Financial Performance of Moroccan Listed Companies: A Multidimensional Analysis of Internal, Macroeconomic, and Institutional Determinants Using Dynamic Panel Data

Asmae Amarhyouz [1*] and Jalal Azegagh [1]

[1] Research Laboratory in Organizational Management Sciences, National School of Commerce and Management, Ibn Tofail University, Kenitra 14000, Morocco.

* Corresponding author: asmae.amarhyouz@uit.ac.ma.

ABSTRACT: This study aims to identify the main determinants of financial performance of non-financial companies listed on the Casablanca Stock Exchange. The research focuses on assessing how internal, macroeconomic, and institutional variables affect performance, using (ROA) and (ROE) as key indicators. *Methodology*: The empirical study covers 8 years from 2013 to 2020 and a balanced panel of 51 Moroccan listed companies. The explanatory variables fall into three categories: firm-specific factors (liquidity, size, age, growth opportunities, and capital structure), macroeconomic indicators (inflation rate, interest rate, exchange rate and GDP growth), and institutional quality (corruption index). To validate the robustness of the outcomes (heteroskedasticity, autocorrelation, and endogeneity), several panel data estimation techniques were applied, including pooled OLS, fixed effects models, and the Generalized Method of Moments (GMM). *Findings*: The results show that liquidity and growth opportunities have a significant and positive impact on performance, while age, firm size, and leverage exert a negative effect. Regarding external factors, inflation and interest rates are shown to be significant constraints to financial performance, whereas GDP growth and exchange rate fluctuations have a non-significant effect. The institutional factor (corruption index), displays only weak explanatory power. *Practical implications*: The findings provide valuable insights for corporate managers, investors, and policymakers by emphasizing the importance of sound internal financial management, particularly in terms of liquidity and investment strategies. Moreover, the study underlines the need for macroeconomic stability and institutional improvement to support firm performance in emerging markets as Morocco. *Originality/value*: To the authors' knowledge, empirical studies on the combined effects of internal, macroeconomic and institutional determinants of business performance in the Moroccan context are non-existent. This study contributes to bridging that gap by offering an integrated and dynamic approach to performance analysis, which may serve as a reference for future research on emerging capital markets.

Keywords: financial performance, internal factors, macroeconomic factors, institutional factors, panel data regression; generalized method of moments (GMM).

I. INTRODUCTION

In a global economy marked by constant transformation and heightened competition, corporate performance remains a central concern for firms seeking to ensure their sustainability and strategic positioning. As highlighted by [1], performance rests on two fundamental dimensions: effectiveness in achieving objectives, and efficiency in resource utilization. The most competitive companies succeed in reconciling both, delivering high performance with minimal waste. This multidimensional concept of

performance has become a recurring theme in managerial literature and academic research [2], giving rise to ongoing debates regarding its definition, measurement, and determinants.

Over the years, numerous studies have sought to identify the factors influencing corporate performance, whether financial or non-financial. However, the lack of consensus among scholars reflects the complex and multifaceted nature of this construct. As suggested by [3], performance can be viewed as a firm's ability to effectively mobilize and manage its resources in pursuit of a sustainable competitive advantage. This encompasses diverse elements, ranging from customer satisfaction and operational efficiency to innovation and corporate social responsibility. Despite this diversity, most research both theoretical and empirical tends to prioritize financial performance, commonly measured by indicators such as Return on Assets (ROA) or Return on Equity (ROE) [4-6]. These metrics are sensitive to a wide array of variables, including internal characteristics like firm size, age, and liquidity [7-8], as well as macroeconomic forces such as inflation and interest rates.

Recent empirical work [9-11] has emphasized the necessity of adopting an integrative approach that jointly considers internal, external, and institutional dimensions. In particular, internal capabilities are seen as key in enabling firms to adapt to external shocks. While internal levers may be managed strategically, external forces especially inflationary pressures often remain beyond managerial control, yet have a direct impact on profitability [9].

In this context, the objective of this study is to examine how internal, macroeconomic, and institutional factors jointly influence the financial performance of non-financial companies listed on the Casablanca Stock Exchange. The Moroccan case is particularly relevant due to the structural and institutional vulnerabilities that characterize emerging markets, where companies often face both economic turbulence and governance challenges. The study specifically seeks to assess whether these factors can serve as predictors of profitability, and how they interact.

This main research question raises several sub-questions:
- To what extent do firm-specific characteristics explain variations in profitability?
- What is the impact of macroeconomic indicators on financial performance?
- How does institutional quality, particularly corruption, affect corporate outcomes?
To answer these questions, the paper will:
- Present a synthesis of the main theories relating to financial performance;
- Analyze the influence of internal variables on ROA and ROE;
- Investigate the effects of inflation, interest rates, exchange rate dynamics, and economic growth;
- Examine the role of institutional environment as measured by corruption perception;
- Propose strategic recommendations for corporate decision-makers and public authorities.

While prior studies such as that conducted by [12] have focused primarily on the banking sector, little empirical work has examined the combined impact of internal, economic, and institutional factors on non-financial firms in Morocco. This study aims to fill that gap, offering new insights for academics, practitioners, and policymakers.

The structure of the paper is as follows: the first section reviews the theoretical and empirical literature; the second outlines the research hypotheses; the third describes the methodology and dataset; the fourth presents and interprets the results; and the final sections offer discussion, conclusions, and practical recommendations.

II. RELATED WORK

1. THEORETICAL FRAMEWORK

1.1 Pecking Order Theory by Majluf and Myers (1984)

This theory [13] breaks down how companies choose their funding in a clear order because of information gaps between them and investors. It shows that companies typically go for money they already have first, and then look for external funding, picking the cheapest options before taking on more expensive loans. According to this theory, companies that follow this order starting with their own funds and then considering other

options will likely see better performance. The benefits come from lower borrowing costs, which reduce the effects of information gaps, and better risk management.

1.2 Agency Theory by Jensen and Meckling (1976)

Agency theory provides a relevant analytical framework for understanding the conflicts of interest that emerge when one party (the principal) delegates authority to another (the agent) to act on their behalf. As stated by [14], this delegation creates an agency relationship in which managers are empowered to make decisions, often without direct oversight from shareholders. However, this separation between ownership and control gives rise to divergences in objectives: while shareholders are primarily interested in maximizing firm value, managers may prioritize personal benefits or the expansion of their own influence within the organization. Such conflicts can undermine organizational efficiency and erode shareholder wealth if left unchecked. Consequently, the implementation of appropriate governance mechanisms such as performance-based incentives, monitoring structures, and control systems is essential to align managerial actions with shareholder interests and to reduce the risk of opportunistic behavior.

1.3 Resource-Based View (RBV) by Birger Wernerfelt (1984)

The Resource-Based View (RBV) offers a strategic framework for understanding the internal sources of competitive advantage and corporate performance. Initially introduced by Wernerfelt in the 1980s, this approach posits that firm-specific resources and capabilities are central to explaining performance differentials across companies [15]. According to this theory, a firm can achieve and sustain a competitive edge when it possesses resources that are valuable, rare, inimitable, and non-substitutable. Such strategic resources whether tangible or intangible include elements like technological know-how, organizational culture, brand reputation, and proprietary processes. When these resources are effectively mobilized, they enable the firm to outperform its rivals in terms of profitability, growth, and market positioning. The RBV thus shifts the focus of performance analysis from external market conditions to the internal assets and capabilities that firms control and develop over time. In this sense, the RBV provides a theoretical basis for assessing how internally rooted advantages such as innovation capacity or efficient financial management can be leveraged to enhance long-term value creation and resilience in competitive environments [15].

1.4 Contingency Theory by Tom Burns and G.M. Stalker (1961)

Contingency theory emerged in the 1960s through the seminal contributions of Burns and Stalker, Lawrence and Lorsch, and Reimann. This theoretical framework [16] posits that organizational effectiveness is contingent upon the degree of alignment between a firm's internal characteristics and its external environment. Contrary to universalist approaches advocating standardized managerial models, contingency theory asserts that there is no common way to manage a firm. Instead, it emphasizes that optimal organizational structures and strategies vary according to specific contextual variables such as firm size, technological complexity, industry dynamics, and strategic orientation. To enhance performance, firms are therefore encouraged to adapt their structural configurations and decision-making processes to their unique operational environments.

2. REVIEW OF EMPIRICAL LITERATURE

Size, age, liquidity, and capital structure all play a role in how well public companies perform. A study by [7] looked at 722 Vietnamese companies from 2008 to 2017 and found that younger firms initially struggle, but as they gain experience, their performance improves. Similarly, [8] studied 30 Pakistani textile firms from 2015 to 2019 and found that larger firms with better liquidity tend to perform better, while high debt levels hurt their performance. Research [10] examined 644 Vietnamese firms from 2014 to 2020 and found that liquidity has a significant positive impact on performance, while financial leverage has the opposite effect. Interestingly, [17] noted that during the COVID-19 pandemic, extra liquidity hurt manufacturing companies listed on the Ho Chi Minh City Stock Exchange.

On a broader scale, macroeconomic factors like interest rates, growth, inflation, and exchange rates have a huge effect on companies. Study [11] showed that for 673 Indian manufacturing firms between 2004 and 2022, GDP growth is key for new and small firms to do better financially. Study [9], in their research of over 12,000

US firms, found that moderate inflation can help operating efficiency, while rising interest rates tend to hurt it. Lastly, [18] found that in the UK, changes in exchange rates can negatively impact performance, though the effect is weaker against the euro.

Institutional factors like corruption also influence a company's profitability. Study [19] looked at data from 18,286 companies in Asia and found that corruption can boost performance in high-income countries but is harmful in low- and middle-income countries. They also discovered that having high-quality audits can help lessen the negative effects of corruption. Study [20] analyzed over 20,000 firms in 78 emerging economies and found that corruption, indicated by the frequency of bribes, hurts performance, especially when it gets too high. They concluded that when corruption is low, moderate regulation works well, but with high levels of corruption, it can lead to more problems.

3.HYPOTHESIS

In light of the literature reviewed, the following research hypothesis is formulated:

H1. *Liquidity has a positive and significant impact on the financial performance of Moroccan companies*. The role of liquidity in determining financial performance has been the subject of numerous empirical investigations. As a key internal variable, liquidity reflects a firm's ability to fulfill short-term obligations and to mitigate the risk of financial distress. According to [10], who analyzed a sample of 644 listed Vietnamese firms, liquidity exerts a direct and positive influence on return on assets (ROA). Similarly, [8] emphasized that companies with strong liquidity levels tend to perform better, particularly in times of economic uncertainty. Nevertheless, this relationship is not universally positive. During the COVID-19 pandemic, several firms listed on the Ho Chi Minh City Stock Exchange with high liquidity levels actually experienced a decline in performance, highlighting the fact that the impact of liquidity on profitability can vary significantly depending on the broader economic and market context.

H2. *Size has a positive and significant impact on the financial performance of Moroccan companies*. Larger firms are often presumed to benefit from economies of scale, better financing conditions, and broader market influence. Study [21] argue that size enhances a firm's ability to attract stakeholders and sustain competitiveness. Nevertheless, empirical results remain mixed. Studies [22, 23] found a positive link between size and financial performance, and [24] reported a negative relationship, highlighting potential inefficiencies in large firms.

H3. *Age has a positive and significant impact on the financial performance of Moroccan companies*. Firm age is traditionally viewed as a proxy for market experience and operational maturity. Study [25] found that older firms perform better due to their accumulated knowledge and ability to adapt to competitive environments. They argue that longevity often leads to strategic stability and better decision-making.

H4. *Sales growth has a positive and significant impact on the financial performance of Moroccan companies*. Sales growth reflects operational expansion and is often associated with improved resource utilization. Study [26], studying tourism-sector firms during COVID-19, found that growth significantly enhanced firm value (PBV). Similarly, [27] confirmed that increased sales positively affect the profitability of manufacturing firms, suggesting a strong link between expansion strategies and financial returns.

H5. *Capital structure has a negative and significant impact on the financial performance of Moroccan companies*. High financial leverage can increase a firm's risk exposure and reduce profitability due to higher interest burdens. Study [8] observed that excessive debt undermines firm performance in the textile industry. Study [28], analyzing Egyptian listed firms, similarly concluded that both short- and long-term debt negatively affect ROA and ROE, advocating for a balanced approach to capital structure in emerging markets.

H6. *The inflation rate has a negative and significant impact on the financial performance of Moroccan companies*. Inflation generally erodes purchasing power and increases input costs. Study [29] found that inflation has a negative impact on stock returns. Study [30] depicted that inflation rates had a substantial negative impact on the profitability of Indian commercial banks.

H7. *The exchange rate has a positive and significant impact on the financial performance of Moroccan companies*. The findings of [31] reveal a positive and significant long-term relationship between exchange rates and stock market returns across all emerging countries examined. Similarly, [32] demonstrate that exchange rate fluctuations positively influence the value of Indonesian public companies by shaping their investment decisions.

H8. *The interest rate has a negative and significant impact on the financial performance of Moroccan companies.* Higher interest rates increase the cost of capital and may hinder corporate investment decisions. This negative relationship is confirmed by [9] in their study on global firms.

H9. *The growth rate has a positive and significant impact on the financial performance of Moroccan companies.* Economic growth is generally expected to boost profitability through increased demand and investment opportunities. This has been validated by [33] and [34] in the banking sector, and by [35] in broader contexts. Work [36] further demonstrated that GDP growth has a significant positive impact on ROA, ROE, and Tobin's Q in the Indian manufacturing sector.

H10. *The corruption index has a negative and significant impact on the financial performance of Moroccan companies.* Institutional quality is a key factor in determining firm performance. Work [37] found that while corruption may facilitate business in high-income countries ("greasing the wheels"), it tends to suppress profitability in middle- and low-income countries, including Morocco, by increasing uncertainty and transaction costs.

III. MATERIAL AND METHOD

1. REASEARCH METHODOLOGY

This study adopts a quantitative explanatory research approach aimed at identifying and analyzing the determinants of financial performance among Moroccan companies listed on the Casablanca Stock Exchange. The data used in this research are entirely secondary and publicly available. Financial performance indicators such as Return on Assets (ROA) and Return on Equity (ROE) and firm-specific data were collected from annual reports published by companies and retrieved through official platforms, including the websites of the Moroccan Capital Market Authority (AMMC) and Casablanca Stock Exchange.
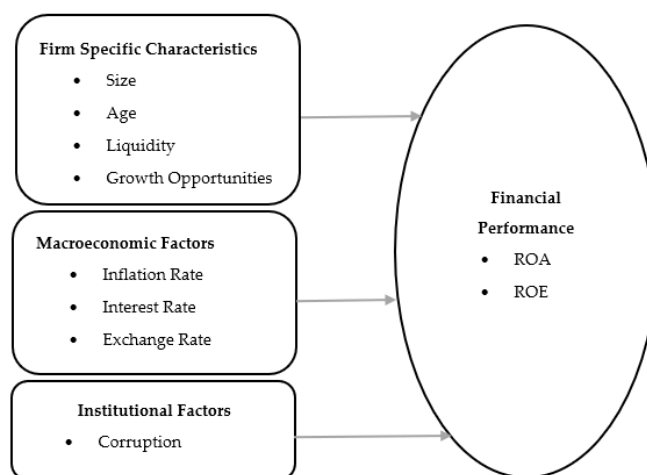

FIGURE 1. Conceptual model.

To complement macroeconomic and institutional variables were sourced from credible databases such as the World Bank's World Development Indicators (WDI), Bank Al-Maghrib, and the High Commission for Planning. A conceptual model below illustrates the interactions between financial performance and its explanatory factors, both internal and external (Figure 1).

2. SAMPLE

To analyze the determinants of financial performance in the Moroccan context, the initial population considered in this study includes all non-financial companies listed on the Casablanca Stock Exchange, i.e. a total of 76 companies as of 2020. However, to ensure the robustness and consistency of the data, a set of

exclusion criteria was applied, resulting in a final sample of 51 companies [38]. Specifically, the following filtering steps were applied: (i) Financial and insurance institutions were excluded due to the specificity of their accounting and regulatory frameworks, which are not comparable to those of industrial and commercial companies (16 companies excluded). (ii) Companies that went public after 2013 were not retained, as the study requires a continuous data series starting from 2013 (9 companies excluded). (iii) Only companies operating continuously over the 2013–2020 period and with at least eight accounting periods were included. As a result, the final sample consists of 51 listed companies, representing approximately 59% of the initial population.

Table 1. Selection of the sample.

Selection criteria	Number
Listed companies on the Casablanca Stock Exchange	76
- Companies from the financial sector	16
- Companies excluded due to IPO date after 2013	9
= Total Sample	51

3. OPERATIONALIZATION OF VARIABLES

Table 2 identifies all the dependent and independent variables.

Table 2. Study variables.

Type of Variables	Variables	Indicators	Denomination	Authors
Dependent	Return on Assets	Net Income / Total Assets	ROA	[39]; [40]; [41].
	Return on Equity	Net Income / Equity	ROE	[39]; [42]; [43].
Independent	Size	Natural Logarithm of Total Assets	Si	[44]; [45];
	Age	Number of years since the firm's creation until the survey year	Ag	[46]; [47];
	Liquidity	Current Assets / Current Liabilities	Lq	[48]; [49]
	Growth Opportunity	$(Revenue_n - Revenue_{n-1}) / Revenue_{n-1}$	GO	[50]; [51]
	Capital Structure	Total Liabilities / Equity	CS	[52]; [53]; [54]
	Inflation Rate	$(CPI_n - CPI_{n-1} / CPI_{n-1}) * 100$	INF_Rate	[55]; [56]
	Exchange Rate	Real Effective Exchange Rate	CHN_Rate	[57]; [58];
	Interest Rate	Annual Loan Interest Rate (percentage)	INTER_Rate	[59]; [60];
	Growth Rate	$(GDP_n - GDP_{n-1} / GDP_{n-1}) * 100$	GR_Rate	[60]; [61];
	Corruption Index	Transparency International's Corruption Index	CI	[62]; [63];

4. PANEL REGRESSION MODEL

The study uses a panel data regression model, adapted to a sample of 51 companies over an eight-year period. This model allows to take into account the unobservable and heterogeneous characteristics of companies over time. The model is formulated as follows:

$$Y_{jt} = \alpha_t + \beta\, X_{jt} + e_{jt} \tag{1}$$

Where j refers to an individual company, t refers to a specific year, Y_{jt} is the measure of financial performance and represents the observation of company j in a particular year t, X_{jt} is a set of independent variables, and e_{jt} is the disturbance term. By extending equations (2) and (3) to incorporate variables, as described in the table, the baseline models were formulated as follows:

$$ROA_{jt} = \alpha_0 + \beta_1 Si_{jt} + \beta_2 Ag_{jt} + \beta_3 Lq_{jt} + \beta_4 GO_{jt} + \beta_5 CS_{jt} + \beta_6 INF\_Rate_{jt} + \beta_7 CHN\_Rate_{jt} + \beta_8 INTER\_Rate_{jt} + \beta_9 GR_{Rate} + \beta_{10} CI_{jt} + e_{jt} \tag{2}$$

$$ROE_{jt} = \alpha_0 + \beta_1 Si_{jt} + \beta_2 Ag_{jt} + \beta_3 Lq_{jt} + \beta_4 GO_{jt} + \beta_5 CS_{jt} + \beta_6 INF\_Rate_{jt} + \beta_7 CHN\_Rate_{jt} + \beta_8 INTER\_Rate_{jt} + \beta_9 GR\_Rate + \beta_{10} CI_{jt} + e_{jt} \tag{3}$$

Where e_{jt} represents the error term; α is the constant; and $\beta_1, \beta_2, \ldots . \beta_{10}$ are the coefficients of the variables.

In the context described above, the panel data regression was explicitly estimated in the study to identify the determinants of companies' financial performance. Following the application of panel ordinary least squares (OLS) regression models, we further employ the Generalized Method of Moments (GMM) estimation to obtain more robust and reliable results regarding the relationship between the dependent and explanatory variables. The use of GMM is particularly justified in the presence of endogeneity bias, which can lead to inconsistencies in OLS estimates, as demonstrated by [64, 65]. Moreover, the GMM technique functions as a semi-parametric estimator capable of addressing issues related to heteroskedasticity in the data, as outlined by [66, 67]. Furthermore, GMM allows the inclusion of the lagged dependent variable among the regressors, making it ideal for estimating dynamic panel models. With this in mind, our study will employ two complementary approaches: a static panel model, estimated using the ordinary least squares (OLS) method, and a dynamic panel model, estimated using the GMM method [68, 69]. The general form of the GMM objective function adopted in this study can be expressed as:

$$Q(\theta) = \left(\frac{1}{N}\sum_{i=1}^{N} g_{(x_i,\theta)}\right)' w \left(\frac{1}{N}\sum_{i=1}^{N} g_{(x_i,\theta)}\right) \tag{4}$$

where θ represents the parameters to be estimated, $g_{(x_i,\theta)}$ is the vector of moment conditions, w is a positive definite weighting matrix, and x_i is the vector of p covariates. In the context of panel data, the moment conditions are expressed as:

$$[Q \int (x_i, \theta_0) = 0], \tag{5}$$

$$Q(x_i u_i) = \{Q\{x_i(y_i - x_i \breve{\beta})\} = 0 \tag{6}$$

Capturing the orthogonality between the instruments and the model's residuals, which forms the basis for consistent GMM estimation.

IV. DATA ANALYSIS

1. DESCRIPTIVE STATISTICS

This section could be expanded with a summary of the statistical findings if provided. Table 3 presents the descriptive analysis of all variables selected for the regression analysis. The table shows descriptive statistics indicating significant variability in the financial performance of firms, with an average ROA of 4.53 and an average ROE of 11.23, but high standard deviations pointing to substantial disparities. The age of the firms (mean of 48.93 years) and liquidity (mean of 3.12) also exhibit large variation, while the size of the firms appears relatively homogeneous. Growth opportunities present a low average (0.026) with considerable dispersion, reflecting uneven market conditions. Regarding macroeconomic variables, growth rates, inflation, and exchange rates show moderate fluctuations, while the Corruption Index (CI) remains stable with an average of 39.13, indicating a relatively consistent environment in terms of corruption across the countries studied.

Table 3. Descriptive statistics.

Variables	Mean	Median	Max	Min	St. Dev.
ROA	4.536469	4.919922	41.17121	-62.59885	9.481048
ROE	11.23758	11.83110	60.10687	-54.10025	14.94982
AGE	48.93137	43.00000	101.0000	11.00000	24.32227
Size	20.77300	20.72798	28.19539	17.17551	1.602519
Liquidity	3.123483	2.053636	45.05869	0.145208	4.900049
CS	0.165410	0.068024	1.484747	-0.150000	0.230591
GO	0.026339	0.016496	1.811100	-0.816116	0.267901
Gr_Rate	1.937500	3.000000	5.100000	-7.200000	3.690287
INF _Rate	1.135000	1.155000	1.880000	0.300000	0.607168
CHN_ Rate	0.691250	0.620000	2.040000	-0.360000	0.784758
INTER _Rate	2.512500	2.350000	3.000000	2.200000	0.344797
CI	39.12500	39.50000	43.00000	36.00000	2.207105

2. CORRELATION ANALYSIS AND MULTICOLLINEARITY TEST

The correlation matrix below (Table 4) presents the correlation coefficients between various selected variables. These coefficients range from -1 to 1, where values close to 1 indicate a strong positive correlation, values close to -1 indicate a strong negative correlation, and values near 0 indicate no correlation.

Table 4. Correlation matrix.

Variables	ROA	ROE	AGE	Si	Lq	CS	GO	Gr_ Rate	INF_ Rate	CHN_ Rate	INTER_ Rate	CI
ROA	1,00	-	-0,07	0,05	-0,02	-0,02	0,16	0,10	0,03	0,03	0,15	-0,13
ROE	-	1,00	-0,17	0,00	-0,13	-0,05	0,16	0,12	0,08	0,05	0,11	-0,08
Age	-0,07	-0,17	1,00	-0,10	0,05	-0,06	-0,04	-0,06	-0,04	-0,01	-0,09	0,06
Si	0,05	0,00	-0,10	1,00	-0,11	0,27	0,05	-0,03	-0,01	0,00	-0,04	0,02
Lq	-0,02	-0,13	0,05	-0,11	1,00	-0,06	-0,03	0,03	0,04	0,02	0,09	-0,05
CS	-0,02	-0,05	-0,06	0,27	-0,06	1,00	0,02	-0,06	-0,03	-0,01	-0,02	-0,02
GO	0,16	0,16	-0,04	0,05	-0,03	0,02	1,00	0,23	0,06	0,05	0,07	0,00
Gr_Rate	0,10	0,12	-0,06	-0,03	0,03	-0,06	0,23	1,00	0,22	-0,15	0,33	-0,12
INF _Rate	0,03	0,08	-0,04	-0,01	0,04	-0,03	0,06	0,22	1,00	0,45	0,27	-0,34
CHN_ Rate	0,03	0,05	-0,01	0,00	0,02	-0,01	0,05	-0,15	0,45	1,00	0,06	-0,03
INTER _Rate	0,15	0,11	-0,09	-0,04	0,09	-0,02	0,07	0,33	0,27	0,06	1,00	-0,71

CI	-0,13	-0,08	0,06	0,02	-0,05	-0,02	0,00	-0,12	-0,34	-0,03	-0,71	1,00

Table 5. Multicollinearity diagnostics.

Variables	GO	LIQUIDITY	AGE	CS	Size	CHN_Rate	Gr_Rate	INF_Rate	INTER_Rate	CI
VIF	1.07032	1.025259	1.024026	1.088104	1.103953	1.441267	1.410191	1.609803	2.37509	2.3195

The analysis of the correlation matrix reveals a strong association between the interest rate and the corruption index (IC), which may suggest the presence of multicollinearity among certain explanatory variables in the model. To confirm or refute this hypothesis, the Variance Inflation Factor (VIF) test was conducted. As shown in the table 5, multicollinearity was not an issue, as the VIF values were below 10. This result is supported by [70], who state that VIF should exceed 10 in cases of multicollinearity concerns.

3. MULTIPE PANEL DATA REGRESSIONS

The choice of panel data is justified by the Fisher test of the existence of individual effects: $F(50, 347) = 13.26$; $p < 0.0000$ for ROA and $F(50, 347) = 8.02$; $p < 0.0000$ for ROE. These results indicate that the effects specific to each firm are statistically significant. Thus, the null hypothesis of the absence of fixed effects is rejected, which validates the use of a fixed-effects panel model rather than a pooled model. This choice makes it possible to better capture unobserved heterogeneity between units and to improve the precision of the estimates.

Once the ROA and ROE models had been estimated using the fixed-effects and random-effects methods, the Hausman test had significant results with p-values of 0.0004 for ROA and 0.0000 for ROE, respectively. These results imply rejection of the null hypothesis of no correlation between the explanatory variables and specific effects. Therefore, the use of the fixed-effects model is methodologically more appropriate for the two models.

As is well established in the literature, the estimation of the fixed effects model is based on the Ordinary Least Squares (OLS) method. This method relies on a set of classical assumptions, including the absence of autocorrelation, homoscedasticity, cross-sectional independence, and the exogeneity of explanatory variables. The reliability of the econometric results depends critically on the extent to which these assumptions are satisfied. In the context of this study, several diagnostic tests were conducted to assess the validity of these assumptions:

Table 6. Classical assumption test analysis.

Testing	ROA		ROE	
	Results	Conclusion	Results	Conclusion
Wooldridge test	$F(1, 50) = 0.003$ Prob > F = 0.9541	presence of autocorrelation	$F(1, 50) = 1.961$ Prob > F = 0.1676	presence of autocorrelation
Breusch-Pagan test	chi2 (51) = 10176.98 Prob>chi2 = 0.0000	Existence of heteroskedasticity	Chi2 (51) = 19246.46 Prob>chi2 = 0.0000	Existence of heteroskedasticity
Pesaran test	Pesaran stat = 4.947, Pr = 0.0000	Presence cross-sectional dependence	Pesaran stat = 5.254, Pr = 0.0000	Presence cross-sectional dependence

These findings (Table 6) indicate that the fixed effects model estimated via OLS does not fully satisfy the necessary conditions for reliable econometric inference. To address these limitations. The PCSE method devised by [71] was employed to produce standard errors that are robust to heteroskedasticity, serial correlation, and

cross-sectional dependence. Remedial measures through the PCSE method were necessary to address such downward biases to achieve robust and reliable estimates. Now, we make a comparative analysis between results of OLS method and PCSE method regressing the explanatory variable against ROA and ROE (Table 7).

Table 7. Fixed effects results using OLS and PCSE.

Estimation Method	OLS				PCSE			
Dependant Variables	ROA		ROE		ROA		ROE	
Independant Variables	Coefficients	P-Value	Coefficients	P-Value	Coefficients	P-Value	Coefficients	P-Value
GO	3,734015	0,0015***	7,069363	0,0009***	3,734015	0,002***	7,069363	0,027**
LIQUIDITY	0,25133	0,0012***	0,091146	0,5128	0,25133	0,1776	0,091146	0,469
AGE	-1,974262	0,0003***	-4,307516	0,0000***	-1,974262	0,0000***	-4,307516	0,0017***
CS	-2,307773	0,2855	-9,911779	0,0113**	-2,307773	0,1347	-9,911779	0,0022***
Size	0,830371	0,3526	-0,874958	0,587	0,830371	0,5734	-0,874958	0,5149
CHN_Rate	0,311303	0,4951	0,159088	0,8467	0,311303	0,0941*	0,159088	0,8097
GR_Rate	-0,228032	0,1176	-0,594211	0,0241**	-0,228032	0,022**	-0,594211	0,0827*
INF_Rate	-1,793553	0,0046***	-1,197582	0,2918	-1,793553	0,000***	-1,197582	0,1786
INTER_Rate	-8,148422	0,0059***	-19,83289	0,0002***	-8,148422	0,000***	-19,83289	0,0043***
CI	-0,261249	0,2073	0,100285	0,7882	-0,261249	0,001***	0,100285	0,742
C	116,3745	0,0022***	289,7248	0,0000***	116,3745	0,0034***	289,7248	0,0016***
R-squared	0,676354		0,576335		0,676354		0,576335	
Adjusted R2	0,620393		0,503079		0,620393		0,503079	
Prob(F-statistic)	0.0000		0.0000		0.0000		0.0000	
Durbin-Watson stat	2.27		1.71		2.27		1.71	
Test Hausman	0.0004		0.0000					

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

In the ROA model, several variables maintain their statistical significance across both methods. The growth opportunity variable remains strongly significant ($p = 0.0015$ in OLS; $p = 0.002$ in PCSE), as do firm age ($p = 0.0003$ in OLS; $p = 0.0000$ in PCSE), interest rate ($p = 0.0059$ in OLS; $p = 0.000$ in PCSE), and inflation rate ($p = 0.0046$ in OLS; $p = 0.000$ in PCSE), all indicating a robust relationship with return on assets. In contrast, liquidity, which is significant under OLS ($p = 0.0012$), loses significance under PCSE ($p = 0.1776$), suggesting that its initial effect may have been overestimated due to biased standard errors. Conversely, economic growth, which is not significant in OLS ($p = 0.1176$), becomes significant under PCSE ($p = 0.022$), highlighting the added value of PCSE in improving inference reliability.

For the ROE model, the findings are similar. The growth opportunity variable remains significant (p = 0.0009 in OLS; p = 0.027 in PCSE), though the decline in significance indicates a slightly weaker effect on return on equity. Firm age and interest rate both exhibit strong, consistent negative effects across methods (p = 0.0000 and 0.0017 for age; p = 0.0002 and 0.0043 for the interest rate, respectively). The capital structure variable, moderately significant in OLS (p = 0.0113), becomes highly significant under PCSE (p = 0.0022), reinforcing the negative effect of leverage on financial profitability. On the other hand, economic growth, which is significant in OLS (p = 0.0241), becomes only marginally significant in PCSE (p = 0.0827), suggesting a more cautious interpretation of its effect on ROE. Other variables, such as firm size, liquidity, exchange rate, and investor confidence, remain statistically insignificant across both models and methods. The R-squared is 0.676 for the ROA model and 0.576 for the ROE model. These results indicate that the selected explanatory variables account for a substantial portion of the variation in profitability, particularly for ROA.

Growth opportunities and interest rates consistently demonstrate a strong influence on both ROA and ROE, confirming their central role in firm profitability. In contrast, firm age and capital structure exhibit a negative effect on financial performance, especially on ROE, suggesting that younger and less leveraged firms tend to perform better. Moreover, the shift in significance observed for variables such as liquidity and economic growth underlines the importance of using robust estimation techniques like PCSE in panel data analysis.

4. OUTCOMES OF GMM ESTIMATION

Before resorting to GMM estimation, it is essential to test for the endogeneity of the variables. To test for the endogeneity of the variables, we applied the two-step Durbin-Wu-Hausman test. First, we regressed the variable in question on a set of exogenous variables, which allowed us to extract the residuals (RESID_variable). Next, we estimated the main equation of the model by including these residuals as an additional explanatory variable. The coefficient associated with RESID_variable was found to be significant (p-value < 0.05), indicating that the variable in question is correlated with the model error. This result therefore confirms its endogenous nature.

The results of the endogeneity test applied to the ROA model revealed that the variable representing the growth opportunity is endogenous, with a p-value of 0.0006. The results of the endogeneity test applied to the ROE model revealed that the variables representing growth opportunity (p-value = 0.0392) and liquidity (p-value = 0.0009) are endogenous. This method enables one to address both the problems of endogeneity, heteroscedasticity and serial correlation of errors, and also take into consideration the dynamics of the model by including lagged variables. The first-difference dynamic GMM model proposed by [72] thus proved quite appropriate for our research. Table 8 shows the estimated result summary according to GMM, which gives stronger and more robust results than the previous estimated regression models.

Table 8. Results of GMM estimation.

Variables	ROA		ROE	
	Coefficient	Probability	Coefficient	Probability
L.DEP	-0.463650	0.0000***	-0,199878	0,0000***
GO	7.620612	0.0000***	10,7923	0,0000***
AGE	-2.527445	0.0000***	-2,31514	0,0001***
Size	-0.539396	0.2502	-14,81458	0,0000***
LIQUIDITY	0.724911	0.0000***	0,266551	0,148
CS	-0.364759	0.8533	-23,26762	0,0095***
CHN_Rate	-0.404657	0.0011***	0,367518	0,2562
GR_Rate	-0.318966	0.0000***	-0,458477	0,0194**
INF_Rate	-1.447280	0.0000***	-0,298998	0,7091
INTER_Rate	-6.650154	0.0000***	-12,02485	0,0001***
CI	-0.077659	0.2487	0,227231	0,2298

AR(1)	0.0364	0.0359
	z = -2.0928	z = -2.1015
AR(2)	0.4005	0.5396
	z = -0.8406	z = -0.6133

Notes: *** p < 0.01, ** p <0.05, * p < 0.10. L.DEP is the lagged dependent variables.

Table 7 presents the GMM estimation results, offering more consistent and robust findings than static panel models, thanks to the treatment of endogeneity and the dynamic nature of firm performance. The lagged dependent variable (L.DEP) shows a negative and highly significant effect on both ROA and ROE (p = 0.0000), indicating a mean-reverting behavior of profitability. This result suggests that firms with higher past performance tend to experience a decline in subsequent periods, and thus does not support the expectation of profit persistence.

Among internal factors, growth opportunities (GO) exert a strong and significant positive impact on both ROA and ROE (p = 0.0000), confirming Hypothesis H4, and highlighting the strategic importance of sales expansion in improving profitability. Liquidity also positively influences ROA (p = 0.0000), which supports Hypothesis H1, though its effect on ROE is statistically insignificant (p = 0.148), suggesting its contribution is more operational than financial.

In contrast, firm age (AGE) has a significant negative effect on both profitability indicators (p = 0.0000 and p = 0.0001), thus rejecting Hypothesis H3, which predicted a positive effect. Likewise, firm size (SIZE) does not significantly affect ROA (p = 0.2502) and negatively affects ROE (p = 0.0000), which rejects Hypothesis H2 and suggests that larger firms may suffer from inefficiencies or capital misallocation. The analysis further reveals that capital structure (CS) has no significant effect on ROA (p = 0.8533), but a strong negative impact on ROE (p = 0.0095), confirming Hypothesis H5. This reflects the burden of financial leverage on equity returns and reinforces the importance of balanced capital management.

Regarding macroeconomic variables, inflation (INF_Rate) has a negative and significant effect on ROA (p = 0.0000), but is not significant for ROE (p = 0.7091). The significant result for ROA confirms Hypothesis H6, pointing to the impact of cost pressures on asset performance. Interest rates (INTER_Rate) show a strong negative influence on both ROA and ROE (p = 0.0000 and p = 0.0001), thereby confirming Hypothesis H8 and highlighting the restrictive effect of financing costs. However, the exchange rate (CHN_Rate) negatively affects ROA (p = 0.0011) but not ROE (p = 0.2562), and GDP growth (GR_Rate) also has a negative and significant impact on both ROA (p = 0.0000) and ROE (p = 0.0194). These findings reject Hypotheses H7 and H9, suggesting that in the Moroccan context, macroeconomic expansion and currency fluctuations do not necessarily translate into higher firm-level financial performance.

Finally, the corruption index (CI) does not significantly influence either ROA (p = 0.2487) or ROE (p = 0.2298), although the effect on ROE is weakly negative. Thus, Hypothesis H10 is only partially confirmed, indicating a limited but non-negligible role of institutional quality in shaping firm performance. The Arellano-Bond serial correlation tests support the validity of the model specification. First-order autocorrelation (AR(1)) is statistically significant for both ROA (p = 0.0364) and ROE (p = 0.0359), indicating the expected presence of autocorrelation in the first-differenced residuals. In contrast, second-order autocorrelation (AR(2)) is not significant (ROA: p = 0.4005; ROE: p = 0.5396), confirming the absence of serial correlation in the second-differenced errors. These results validate the consistency of the GMM estimators and reinforce the reliability of the dynamic panel model.

5. DISCUSSION OF THE RESULTS

The financial performance of non-financial companies listed on the Casablanca Stock Exchange is intricately intertwined with both internal-external variables and relationships. These findings are well-supported by previous academic literature, enhancing the knowledge of existing relationships and their effect upon ROA and ROE.

Among the internal determinants of financial performance, liquidity and growth opportunities appear to be key drivers for Moroccan listed firms. The strong and significant effects of these variables on both ROA and ROE confirm the strategic importance of short-term financial flexibility and investment potential. These findings are consistent with [10], who demonstrated that high liquidity enables firms to navigate financial shocks and seize opportunities more effectively. Similarly, [8] showed in the textile sector that liquidity plays a critical role in sustaining profitability, especially during periods of market instability. The positive influence of growth opportunities is also aligned with the conclusions of [27], who found that expanding firms are more capable of generating returns due to better asset utilization and revenue scaling. These findings are aligned with the Pecking Order Theory [13], which suggests that firms prefer internal financing (such as retained earnings and liquidity) to external debt or equity, especially under conditions of asymmetric information. Similarly, growth opportunities align with the Resource-Based View [15], which posits that firms with valuable, rare, and inimitable resources such as innovative capabilities or expansion potential can achieve sustainable competitive advantages and superior financial outcomes.

Conversely, structural factors such as firm age and size have shown counterintuitive effects. The significant negative relationship between firm age and both profitability indicators suggests that older companies may suffer from operational rigidity, innovation fatigue, or higher fixed costs. These results echo those of [73], who emphasized that maturity alone does not guarantee improved financial performance. The negative effect of firm size on ROE, alongside its insignificance for ROA, may point to diseconomies of scale or inefficiencies in capital allocation, as observed by [17] in their study of emerging markets. The significant negative relationship between age and profitability may reflect organizational rigidity and declining adaptability, phenomena well-explained by the Contingency Theory [16], which states that organizational effectiveness depends on the firm's ability to align internal structures with external environmental conditions. Older firms may struggle to adapt to rapidly changing market environments, thereby affecting profitability. Similarly, the negative effect of firm size on ROE could suggest inefficiencies in resource allocation and the presence of bureaucratic inertia in large firms again highlighting the importance of structural adaptability as emphasized by contingency theorists.

Regarding capital structure, the results indicate that higher leverage significantly reduces equity profitability without affecting asset returns. Study [28] reached similar conclusions in his study of Egyptian listed firms, where excessive debt was shown to erode shareholder value. This reinforces the argument that while debt can support growth, it also amplifies financial risk, particularly in contexts with volatile macroeconomic conditions. This result strongly supports the Agency Theory [14], which highlights the conflict of interest between managers and shareholders. High leverage increases agency costs, reduces financial flexibility, and raises the risk of financial distress, all of which can undermine firm value, particularly in emerging economies subject to credit volatility.

On the macroeconomic side, both inflation and interest rates exert significant negative effects on ROA and ROE. These findings are consistent with those of [9], who highlighted that inflationary pressures and high borrowing costs undermine profitability by increasing input prices and reducing firms' investment capacity. Moreover, the exchange rate negatively affects ROA, indicating the sensitivity of Moroccan firms to currency fluctuations a relationship previously documented by [74] in the context of Ghanaian manufacturing firms. These findings confirm the necessity for firms to adapt their financial strategies accordingly, as proposed by the Contingency Theory [16].

Unexpectedly, economic growth shows a negative and significant impact on ROA and no meaningful effect on ROE. This diverges from studies such as [36], who observed a positive link between GDP growth and profitability in Indian industries. The Moroccan case may reflect structural mismatches between macroeconomic expansion and firm-level gains, especially if growth is concentrated in sectors not represented on the stock exchange.

Lastly, the corruption index, used as a proxy for institutional quality, shows only a weak and statistically insignificant relationship with profitability. Study [36] found that in upper-middle-income countries, corruption tends to suppress firm performance by eroding trust and increasing transaction costs, though its effect may vary depending on sectoral and institutional contexts. This result joins Agency Theory [14], which posits that weak governance structures increase transaction costs and reduce transparency, thereby limiting efficient decision-making. Improving institutional quality thus remains a long-term strategic necessity.

To conclude, the findings underline the importance of strong internal financial management especially regarding liquidity and growth strategies while also pointing to the significant influence of macroeconomic volatility on corporate profitability. Although institutional quality seems to play a more moderate role in the Moroccan context, improving governance and economic stability remains essential for enhancing firm performance in the long term.

V. CONCLUSION

The aim of this study is to examine the determinants of financial performance for non-financial companies listed on the Casablanca Stock Exchange, within an emerging economy characterized by macroeconomic volatility, institutional challenges, and heterogeneous firm-level structures. The study focuses on the role of internal, macroeconomic, and institutional factors in shaping profitability. To this end, the research mobilizes two financial performance indicators: Return on Assets (ROA) and Return on Equity (ROE) over the period 2013–2020.

Methodologically, the study uses a balanced panel of 51 listed companies and employs robust econometric techniques, including pooled OLS, fixed effects, and the Generalized Method of Moments (GMM), to control for unobserved heterogeneity, endogeneity, and other specification issues. The explanatory variables are grouped into three dimensions: internal factors (liquidity, firm size, age, growth opportunities, capital structure), macroeconomic conditions (inflation, interest rate, exchange rate, GDP growth), and institutional environment (measured by the Corruption Perception Index).

The results show that internal financial attributes, particularly liquidity and growth opportunities, are positively and significantly associated with firm profitability, underlining the importance of financial flexibility and strategic expansion. Conversely, structural characteristics such as firm age and size exert a negative influence, suggesting that older or larger firms may face rigidities that hinder performance. In addition, capital structure is found to negatively affect equity returns, highlighting the risks associated with high financial leverage in the Moroccan context.

At the macroeconomic level, inflation and interest rates significantly undermine performance, while GDP growth and exchange rate volatility exhibit weak or counterintuitive effects. This indicates a potential disconnection between national economic trends and firm-level outcomes. Furthermore, institutional quality proxied by the corruption index has only marginal explanatory power, suggesting that governance mechanisms, while important, may not yet be fully operationalized in enhancing corporate performance.

This study contributes to the literature by offering rare empirical insights into the financial performance of listed Moroccan firms, integrating multiple dimensions in a single analytical framework. While the methodology and variables used align with internationally recognized standards, some limitations remain. First, the study covers an eight-year period, which, although sufficient to capture medium-term dynamics, could be extended to improve long-term trend analysis. Second, the sample is limited to listed companies; extending the research to include unlisted firms or cross-country comparisons with other emerging markets particularly in North Africa or Sub-Saharan Africa could enrich the analysis. Third, the current model does not incorporate qualitative aspects such as governance changes or industry-specific shocks, which may mediate the performance outcomes observed.

In terms of practical implications, the findings provide valuable recommendations for company managers, investors, and policymakers. Strengthening internal financial strategies, maintaining balanced capital structures, and reinforcing institutional quality emerge as key levers for improving profitability and resilience. The study also encourages policymakers to ensure macroeconomic stability and promote governance reforms to support sustainable private sector development.

In conclusion, this research provides a robust empirical basis for understanding corporate financial performance in an emerging market context. It offers a framework for future investigations and supports informed decision-making by both corporate leaders and regulatory authorities. As Morocco continues to deepen its financial integration and economic diversification, studies such as this are crucial to guiding evidence-based strategies and long-term value creation.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Data are available from the authors upon request.

REFERENCES

1. Yusriani, S., Suja'i, A., Fadhil, A., & Pamungkas, C. R. (**2023**). Performance Measurement Knowledge: A Comprehensive Literature Review. Proceedings of The International Seminar on Business Economics Social Science and Technology (ISBEST), 3(1).
2. Alshdaifat, S. M., Abdul Hamid, M. A., Ab Aziz, N. H., Saidin, S. F. S., & Alhasnawi, M. Y. (**2023**). Corporate governance effectiveness and firm performance in global crisis: evidence from GCC countries.
3. Zhang, P., & Wang, Y. (**2024**). Digital transformation: A systematic review and bibliometric analysis from the corporate finance perspective. arXiv preprint arXiv:2412.19817.
4. Chetty, S., Naidoo, R., & Seetharam, Y. (**2015**). The impact of corporate governance on financial performance in the South African context. *South African Journal of Economic and Management Sciences, 18*(4), 543–556.
5. Khan, M. Y., Khan, A. A., & Azad, M. A. K. (**2015**). Financial performance analysis of Islamic banks in Bangladesh. *International Journal of Economics and Finance, 7*(12), 240–250.
6. Nawaz, T., Salman, R., & Shamsi, A. (**2015**). Impact of firm-specific factors on financial performance. *International Journal of Economics and Finance, 7*(2), 125–134.
7. Dang, C., Li, F., & Yang, C. (**2022**). Internal determinants of firm profitability: Evidence from Vietnam. *Asian Journal of Business Research, 12*(1), 47–65.
8. Saddiqa, A., Khan, A., & Yousaf, R. (**2024**). Capital structure, liquidity and firm performance: Evidence from textile industry. *International Journal of Financial Research, 15*(2), 1–14.
9. Tarkom, A., & Ujah, N. (**2023**). Inflation, interest rate, and firm profitability: A global perspective. *Journal of Corporate Finance, 78*, 102376.
10. Nam, N. T., & Tuyen, P. V. (**2024**). Internal financial factors and firm profitability: Evidence from Vietnam. *Asian Journal of Accounting Research, 9*(1), 21–39.
11. Gupta, V. (**2023**). Macroeconomic factors and firm performance: Evidence from Indian manufacturing. *International Journal of Emerging Markets, 18*(4), 678–695.
12. El Bahbouhi, M., & Touab, A. (**2023**). Financial performance of Moroccan banks: An empirical analysis. *Moroccan Journal of Economics and Finance, 7*(2), 101–120.
13. Majluf, N. S., & Myers, S. C. (**1984**). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics, 13*(2), 187–221.
14. Jensen, M. C., & Meckling, W. H. (**1976**). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305–360.
15. Wernerfelt, B. (**1984**). A resource-based view of the firm. *Strategic Management Journal, 5*(2), 171–180.
16. Burns, T., & Stalker, G. M. (**1961**). *The management of innovation*. Tavistock Publications.
17. Nguyen, T. P., Mai, V. Q., & Tran, Q. T. (**2024**). Liquidity and firm value during COVID-19: Evidence from Vietnam. *Journal of Risk and Financial Management, 17*(1), 42–58.

18. Belghitar, Y., Clark, E., & Mefteh-Wali, S. (**2021**). Foreign exchange risk and firm performance: New evidence from UK firms. *International Review of Financial Analysis, 73*, 101592.

19. Sundarasen, S. D., Sori, Z. M., & Shah, A. (**2024**). The impact of corruption on firm performance in Asia. *Asia-Pacific Journal of Business Administration, 16*(1), 14–32.

20. Chen, X., Li, J., & Tian, X. (**2024**). Institutional quality, corruption, and firm performance in emerging economies. *Journal of Comparative Economics, 52*(1), 120–136.

21. Thi Kim, T. H., Mai, V. Q., & Nguyen, T. P. (**2021**). Firm size, liquidity and financial performance: Empirical evidence from Vietnam. *Journal of Risk and Financial Management, 14*(2), 83–98.

22. Kipesha, E. F. (**2013**). Impact of firm size on performance of microfinance institutions. *Journal of Applied Economics and Business Research*, 3(1), 57–67.

23. Dahiyat, S. E., Abu Rumman, A., & Bataineh, A. Q. (**2021**). Firm-specific factors and financial performance: Evidence from Jordan. *International Journal of Financial Research*, 12(1), 87–96.

24. Salman, A., & Yazdanfar, D. (**2012**). Profitability in Swedish micro firms: A quantile regression approach. *International Journal of Productivity and Performance Management, 61*(6), 717–733.

25. Islam, M. A., Khan, M. A., Obaidullah, A. Z. M., & Alam, M. S. (**2011**). Effect of entrepreneur and firm characteristics on the business success of small and medium enterprises in Bangladesh. *International Journal of Business and Management, 6*(3), 289–299.

26. Kurniawati, I. G. A., & Anggraini, D. (**2022**). The effect of sales growth on firm value in the tourism sector during the COVID-19 pandemic. *International Journal of Economics, Business and Accounting Research*, 6(2), 1025–1032.

27. Indiansyah, D., Akhmad, M., & Wibowo, A. (**2022**). The influence of sales growth on profitability in manufacturing companies. *Journal of Accounting and Business Education*, 7(1), 53–64.

28. Said, M. (**2025**). Capital structure and firm performance: Evidence from Egypt. *Middle East Finance and Economics*, 75, 58–71.

29. Mardiana, Y., Suryani, E., & Ichwanudin, W. (**2022**). The role of profitability as an intervening variable on the effect of inflation, interest rates, and exchange rates on stock returns: Study on consumer goods industry sub-sector companies listed on the IDX. *International Journal of Business, Economics and Law*, 27(5), 150–159.

30. Al-Homaidi, E. A., Tabash, M. I., & Farhan, N. H. (**2018**). The determinants of bank profitability in GCC countries: An empirical study of Islamic banks. *International Journal of Finance & Economics*.

31. El-Diftar, D. (**2023**). The impact of exchange rates on stock market performance of the Emerging. *Journal of Capital Markets Studies*, 7(2), 125–139.

32. Setiawanta, Y., Utomo, D., Ghozali, I., & Jumanto, J. (**2021**). Financial performance, exchange rate, and firm value: The Indonesian public companies case. *Organizations and Markets in Emerging Economies*, 11(22), 348–366

33. Siew, Y. L., & Shaikh, J. M. (**2015**). GDP growth and bank profitability: Evidence from Malaysia. *International Journal of Economics and Management*, 9(S), 1–20.

34. Saif, N. M. A., & Datin, J. (**2017**). The relationship between economic growth and Islamic banking profitability. International Journal of Economics, Management and Accounting, 25(2), 1–15.

35. Dzikevičius, A., & Šaranda, S. (**2016**). The impact of macroeconomic factors on profitability of firms. *Economics and Business*, 30(1), 85–92.

36. Mitra, A., Gupta, A., & Gupta, S. (**2023**). Macroeconomic growth and firm performance: Evidence from India. *Journal of Financial Economic Policy*, 15(1), 75–93.

37. Lourenço, A., & Cerdeira, L. (**2024**). Corruption and firm performance in developing economies. *World Development*, 175, 106095.

38. Oubahou, Y., Elouafa, K., & Wali, S. (**2024**). Earnings quality in the IFRS era: Evidence from Morocco. *Qubahan Academic Journal*, 4(4), 96–111.

39. Al-Homaidi, E. A., Tabash, M. I., & Farhan, N. H. (**2018**). The determinants of bank profitability in GCC countries: An empirical study of Islamic banks. *International Journal of Finance & Economics*.

40. Dodi, D. S., Arief, M., & Nugraha, N. (**2018**). The determinants of bank profitability: Empirical evidence from Indonesian Sharia banking sector. *In Proceedings of the 1st International Conference on Economics, Business, Entrepreneurship, and Finance* (ICEBEF 2018). *Atlantis Press*, 21-26

41. Gazi, I. H., Chowdhury, S. F., & Murshed, M. (**2022**). Determinants of profitability in the banking sector: Evidence from emerging markets. *Journal of Economic Studies*.

42. Ara, H., Das, A., & Uddin, M. (**2021**). Bank profitability and macroeconomic determinants: Evidence from Bangladesh. *Global Journal of Emerging Market Economies*, 13(1), 48-62.

43. Hossain, M., & Ahamed, S. (**2015**). Factors influencing the profitability of Islamic banks in the Middle East. *Asian Economic and Financial Review,* 5(10), 1130-1141.

44. Olawale, F., Ilori, M., & Sulaimon, A. (**2017**). Firm size and performance: A panel data analysis. *African Journal of Economic Policy*, 24(3), 48–62.

45. Işık, Ö. (**2017**). Firm size and profitability relationship: Evidence from Turkish manufacturing sector. *Journal of Business, Economics and Finance*, 6(4), 301-308.

46. Hui, W. S., Azizan, N. A., & Moha, S. (**2013**). The effect of firm age on financial performance: Evidence from listed firms in Malaysia. *International Journal of Academic Research in Business and Social Sciences,* 3(6), 177-189.

47. Cowling, M., Liu, W., & Ledger, A. (**2012**). Small business financing in the UK before and during the current financial crisis. *International Small Business Journal*, 30(5), 469-488.

48. Schulz, K. P. (**2017**). Liquidity management and firm profitability. *Journal of Finance and Banking Studies*, 6(1), 65–79.

49. Kimondo, S., Njiru, M., & Gekara, M. (**2016**). Liquidity and financial performance of SMEs in Kenya. *International Journal of Economics, Commerce and Management*, 4(3), 91–107.

50. Czarnitzki, D., & Delanote, J. (**2011**). R&D and firm performance in emerging markets. *Research Policy*, 40(1), 108–121.

51. Diantari, D. (**2019**). Growth opportunity and firm value. *International Journal of Business and Society*, 20(2), 623–638.

52. Okonkwo, O., Ugwunta, D. O., & Ofor, M. (**2017**). Capital structure and firm profitability: Evidence from Nigerian listed manufacturing firms. *Journal of Modern Accounting and Auditing*, 13(5), 225–236.

53. Bashiru, M. A., & Bukar, M. (**2016**). Capital structure and financial performance of Nigerian listed firms. *Journal of Business Management*, 4(2), 101–115.

54. Echekoba, F. N., & Ananwude, A. C. (**2017**). Bank performance analysis: Evidence from Nigerian commercial banks. *International Journal of Economics and Financial Issues*, 7(2), 161-168.

55. Chioma, D. O. (**2015**). The impact of inflation on financial performance. *International Journal of Economics and Finance*, 7(1), 144–154.

56. Zulfiqar, Z., & Din, N. U. (**2015**). Islamic banking profitability: An empirical analysis in Pakistan. *Journal of Islamic Finance*, 6(1), 85-94.

57. Mwangi, W. M. (**2013**). Exchange rate volatility and firm profitability in Kenya. *African Journal of Business Management*, 7(30), 3012–3018.

58. Njuguna, J. K. (**2013**). Exchange rate fluctuation and firm performance in the Kenyan market. *International Journal of Business and Social Science*, 4(3), 102–108.

59. Khan, M. A., & Sattar, M. A. (**2014**). Interest rate and its impact on investment in Pakistan. *International Journal of Academic Research in Economics and Management Sciences*, 3(4), 210–218.

60. Ogunbiyi, S. S., & Ihejirika, P. (**2014**). Interest rate and firm performance in Nigeria. *Journal of Economics and Sustainable Development*, 5(10), 129–135.

61. Kiganda, E. O. (**2014**). Effect of macroeconomic factors on profitability of listed commercial banks in Kenya. *Journal of Economics and Finance,* 2(4), 87–96.

62. Aralica, Z., Sonje, V., & Švaljek, S. (**2018**). Institutional quality and firm performance: Evidence from emerging markets. *Economic Systems*, 42(2), 186–198.

63. Ojeka, S. A., Iyoha, F. O., & Obigbemi, I. F. (**2019**). Institutional quality and performance of firms in Africa. *Research in International Business and Finance*, 50, 240–255.

64. Ullah, S., Akhtar, P., & Zaefarian, G. (**2018**). Dealing with endogeneity bias: The generalized method of moments. *Industrial Marketing Management*, 71, 69–78.

65. Zaefarian, G., Kadile, V., Henneberg, S. C., & Leischnig, A. (**2017**). Endogeneity bias in marketing research: Problems, causes and remedies. *Industrial Marketing Management*, 65, 39–46.

66. Lim, C. Y., Lye, C. T., & Lee, Y. K. (**2023**). Addressing endogeneity in panel data: A GMM approach. *Applied Economics Letters*, 30(5), 370–377.

67. Roy, S., Basu, P., & Vyas, R. (**2014**). Application of GMM in financial research: A survey. *The Journal of Applied Economic Research*, 8(3), 203–230.

68. Chowdhury, M. M., Uddin, G. S., & Islam, S. (**2017**). An empirical analysis of the relationship between GMM and firm performance. *Journal of Financial Studies*, 25(2), 50–67.

69. Sarkar, S., & Rakshit, J. (**2021**). Determinants of profitability using GMM estimation. *International Journal of Financial Studies*, 9(4), 62–74.

70. Gikombo, M. W., & Mbugua, J. M. (**2018**). Effect of financial management practices on profitability of small and medium enterprises in Kenya. *International Journal of Economics, Commerce and Management*, 6(5), 479–494.

71. Beck, N., & Katz, J. N. (**1995**). What to do (and not to do) with time-series cross-section data. *American Political Science Review*, 89(3), 634–647.

72. Arellano, M., & Bond, S. (**1991**). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies*, 58(2), 277–297.

73. Salman, A., & Yazdanfar, D. (**2012**). Profitability in Swedish micro firms: A quantile regression approach. *International Journal of Productivity and Performance Management,* 61(6), 717–733.

74. Buabeng, T., Oppong, M., & Asare, R. (**2019**). The effect of exchange rate volatility on firm performance in Ghana. *International Journal of Economics and Finance*, 11(4), 50–60.