Jurnal Masharif al-Syariah: Jurnal Ekonomi dan Perbankan Syariah
ISSN: 2527 - 6344 (Printed), ISSN: 2580 - 5800 (Online)
Accredited No. 204/E/KPT/2022
DOI: https://doi.org/10.30651/jms.v11i4.31893
Volume 11, No. 1, 2026 (83 - 97)
Received 04 Apr 2026, Accepted 26 Apr 2026, Published Online: 28 Apr 2026

ANALYSIS AND FORECASTING OF BANK MUAMALAT'S PROFITABILITY USING THE OPTIMAL TREND ANALYSIS METHOD (2008 - 2024)

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Abstract

This study aims to analyze and predict the profitability of Bank Muamalat Indonesia for the 2008–2024 period using Return on Assets (ROA) and Return on Equity (ROE), addressing the critical issue of a persistent long-term profitability decline in Indonesia's pioneering Islamic bank. Building on existing forecasting literature, this quantitative time-series research compares three trend models; linear, quadratic, and exponential through SPSS 23.0's Curve Estimation to identify the best-fit model. The results show that the exponential trend model is the most accurate for both ROA and ROE, with Adjusted R^2 values of 0.814 and 0.780, respectively. Based on this model, five-year projections (2025–2029) indicate a continued downward trend, with profitability approaching critically low levels. These findings serve as an early warning signal and highlight the urgent need for strategic interventions to reverse Bank Muamalat's profitability structural decline, offering crucial insights for management, investors, and regulators

Keywords: Forecasting, Profitability, ROA, ROE, Trend Analysis, Bank Muamalat, Islamic Bank

1. Introduction

Profitability is a fundamental indicator that reflects a company's ability to generate profits from all its resources (Nirawati et al., 2022). In the banking industry, profitability is a primary benchmark for management, investors, and regulators in assessing the operational efficiency and financial health of a financial institution. Kasmir (2019) defines profitability as a company's capacity to generate profits, which

is crucial for the company's operational sustainability. Brigham and Houston (2016) add that profitability is one of the most important indicators in assessing a company's financial performance because it shows how effectively management uses resources to generate profits.

The Signaling Theory proposed by Spence (1973) explains that a company's profitability serves as a signal sent to external parties—especially investors—regarding the quality and prospects of the company's performance. High and stable profitability is perceived as a positive signal, while a sustained decline in profitability sends a negative signal that can undermine investor confidence and weaken investment attractiveness (Alfiana & Khaerunnisa, 2023; Hermawinata & Sufiyanti, 2023). Previous research by Skvarciany & Simanavičiūtė (2018) demonstrated that time series-based forecasting methods can provide an accurate picture of long-term profitability trends. Lubis (2022) found that the quadratic trend analysis method is effective in forecasting profitability ratios with a good degree of accuracy, while Sopian et al. (2022) confirmed that a quantitative approach based on historical data can consistently capture patterns of declining profitability.

Bank Muamalat Indonesia, the pioneer of Islamic banking in Indonesia, faces serious challenges related to its profitability. Financial report data shows a significant decline in ROA from 2.6% (2008) to 0.03% (2024), and ROE from 17.78% (2010) to 0.42% (2024) (Bank Muamalat, 2024). Business phenomena also reveal an 82.8% decline in annual profit in the first semester of 2024 (CNBC Indonesia, 2024). This decline indicates structural problems in the bank's operations, such as high Non-Performing Financing (NPF) and operational inefficiencies (La Difa et al., 2022; Astuti, 2022). Stakeholder theory (Freeman, 1984) emphasizes that companies have a responsibility to provide sustainable benefits to all stakeholders, so a prolonged decline in profitability harms not only shareholders but also customers and the wider community.

From an Islamic perspective, profitability must be achieved through lawful and ethical means, and bring benefits to society (Ariyadi, 2020). As emphasized in the Qur'an, Surah Al-Baqarah verse 257 and Surah An-Nisa verse 29, business profits must be obtained through legitimate, fair trade, and without usury. Therefore, a predictive approach is needed to anticipate changes in profitability. The trend analysis method, as part of the time series approach, has advantages in identifying long-term movement patterns (Sutiyono & Setiafindari, 2024; Syafi et al., 2023). This study aims to analyze and forecast the profitability of Bank Muamalat by comparing three trend models—linear, quadratic, and exponential—to determine the best model and project profitability for the next five years (2025–2029).

2. Literature review

2.1. Signal Theory

Signaling theory was first proposed by Spence (1973), who stated that informed parties (companies) can send signals to external parties (investors)

to demonstrate the company's quality or capabilities. This theory serves to reduce information asymmetry, build reputation, and influence positive perceptions, contributing to customer satisfaction and organizational attractiveness (Qingyu et al., 2020). Signals of management success or failure are conveyed through financial reports, which can be good or bad news for investors (Sari et al., 2022).

2.2. Forecasting Theory

Heizer and Render (2008) define forecasting as a combination of the art and science of predicting future events, which plays a crucial role in managerial decision-making. This theory is based on the assumption that patterns in past data can be identified and extrapolated into the future (Box et al., 2015). In a financial context, forecasting is divided into short-term forecasts for operational activities and long-term forecasts for strategic planning (Brigham & Houston, 2016). Hyndman and Athanasopoulos (2018) emphasize that forecasting is a systematic and measurable approach that is crucial for data-driven decision-making. Petropoulos et al. (2022) add that historical data and current information can be utilized to predict future conditions, particularly in time series analysis.

2.3. Stakeholder Theory

Freeman (1984) argued that companies are responsible not only to shareholders but also to all stakeholders, including employees, suppliers, consumers, the government, and the community. Ghozali and Chariri (2007) emphasized that this theory emphasizes the significant influence of stakeholders on corporate sustainability. Harrison and Wicks (2013) found that companies that implement effective stakeholder management tend to have better financial performance, including higher profitability. In the banking context, profitability is an important indicator for all stakeholders to assess the added value provided by the bank on an ongoing basis.

2.4. Profitability

Forecasting is the systematic process of predicting future events based on historical data (Mulyani et al., 2021; Ahmad, 2020). Rizal et al. (2021) define forecasting as a method of analyzing factors that influence the occurrence of events within a timeframe. Forecasting objectives include strategic planning, financial optimization, risk management, and policy development (Hwihanus, 2023).

2.5. Forecasting

Kasmir (2019) defines profitability as a company's capacity to generate profits. Brigham and Houston (2016) state that profitability indicates how effectively a company uses its resources to generate profits. Damayanti (2021) adds that profitability provides an indication of the efficiency of company

management. Hartati (2024) emphasizes that profitability is the ultimate goal a company desires.

3. Research methods

This study uses a quantitative approach with time series analysis because the data used is annual profitability data of Bank Muamalat Indonesia for the period 2008–2024 (Sugiyono, 2019). The dependent variable is profitability as measured by Return on Assets (ROA) and Return on Equity (ROE), while the independent variable is time (T) with year codes (T=1 for 2008, T=2 for 2009, etc.) (Lubis, 2022; Felisa Putri et al., 2024).

The sample was taken using a purposive sampling technique with the criteria of complete and sequential ROA and ROE data available during the 2008–2024 period, obtained 17 years of observation (34 data) from the annual financial reports of Bank Muamalat (www.bankmuamalat.co.id)

Trend analysis is conducted through several stages. First, collecting historical ROA and ROE data for the 2008–2024 period (Felisa Putri et al., 2024). Second, presenting the data in tabular form to facilitate pattern identification. Third, analyzing the estimated curve regression using IBM SPSS Statistics 23.0 to test three trend models: linear, quadratic, and exponential (Dawan & Barihman, 2018). Fourth, evaluating and selecting the best trend model based on statistical criteria: Adjusted R Square (the higher the better) and Standard Error of the Estimate (SEE) (the smaller the more accurate), as well as the model's significance level ($p < 0.05$) (Ghozali, 2018; Marsaoly, 2022). Fifth, forecasting profitability for the 2025–2029 period using the selected trend equation by entering the time values (T = 18 to T = 22). Sixth, evaluating accuracy forecasting use Mean Absolute Deviation (MAD), Mean Squared Error (MSE), Root Mean Squared Error (RMSE), and Mean Absolute Percentage Error (MAPE) indicators. MAPE criteria : <10% (very good), 10–20% (good), 20–50% (sufficient), >50% (poor) (Riana, 2024). Seventh, preparation and presentation results forecasting in form tables and graphs For make it easier interpretation and analysis more continued (Felisa Putri et al., 2024).

4. Results and Discussion

4.1. Best Trend Model Test Results

Table 4.1 Bank Muamalat Indonesia ROA Model Trends

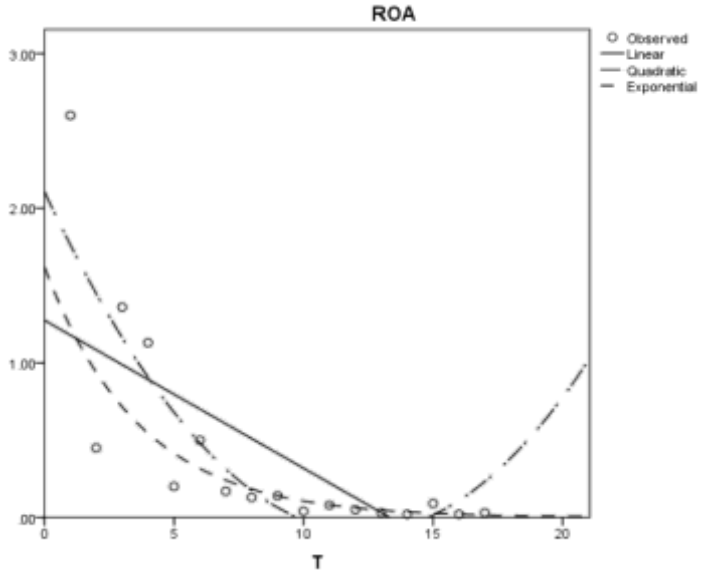
Trends	SEE	*Adjusted R-Square*
Linear	.504	.461
Quadratic	.393	.673
Exponential	.653	.814

Source : IBM SPSS 23.0 (processed data, 2026)

Based on Table 1.1, the linear trend model has an SEE of 0.504 and an Adjusted R Square of 0.461, meaning it is only able to explain 46.1% of the variation in ROA with a fairly large prediction error rate. The quadratic trend model performs

better with an SEE of 0.393 and an Adjusted R Square of 0.673, able to explain 67.3% of the variation in ROA. The exponential trend model has the highest Adjusted R Square of 0.814 (81.4% of the variation in ROA), although its SEE is 0.653 higher than the quadratic model. Overall, the exponential model has the strongest explanatory power and is selected as the best model.

Graph 4.1 Trend of Return on Assets (ROA) of Bank Muamalat Indonesia for the Period 2008-2024



Source : IBM SPSS 23.0 (processed data, 2026)

Chart 4.1 shows that Bank Muamalat Indonesia's ROA tended to decline during the observation period. The actual ROA value at the beginning of the period was relatively high, then declined sharply to near zero at the end of the period, reflecting the bank's weakening ability to generate profits from assets. The linear trendline shows a constant decline but less accurately follows the actual data. The quadratic trendline is more flexible with a curved pattern, but the increase at the end of the period does not align with the actual data, which remains low. The exponential trendline most closely matches the actual data distribution, capable of capturing a percentage and continuous decline. Overall, the exponential model has the best visual fit, in line with the statistical results showing the highest *Adjusted R Square value,* thus being selected as the best model for ROA forecasting.

Thus, the ROA *forecasting model equation is obtained* in exponential form as follows:

$$\boldsymbol{ROA = 1,620 \text{ x } exp^{(-0,272T)}}$$

Based on the exponential trend equation, Bank Muamalat Indonesia's ROA forecast is conducted for the period following the observation year. The forecast value is obtained from SPSS output in the form of a FIT value by adding the time value (T) to each forecast period.

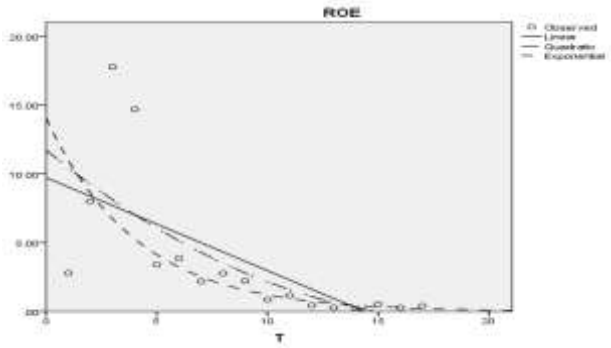
Table 4.2
Summary of Bank Muamalat Indonesia's ROE Model Trends

Trends	SEE	*Adjusted R-Square*
Linear	3,992	.401
Quadratic	4,049	.461
Exponential	.651	.780

Source : IBM SPSS 23.0 (processed data, 2026)

Based on Table 4.9, the linear trend model has a SEE of 3.992 and an Adjusted R Square of 0.401, meaning it can only explain 40.1% of the variation in ROE with a fairly large prediction error rate. The quadratic trend model has an Adjusted R Square of 0.461 (slightly higher) but an SEE of 4.049 (greater), so its prediction accuracy is still low and not optimal. The exponential trend model shows the best performance with the highest Adjusted R Square of 0.780 (78.0% of the variation in ROE) and the smallest SEE of 0.651. Thus, the exponential model was chosen as the best trend model because it has the strongest explanatory power, better prediction accuracy, and is able to describe the pattern of ROE changes that are percentage and continuous.

Graph 4.2
***Return on Equity* (ROE) Trend of Bank Muamalat Indonesia**
for the Period 2008-2024



Source : IBM SPSS 23.0 (processed data, 2026)

Chart 4.2 shows that Bank Muamalat Indonesia's ROE declined significantly during the observation period. The actual ROE value at the beginning of the period was relatively high and fluctuated sharply, then declined to near zero at the end of the period, reflecting the bank's weakening ability to generate profits from its equity. The linear trendline shows a constant decline but is less able to follow the fluctuations in the actual data in the early period. The quadratic

trendline is more flexible with a curved pattern, but its results are less consistent with the actual ROE value at the end of the period. The exponential trendline best approximates the actual ROE decline pattern, able to capture the percentage and continuous decline. Overall, the exponential model has the best visual fit, in line with the statistical results showing the highest Adjusted R Square value and the lowest prediction error rate, thus being selected as the best model for ROE forecasting. The resulting equation is:

$$ROE = 14,068 \text{ x } exp^{(-0,245T)}$$

This equation is used as the basis for forecasting Bank Muamalat Indonesia's ROE for the period following the observation year. The forecast value is obtained from SPSS output in the form of a FIT value by adding the time value (T) to each forecast period.

4.2. Bank Muamalat Profitability Forecasting Results

Table 4.3 Results of Bank Muamalat Indonesia's ROA *Forecasting*

Year	T	Actual ROA	ROA *Forecasting*	Error (y- $\hat{y}^2$)	|Error|	Error ²	APE(%)
2008	1	2.60	1,232	1,368	1,368	1.871424	52.62
2009	2	0.45	0.939	-0.489	0.489	0.239121	108.67
2010	3	1.36	0.716	0.644	0.644	0.414736	47.35
2011	4	1.13	0.544	0.586	0.586	0.343396	51.86
2012	5	0.20	0.414	-0.214	0.214	0.045796	107.00
2013	6	0.50	0.316	0.184	0.184	0.033856	36.80
2014	7	0.17	0.241	-0.071	0.071	0.005041	41.76
2015	8	0.13	0.183	-0.053	0.053	0.002809	40.77
2016	9	0.14	0.139	0.001	0.001	0.000001	0.71
2017	10	0.14	0.105	0.035	0.035	0.001225	25.00
2018	11	0.08	0.081	-0.001	-0.001	0.000001	1.25
2019	12	0.05	0.061	-0.011	-0.011	0.000121	22.00
2020	13	0.03	0.046	-0.016	0.016	0.000256	53.33
2021	14	0.02	0.035	-0.015	0.015	0.000225	75.00
2022	15	0.09	0.025	0.065	0.065	0.004225	72.22
2023	16	0.02	0.019	0.001	0.001	0.000001	5.00
2024	17	0.03	0.014	0.00042	0.016	0.000256	53.33
2025	18	-	0.011	-	-	-	-
2026	19	-	0.008	-	-	-	-
2027	20	-	0.006	-	-	-	-
2028	21	-	0.004	-	-	-	-
2029	22	-	0.003	-	-	-	-

Source : IBM SPSS 23.0 and Author's Calculation Results
(processed data, 2026)

Based on Table 4.11, the results *forecasting* shows that Bank Muamalat Indonesia's ROA is projected to Keep going experience decline from year to year. In the initial observation period, the ROA value remained at a relatively high level, but gradually decreased to approach zero in the final forecast period. The forecasted ROA value *in* 2025 is estimated at 0.011%, then decreases to 0.008% in 2026, and continues to decline to reach 0.003% in 2029. This pattern indicates that Bank Muamalat Indonesia's asset profitability is at a very low level and tends to stagnate at a minimal level if there are no significant changes in policy or strategy. To assess the accuracy of the forecast results, an evaluation is carried out using several forecast error indicators shown in Table 4.12 below:

Table 4.4
ROA Forecasting Accuracy Indicator
Bank Muamalat Indonesia

Variables	MAD	MSE	RMSE	MAPE (%)
Return on Assets (ROA)	0.221	0.174	0.418	46.74%

Source: Author's Calculation Results (2026)

Based on Table 4. 4 indicators of Bank Muamalat Indonesia's ROA forecasting accuracy, the MAD value of 0.221 indicates that the average absolute difference between actual ROA and forecasted ROA is relatively small. The MSE and RMSE values indicate several significant forecasting errors in certain periods, especially in the early years when ROA still fluctuates significantly. Meanwhile, the MAPE value of 46.74% indicates that the average forecasting percentage error is below 50%.

In a study conducted by Suryanto et al. (2024) on forecasting, a MAPE value below 50% is categorized as a *reasonable forecast result* (fairly good forecasting model capability), especially for small-value economic and financial data used for long-term trend analysis. Therefore, although the model's numerical precision is still limited, this exponential trend model is suitable for describing the direction and downward trend of Bank Muamalat Indonesia's ROA.

Table 4.4
Bank Muamalat Indonesia's ROE *Forecasting* Results

Year	T	Actual ROE	ROE *Forecasting*	Error (y- $\hat{y}^2$)	|Error|	Error ^{2}	APE(%)
2008	1	2.79	11,001	-8,211	8,211	67,420	294.30
2009	2	8.03	8,609	-0.579	0.579	0.335	7.21
2010	3	17.78	6,738	11,042	11,042	121,925	62.11
2011	4	14.71	5,275	9,435	9,435	88,999	64.12
2012	5	3.42	4,121	-0.701	0.701	0.491	20.50
2013	6	3.87	3,221	0.649	0.649	0.421	16.78
2014	7	2.20	2,518	-0.318	0.318	0.101	14.45
2015	8	2.78	4,248	-1,468	1,468	2,154	52.80
2016	9	2.22	1,547	0.673	0.673	0.453	30.32

2017	10	0.87	1,209	-0.339	0.339	0.115	38.97
2018	11	1.16	0.942	0.218	0.218	0.048	18.79
2019	12	0.45	0.731	-0.281	0.281	0.079	62.44
2020	13	0.29	0.576	-0.286	0.286	0.082	98.62
2021	14	0.20	0.450	-0.25	0.250	0.063	125.00
2022	15	0.53	0.351	0.179	0.179	0.032	33.77
2023	16	0.28	0.267	0.013	0.013	0,000	4.64
2024	17	0.42	0.211	0.209	0.209	0.044	49.76
2025	18	-	0.168	-	-	-	-
2026	19	-	0.126	-	-	-	-
2027	20	-	0.098	-	-	-	-
2028	21	-	0.070	-	-	-	-
2029	22	-	0.056	-	-	-	-

Source : IBM SPSS 23.0 and Author's Calculation Results (2026)

Based on Table 4.14, the results *forecasting* shows that Bank Muamalat Indonesia's ROE is projected Keep going experience decline from year to year. In the initial observation period, the ROE value was still at a relatively high and fluctuating level, but gradually decreased to a very low level in the final forecast period.

forecasted ROE value for 2025 is estimated at 0.168%, then decreases to 0.126% in 2026, and continues to decline to 0.056% in 2029. This pattern indicates that Bank Muamalat Indonesia's ability to generate returns on equity is projected to weaken further if there is no significant performance improvement. To assess the accuracy of the forecast results, an evaluation was conducted using several forecast error indicators shown in Table 4.5.

Table 4.15
ROE Forecasting Accuracy Indicator
Bank Muamalat Indonesia

Variables	MAD	MSE	RMSE	MAPE (%)
Return on Equity (ROE)	2,051	16,633	4,079	58.50%

Source: Author's Calculation Results (2026)

Based on Table 4.5, the MAD value of 2.051 indicates that the average absolute difference between actual ROE and forecasted ROE is still relatively large. The MSE and RMSE values indicate several large forecasting errors in certain periods, particularly in the early years when ROE still fluctuates significantly.

Meanwhile, the MAPE value of 58.50% indicates that the ROE forecasting error rate is above 50%. This condition indicates that the numerical accuracy of the ROE forecast is relatively limited, but the exponential trend model is still able to capture the direction and general

trend (*trend direction*) of Bank Muamalat Indonesia's ROE movement in the long term. Overall, the results of the ROE forecasting of Bank Muamalat Indonesia indicate a structural downward trend in capital-based profitability. The exponential trend model is able to consistently follow the direction of the ROE decline, so this forecasting result is suitable for use as a long-term trend analysis tool and early warning, although it is not intended as a precise short-term prediction.

4.3. Discussion

Research result show that profitability of Bank Muamalat Indonesia as measured through *Return on Asset* (ROA) and *Return on Equity* (ROE) are projected experience decline sustainable until 2029 based on trend model exponential selected. This model chosen Because own mark *Adjusted R Square* the highest respectively at 0.814 for ROA and 0.794 for ROE, which indicates that more from 79% of the variation profitability can explained by factors The high explanatory power of this model indicates that the historical pattern of Bank Muamalat's profitability has a strong and relatively stable trend, making the exponential model suitable for use as a basis for forecasting.

The exponential decline in profitability indicates that the decline is not linear or constant, but rather proportional to the level of profitability itself. The lower the ROA and ROE achieved, the greater the obstacles the bank faces in recovering its performance in the short term. This phenomenon reflects *profitability inertia,* where banks that have entered a phase of structural decline require significant managerial intervention to return to growth (Lubis, 2022; Trujillo-Ponce, 2017). The time variable in the forecasting model is not interpreted as a direct economic causal factor, but rather as a representation of the accumulated dynamics of bank performance from year to year, encompassing managerial decisions, internal conditions, changes in the macroeconomic environment, and regulatory policies.

From an internal perspective, the downward trend in ROA is associated with operational inefficiency, suboptimal productive asset quality, and a weak revenue structure (Brigham & Houston, 2016). Meanwhile, the decline in ROE reflects the suboptimal utilization of equity capital due to rising operational costs, pressure from non-performing financing, and limited productive financing expansion (Kamarudin et al., 2019). This condition is reinforced by the finding that operational efficiency and financing quality are the main determinants of Islamic bank profitability (Astuti, 2022; La Difa et al., 2022). Externally, slowing economic growth, interest rate volatility, liquidity pressures, and other macroeconomic dynamics have also contributed to the long-term downward trend in profitability (Sufian & Kamarudin, 2016; Alshatti, 2018; Boateng et al., 2021).

Forecasting results This own implications important in framework management bank risk. Based on POJK Number 18/POJK.03/2016 concerning Implementation Risk Management for Commercial Banks, banks are required For identify, measure, monitor, and control all over risk in a way Sustainable. Profitability forecasting is a relevant quantitative instrument in the process of measuring and monitoring performance risks, particularly strategic and operational risks. Furthermore, banks' obligation to prepare a Bank Business Plan (RBB), as stipulated in POJK No. 12/POJK.03/2021, emphasizes the importance of financial projections as a basis for strategic planning. From an accounting perspective, *forecasting results* are also relevant to the implementation of PSAK 71, which emphasizes a *forward-looking approach* in recognizing Allowance for Impairment Losses (CKPN), where declining profitability can signal increased credit risk.

Based on Signaling Theory (Spence, 1973), low ROA and ROE, projected to continue declining, serve as negative signals to investors and external stakeholders regarding Bank Muamalat's future financial performance prospects. This signal has the potential to influence market perceptions of the bank's stability and sustainability, increasing the need for transparency and a credible performance recovery strategy. This research aligns with the findings of Kamarudin et al. (2021) that ROA is the most representative profitability indicator in assessing the operational efficiency of Islamic banks, as well as Dietrich & Wanzenried (2021) and Bitar et al. (2022) who stated that ROE has higher volatility due to the influence of leverage, capital policy, and credit risk.

Thus, the results of the profitability *forecasting* of Bank Muamalat Indonesia show that the forecasting equation obtained is not only mathematical, but also reflects structural dynamics involving the bank's internal factors, macroeconomic conditions, and the regulatory and risk management framework. The exponential trend model used is able to consistently describe the direction and tendency of declining profitability, so that the results of this study can be used as an early warning *system* for bank management in formulating strategic policies to improve the profitability performance of assets and capital in the future.

5. Conclusion and Suggestions

Based on the results of the analysis and discussion regarding *the forecasting* of Bank Muamalat Indonesia's profitability as measured by *Return on Assets* (ROA) and *Return on Equity* (ROE) using the best trend analysis method during the 2008–2024 period, it can be concluded that Bank Muamalat's profitability has historically shown a downward trend with relatively low and fluctuating ROA and ROE values, reflecting unstable profitability performance and a tendency to weaken in the long

term. The exponential trend model is the most appropriate trend analysis model to use because it has a better level of statistical significance and a higher coefficient of determination value compared to the linear and quadratic models, so it is able to describe the pattern of changes in profitability that are percentage and sustainable.

Forecasting results indicate that ROA and ROE are projected to continue declining until the end of the forecast period. This projection indicates that the bank's ability to utilize productive assets and manage its equity to generate profits still faces structural pressures. The decline in ROE reflects suboptimal capital management effectiveness, while the decline in ROA indicates the need to improve operational efficiency and the quality of productive assets. Model accuracy evaluation shows that ROE has a higher forecasting error rate (MAPE) than ROA due to ROE's higher volatility. However, the exponential model remains capable of consistently depicting the direction and trend of profitability changes over the long term.

Based on these conclusions, Bank Muamalat Indonesia management is advised to conduct a strategic evaluation of its productive asset management and capital structure, prioritizing operational efficiency, financing quality, and strengthening the credit risk management system to sustainably improve profitability. Regulators are expected to continue providing policy support that encourages the strengthening of the Islamic banking industry, particularly in the areas of capitalization, financing quality monitoring, and operational efficiency improvement, by incorporating *forecasting results* into the formulation of preventive policies. Investors and stakeholders are advised to consider the results of trend analysis and profitability forecasting in their investment decisions, given that the projected downward trend demonstrates the importance of caution in assessing long-term prospects. Further research is recommended to develop a more comprehensive forecasting model incorporating fundamental and macroeconomic variables such as NPF, operational efficiency, inflation, and economic growth, and employing more complex forecasting methods such as ARIMA, VAR, or *machine learning* to produce a more accurate picture of the dynamics of Islamic banking profitability.

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