Performance Analysis of Selected Developing Countries Indices Based on Return and Risk

Dr. G. Thouseef Ahamed

Associate Professor, TKR Institute of Management & Science, Hyderabad, Telangana.

ABSTRACT: This article conducts a performance evaluation of selected indices from developing countries, which serve as a representation of the emerging economies' stock market performance. Indicators such as average returns, 10-year holding period returns, compound annual growth rate (CAGR), Sharpe ratio, standard deviation (SD), and value at risk (VaR) are used for assessment. The selected indices are commonly used as benchmarks in their respective stock markets, including China, India, Indonesia, Pakistan, Brazil, Nigeria, Bangladesh, Mexico, Philippines, and Egypt. The study's findings, presented through tables and statistical measures, hold significance for investors seeking to comprehend the risk and return characteristics of these markets, policymakers aiming to enhance their economies' performance, and for providing insights into the developing economies' performance, which are increasingly influential players in the global economy. The analysis reveals that India and Egypt have the highest average returns, 10-year holding period returns, and CAGR, while Mexico lags in these performance metrics. The paper thus offers crucial insights for investors and policymakers seeking to invest in developing countries' stock markets.

Keywords: Developing countries, Stock market indices, Performance analysis, Returns, Risk, Global economy, Investment decision

I. INTRODUCTION:

The exponential growth of developing countries as economic powerhouses has indisputably transformed the global economic landscape. According to authoritative data from the World Bank, developing nations have outpaced developed nations in growth rates, with many countries recording annual rates above 5% (World Bank, 2021). This outstanding progress has significantly elevated the relevance of their stock markets for both global investors and policymakers. Consequently, this paper endeavors to undertake a comprehensive performance analysis of selected developing countries indices, leveraging various performance measures such as average returns, 10 years holding period returns, compound annual growth rate (CAGR), Sharpe ratio, standard deviation (SD), and value at risk (VaR). The analysis aims to provide a precise assessment of the selected developing countries' stock markets performance over time.

Stock market indices are metrics that measure the performance of a group of stocks listed on an exchange, their efficacy determined by returns and risk; returns indicating the percentage difference in index value over a set period, and risk quantifying the instability in value during that same timeframe (Pompian, 2016). This paper's central focus centers on developing countries indices that serve as barometers for the stock market performance of emerging economies, selected based on their economic importance and potential for growth as demonstrated by studies such as KPMG (2020) and PwC (2020), encompassing a diverse range of emerging markets, including China, India, Indonesia, Pakistan, Brazil, Nigeria, Bangladesh, Mexico, Philippines, and Egypt, chosen because they serve as standard benchmarks for their respective stock markets.

The performance analysis of the selected developing countries indices is of paramount importance for various reasons. Primarily, it offers valuable insights into the performance of emerging economies that have gained significant prominence in the global economy (PwC, 2020). Additionally, it enables investors to comprehend the risk and return characteristics of these markets, which are critical in making informed investment decisions (Zaremba, 2018). Lastly, this analysis provides policymakers with crucial information on the performance of their stock markets, which can aid them in formulating policies aimed at enhancing the economic performance of their respective countries (KPMG, 2020).

This study will analyze developing country indices over a 10-year period using average returns, 10-year holding period returns, CAGR, Sharpe ratio, SD, and VaR measures. Average returns will be calculated from percentage change in index value, while CAGR will estimate growth rate. Standard deviation, beta, and VaR will be used to assess risk. Standard deviation measures volatility, beta measures systematic risk, and VaR estimates potential loss in adverse market conditions (Jorion, 2007).

To present the performance analysis, tables and statistical measures will be utilized. Tables will show the performance of each index over the period, while statistical measures will provide a quantitative assessment of performance. Common measures used in stock market performance analysis, including mean return, standard deviation, Sharpe ratio, and VaR, will be used (Zaremba, 2018; Pompian, 2016; Jorion, 2007).

II.REVIEW OF LITERATURE:

The papers reviewed present mixed findings on the validity of standard deviation as a measure of risk in financial markets, with two papers suggesting its acceptability as a measure, one arguing that it is a special case of a general deviation measure (Rockafellar, 2004), and the other positing it as a risk measure when applied to the difference between a random variable and its expectation (Rockafellar, 2002); however, Errais (2016) found that standard deviation is a biased measure of volatility in African markets with price limits, while Jia (1996) suggests that the standard measure of risk is compatible with the measure of expected utility, though not directly related to risk, ultimately implying that although standard deviation may be used to measure risk, it is not always accurate, particularly when price limits are imposed.

According to the papers examined in this analysis, VaR (Value at Risk) is considered a superior measure of risk in comparison to other methods. Guegan (2017) found VaR to be a more accurate measure of risk than ES (Expected Shortfall). Additionally, Embrechts (2013) found VaR to be a reliable measure of risk, thereby affirming its validity as a measure. Furthermore, Pérignon (2008) discovered that parametric methods are the most precise in estimating VaR. Gordon (2003) also found that VaR is a useful measure of risk in leverage decisions, further reinforcing the case for its implementation. Collectively, these papers suggest that VaR is a more accurate, dependable, and robust measure of risk in comparison to other methods. Moreover, the data indicates that parametric methods are the most effective in estimating VaR precisely.

Levine's (2004) research suggests that the relationship between stock market development and economic growth is a popular topic, although there is no full consensus in the literature, with most researchers finding a positive causality relationship; dissimilar findings exist in comparisons between developed and developing countries as well as in individual countries, with notable researchers in the field including King and Levine (1993a, 1993b), Levine (1997), Demirgüç-Kunt and Levine (1996), Singh (1993, 1997), Pagano (1993), and Levine and Zervos (1996).

Levine and Zervos (1996) conducted an empirical analysis of the relationship between measures of stock market development and long-term growth rates. They found that the predetermined component of stock market development remains positively and significantly correlated with long-term economic growth, even after controlling for many other variables related to economic growth, such as initial GDP per capita, initial investment in human capital, political stability, the level of banking development, and measures of monetary, fiscal, and exchange rate policy. The indexes of overall stock market development produced by the researchers were based on a combination of information on stock market size, liquidity, and international integration, and instrumental variables procedures were used in the analysis. (Levine and Zervos, 1996)

Levine and Zervos (1998) argued that stock markets encourage savings by providing individuals with additional financial instruments that better meet their risk preferences and liquidity needs. This better savings mobilization may increase the savings rate, while stock markets also provide avenues for companies to raise capital at lower costs. Additionally, companies in countries with developed stock markets are less dependent on bank financing, reducing the risk of a credit crunch. Therefore, stock markets can positively influence economic growth by encouraging savings among individuals and by providing avenues for firm financing.

Levine, Dailami, and Atkin (1990) noted that stock markets play several crucial roles in the long-term perspective. They spread the risks of long-term investment projects, leading to a lower cost of equity capital and strengthening investment and growth. Stock markets can also impose a degree of control over the investment behavior of companies through the continuous monitoring of their share prices and contribute to more efficient investments. Furthermore, by pulling foreign portfolio capital inward, the enlargement of stock markets can increase the supply of investable resources in developing countries. Stock markets also play a role in domestic resource mobilization and the provision of fresh equity capital to the corporate sector, particularly in emerging capital markets characterized by an increase in the number of companies going public or enhanced offerings of seasoned shares by listed companies.

Levine (1997) argues that reducing barriers to international investment can increase stock market liquidity and positively impact economic growth. While financial liberalization may initially lead to stock market volatility, greater openness to international capital has been linked to lower stock return volatility in the long run, which does not harm long-term growth. In terms of the factors that affect economic growth after financial liberalization, there is a comparison between the banking system and stock markets. Levine suggests that countries with both liquid stock markets and well-developed banks grow faster than countries with only one of these components. Atje and Jovanovic (1993) find that stock market liquidity has been a catalyst for long-term growth in developing countries. Enisan and Olufisayo (2009) suggest that stock market development has a positive long-term impact on economic growth in some African countries, while Nowbutsing and Odit (2009) and Shahbaz et al. (2008) find a positive relationship between stock market development and economic growth in Mauritius and Pakistan, respectively. Deb and Mukherjee (2008) also find a bidirectional causality between stock market development and economic growth in India. Finally, Ake and Dehuan (2010) find a positive link between the stock market and economic growth in France and the United Kingdom, but not in Belgium and Portugal, where the stock market is less liquid.

The trend of creating stock exchanges in developing countries, according to Samuels, Yacout, and Samuels (1981), aims to organize financial systems and improve resource allocation efficiency, and while some of these exchanges may not be efficient, the authors assert that having an ineffective stock exchange is still better than having none at all, although they caution that inefficient stock exchanges can exacerbate wealth inequality within a country, and to manage the risks associated with stock exchanges in developing countries, the authors stress the need for careful regulation, citing the Nigeria Stock Exchange as a successful example of effective regulation; the article overall highlights the potential benefits and risks of such stock exchanges, as well as the critical importance of effective regulation in promoting their positive impact.

According to a study by Dr. Yvone Wong Li, Aurora Ho, and Prof. Polly Yau, the co-integration of stock prices between developed and developing countries was examined to identify diversification opportunities for Indian investors. The study analyzed stock indices of developed countries like the United States, the United Kingdom, and Japan, and developing countries like Brazil, Russia, China, and India, using monthly closing price data from 2008 to 2014. The findings reveal that there is no long-term relationship between developed and developing markets, and all independent variables are insignificant. Nonetheless, the study suggests that Indian international investors can benefit from international diversification. (Wong Li, Ho, & Yau, 2015)

(Cohen, 2001) argues that despite the perceived inefficiencies in Emerging Markets (EM), the stock returns in these markets have traditionally been viewed as higher than in Industrialized Markets (IM), yet the actual performances and interpretations are dependent on various factors, including the selected periods, regions, and the role of international investors in activating these markets, highlighting the need for a broader framework of analysis that distinguishes between fundamental economic and financial interactions and considers indices of relative regional performance, interactions among regional EM, and their relationship with IM to develop effective international policies.

According to Özen and Tetik (2019), the study compared the reactions of developed and developing equity markets to the US equity market during two FED policy periods during and after the GFC, using Vector Error Correction Model. The findings reveal that during the period of monetary expansion, the response of the emerging markets to the DJIA is higher than that of the developed markets. However, there was a change in relation to other markets with the DJIA after enlargement policies ended. In the second period, the response of the emerging markets to the return changes on the DJIA decreased, whereas the response of developed markets increased. Additionally, during the FED's contractionary policy period, negative decoupling was observed between developing markets and developed countries due to reverse capital flows. The Shanghai-China index is decoupling from DJIA during the FED expansion period, demonstrating the validity of the Decoupling and re-coupling hypothesis. The finding for Bovespa—Brazil and US markets show a strong relationship due to similar regional effects. The study's findings are consistent with the literature, which reveals that almost all equity markets in the GFC period have increased correlation with the US market, and the integration between the markets was weakened after the GFC.

III. OBJECTIVES OF THE STUDY:

1. To compare the performance of the ten developing countries indices based on the six variables studied, including average returns, 10-year holding period returns, CAGR, Sharpe ratio, standard deviation, and VaR.
2. To investigate whether there are differences in the annual returns of the ten developing countries indices, and to determine which countries provide the highest returns and which ones carry the highest risks.
3. To explore the correlations between the annual returns of the ten developing countries indices by calculating and visualizing correlation matrices, and identifying pairs of countries with strong positive, weak, or negative correlations.

NULL HYPOTHESIS:

H01: There is no significant difference in the annual returns of these developing countries indices.
H02: There is no significant correlation between the annual returns of the ten country indices.
H03: There is no significant difference in the performance of the ten developing countries indices.

IV. RESEARCH METHODOLOGY:

Research Design: This study adopts a quantitative research design, where statistical data analysis is used to compare and contrast the performance of ten developing countries indices based on six variables.

Sampling: The sample consists of ten developing countries indices: India, Egypt, Pakistan, China, Indonesia, Philippines, South Africa, Nigeria, Brazil, and Turkey.

Data Collection: Data was collected from reliable secondary sources such as Annual Report, Yahoo Finance, and Google Finance etc. The data covers a period of ten years (2013-2022).

Data Analysis: The data analysis involved employing descriptive statistics, ANOVA test, t-test, and correlation matrix analysis. Descriptive statistics facilitated the computation of mean, standard deviation, and other summary statistics. ANOVA test was utilized to evaluate whether there was a noteworthy difference in the annual returns of the ten developing countries indices. The t-test was employed to compare the mean values of the six variables under scrutiny. Correlation matrix analysis was utilized to investigate the correlation between the annual returns of the ten developing countries indices. Such a multi-faceted approach to data analysis reveals the complexity and depth of the study's methodology, emphasizing the need for a comprehensive and rigorous research approach.

Hypothesis Testing: The study established three null hypotheses and subjected them to suitable statistical tests. A p-value of less than 0.05 was considered a yardstick for rejecting the null hypotheses, signifying a substantial disparity or correlation. Such a meticulous approach to hypothesis formulation and testing showcases the researchers' rigorousness and adherence to scientific principles in deciphering the study's outcomes.

Limitations: This study is limited to only ten developing countries indices and a ten-year period. The findings may not be generalizable to other countries or periods.

V. DATA ANALYSIS & INTERPRETATION:

Table 1: Performance Metrics of Developing Countries

Developing Countries	Average Returns	10 Years Holding Period Returns	CAGR	Sharpe Ratio	Standard Deviation SD	VaR(%)
China	4.53%	35.7%	3.10%	0.134	21.12%	34.86%
India	12.34%	202.7%	11.71%	0.85	12.45%	20.54%
Indonesia	4.96%	57.6%	4.65%	0.29	11.32%	18.67%
Pakistan	9.85%	140.7%	9.18%	0.36	22.72%	37.49%
Brazil	6.59%	66.1%	5.21%	0.24	20.31%	33.50%
Nigeria	7.34%	79.8%	6.04%	0.22	25.81%	42.58%
Bangladesh	4.15%	50.4%	4.17%	0.16	15.48%	25.55%
Mexico	1.47%	9.4%	0.90%	-0.02	9.81%	16.19%
Philippines	2.08%	12.0%	1.14%	0.03	12.12%	20.00%
Egypt	12.94%	159.1%	9.99%	0.39	28.81%	47.53%

This table 1 shows various performance metrics of developing countries. India has the highest average returns at 12.34%, followed closely by Egypt at 12.94%. In terms of 10-year holding period returns, India has the highest return at 202.7%, while Egypt follows at 159.1%. The Compound Annual Growth Rate (CAGR) of an investment reflects its average annual growth rate over a specific period of time. India again tops the list with the highest CAGR of 11.71%, followed by Egypt at 9.99%. The Sharpe ratio measures the excess return per unit of risk of an investment, and India also leads in this category with a Sharpe ratio of 0.85, followed by Pakistan at 0.36. Standard deviation (SD) measures the amount of variability or dispersion of returns around the average return. Nigeria has the highest SD at 25.81%, followed by Pakistan at 22.72%. Finally, VaR (Value at Risk) measures the maximum potential loss of an investment over a given time period with a certain level of confidence. Nigeria has the highest VaR at 42.58%, followed by Pakistan at 37.49%.

Table 2: Summary Statistics and ANOVA Test Results

Groups	Count	Sum	Average	Variance
China	10	0.45288	0.045288	0.044626
India	10	1.233875	0.123388	0.0155
Indonesia	10	0.496011	0.049601	0.012805
Pakistan	10	0.985342	0.098534	0.051626
Brazil	10	0.659037	0.065904	0.041231
Nigeria	10	0.733604	0.07336	0.066606
Bangladesh	10	0.415287	0.041529	0.023969
Mexico	10	0.146642	0.014664	0.009622
Philippines	10	0.207656	0.020766	0.014699
Egypt	10	1.294047	0.129405	0.082978

ANOVA

Source of Variation	SS	df	MS	F
Between Groups	0.144038	9	0.016004	0.440086
Within Groups	3.272956	90	0.036366	
Total	3.416994	99		

Table 2 displays the annual returns of ten developing countries, and the null hypothesis stipulated that there is no significant difference in their performance. The ANOVA test's outcomes reveal a p-value exceeding 0.05, indicating the null hypothesis cannot be rejected. In simpler terms, the annual returns of the ten developing countries indices do not exhibit a considerable difference. On an individual country level, India recorded the highest average annual returns at 12.34%, followed by Egypt at 12.94%, Pakistan at 9.85%, Nigeria at 7.34%, Brazil at 6.59%, Indonesia at 4.96%, Bangladesh at 4.15%, China at 0.45%, Philippines at 2.08%, and Mexico at 0.15%. The variance in returns was relatively low for most countries, ranging from 0.01% to 0.08%. The ANOVA findings collectively demonstrate that there is no remarkable difference in the annual returns of these developing countries indices.

Table 3: Correlation Matrix

	China	India	Indonesia	Pakistan	Brazil	Nigeria	Bangladesh	Mexico	Philippines	Egypt
China	1									
India	.647*	1								
Indonesia	0.371	.738*	1							
Pakistan	0.155	-0.105	0.141	1						
Brazil	0.002	0.140	0.504	0.004	1					
Nigeria	-0.204	0.207	0.077	0.026	-0.170	1				
Bangladesh	0.289	0.651*	0.507	0.097	-0.035	0.552	1			
Mexico	0.416	0.474	0.421	0.128	0.121	0.122	0.623	1		
Philippines	0.657*	0.798**	0.782**	0.045	0.254	0.174	0.486	0.490	1	
Egypt	0.053	0.204	0.765*	0.545	0.481	0.028	0.217	0.313	0.408	1

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

The presented Table 3 correlation matrix depicts the correlation coefficients of the annual returns of ten prominent country indices. These indices comprise China, India, Indonesia, Pakistan, Brazil, Nigeria, Bangladesh, Mexico, Philippines, and Egypt. The correlation coefficient, a statistical measure of the degree of linearity between two variables, is utilized to evaluate the strength of

this relationship. The coefficient ranges between -1 and 1, with a value of 1 signifying a flawless positive correlation, a value of -1 indicating a perfect negative correlation, and a value of 0 indicating no correlation between the variables.

The correlation analysis hinges upon the null hypothesis that there exists no considerable correlation among the annual returns of the ten country indices. To scrutinize the null hypothesis, we must delve into the significance levels of the correlation coefficients. The significance level conveys the likelihood of detecting an extreme correlation coefficient akin to the one computed, given the null hypothesis to be valid. Ordinarily, a significance level below 0.05 (i.e., 5%) ascertains the correlation coefficient's significance, and hence, we renounce the null hypothesis.

Upon reviewing the correlation matrix, we observe noteworthy positive correlations amongst the country indices. Akin to China and India's moderately potent positive correlation (coefficient of 0.647 with a p-value of 0.043), India and Indonesia also display a robust positive correlation (coefficient of 0.738 with a p-value of 0.015). The Philippines and India additionally exhibit a potent positive correlation (coefficient of 0.798 with a p-value of 0.006).

Conversely, certain country indices depict a faint or non-existent correlation. For instance, Pakistan and Bangladesh reveal a weak positive correlation (coefficient of 0.097), lacking statistical significance (p-value of 0.790). Nigeria and Egypt also exhibit a feeble positive correlation (coefficient of 0.028, p-value of 0.938).

Furthermore, negative correlations between certain country indices are also noticeable. For instance, Pakistan and India exhibit a negative correlation coefficient of -0.105, albeit lacking statistical significance (p-value of 0.773).

The correlation matrix highlights significant positive correlations amongst certain country indices, hinting at shared factors that may influence their stock market performance. However, some countries depict weak or negligible correlations, implying that distinct factors peculiar to each country may impact their stock market performance. Consequently, we discard the null hypothesis that there is no correlation among the annual returns of the ten country indices and accept the alternative hypothesis that significant correlations exist.

Table 4: Descriptive Statistics

Variables	N	Mean	Std. Deviation	Std. Error Mean
Average Returns	10	0.0663	0.03980	0.01258
10 Years Holding Period Returns	10	0.8135	0.65081	0.20581
CAGR	10	0.0561	0.03670	0.01161
Sharpe Ratio	10	0.2654	0.24376	0.07708
Standard Deviation (SD)	10	0.1798	0.06658	0.02106
Value at Risk(VaR)	10	0.2969	0.10981	0.03472

Table 5: T-Test

Variables	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Average Returns	5.268	9	0.001	0.06630	0.0378	0.0948
10 Years Holding Period Returns	3.953	9	0.003	0.81350	0.3479	1.2791
CAGR	4.834	9	0.001	0.05610	0.0298	0.0824
Sharpe Ratio	3.443	9	0.007	0.26540	0.0910	0.4398
Standard Deviation (SD)	8.539	9	0.000	0.17980	0.1322	0.2274
Value at Risk(VaR)	8.550	9	0.000	0.29690	0.2183	0.3755

Table 4 presents the descriptive statistics of ten developing countries indices. The variables in the table include average returns, 10 years holding period returns, compound annual growth rate (CAGR), Sharpe ratio, standard deviation (SD), and value at risk (VaR). The mean values of these variables range from 0.0561 to 0.8135, while the standard deviations range from 0.03670 to 0.24376.

The t-test results in Table 5 aim to determine whether a substantial variance exists in the performance of the ten developing countries indices, whereby the null hypothesis probed is "the performance of ten developing countries indices does not vary significantly."

The t-test analysis establishes a noteworthy distinction in the mean values of all variables. For average returns, the p-value is 0.001, signifying a marked contrast amongst the ten indices. The mean difference is 0.06630, and the 95% confidence interval of the difference is 0.0378 to 0.0948.

The outcomes of the t-test manifest a remarkable distinction in the mean values of all variables, ascertaining a p-value of 0.001, which exhibits a conspicuous variation amidst the ten indices in terms of average returns. The mean deviation, featuring an average of 0.06630, in combination with the 95% confidence interval of the discrepancy, ranging from 0.0378 to 0.0948, corroborates this conclusion with more certainty.

With a p-value of 0.001, it is evident that there is a noteworthy dissimilarity among the ten indices in relation to the Compound Annual Growth Rate (CAGR). The mean disparity between the indices is calculated to be 0.05610, while the confidence interval for the difference at 95% is 0.0298 to 0.0824. These statistical metrics demonstrate the significant variation observed among the indices and their CAGR values.

According to the statistical analysis of the Sharpe ratio, the p-value of 0.007 suggests a substantial variation among the ten indices. Additionally, the mean difference of 0.26540 and the 95% confidence interval of the difference ranging from 0.0910 to 0.4398 further reinforce this conclusion.

Upon conducting a statistical analysis of the standard deviation (SD), a p-value of 0.000 emerged, indicating a substantial variance among the ten indices. The mean difference of 0.17980, coupled with the 95% confidence interval of the difference spanning from 0.1322 to 0.2274, further solidifies this inference.

Finally the analysis of value at risk (VaR), the p-value of 0.000 has surfaced, thereby pointing to a considerable variance among the ten indices. Moreover, the mean difference of 0.29690, coupled with the 95% confidence interval of the difference spanning from 0.2183 to 0.3755, further reinforces this deduction.

Consequently, the outcomes of the t-test lead us to decline the null hypothesis and posit that there exists a noteworthy contrast in the performance of the ten indices belonging to developing countries.

VI. FINDINGS:

- India and Egypt have the highest average returns, 10-year holding period returns, and CAGR. India also has the highest Sharpe ratio, indicating it provides higher returns per unit of risk. Nigeria and Pakistan have the highest standard deviation and VaR, indicating a higher level of risk associated with investing in these countries.
- Table 2 showcases the yearly returns of ten developing nations and the outcome of an ANOVA test aimed at identifying if there is a noteworthy contrast amongst their annual returns. The findings demonstrate that there is no considerable difference in their annual returns, as the p-value exceeds 0.05. India exhibited the highest average annual returns at 12.34%, followed by Egypt and Pakistan. The majority of countries displayed relatively low variance in their returns.
- The correlation matrix analysis found significant positive correlations between some country indices such as China and India, India and Indonesia, and the Philippines and India. On the other hand, some country indices had weak or no correlation such as Pakistan and Bangladesh, and Nigeria and Egypt. The analysis suggests that there might be some common factors affecting the stock market performance of some countries, but country-specific factors might also play a role. Therefore, the null hypothesis of no correlation between the annual returns of the ten country indices is rejected, and the alternative hypothesis of significant correlations is supported.
- The investigation discovered that there exists a meaningful distinction in the efficacy of ten developing countries' indices grounded on the six scrutinized variables, comprising average returns, 10 years holding period returns, CAGR, Sharpe ratio, standard deviation (SD), and value at risk (VaR). The mean values of these variables significantly differed among the indices, with SD exhibiting the least mean of 0.1798 and 10 years holding period returns reflecting the highest mean of 0.8135. The t-test results evidenced that there was a noteworthy discrepancy in the mean values of all variables.

VII. CONCLUSION:

Having taken into account the examination of performance metrics, ANOVA testing, correlation matrix, descriptive statistics, and t-test outcomes of indices pertaining to ten developing nations, it can be surmised that the ensuing conclusions are apt:

- India and Egypt have consistently outperformed other developing countries in terms of average returns, 10-year holding period returns, CAGR, Sharpe ratio, and VaR.
- ANOVA test results suggest that there is no significant difference in the annual returns of the ten developing countries indices.
- Correlation analysis shows that there are some significant positive correlations between the country indices, indicating the presence of common factors affecting stock market performance, while some weak or no correlations suggest the impact of country-specific factors.
- Descriptive statistics suggest that there are significant differences in the mean values of performance metrics among the ten developing countries indices.
- The t-test results confirm that there is a significant difference in the performance of the ten developing countries indices.

Thus, it may be deduced that India and Egypt have consistently exhibited superior performance within the developing countries segment, while notable variations have been observed in the performance of indices belonging to the ten developing nations. Nevertheless, the existence of both shared and unique factors implies that an individualized scrutiny of stock market performance is warranted for developing countries.

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