecosystem, strong infrastructure support, and consistent pro-innovation policies. However, the openness of Singapore's financial markets to global capital flows makes it highly sensitive to international geopolitical tensions and global market volatility, especially in periods of crisis (The World Bank, 2023). This condition has implications for fluctuations in the returns of technology stocks which are relatively quick to respond to changes in global sentiment.

On the other hand, Malaysia and Thailand show different levels of stability in the spectrum of the technology sector. Malaysia has a relatively strong industrial base in the hardware and semiconductor sub-sectors that are tightly integrated with global supply chains, so its performance is heavily influenced by global industrial cycles and is vulnerable to global economic slowdowns (UNCTAD, 2022).

Thailand, although still facing challenges in accelerating the adoption of digital technology, is showing growth potential through the digitalization of the MSME sector as part of its post-pandemic economic recovery strategy, especially after the tourism sector recovers. (Pid, 1818)

Vietnam is emerging as a significant new power in the region with the projected growth of the digital economy increasing exponentially. The government's support for foreign investment and the technology industry has made Vietnam even more attractive to investors. (Google, 2023) projecting Vietnam's digital economy to reach USD 43 billion by 2025. However, domestic policy risks, limited capital market liquidity, and market transparency remain critical notes in the country's technology stock risk assessment. The Philippines is also showing great potential through the expansion of digital financial services and an app-based economy, although the limitations of physical infrastructure and political stability remain the main risk factors affecting its stock market performance.

These differences in characteristics show that although ASEAN-6 is in the same digital transformation framework, the level of return and risk of technology sector stocks is greatly influenced by the maturity of the digital ecosystem, macroeconomic stability, and national policies. As well as the influence of liquidity and investor risk perception, it also causes varying instability in the ASEAN-6 region as conveyed by the (Pontoh & Budiarmo, 2023). (Google, 2023) reported that the value of Southeast Asia's digital economy reached a Gross Merchandise Value of USD 218 billion in 2023, but the distribution of this growth was uneven between countries. From the perspective of the Capital Asset Pricing Model (CAPM), technology sector stocks tend to have high expected returns, but are accompanied by large systemic risks due to exposure to global external factors. In addition to the financial aspect, the current direction of technological and economic development is also required to be in line with the Sustainable Development Goals (SDGs) targets (Shahbaz et al., 2021).

Based on the results of the literature review, there are several research gaps that are the basis for this study to strengthen the scientific foundation (state of the art). Most previous research has focused on the banking and property sectors, as has been done by (Awala et al., 2020) and (Elizabeth & Sunaryo, 2020), while the technology sector, which has high growth rates and high volatility, is still rarely studied in depth, especially in the Southeast Asian region. Although in essence, this sector has different characteristics in response to changes in interest rate policy and global macroeconomic conditions, there is an inconsistency in return performance results influenced by macroeconomic variables. Some research, such as (Wulandari, 2021), found an insignificant influence, while (Yes, 2024) and (Stuart O'Neill et al., 2024) shows a positive influence on the performance of technology sector stocks. As well as the lack of a regional comparative approach to research by (Wulandari, 2021) and (Yes, 2024), has begun to lead to a cross-border approach, but has not specifically highlighted the technology sector.

The urgency of this research is based on the practical and academic need to understand the heterogeneity of risks and returns of technology sector stocks in the Southeast Asian region. Although these countries are part of the integration of Southeast Asian economies, differences in capital market maturity, digital ecosystems, and national macroeconomic policies have the potential to result in statistically significant differences in stock performance. Therefore, this study uses a quantitative approach through the non-parametric Kruskal-Wallis test to empirically test the differences in returns and risks between countries. The results of the research are expected to make a theoretical contribution to the international financial literature as well as become a strategic reference for investors and investment managers in diversifying their portfolios across countries to minimize risk and optimize returns.

2. RESEARCH METHODS

2.1 Basic Research Framework

This study applies a comparative quantitative research design that aims to examine the differences in dependent variables in the form of return and stock risk empirically in six major capital markets in the Southeast Asian region (ASEAN-6) (Afif et al., 2023). The quantitative approach was chosen because it allows for objective measurement of the stock's performance based on numerical data as well as statistical testing of hypotheses to obtain generalizable conclusions (Pirdaus et al., 2025). The research locations include the Indonesia Stock Exchange (IDX), Singapore Exchange (SGX), Bursa Malaysia, Stock Exchange of Thailand (SET), Vietnam Exchange (HOSE), and Philippine Stock Exchange (PSE),

which were chosen because they represent the diverse level of capital market maturity, regulatory structure, and digital ecosystem in the Southeast Asian region. The framework of this research is built on the efficient market hypothesis, which states that stock prices reflect all relevant information, including information about technological innovations and macroeconomic conditions (Fama, 1970). However, differences in institutional characteristics, national policies, economic stability, and digital infrastructure readiness in each country are expected to create disparities in return performance and risk in the technology sector. The logical flow of this research is presented systematically in, which describes relations between ASEAN-6 countries, stock returns, and stock risk. In this study, the ASEAN-6 region is the scope of analysis that includes several countries, such as Indonesia, Singapore, Malaysia, Thailand, Vietnam and the Philippines. This frame of thinking suggests that stock market conditions in these countries affect the level of return and risk faced by investors. Return reflects the level of profit earned from investment activity, while risk describes the magnitude of the uncertainty inherent in changes in stock prices. The relationship between return and risk is reciprocal, where the higher the risk level of a stock, the greater the expected potential return. Therefore, this study seeks to analyze the comparison between the level of return and risk of stocks in various ASEAN-6 countries to obtain an overview of the characteristics of the capital market in the region as well as the differences in returns and risks between countries.

The population in this study includes all companies listed in the technology sector index on each stock exchange during the observation period from 2020 to 2024. The sampling technique was carried out using the purposive sampling method with certain inclusion criteria, (Kamaruddin et al., 2024) Based on the criteria of companies that are listed on an ongoing basis, with the highest market cap, and have complete annual closing price data during the research period. Based on these criteria, a total sample of 60 technology companies was obtained that were considered representative in describing the dynamics of the technology sector in the ASEAN-6 region as a whole.

The data used in this study is secondary data in the form of annual stock closing prices obtained from the official database of Yahoo Finance, Investing.com and the official website of each stock exchange to ensure the reliability and validity of the data. All stock price data is taken in the local currency denomination of each country. The use of local currency aims to measure the level of domestic return purely on each stock exchange. Thus, the results of the calculation of returns and risks in this study reflect the performance of the local capital market without being influenced by exchange rate fluctuations or foreign currency risks that are commonly faced by international investors. Stock return is calculated using the difference between the stock price of the current period and the previous period divided by the stock price of the previous period. Meanwhile, stock risk is calculated using the standard deviation of return as a measure of risk dispersion commonly used in the financial literature. Before hypothesis testing, the data were first tested using the Shapiro-Wilk normality test considering the relatively limited sample size and segmented by country. The test results showed that the data were not normally distributed, so the analysis method used was the non-parametric Kruskal-Wallis test. This test was used to compare more than two independent groups that did not meet the normality assumptions to identify whether there was a significant difference in mean rank return and stock risk between the six countries with a significance value (p-value) of less than 0.05.

Table 1. Operational Definition

Variabel	Indicator	Reference Source
Return	$R_i = \frac{P_t - P_{t-1}}{P_{t-1}}$	Halim (2018:32); Jogiyanto (2017)
Risk	$E(R_i) = \frac{\sum_{i=1}^n (R_i)}{N}$	Halim (2018:32); Tandelilin (2019)

3. RESULTS AND DISCUSSION

The difference in risk levels between countries also reflects the variation in the structure of the technology industry in each capital market. Countries with a dominance of digital platform-based technology companies tend to have higher stock price volatility because their valuations are highly dependent on user growth expectations and future revenues. In contrast, countries with manufacturing and semiconductor technology bases show a more stable risk profile because they are supported by relatively more predictable cash flows. These findings confirm that the risk of technology sector stocks is not uniform, but rather highly depends on the composition of the technology subsectors that develop in each country.

In addition, the high risk in some countries during the observation period also indicates high exposure to global systematic risks. Tight monetary policies in developed countries, exchange rate fluctuations, and foreign capital outflows are external factors that increase the volatility of technology stocks in the ASEAN-6 market. Therefore, risk management in this sector demands a comprehensive understanding of global and regional dynamics simultaneously.

This section presents empirical results and a comprehensive discussion of the differences in the performance of returns and risks of technology sector stocks in ASEAN-6 during the 2020–2024 observation period. The presentation of results was carried out systematically in accordance with the flow of the research methodology described earlier, starting from testing the assumption of data normality, followed by hypothesis testing using the non-parametric Kruskal-Wallis test, and ending with an in-depth discussion that related empirical findings with financial theory and relevant literature. This analysis structure is designed to ensure that each conclusion produced has a strong statistical basis, coherent

interpretation, and high relevance to the dynamics of the ASEAN-6 capital market, especially in the technology sector which is known to have high growth characteristics as well as significant volatility.

In line with the research objectives and statements in the abstract, the main focus of this section is to identify whether there are significant differences in the return and risk of technology sector stocks between countries in the ASIAN-6 region.

3.1. Classical Assumption Test

3.1.1. Normality Test

Table 2. Normality Test of Stock Return

	Tests of Normality					
	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Return_Indonesia	.213	10	.200*	.900	10	.218
Return_Singapore	.238	10	.113	.755	10	.004
Return_Malaysia	.141	10	.200*	.940	10	.557
Return_Thailand	.465	10	.000	.418	10	.000
Return_Vietnam	.168	10	.200*	.904	10	.241
Return_Filipina	.184	10	.200*	.898	10	.208

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

The results of the stock return normality test are presented in Table 2. Based on the table, stock returns in Singapore (Sig. = 0.004) and Thailand (Sig. = 0.000) showed significant values below 0.05, which indicates data is not normally distributed. Although Indonesia, Malaysia, Vietnam, and the Philippines meet the assumption of normality, the existence of abnormal clusters causes the overall distribution of data to be considered abnormal.

Table 3. Shapiro-Wilk Risk Normality Test

	Tests of Normality					
	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Risiko_Indonesia	.222	10	.177	.923	10	.380
Risiko_Singapore	.263	10	.048	.832	10	.036
Risiko_Malaysia	.236	10	.122	.884	10	.147
Risiko_Thailand	.487	10	.000	.416	10	.000
Risiko_Vietnam	.232	10	.135	.868	10	.095
Risiko_Filipina	.241	10	.102	.829	10	.033

a. Lilliefors Significance Correction

Similar findings were found in the stock risk variable (Table 3). The risks in Singapore (Sig. = 0.036), Thailand (Sig. = 0.000), and the Philippines (Sig. = 0.033) were found to be not normally distributed. The non-fulfillment of these assumptions reflects a pattern of asymmetric volatility and extreme stock price movements in the technology sector during the observation period. Therefore, hypothesis testing was carried out using the non-parametric Kruskal-Wallis method.

3.1.2. Interpretation

Before hypothesis testing, data return and risk of technology sector stocks are first tested for their distribution assumptions using the Shapiro-Wilk normality test. The selection of the Shapiro-Wilk method was based on the relatively small sample size of each group of countries (df = 10), which was considered to have a higher level of statistical strength than other normality tests such as the Kolmogorov-Smirnov. Normality testing is a crucial stage in quantitative research because the results determine the selection of the right statistical analysis method, whether using a parametric or non-parametric approach.

The results of the normality test of the return of technology sector stocks are presented in Table 2. Based on the table, stock returns in Singapore (Sig. = 0.004) and Thailand (Sig. = 0.000) show significance values below the significance level of 0.05, which indicates that the return data in these two countries is not normally distributed. On the other hand, the returns of technology sector stocks in Indonesia, Malaysia, Vietnam, and the Philippines showed a significance value above 0.05, so that it statistically met the assumption of normality. However, the existence of more than one group of countries that does not meet the assumption of normality causes the overall distribution of data cannot be assumed to be normal.

Relatively similar findings were also found in the stock risk variables as shown in Table 3. The risk of technology sector stocks in Singapore (Sig. = 0.036), Thailand (Sig. = 0.000), and the Philippines (Sig. = 0.033) proved to be not normally distributed. This unfulfilled assumption of normality reflects an asymmetric pattern of volatility and extreme

stock price movements, which are very common in the technology sector during periods of global economic uncertainty, particularly in the early phases of the COVID-19 pandemic and post-pandemic monetary policy tightening.

Based on the results of the normality test on these two variables, it can be concluded that the use of parametric statistical methods such as ANOVA has the potential to produce biased estimates. Therefore, in accordance with the design of the research methodology and to maintain the validity of statistical inference, hypothesis testing was carried out using the non-parametric Kruskal-Wallis method which did not require a normal distribution and was considered more robust in comparing more than two independent groups.

3.2 Hypothesis Analysis and Testing Results

3.2.1. Kruskal-Wallis Return

Table 4. Kruskal-Wallis Test Results of Technology Sector Stock Returns

	Ranks		
	Country	N	Mean Rank
Return	1	10	27.10
	2	10	30.20
	3	10	29.00
	4	10	41.10
	5	10	43.70
	6	10	11.90
Total	60		

Test Statistics ^{a,b}	
	Return
Kruskal-Valais H	21.195
df	5
Asymp. Sig.	.001
a. Kruskal Wallis Test	
b. Grouping Variable: Negara	

Based on Table 4, the results of the Kruskal-Wallis test show the value of Asymp. The sig is 0.001 (< 0.05), so H_0 is rejected. This shows that there is a significant difference in the return of technology sector stocks among ASEAN-6 countries. Mean rank data shows Vietnam occupies the highest position (43.70), while the Philippines records the lowest position (11.90).

The first hypothesis test (H_1), which states that there is a significant difference in the return of technology sector stocks between ASEAN-6 countries, was carried out using the Kruskal-Wallis test. The results of this test are presented in Table 4 which contains the test statistical value and the average rank of each country's stock return.

Based on the results of the Kruskal-Wallis test, a statistical value of H of 21.195 was obtained with an Asymp.Sig. by 0.001. This significance value is smaller than the significance level of 0.05, so the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. Thus, these results provide strong empirical evidence that there is a significant difference in the rate of return of technology sector stocks in ASEAN-6 during the 2020–2024 observation period, as stated in the research objectives and abstracts.

Further analysis through the stock's mean rank return shows quite sharp variations in performance between countries. Vietnam (5th Country) ranks highest with a mean rank of 43.70. This high return rating reflects investors' optimism about the growth prospects of Vietnam's digital economy, supported by increased foreign direct investment, relocation of global technology production bases, and aggressive government policies in encouraging digital transformation and technology-based industrialization.

In contrast, the Philippines (6th Country) recorded the lowest mean rank of 11.90. The low return performance of technology stocks in the Philippines indicates that the growth potential of the technology sector has not been fully internalized in stock prices. This condition can be attributed to the limitations of digital infrastructure, dependence on technology imports, and political and policy instability that affects investors' risk perceptions.

Other countries such as Indonesia, Malaysia, Singapore, and Thailand are in the middle position with relatively close mean ranks. These findings show that although these countries have a thriving technology ecosystem, their stock return performance is still heavily influenced by structural factors, industrial maturity levels, and sensitivity to global economic dynamics.

If analyzed temporally, the 2020–2024 period represents a very dynamic market phase. The year 2020 was marked by return pressure due to extreme uncertainty at the beginning of the COVID-19 pandemic, while the 2021–2022 period showed recovery in line with the acceleration of digitalization. However, entering the 2023–2024 period, technology stocks' returns are again facing pressure due to tightening global monetary policy and rising interest rates. Although this study did not conduct statistical testing per year, this pattern provides important context in understanding the differences in returns between countries in aggregate.

3.2.2. Kruskal-Wallis risk

Table 5. Kruskal-Wallis Test Results of Technology Sector Stock Risk

Ranks			
	Country	N	Mean Rank
Risk	1	10	29.90
	2	10	22.40
	3	10	21.20
	4	10	41.50
	5	10	26.00
	6	10	42.00
	Total	60	

Test Statistics ^{a,b}	
	Risk
Kruskal-Valais H	13.966
Df	5
Asymp. Sig.	.016

a. Kruskal Wallis Test
b. Grouping Variable: Negara

The results in Table 5 show a significance value of 0.016 (< 0.05), which means that the risk level of technology stocks in this region is not homogeneous. The Philippines has the highest mean risk rank (42.00), while Malaysia records the lowest risk (21.20).

3.2.3. Interpretation

The second hypothesis test (H_2) was conducted to test whether there was a significant difference in the risk of technology sector stocks between countries in Southeast Asia. The results of the Kruskal-Wallis test for stock risk variables are presented in Table 5.

The test results showed a statistical value of H of 13.966 with a significance value of 0.016. Since the significance value is less than 0.05, the hypothesis (H_0) is rejected and the alternative hypothesis (H_2) is accepted. These findings indicate that the level of risk of tech stocks in the Southeast Asian region is not homogeneous, but rather shows statistically significant differences.

Based on the analysis of the mean risk rank of stocks, the Philippines (6th country) ranks as the highest risk with a value of 42.00, followed by Thailand (4th country) with a mean rank of 41.50. The high risk in these two countries reflects the relatively large volatility of stock prices during the observation period, which can be attributed to macroeconomic uncertainty, dependence on foreign capital flows, as well as sensitivity to changes in global monetary policy.

On the other hand, Malaysia (the 3rd country) recorded the lowest mean risk rank of 21.20. This low level of risk indicates that technology stocks in Malaysia are relatively more stable than other countries. This stability is likely influenced by the dominance of the hardware and semiconductor subsectors which have more mature business fundamentals and are relatively resistant to short-term market sentiment fluctuations.

3.3 Discussion

Overall, the findings of this study confirm that the characteristics of return and risk of technology sector stocks in the ASEAN-6 region are segmented between countries. The significant differences found support previous research by (Awala et al., 2020) and (Elizabeth & Sunaryo, 2020) which emphasizes that institutional factors, national policies, and macroeconomic conditions have an important role in shaping the performance of sectoral stocks.

If associated, the findings of this study also provide significant theoretical implications for the application of the Capital Asset Pricing Model (CAPM) in emerging markets. The CAPM assumes that investors are only compensated for systematic risks, while non-systematic risks can be eliminated through diversification. However, the results of this study show that in the Southeast Asian technology sector, high returns do not always go hand in hand with high risks. This condition indicates that factors such as growth expectations, innovation, and policy interventions have roles that are not fully reflected in traditional beta parameters.

The significant divergence in technology stocks' returns reflects the digital economy adoption gap in ASEAN-6. The high returns in Vietnam are explicitly driven by the country's structural transformation into a global technology manufacturing hub and the government's aggressive policy support. Conversely, low returns in the Philippines indicate that investor sentiment is still hampered by limited supporting infrastructure and regulatory uncertainty during the 2020-2024 period.

The findings of this study also highlight the phenomenon of "Market Inefficiency" or "Negative Risk Premium" in the Philippine market. Based on the data in Tables 4 and 5, investors in the Philippines bear the highest risk (mean rank 42.00) but get the lowest return (mean rank 11.90). This is contrary to the traditional Capital Asset Pricing Model (CAPM)

theory where high risk is supposed to provide high returns. This condition suggests that technology stock markets in developing countries are often influenced by non-systemic risks and market sentiment that is irrational compared to company fundamentals.

On the other hand, Malaysia offers stability for investors as it has the lowest risk, which is due to the dominance of the more mature technology manufacturing sector. Overall, these results provide important implications for institutional investors to diversify internationally to mitigate country-specific risks in the AEAN-6 region.

From the point of view of international diversification theory, the significant differences between countries found in this study reinforce the argument that cross-country diversification remains relevant despite increased global market integration. Investors who selectively allocate a portfolio of technology stocks in various ASEAN-6 countries have the potential to benefit in the form of reduced portfolio risk without having to sacrifice the expected rate of return. This is becoming increasingly important in the context of increasing global volatility and international economic uncertainty.

The policy implications of these findings cannot be ignored either. Capital market regulators in the Southeast Asian region need to be aware that regulatory stability, market transparency, and investor protection are key factors in reducing the volatility of technology stocks. Countries that are able to create a conducive regulatory environment and support innovation tend to attract long-term investor interest and produce more stable capital market performance with the Capital Asset Pricing Model (CAPM) theory, the results of this study show that the relationship between risk and return is not always linear as assumed in a fully efficient market. The findings that Vietnam has the highest returns without the highest risk, and the Philippines has the highest risk with relatively low returns, suggest that non-systematic factors, growth expectations, and emerging market characteristics play a significant role in shaping technology stock prices.

From an international diversification perspective, these differences in performance between countries provide a strategic opportunity for investors to build cross-border portfolios to minimize risk and optimize returns. Diversification of technology stocks in various ASEAN-6 markets can be an effective strategy in the face of global volatility.

In addition to the implications for investors, the results of this study also have policy relevance. Capital market regulators and policymakers need to pay attention to regulatory stability, legal certainty, and support for the digital ecosystem are key factors in suppressing the volatility of the technology stock market. Policy harmonization efforts at the ASEAN-6 level have the potential to increase the attractiveness of the region as a long-term technology investment destination, as concluded in the conclusion of this study.

4. CONCLUSION

This study aims to analyze the differences in the performance of returns and risks of technology sector stocks in ASEAN-6 during the period 2020–2024. Based on the results of empirical testing using the non-parametric Kruskal-Wallis test, this study concludes that there are statistically significant differences in the returns and risks of technology sector stocks in six ASEAN-6 stock exchanges during the 2020–2024 period. Key findings show that Vietnam leads in terms of stock returns thanks to aggressive digital policy support, while the Philippines records the highest level of risk but with a low rate of return. The situation in the Philippines explicitly indicates the existence of market anomalies in the form of "Negative Risk Premium" and "Market Inefficiency", where the linear relationship between risk and return as assumed in the CAPM theory is not consistently fulfilled in emerging markets. On the other hand, Malaysia offers better risk stability as it is dominated by a more fundamentally mature manufacturing technology subsector. These results confirm the importance of an international diversification strategy for institutional investors to optimize portfolios amid the volatility of the regional digital economy. For regulators, these findings underscore the need for increased market transparency and stability of digital infrastructure to attract long-term investment. The limitations of this study lie in the use of monthly data that may not capture extreme daily fluctuations, so future research is recommended to use high-frequency data or add country-specific macroeconomic variables to deepen regional volatility analysis.

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