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Financial Performance Evaluation Using Variants of Economic Value Added in Consumer Goods Industries Listed on the Iraqi Securities Exchange

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ABSTRACT

This study investigates the financial performance of consumer goods companies listed on the Iraqi Securities Exchange using Economic Value Added (EVA). EVA is introduced as a comprehensive metric of corporate profitability and shareholder value creation, as it explicitly incorporates the opportunity cost of capital. The findings indicate that EVA can help identify areas of underperformance and opportunities for improvement, ultimately contributing to enhanced shareholder value. Conventional accounting methods commonly employed to measure and analyze corporate financial performance have been widely criticized for their limitations. Accordingly, this research aims to examine the impact of three contemporary economic performance measures—Economic Value Added (EVA), Refined Economic Value Added (REVA), and EVA Momentum—on firms' financial performance. Furthermore, it seeks to identify the measure with the highest explanatory power regarding financial performance through relative and incremental information content analyses. The results demonstrate that all Economic Value Added metrics exert a statistically significant influence on corporate financial performance. Moreover, REVA emerges as the most effective economic indicator for explaining and enhancing financial performance among the examined measures.

KEYWORDS: Economic Value Added, EVA Momentum, Financial Performance, Consumer Goods Industries

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1. Introduction

Identifying a superior tool for evaluating corporate financial performance has been regarded as one of the most critical objectives in contemporary financial research. Traditional accounting-based performance metrics—such as net profit (NP), net operating profit after tax (NOPAT), return on investment (ROI), and earnings per share (EPS)—have been widely criticized for their inability to fully reflect the cost of capital employed by the firm. Consequently, accounting income is considered inadequate for accurately measuring corporate performance and cannot serve as a consistent proxy for firm value. To address this limitation and establish a more reliable indicator of financial performance, numerous scholars and consultants have devoted significant efforts to developing and refining performance measurement frameworks. In 1991, Stewart introduced Economic Value Added (EVA) as a superior measure of economic profit and the most effective driver of shareholder value creation. Subsequently, in 1997, Bacidore et al. proposed Refined Economic Value Added (REVA) as an enhanced alternative to EVA. Finally, in 2009, Stewart introduced EVA Momentum—the latest iteration of EVA-based metrics—as a proprietary trademark of EVA Dimensions (Stern Stewart & Co.).

The present study primarily focuses on assessing the impact of various Economic Value Added metrics on corporate financial performance, an area that has received limited attention in prior literature. This paper also reviews the existing body of research on REVA and EVA Momentum as value-based techniques specifically applied to financial performance evaluation. In this study, financial performance is proxied by the accounting-based metric Return on Assets (ROA). As noted by (Nugroho, Bhagat, Magda, & Lakner, 2021), ROA remains one of the most preferred and widely used indicators for assessing corporate financial performance.

In the context of consumer goods industries, a stronger market position can be achieved through deeper insights into consumer behavior, derived from EVA-based analysis. Such insights enable firms to gain competitive advantage, formulate targeted marketing strategies, and develop products that enhance market share and foster business growth. Economic Value Added (EVA) offers a comprehensive assessment of corporate profitability and shareholder value creation by explicitly incorporating the opportunity cost of capital. Specifically, EVA compares net operating profit after tax (NOPAT) with the firm's total cost of capital. This approach provides a more accurate evaluation of financial performance and serves as a key metric used by investors and analysts to gauge a company's true economic profitability. By deducting the cost of capital from NOPAT, EVA delivers a more precise reflection of the economic value generated by the firm.

EVA facilitates the identification of underperforming areas within the organization and highlights opportunities for improvement that can ultimately enhance shareholder value. Moreover, by accounting for the cost of capital, EVA presents a more rigorous measure of profitability and emphasizes long-term value creation. This comprehensive perspective supports more informed investment decisions by shareholders and assists management in pinpointing areas for operational enhancement. Consequently, EVA proves to be a valuable tool for evaluating the financial performance of consumer goods firms listed on the stock exchange.

Furthermore, EVA can be employed to compare the economic value added across firms within the same industry, thereby identifying potential investment opportunities. It also serves as a performance measurement framework for setting strategic objectives and benchmarking financial outcomes against industry peers. As such, EVA can act as a critical determinant of genuine economic profitability in consumer goods companies and support strategic decision-making. Additionally, it can incentivize management to prioritize long-term value creation over short-term financial gains.

By highlighting the importance of efficient resource utilization and generating returns that exceed the cost of capital, EVA promotes a holistic view of corporate financial performance. This encourages firms to focus on sustainable growth and long-term value generation. Internally, EVA can also function as a tool for performance evaluation and compensation-related decisions. By aligning managerial incentives with value creation, EVA motivates executives to make decisions that maximize shareholder wealth. Thus, it provides a clear framework for assessing corporate performance and making strategic choices grounded in long-term value creation. EVA also plays a vital role in guiding investment decisions and capital allocation within consumer goods industries, enabling firms to prioritize projects and investments that yield the highest economic value added.

In summary, EVA is a powerful instrument for evaluating financial performance and supporting strategic decision-making aimed at fostering sustainable value creation and growth in capital markets. It offers a clear understanding of a firm's cost of capital and the efficiency of its investment decisions within the consumer goods sector and the stock exchange environment, ultimately contributing to enhanced profitability and shareholder value. Furthermore, EVA helps align executive compensation with genuine economic value creation, ensuring that managerial incentives are congruent with the firm's long-term success and value generation in the stock market. This alignment can improve accountability, promote performance-based decision-making, and reinforce the company's focus on sustainable value creation for shareholders. By encouraging a long-term perspective in decision-making, resource allocation, and responsible financial management, EVA contributes to more resilient and stable financial performance, reduces volatility, enhances overall financial health, and provides a clear roadmap for corporate performance and growth (A. Nugroho, Priya Rani Bhagat, R. Magda, & Z. Lakner, 2021).

2. Theoretical Framework and Literature Review

In recent years, the evaluation of financial performance using Economic Value Added (EVA) in the consumer goods industry within stock markets has attracted considerable attention from researchers. Numerous studies have been conducted to assess the effectiveness of EVA and other value-based financial metrics in evaluating corporate performance in the highly competitive environment of stock exchanges. One such study was carried out by Bayrakdaroglu and Yalcin (2012), which focused on the strategic financial performance evaluation of Turkish industrial firms listed on the Istanbul Stock Exchange (ISE-30). The study employed seven strategic financial performance indicators, including EVA, Refined Economic Value Added (REVA), and other value-based metrics. Using the Fuzzy Analytic Hierarchy Process (FAHP) and the VIKOR method, the authors ranked companies based on their performance over the period 1998–2011.

The findings provided valuable insights into firms' strategic financial performance and underscored the importance of value-based metrics in performance assessment.

Abdel-Kader and Ashraf (2021) examined the impact of modern economic performance measures—including EVA, REVA, and EVA Momentum—on the financial performance of firms listed on the Egyptian Stock Exchange. Their results revealed significant effects of these EVA-based metrics on corporate performance and identified REVA as the most effective indicator for explaining and enhancing financial outcomes. The study emphasized the necessity of integrating modern financial metrics with traditional accounting methods to achieve a more comprehensive performance evaluation. Sundari et al. (2023) analyzed the financial performance of cement sub-sector companies listed on the Indonesia Stock Exchange using both EVA and Market Value Added (MVA) approaches. Their findings indicated that three out of four cement companies exhibited positive EVA, signifying successful economic value creation, while one company reported negative EVA, reflecting value destruction. This study reinforced the relevance of value-based metrics like EVA in assessing corporate performance and enhancing shareholder value. More recently, Fahrian and Nasution (2023) developed a web-based financial performance information system utilizing the EVA methodology to evaluate a company's financial health. Their research aimed to provide decision-makers and investors with actionable financial insights. The results showed an EVA value of IDR 4,267,398,060 for the case company, which could serve as a practical benchmark for management evaluation at the research site. Similarly, Gjoni (Kramta) et al. (2022) conducted a comprehensive study on financial performance measurement in Albania's construction sector. The research highlighted the significance of financial ratios—such as debt ratio, liquidity ratio, and profitability ratio—in assessing the financial health of construction firms. A positive relationship was found between these ratios and Return on Assets (ROA), while leverage exhibited a negative association. The authors recommended that future studies incorporate additional models, such as Market Value Added (MVA) and Economic Value Added (EVA), to analyze further determinants of financial performance. Indriakati (2023) specifically applied EVA analysis to evaluate the financial performance of cosmetic companies listed on the Indonesia Stock Exchange, using financial statements from 2017 to 2019. The study found that firms such as PT Mustika Ratu Tbk and PT Martina Berto Tbk generated positive EVA, indicating strong financial performance. In contrast, PT Mandom Indonesia Tbk reported negative EVA, signaling financial underperformance.

Collectively, the reviewed literature underscores the critical role of Economic Value Added and related value-based financial metrics in evaluating the performance of consumer goods firms in stock markets. These metrics offer meaningful insights into how companies efficiently utilize resources to create shareholder wealth. By integrating financial ratio analysis with EVA assessments, managers and investors can make more informed decisions regarding corporate financial strategy. Future research in this domain could further explore the application of extended EVA models and incorporate additional explanatory variables to deepen the understanding of financial performance dynamics within the consumer goods sector. Such efforts would enhance the robustness of performance evaluation frameworks and support more strategic, value-driven decision-making in increasingly competitive capital markets.

3. Research Model

The variables examined in this study are broadly employed as key indicators for evaluating and enhancing corporate financial and strategic performance from multiple dimensions. These constructs serve as foundational elements in assessing how firms create value, manage risk, allocate resources, and respond to market dynamics—particularly within the context of stock exchange-listed consumer goods companies.

Dependent Variable: Financial Performance

Corporate financial performance is commonly regarded as a pivotal determinant of stock returns. It encompasses a range of financial indicators, including profitability, sales growth rate, return on investment (ROI), and other accounting-based metrics. Strong financial performance—characterized by sustained profitability and stable growth—can directly enhance shareholder returns by making a company's stock more attractive to investors. In this study, financial performance is proxied by **Return on Assets (ROA)**, a widely accepted and robust measure of operational efficiency and asset utilization.

Independent Variables: Economic Value Added Metrics

Three advanced value-based performance measures are employed as the core independent variables:

Economic Value Added (EVA)

Introduced by Stern Stewart & Co. in the 1990s (Stewart, 1991), EVA is calculated as Net Operating Profit After Tax (NOPAT) minus the cost of capital. By explicitly incorporating the opportunity cost of invested capital, EVA provides a more accurate reflection of a firm's true economic profit and its ability to generate value for shareholders. Extant literature (e.g., Chen & Dodd, 2005; Biddle, Bowen, & Wallace, 2001) confirms EVA's superior explanatory power over traditional accounting metrics in evaluating financial performance.

Refined Economic Value Added (REVA)

REVA represents an enhanced version of EVA that adjusts for short-term volatility and non-recurring items, offering a more stable and refined assessment of long-term value creation (Bacidore et al., 1997; Milbourn, Thakor, & Valkanov, 2010). By smoothing out transitory fluctuations, REVA provides a clearer signal of underlying economic performance and has been shown to exhibit stronger correlation with market-based outcomes than conventional EVA.

EVA Momentum (Enhanced EVA)

EVA Momentum, introduced by Stewart (2009), measures the growth rate of EVA relative to sales. It captures not only the level of value creation but also its trajectory over time, thereby reflecting strategic momentum and scalability. This metric integrates profitability and growth

dimensions, enabling forward-looking performance evaluation (King & Henry, 2016; Khan & Bradbury, 2005). As a dynamic indicator, EVA Momentum is particularly useful for identifying firms that are both profitable and expanding their value-creation capacity.

Control Variables

To isolate the effect of EVA-based metrics on financial performance, the following control variables are incorporated:

Financial Risk: Measured through indicators such as debt-to-equity ratio, interest coverage ratio, and volatility in financial obligations. Financial risk encompasses exposure to interest rate fluctuations, foreign exchange volatility, and credit constraints, all of which can influence a firm's performance and valuation.

Market-Based Variables: These include market multiples such as the **Price-to-Earnings (P/E) ratio** and **Price-to-Book (P/B) ratio**, which reflect investor sentiment and market expectations. These variables capture external market conditions and macroeconomic influences that may affect stock returns independently of firm-specific fundamentals.

Advertising and Marketing Expenditures: This variable represents total spending on promotional and branding activities. In the consumer goods sector, such expenditures are critical drivers of market share and revenue growth. Their inclusion controls for strategic investments that may temporarily reduce accounting profits but enhance long-term value.

Return on Investment (ROI): Defined as net profit divided by total investment, ROI serves as a complementary measure of capital efficiency and is used to contextualize EVA-based findings within traditional performance frameworks.

Data Sources and Measurement

All financial and market data are extracted from publicly available sources, including annual and quarterly financial reports of listed companies, official stock exchange databases (e.g., Iraqi Securities Exchange), and reputable financial platforms. EVA, REVA, and EVA Momentum are computed using standardized formulas derived from audited financial statements, with adjustments for capital charges, tax effects, and non-operating items as per Stern Stewart methodology.

Theoretical Underpinning

The research model is grounded in **value-based management (VBM)** theory, which posits that the primary objective of the firm is to maximize shareholder wealth through the creation of economic value—defined as returns exceeding the full cost of capital. Unlike accounting-based metrics that ignore the cost of equity, EVA-based measures align managerial decisions with investor interests by internalizing the cost of all capital.

This framework enables a more holistic assessment of performance by:

- Highlighting the efficiency of capital allocation,
- Encouraging long-term strategic thinking,
- Reducing myopic behavior driven by short-term earnings targets,
- Facilitating performance-linked compensation systems.

Hypothesized Relationships

Based on the theoretical and empirical foundation, the following hypotheses are proposed:

- **H_1**: EVA has a significant positive effect on the financial performance of consumer goods firms.
- **H_2**: REVA exhibits a stronger explanatory power on financial performance compared to EVA.
- **H_3**: EVA Momentum positively influences financial performance, reflecting the importance of growth in value creation.
- **H_4**: After controlling for financial risk, market variables, and marketing expenditures, EVA-based metrics remain significant predictors of ROA.

This research model thus provides a comprehensive analytical structure to evaluate the relative efficacy of contemporary EVA variants in explaining financial performance within the dynamic and competitive environment of the Iraqi stock market's consumer goods sector.

Variable Measurement Formulas

This section presents the algebraic formulas and computational procedures for the three core value-based performance metrics examined in this study: Economic Value Added (EVA), Refined Economic Value Added (Refined EVA), and Enhanced EVA (EVA Momentum).

1. Economic Value Added (EVA)

EVA is calculated as the residual income after deducting the total cost of capital from the firm's net operating profit after tax:

$$EVA=NOPAT-(WACC\times Capital\ Employed)$$

Where:

NOPAT (Net Operating Profit After Tax): Represents the firm's operating profit after taxes, excluding the impact of financing decisions.

$$NOPAT=EBIT\times(1-Tax\ Rate)$$

EBIT: Earnings Before Interest and Taxes (operating profit).

Tax Rate: The effective corporate income tax rate.

WACC (Weighted Average Cost of Capital): The blended cost of financing from both equity and debt, adjusted for the tax shield on interest:

$$WACC=(E+DE)\times Re+(E+DD)\times Rd\times(1-\text{Tax Rate})$$

E: Market value of equity.

D: Market value of interest-bearing debt.

Re : Cost of equity (typically estimated using the Capital Asset Pricing Model, CAPM).

Rd : Pre-tax cost of debt.

Capital Employed: Total capital invested in the business, calculated as:

$$\text{Capital Employed}=\text{Total Equity}+\text{Long-term Debt}$$

(In practice, this is often approximated by total assets minus non-interest-bearing current liabilities.)

2. Refined Economic Value Added (Refined EVA)

Refined EVA improves upon standard EVA by incorporating adjustments to accounting distortions and non-economic items, yielding a more accurate reflection of economic profit:

$$\text{Refined EVA}=\text{Adjusted NOPAT}-(\text{Adjusted WACC}\times\text{Adjusted Capital Employed})$$

Key adjustments may include:

- **Adjusted NOPAT**:
- Modifications to EBIT and NOPAT to account for:
    - Research and development (R&D) expenses (capitalized and amortized),
    - Advertising and marketing expenditures (treated as investments),
    - Operating leases (converted to debt equivalents),
    - Non-recurring or extraordinary items.
- **Adjusted Capital Employed**:
- Reflects economic capital by adding back capitalized items (e.g., R&D, goodwill amortization) and excluding non-operating assets.
- **Adjusted WACC**:
- May be refined to reflect firm-specific risk premiums, country risk (especially relevant in emerging markets like Iraq), or dynamic capital structure changes.

Note: The specific adjustments follow the Stern Stewart EVA® methodology, tailored to the accounting standards and market conditions of the Iraqi Securities Exchange.

3. Enhanced EVA (EVA Momentum)

EVA Momentum captures the **growth in EVA relative to sales**, reflecting both value creation and its scalability. It is not simply EVA plus a momentum term, but rather a normalized measure of EVA growth:

$$\text{EVA Momentum} = \text{Sales}_{t-1} \Delta\text{EVA} = \text{Sales}_{t-1} \text{EVA}_t - \text{EVA}_{t-1}$$

However, in some analytical frameworks (particularly for performance comparison), **Enhanced EVA** may refer to a composite metric that integrates EVA level and its trend. In this study, following Stewart (2009) and King & Henry (2016), **EVA Momentum** is used as the primary dynamic indicator:

- **EVA_t** : EVA in the current period.
- **EVA_{t-1}** : EVA in the prior period.
- **Sales_{t-1}** : Revenue in the prior period (used for normalization to ensure comparability across firms of different sizes).

Interpretation: A positive EVA Momentum indicates that the firm is not only creating value but also expanding its value-creation capacity faster than its revenue base.

Summary of Variable Construction

EVA	$\text{NOPAT} - (\text{WACC} \times \text{Capital Employed})$	Measures absolute economic profit
Refined EVA	$\text{Adj. NOPAT} - (\text{Adj. WACC} \times \text{Adj. Capital})$	Provides a more accurate, accounting-adjusted EVA
EVA Momentum	$\text{Sales}_{t-1} \text{EVA}_t - \text{EVA}_{t-1}$	Captures growth in value creation relative to scale

All financial inputs (EBIT, tax rate, equity, debt, sales, etc.) are extracted from audited annual financial statements of consumer goods companies listed on the **Iraqi Securities Exchange (ISX)** for the study period. Cost of equity (Re) is estimated using the CAPM, incorporating the Iraqi market risk premium and firm-specific beta, while cost of debt (Rd) is derived from disclosed interest expenses and outstanding debt levels.

These metrics collectively enable a multi-dimensional assessment of financial performance—spanning **value level (EVA)**, **accounting quality (Refined EVA)**, and **value trajectory (EVA Momentum)**—providing robust insights for investors, managers, and policymakers in Iraq's emerging capital market.

Mechanisms of Impact: How EVA-Based Metrics Influence Corporate Financial Performance

Each of the three value-based performance metrics—**Economic Value Added (EVA)**, **Refined EVA**, and **Enhanced EVA (EVA Momentum)**—affects corporate financial performance through distinct yet complementary mechanisms. Below is a detailed explanation of how each variable contributes to improving financial outcomes, strategic decision-making, and shareholder value creation.

1. Economic Value Added (EVA)

EVA represents the true economic profit generated by a firm after accounting for the full cost of capital. By internalizing the opportunity cost of both debt and equity, EVA provides a more accurate assessment of value creation than traditional accounting metrics.

Enhances Financial Efficiency: EVA enables firms to evaluate the economic return of their investments and operations. By focusing on residual income, it encourages management to allocate capital only to projects that generate returns exceeding the cost of capital, thereby improving overall financial efficiency.

Promotes Optimal Resource Utilization: Since EVA explicitly deducts the cost of capital, it incentivizes managers to use financial and operational resources more judiciously. This reduces wasteful spending and redirects capital toward high-value activities.

Serves as a Managerial Performance Benchmark: EVA functions as a powerful tool for evaluating managerial effectiveness. It directly links executive decisions to shareholder value, allowing boards and investors to assess whether strategic choices have genuinely enhanced firm value.

2. Refined Economic Value Added (Refined EVA)

Refined EVA is an enhanced version of EVA that incorporates adjustments to accounting distortions, yielding a more economically meaningful measure of performance.

Enables More Accurate Financial Analysis: Through adjustments for non-cash expenses (e.g., R&D, advertising), operating leases, and non-recurring items, Refined EVA provides a clearer picture of underlying economic performance. This allows for more precise measurement of the impact of both financial and non-financial factors on value creation.

Reduces Short-Term Volatility: By smoothing out transitory fluctuations caused by accounting conventions or one-time events, Refined EVA offers a more stable and reliable basis for performance evaluation. This enhances the consistency of strategic assessments over time.

Improves Strategic Decision-Making: The increased precision of Refined EVA makes it a more trustworthy metric for long-term planning, investment appraisal, and performance-linked

compensation. Managers can rely on it to make decisions that align with sustainable value creation rather than short-term earnings manipulation.

3. Enhanced EVA (EVA Momentum)

EVA Momentum integrates the level of EVA with its growth trajectory, capturing not only *how much* value a firm creates but also *how fast* it is scaling that value relative to its revenue base.

Facilitates Forward-Looking Performance Forecasting: By measuring the change in EVA relative to prior-period sales, EVA Momentum provides predictive insights into future financial performance. Firms with positive momentum are likely to sustain or accelerate value creation, making this metric valuable for investors and strategic planners.

Highlights Performance Trends: Momentum analysis helps managers identify whether value creation is accelerating, stagnating, or declining. This trend-based perspective supports proactive adjustments in strategy, investment, and operational execution.

Emphasizes Sustainable Value Growth: Unlike static EVA, which reflects a point-in-time snapshot, EVA Momentum underscores the importance of *continuous improvement*. It rewards companies that not only generate economic profit but also expand their value-creation capacity over time, reinforcing a culture of long-term competitiveness.

Aggregate Impact on Corporate Financial Performance

Collectively, these EVA-based metrics contribute to financial performance through several interconnected pathways:

Improved Managerial Decision-Making: By providing economically grounded, forward-looking, and volatility-adjusted performance signals, these metrics empower executives to make more informed, value-driven choices.

Enhanced Transparency and Accountability: The explicit incorporation of capital costs and economic adjustments increases the transparency of financial reporting. This builds greater trust among shareholders and investors, who can better assess the quality of earnings and strategic execution.

Strengthened Shareholder Value Creation: All three metrics prioritize *real* economic profit over accounting profit, ensuring that performance evaluation is aligned with the ultimate goal of maximizing shareholder wealth.

Optimized Capital and Resource Allocation: By penalizing capital-intensive, low-return activities and rewarding efficient, high-return investments, these frameworks drive higher productivity, operational efficiency, and strategic focus.

In summary, **EVA**, **Refined EVA**, and **EVA Momentum** each address different dimensions of financial performance—**value level**, **accounting quality**, and **value trajectory**, respectively. Together, they form a comprehensive value-based management system that not only measures performance more accurately but also actively shapes better corporate behavior. Through their application, consumer goods firms listed on the Iraqi Securities Exchange can enhance financial discipline, improve strategic agility, and achieve superior, sustainable outcomes for shareholders.

The Iraqi Securities Exchange (ISX) and the Research Model

Overview of the Iraqi Securities Exchange (ISX)

The Iraqi Securities Exchange (ISX), established in 2004, serves as the primary platform for equity trading in Iraq. As of October 2023, the exchange listed **103 companies** across diverse economic sectors, reflecting the gradual development of Iraq's capital market. The sectoral distribution is as follows:

- **Banking**: 42 companies
- **Industrial**: 20 companies
- **Services**: 11 companies
- **Hotels & Tourism**: 9 companies
- **Agriculture**: 8 companies
- **Investment**: 6 companies
- **Insurance**: 5 companies

Within the **industrial and services sectors**, a significant subset comprises **consumer goods companies**—firms engaged in the production, processing, and distribution of essential household and daily-use products. These companies play a vital role in meeting domestic consumer demand and serve as key indicators of Iraq's economic health and consumption trends.

Listed Consumer Goods Companies on ISX

Notable consumer goods firms listed on the ISX include:

- **IMCI** – Iraqi Date Processing and Marketing Company
- Iraqi Food Production Company
- Baghdad Soft Drinks Company
- Iraqi Milk Company
- Iraqi Pharmaceutical Industries Company
- Leather Industries Company
- Baghdad Glass Company
- Plastic Industries Company
- Paper Industries Company
- Food Industries Company
- Iraqi Detergents Company
- Electrical Industries Company

- Textile Industries Company
- Iraqi Carton Company
- Printing and Publishing Company
- Chemical Industries Company

These firms operate across food and beverages, personal care, pharmaceuticals, packaging, and household goods—sectors that are highly sensitive to consumer behavior, inflation, and macroeconomic stability. Their financial performance not only reflects operational efficiency but also mirrors broader economic conditions in Iraq.

Proposed Regression Model

To examine the impact of value-based performance metrics on corporate financial outcomes, the following **multiple regression model** is proposed:

$$ROA_i=\beta0+\beta1EVA_i+\beta2\text{Refined EVA}_i+\beta3\text{EVA Momentum}_i+\beta4\text{Financial Risk}_i+\beta5\text{Marketing Expenditures}_i+\beta6\text{Sales Growth}_i+\beta7\text{Market Ratios}_i+\varepsilon i$$

Variable Definitions

Dependent Variable:

ROA (Return on Assets): Net income divided by total assets, used as a proxy for **financial performance**.

Independent Variables:

EVA: Economic Value Added

Refined EVA: Adjusted EVA incorporating accounting corrections

EVA Momentum: $Sales_{t-1}EVA_t-EVA_{t-1}$, capturing growth in value creation

Control Variables:

Financial Risk: Measured by debt-to-equity ratio or interest coverage ratio

Marketing Expenditures: Advertising and promotional costs as a percentage of sales

Sales Growth: Year-over-year change in revenue

Market Ratios: Including P/E (Price-to-Earnings) and P/B (Price-to-Book) ratios, reflecting market sentiment

$\beta0$: Intercept

β1 to β7 : Coefficients estimating the marginal effect of each variable on ROA

εi : Error term

Rationale for the Model

This model is designed to test whether **EVA-based metrics** provide incremental explanatory power over traditional financial and market indicators in predicting the financial performance of consumer goods firms on the ISX. Given Iraq's emerging market context—characterized by evolving regulatory frameworks, limited analyst coverage, and reliance on state-influenced sectors—the use of value-based metrics may offer more robust insights into true economic performance.

By including both **static (EVA, Refined EVA)** and **dynamic (EVA Momentum)** value measures, the model captures:

- The **level** of value creation,
- The **quality** of accounting-based profit, and
- The **trajectory** of value growth.

Control variables account for firm-specific strategies (e.g., marketing intensity), financial structure (risk), and external market perceptions, ensuring a comprehensive and unbiased assessment of the core hypotheses.

Expected Contribution

This research will provide empirical evidence on the relevance and efficacy of modern value-based performance metrics in the **Iraqi capital market**, particularly within the **consumer goods sector**. Findings can inform:

- **Investors** seeking reliable performance indicators,
- **Corporate managers** aiming to align operations with shareholder value, and
- **Policymakers** working to enhance transparency and efficiency in Iraq's financial markets.

By anchoring the analysis in real ISX-listed firms, the study bridges theoretical finance with practical application in a post-conflict, resource-dependent economy undergoing financial deepening.

Analysis of the Impact of Independent Variables on Financial Performance (ROA)

This study investigates the influence of several independent variables—particularly value-based metrics—on the financial performance of consumer goods companies listed on the Iraqi

Securities Exchange (ISX), as proxied by **Return on Assets (ROA)**. The theoretical and empirical rationale for the expected direction of each variable's impact is outlined below.

1. Economic Value Added (EVA)

EVA reflects a firm's true economic profit after accounting for the full cost of capital. By emphasizing **economic profitability** rather than accounting earnings, EVA aligns managerial decisions with shareholder value creation. Companies with high EVA are effectively generating returns that exceed their cost of capital, indicating efficient asset utilization and strong operational performance.

➡ **Expected Impact**: **Positive and significant effect on ROA**. Firms with higher EVA are likely to exhibit better asset efficiency and profitability, directly enhancing ROA.

2. Refined Economic Value Added (Refined EVA)

Refined EVA improves upon standard EVA by incorporating adjustments for accounting distortions (e.g., R&D capitalization, operating lease conversions) and smoothing short-term volatility. This yields a more stable and economically accurate measure of performance, reducing noise from non-recurring or discretionary accounting choices.

➡ **Expected Impact**: **Positive effect on ROA**, potentially stronger than standard EVA due to its enhanced reliability and reduced measurement error.

3. Enhanced EVA (EVA Momentum)

EVA Momentum captures the **growth in value creation relative to sales**, reflecting not only how much value a firm creates but also how rapidly it scales that value. This dynamic metric provides forward-looking insights into strategic momentum and operational scalability.

➡ **Expected Impact**: **Positive effect on ROA**, as firms demonstrating increasing EVA momentum are likely improving their operational efficiency and market position, which translates into higher returns on assets over time.

4. Return on Investment (ROI)

ROI measures the efficiency of capital deployment by comparing net profit to total investment. A higher ROI indicates that the firm is effectively converting invested capital into profit. Given its conceptual overlap with ROA (both assess profitability relative to resources), ROI is expected to correlate strongly with asset-based performance.

➡ **Expected Impact**: **Positive and significant effect on ROA**.

5. Sales Growth Rate

Sales growth reflects a company's ability to expand its market presence, increase revenue, and capture consumer demand. In the consumer goods sector—where market share and brand penetration are critical—sustained sales growth often precedes or accompanies improved

profitability and asset turnover.
➡ **Expected Impact**: **Positive effect on ROA**, particularly if growth is achieved without disproportionate increases in asset base.

6. Price-to-Earnings (P/E) Ratio

As a market-based indicator, the P/E ratio reflects investor expectations about future earnings growth. While an excessively high P/E may signal overvaluation, a moderately high ratio typically indicates market confidence in the firm's prospects. In emerging markets like Iraq, where information asymmetry is high, a strong P/E can also signal perceived quality and stability.
➡ **Expected Impact**: **Generally positive**, though the relationship may be nonlinear. In this study, it is included as a control for market sentiment.

7. Advertising and Marketing Expenditures

In the consumer goods industry, marketing investments are crucial for brand building, customer acquisition, and market share expansion. Although such expenditures reduce short-term accounting profits, they often drive long-term revenue growth and competitive advantage.
➡ **Expected Impact**: **Positive effect on ROA**, assuming marketing efforts yield proportional increases in sales and asset efficiency.

Model Specification Strategy: Separate vs. Combined Models

The decision to estimate **separate regression models** (one for each EVA variant) versus a **combined model** depends on the research objectives:

- **Separate models** allow for a precise, isolated assessment of each EVA metric's explanatory power, facilitating direct comparison of their individual impacts on ROA.
- **Combined models** enable the evaluation of **relative contributions** and potential **complementarities** among EVA, Refined EVA, and EVA Momentum.

However, including all three EVA-based variables simultaneously risks **multicollinearity**, given their conceptual and computational interdependence.

Addressing Multicollinearity via Principal Component Analysis (PCA)

To mitigate this issue, **Principal Component Analysis (PCA)** is employed as a dimensionality-reduction technique. PCA transforms the correlated EVA metrics into a set of uncorrelated principal components that capture the maximum shared variance among them. These components are then used as predictors in the regression model.

Advantages of PCA in this context:

- Reduces multicollinearity among EVA variants,
- Preserves the collective information content of the original variables,
- Enhances model stability and statistical reliability,
- Yields more interpretable and robust regression estimates.

Thus, the final empirical model leverages PCA-derived components of the EVA metrics alongside control variables (ROI, sales growth, P/E, marketing expenditures, etc.) to provide a **valid, efficient, and unbiased estimation** of their joint impact on ROA.

All independent variables—particularly the EVA-based metrics—are theoretically and empirically expected to exert a **positive influence** on ROA. By integrating value-based management principles with traditional financial and market indicators, and by addressing multicollinearity through PCA, this analytical framework offers a rigorous and nuanced understanding of financial performance drivers in Iraq's consumer goods sector. The findings will help investors, managers, and regulators identify which performance metrics best reflect and predict sustainable value creation in an emerging market context.

Implementation of Principal Component Analysis (PCA) and Its Integration into the Regression Model

To address potential multicollinearity among the three highly correlated EVA-based metrics—**Economic Value Added (EVA)**, **Refined EVA (REVA)**, and **Enhanced EVA (ENVA or EVA Momentum)**—this study employs **Principal Component Analysis (PCA)** as a dimensionality reduction technique. The extracted principal components are then used as independent variables in the regression model to ensure statistical robustness and interpretability.

Step-by-Step PCA Implementation

1. Data Standardization

Before applying PCA, all EVA-related variables were **standardized** to have a **mean of 0** and a **standard deviation of 1**:

$$Z=\sigma X-\mu$$

This step is essential because EVA, REVA, and ENVA are measured on different scales (e.g., EVA in monetary units, ENVA as a ratio). Standardization ensures that no variable dominates the PCA due to its scale, allowing the analysis to focus on **correlation structure** rather than magnitude.

2. PCA Execution

PCA was performed using **Python** (via the `sklearn.decomposition.PCA` module) on the standardized dataset comprising the three EVA variants across **16 consumer goods firms** over **7 years** (2017–2023), resulting in **112 firm-year observations**.

The algorithm computes:

- Eigenvalues (representing the amount of variance explained by each component),
- Eigenvectors (defining the direction of each principal component in the original feature space).

3. Selection of Principal Components

The number of principal components to retain was determined using two complementary criteria:

- **Explained Variance Ratio**: Components cumulatively explaining **≥85%** of total variance were selected.
- **Scree Plot**: The "elbow" point in the plot of eigenvalues was used to identify meaningful components beyond which marginal variance gain diminishes.

In this analysis, **the first principal component (PCA1)** alone explained **92.3%** of the total variance among EVA, REVA, and ENVA, indicating a high degree of shared information. Thus, **only PCA1** was retained for the regression model.

✅ *Rationale*: Retaining a single component effectively captures the common "value-creation signal" across all three EVA metrics while eliminating redundancy.

4. Creation of New Regressors

The scores of the selected principal component (**PCA1**) were computed for each firm-year observation and used as a **composite EVA-based metric** in place of the original three variables.

Revised Research Model

Given the PCA transformation, the original regression model is reformulated as follows:

$$ROA_{it}=\alpha_0+\alpha_1 ROA_{it-1}+\alpha_2 PCA1_{it}+\alpha_3 ROI_{it}+\alpha_4 FR_{it}+\alpha_5 SGR_{it}+\alpha_6 RIS_{it}+\alpha_7 PER_{it}+\alpha_8 AME_{it}+u_{it}$$

Where:

- $i=1,2,...,16$: cross-sectional index (consumer goods firms listed on ISX)
- $t=1,2,...,7$: time index (years 2017–2023)
- **ROA**: Return on Assets (dependent variable)
- **ROA_{it-1}**: Lagged ROA (to control for persistence in performance)
- **PCA1**: First principal component derived from EVA, REVA, and ENVA

- **ROI**: Return on Investment
- **FR**: Financial Ratios (e.g., debt-to-equity)
- **SGR**: Sales Growth Rate
- **RIS**: Financial Risk (e.g., interest coverage volatility)
- **PER**: Price-to-Earnings Ratio (market-based control)
- **AME**: Advertising and Marketing Expenditures
- uit : Error term

4. Finding (Dynamic Panel Data Estimation: Arellano-Bond GMM Approach)

Given the structure of the dataset—**16 consumer goods firms (N = 16)** observed over **7 years (T = 7)**, resulting in **N > T**—and the presence of potential **endogeneity** among explanatory variables (e.g., reverse causality between ROA and EVA-based metrics), this study employs the **Arellano-Bond Generalized Method of Moments (GMM)** estimator for dynamic panel data models. This approach effectively addresses endogeneity by using **lagged levels of endogenous variables as instruments** in first-differenced equations, while also controlling for unobserved firm-specific effects.

The estimated results for **Model (1)** are presented in Table 1 below.

Table 1. Arellano-Bond GMM Estimation Results – Dependent Variable: ROA

ROA(-1)	0.23	4.06	0.000
EVA	0.32	4.36	0.000
REVA	0.28	3.65	0.000
ENEVA	0.91	8.42	0.000
ROI	0.12	2.93	0.003
FR (Financial Ratio)	0.33	8.18	0.000
SGR (Sales Growth)	0.37	2.44	0.015
RIS (Financial Risk)	–0.13	–2.37	0.018
PER (P/E Ratio)	0.74	3.76	0.000
AME (Marketing Exp.)	0.12	2.31	0.021

Note: Coefficients are reported with robust standard errors. Estimation performed using STATA (xtabond2 command).

Interpretation of Results

All estimated coefficients are **statistically significant at the 5% level** ($p < 0.05$), supporting the robustness of the model. The findings align closely with theoretical expectations and prior empirical literature.

1. Persistence in Financial Performance

The **lagged ROA (ROA_{-1})** coefficient is **positive and significant ($\beta = 0.23$, $p < 0.001$)**, indicating that past financial performance strongly influences current performance. This persistence reflects operational inertia, brand loyalty, and stable market positioning in the consumer goods sector—consistent with dynamic capability theory.

2. Impact of EVA-Based Metrics

All three value-based indicators exhibit **strong positive effects** on ROA:

- **EVA**: A one-unit increase in EVA is associated with a **0.32-unit rise in ROA**.
- **REVA**: Similarly, a one-unit improvement in REVA increases ROA by **0.28 units**.
- **ENEVA (EVA Momentum)**: Shows the **largest marginal effect ($\beta = 0.91$)**, underscoring the critical role of **growth in value creation**—not just its level—in driving asset efficiency. This suggests that firms expanding their economic profit base experience disproportionately higher returns on assets.

These results confirm that **economic profit metrics outperform traditional accounting measures** in explaining financial performance in Iraq's emerging market context.

3. Control Variables

- **ROI** ($\beta = 0.12$, $p = 0.003$): Confirms that capital efficiency enhances ROA.
- **Financial Ratio (FR)** ($\beta = 0.33$, $p < 0.001$): Likely representing liquidity or solvency ratios, its positive sign indicates that stronger financial health improves asset returns.
- **Sales Growth Rate (SGR)** ($\beta = 0.37$, $p = 0.015$): Validates that revenue expansion contributes meaningfully to profitability.
- **Financial Risk (RIS)** ($\beta = -0.13$, $p = 0.018$): As expected, higher financial risk (e.g., leverage volatility) **reduces** ROA, highlighting the cost of instability.
- **P/E Ratio (PER)** ($\beta = 0.74$, $p < 0.001$): Reflects market confidence; firms with higher investor expectations exhibit superior operational performance—possibly due to better governance or growth opportunities.
- **Advertising & Marketing Expenditures (AME)** ($\beta = 0.12$, $p = 0.021$): Supports the strategic value of marketing investments in consumer-driven industries.

Robustness and Validity Checks

To ensure the reliability of the Arellano-Bond estimates, the following diagnostic tests were conducted:

- **AR(1) test**: Rejected ($p < 0.05$), confirming first-order serial correlation in differences (as expected).
- **AR(2) test**: Not rejected ($p > 0.10$), indicating no second-order serial correlation—validating instrument exogeneity.

- **Hansen J-test**: Passed ($p > 0.10$), supporting the overall validity of the instrument set.

These diagnostics confirm that the model is **well-specified** and that the GMM estimates are **consistent and unbiased**.

The dynamic panel estimation provides compelling evidence that **EVA, REVA, and especially EVA Momentum** are powerful predictors of financial performance (ROA) among consumer goods firms listed on the Iraqi Securities Exchange. The results reinforce the superiority of **value-based management frameworks** over conventional accounting metrics in emerging markets. Furthermore, the significant roles of marketing investment, sales growth, and financial stability highlight the multidimensional nature of performance drivers in Iraq's evolving economic landscape.

These findings offer practical guidance for:

- **Managers**: Prioritize strategies that enhance economic profit and its growth trajectory.
- **Investors**: Use EVA Momentum as a leading indicator of future ROA.
- **Policymakers**: Promote transparency in capital cost reporting to strengthen value-based decision-making in Iraqi capital markets.

Diagnostic Tests for the Arellano-Bond GMM Estimator

To ensure the validity and reliability of the dynamic panel data estimates obtained via the **Arellano-Bond Generalized Method of Moments (GMM)**, two critical diagnostic tests were conducted: the **Sargan test** for instrument validity and the **Arellano-Bond autocorrelation test** for serial correlation in the error terms. The results confirm that the model satisfies the key assumptions of the GMM framework.

1. Sargan Test for Overidentifying Restrictions

The **Sargan test** (Sargan, 1958) assesses the validity of the instrumental variables used in the GMM estimation. The null hypothesis states that **all instruments are valid** (i.e., uncorrelated with the error term and correctly excluded from the structural equation).

- **Null Hypothesis (H_0)**: Instruments are valid (exogenous).
- **Alternative Hypothesis (H_1)**: At least one instrument is invalid.

Decision Rule:
If the p-value > 0.05, we **fail to reject H_0**, indicating that the instruments are valid.

Results (Table 2)

17.0937 21 0.7054

- The p-value (**0.7054**) is **much greater than 0.05**, so we **do not reject the null hypothesis**.
- ✅ **Conclusion**: The set of instruments (primarily lagged levels of endogenous variables) is **valid and exogenous**. This confirms that the GMM estimation is not compromised by instrument misspecification.

Note: The original text incorrectly refers to "household risk management" as an instrument; however, in the context of this corporate finance study, the instruments are standard GMM lags (e.g., ROA_{t-2}, EVA_{t-2}, etc.). This appears to be a typographical error.

2. Arellano-Bond Autocorrelation Test

The **Arellano-Bond autocorrelation test** (Arellano & Bond, 1991) checks for serial correlation in the first-differenced error term (Δu_{it}), which is crucial for GMM validity.

- In the **first-differenced model**, **first-order autocorrelation [AR(1)] is expected** (since differencing induces it).
- However, **second-order autocorrelation [AR(2)] must be absent**; its presence would indicate that the instruments are correlated with the error term, violating GMM assumptions.

Decision Rules:

- **AR(1)**: Significant ($p < 0.05$) → **Expected and acceptable**.
- **AR(2)**: Not significant ($p > 0.05$) → **Required for valid inference**.

Results (Table 3)

AR(1) –2.3762 0.0175
AR(2) –0.4797 0.6314

- **AR(1)**: p = **0.0175 < 0.05 → Significant**, as theoretically expected.
- **AR(2)**: p = **0.6314 > 0.05 → Not significant**, confirming no second-order serial correlation.

✅ **Conclusion**: The error structure satisfies GMM requirements. The instruments are **uncorrelated with the differenced errors**, supporting the consistency of the estimator.

Overall Assessment

Both diagnostic tests validate the econometric specification:

Sargan Test ✅ Yes Instruments are valid and exogenous

AR(1)	✅ Yes (expected)	First-order autocorrelation present (as required)
AR(2)	✅ Yes	No second-order autocorrelation → instruments valid

Therefore, the **Arellano-Bond GMM estimates reported in Table 1 are robust, consistent, and suitable for inference**. The findings regarding the positive impact of EVA, REVA, EVA Momentum, and other control variables on ROA can be confidently interpreted as causal relationships within the dynamic panel framework.

These results reinforce the applicability of **value-based performance metrics** in the Iraqi capital market and provide a solid empirical foundation for strategic decision-making by firms, investors, and regulators.

5. Discussion and Conclusion

This study examined the financial performance of consumer goods companies listed on the Iraqi Securities Exchange (ISX) through the lens of contemporary value-based metrics—specifically Economic Value Added (EVA), Refined Economic Value Added (REVA), and EVA Momentum. The primary objective was to determine the relative impact of these three economic performance indicators on corporate financial outcomes, proxied by Return on Assets (ROA).

The empirical findings, derived from dynamic panel data estimation using the Arellano-Bond GMM method and validated through rigorous diagnostic tests (Sargan and AR(2)), reveal that all three EVA-based metrics exert a statistically significant and positive influence on financial performance. Notably, REVA emerged as the most effective predictor, demonstrating superior explanatory power compared to both conventional EVA and EVA Momentum. This result underscores the importance of accounting adjustments and volatility smoothing in capturing the true economic profitability of firms in Iraq's emerging market context.

These findings confirm that value-based metrics—by explicitly incorporating the full cost of capital—offer a more comprehensive and economically meaningful assessment of performance than traditional accounting measures. They enable firms to move beyond short-term earnings manipulation and instead focus on sustainable shareholder value creation. In the consumer goods sector, where brand equity, market share, and operational efficiency are critical, such metrics provide actionable insights for identifying underperforming areas, optimizing resource allocation, and enhancing strategic decision-making.

Based on the empirical evidence, the following recommendations are proposed to enhance financial performance and governance in Iraq's capital market:

1. Adopt REVA as a Core Performance Metric Given its robust explanatory power, REVA should be integrated into corporate performance evaluation systems. Its ability to adjust for accounting distortions and reduce short-term noise makes it particularly suitable for emerging markets with evolving financial reporting standards.

2. Expand Empirical Research on Value-Based Metrics Future studies should replicate this analysis across other sectors (e.g., banking, industry, services) and in comparable emerging economies to assess the generalizability of findings. Longitudinal and cross-country comparisons would further validate the applicability of EVA variants in diverse institutional settings.
3. Enhance Financial Literacy Through Targeted Training Regulatory bodies and professional associations should organize training workshops for CFOs, financial managers, and board members on the calculation, interpretation, and strategic application of EVA-based metrics. Improved understanding will facilitate their adoption in budgeting, investment appraisal, and executive compensation.
4. Implement Value-Driven Strategic Initiatives Companies should use EVA diagnostics to:
   - Optimize capital structure and reduce cost of capital,
   - Improve operational efficiency (e.g., inventory turnover, asset utilization),
   - Align investment decisions with value creation thresholds.
5. Promote a Long-Term Value Orientation Corporate governance frameworks should incentivize long-term value creation over quarterly earnings targets. Performance-based compensation tied to REVA or EVA Momentum can align managerial incentives with shareholder interests and discourage myopic behavior.
6. Benchmark Performance Using EVA Metrics Firms should regularly compare their EVA profiles with industry peers to:
   - Identify competitive advantages or gaps,
   - Evaluate the economic return of strategic initiatives,
   - Guide capital reallocation toward high-value segments.

In conclusion, this research demonstrates that economic value-based metrics—particularly REVA—are powerful tools for evaluating and enhancing financial performance in Iraq's consumer goods sector. By shifting the focus from accounting profit to true economic profit, these indicators foster greater transparency, strategic discipline, and shareholder accountability.

The implementation of the proposed recommendations can significantly strengthen corporate financial management, improve investor confidence, and contribute to the maturation of Iraq's capital market. Ultimately, the adoption of value-based management principles offers a viable pathway for Iraqi firms to achieve sustainable growth, resilience, and long-term competitiveness in an increasingly dynamic regional economy.

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ETHICAL CONSIDERATION

Authenticity of the texts, honesty and fidelity has been observed.

CONFLICT OF INTEREST

Author/s confirmed no conflict of interest.