The Impact of Financial Flexibility on Financial Performance - The Mediating Role of Financing Mix: Evidence from listed Companies within Industrial and Manufacturing Sector in Egypt

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Scientific Journal for Financial and Commercial Studies and Research (SJFCSR)

Faculty of Commerce – Damietta University

Vol.6, No.1, Part 1., January 2025

APA Citation:

Elgayar, A. H. and **Libda**, R. E. (2025). The Impact of Financial Flexibility on Financial Performance - The Mediating Role of Financing Mix: Evidence from listed Companies within Industrial and Manufacturing Sector in Egypt, ***Scientific Journal for Financial and Commercial Studies and Research***, Faculty of Commerce, Damietta University, 6(1)1, 131-178.

Website: https://cfdj.journals.ekb.eg/

The Impact of Financial Flexibility on Financial Performance - The Mediating Role of Financing Mix: Evidence from listed Companies within Industrial and Manufacturing Sector in Egypt

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Abstract:

This study aims to examine the mediating role of the financing mix in shaping the influence of financial flexibility on the financial performance of listed companies in Egypt's industrial and manufacturing sector. According to an empirical methodology, the study used secondary data collected from various sources covering the period from 2002 to 2020. The analysis focuses on three of the most prominent industry leaders: Eastern Company for Tobacco and Cigarettes, Misr Aluminum Company, and the Egyptian Financial and Industrial Company, with observations spanning from 2018 to the present. Two primary hypotheses were constructed and investigated by Panel Data Structural Equation Modelling (PDSEM) using Stata/MP 17 to validate these hypotheses. The results confirm the validity of the hypotheses and shed light on the interrelationships between the variables specified therein. Significantly, the findings are consistent with the expected theoretical results.

Several suggestions are made for future research. First, examining additional factors affecting the financial performance of Egyptian listed companies within the industrial and manufacturing sector. By including different time frames and a wider range of companies in this sector, the study could produce more comprehensive and varied results. Secondly, consideration should be given to extending this study from the industrial and manufacturing sector to other sectors. Analyzing multiple sectors can provide a broader understanding of how financial flexibility affects financial performance in different market segments. In this case, researchers must account and control, using control variables for each sector to isolate and demonstrate the difference between findings of each sector. Third, integrating external influences such as global health crises, political developments and socio-economic changes in the MENA region. Research on the effects of events such as the COVID-19 pandemic and ongoing geopolitical tensions can uncover how these factors shape the relationship between financial flexibility, financing mix, and financial performance. Fourth, examining the bidirectional effects between each pair of variables through Granger

causality testing could provide valuable insights into the causal relationships between financial flexibility, financing mix, and financial performance. Finally, it could provide practical insights for decision-makers to explore how the influence of financial flexibility on financial performance changes when mediated by variables other than the financing mix. By following these directions, future research can deepen the understanding of how financial flexibility and financing mix interact to shape the performance of companies in different contexts and time periods, providing valuable insights for both companies and policymakers.

Keywords: Financial Flexibility, Financial Performance, Financing Mix, Mediator Variable, Industrial and Manufacturing Sector, Egypt, Eastern Company for Tobacco and Cigarettes, Misr Aluminum Company, and Egyptian Financial and Industrial Company, Panel Data, Structural Equation Modelling (SEM).

1. INTRODUCTION

The dawn of new financing strategies geared towards green investment decisions is profoundly influenced by governance frameworks, including mandates from regulatory bodies. Embracing technological innovations that bolster eco-friendly business strategies and enhance strategic investment decision-making practices significantly fortifies firm performance (Alkaraan et al., 2023a). Nevertheless, securing financial flexibility remains a pressing concern for companies, as striving for flexibility in debt markets might strain relationships with existing lenders, escalating the risk of future financial turmoil (Garmaise and Natividad, 2021). A company's investment behavior and performance are deeply affected by its financial strategy, where financial flexibility stands as a pivotal factor (Rapp et al., 2014).

Financial flexibility, described as "the capacity of a firm to access and reconfigure its financing at minimal cost" (Gamba and Triantis, 2008), augments a firm's ability to raise capital and swiftly seize investment opportunities. Extensive literature validates the significance of financial flexibility in mitigating suboptimal investments and poor performance (Arslan-Ayaydin et al., 2014; Rapp et al., 2014), reducing the crowding-out effect on investments (Chao and Huang, 2022), and easing financing constraints (Wei, 2016). Restrictions on external financing can lead to underinvestment due to high costs like interest expenses, but financial flexibility permits firms to harness low-cost financing for investments while

maintaining healthy financial leverage, thus alleviating underinvestment (Mura and Marchica, 2007). Conversely, in the presence of severe principal-agent problems, managers might pursue high-return projects with negative net present values to fulfill personal interests, resulting in overinvestment (Jensen, 1986). Elevated financial flexibility can exacerbate overinvestment by increasing available capital and the likelihood of indiscriminate investments (Sang, 2018). The paradox of financial flexibility and firm performance stems from the empirical measures and proxies used, which might not always align, causing inconsistencies in empirical evidence and challenges for effective policy interventions. Wu et al. (2023) identified a positive correlation between corporate governance structure, financial flexibility, and firm performance, with corporate governance mechanisms modulating this relationship.

Extensive research has examined firm financing mixes and their determinants, centering on the trade-off theory of debt, which balances bankruptcy costs against tax benefits (Kraus and Litzenberger, 1973; Myers and Majluf, 1984), and the pecking order theory, which prioritizes retained earnings over debt and debt over equity issuance. Graham and Harvey (2001) noted that the primary consideration in issuing debt is maintaining financial flexibility. Debt issuance financially commits the firm, diminishing its flexibility. Firms strive to maintain and enhance financial flexibility to capitalize on positive NPV projects and evade financial distress (Graham and Harvey, 2001; Denis, 2011; Brav et al., 2005).

Corporate leaders, investors, analysts, and researchers continuously debate the optimal financing arrangement due to its impact on business performance and firm value (Umobong and Ayebanengiyefa, 2019). Capital structure, the method by which businesses finance their activities through equity, debt, or a combination, is a critical decision in financial management. The ideal capital structure minimizes risks and costs while maximizing profits and shareholder wealth (Dabo et al., 2019; Kafle & Ghimire, 2020). The ongoing process of capital structure decisions involves balancing risks and returns, impacting the firm's profitability and value.

Debt policy aims to bolster a company's operational fund base. External funding, through stock issuance or debt financing, significantly influences a company's survival and growth prospects. Short-term debt, viewed as an essential financing source, is accessible and beneficial during sudden working capital shortages (Henry et al., 2020). Despite inconsistent findings regarding

the relationship between short-term debt and financial performance, some studies show significant negative impacts on performance (Nwude et al., 2016; Aziz and Abbas, 2019), while others find positive correlations (Baum et al., 2006; Eton et al., 2017).

Financial performance, closely tied to company value, is a fundamental aspect of economic entities. High financial performance is crucial for sustainable economic development (Henry et al., 2020). Profitability, a key indicator of financial performance, positively influences business attractiveness to investors, potentially affecting stock prices (Putri and Suwitho, 2015; Heder and Priyadi, 2017). The impact of financing composition on financial performance varies across industries due to differing capital management practices.

In summary, the influence of financial flexibility on financial performance, mediated by the financing mix, is a complex interplay of governance structures, investment behaviors, and strategic financial decisions. Balancing debt and equity to optimize capital structure while preserving financial flexibility is vital for enhancing firm performance and value. It is considered as one of the most important topics in corporate finance.

2. LITERATURE REVIEW

2.1 Financial Performance

Financial performance is a critical measure of how effectively a firm utilizes its assets to generate revenues. It involves evaluating the outcomes of a firm's policies and operations in monetary terms (Mwangi, 2016). This assessment helps identify the financial strengths and weaknesses of a firm by analyzing the relationships between items in the financial position and income statement. The term encompasses a general measure of a firm's overall financial health over time and facilitates comparisons across firms in the same industry or different sectors.

There are multiple ways to measure a firm's performance, with all measures ideally considered in aggregation. Key indicators include revenue from operations, operating income, cash flow from operations, total unit sales, return on investment (ROI), competitive position, market share growth, overall profitability, sales volume growth, and cash flow and profit improvement (Njeru, 2012; Lyria et al., 2017). A comprehensive evaluation often involves both financial and non-financial measures. Financial measures, such as profit, revenue, ROI, return on equity (ROE), and earnings per share

(EPS), are objective, straightforward, and easy to understand, though they may suffer from availability issues and historical bias (Omar, 2014; Ng'ang'a, 2017). Non-financial measures include employee numbers, revenue growth, revenue per employee, market share, customer satisfaction, and employee satisfaction, but these can be subjective (Uzel, 2015).

Given the limitations of both financial and non-financial measures, a hybrid approach combining these metrics is widely accepted. Objective measures, such as profitability (gross margin, net margin, return on sales, return on equity), cash flow (free cash flow over sales), and growth indicators (historical revenue growth), provide robust insights into firm performance (Kiaritha, 2015). Management researchers often prefer accounting variables like ROE, ROI, and return on assets (ROA), alongside measures like earnings per share (EPS), price/earning (P/E) ratio, and net interest margin (NIM). These metrics assess managerial performance by evaluating how well management uses assets to generate returns (Memba, 2011). However, these measures have known drawbacks, such as including depreciation and inventory costs and relying on historical asset values.

Return on total assets (ROA) is a key metric reflecting management's efficiency in using resources to generate profit. A higher ROA indicates a firm's ability to earn more on its invested capital, with a standard figure for ROA being 10%-12% (Ongore, 2013; Nyabwanga et al., 2013). Firm performance encompasses overall productivity, including stock turnover, customer base, profitability, and market share (Uzel et al., 2015). Profitability, a crucial indicator, is linked to corporate profitability, where higher earnings from production and operations enhance a firm's ability to repay debt (Fu Gang et al., 2012; Agha, 2014). Performance measurement tools help firms monitor performance, identify areas needing attention, motivate employees, improve communication, and strengthen accountability (Migiro, 2013).

The relationship between firm growth and profit rates is well-established, with growth potentially enhancing firm size and benefiting from economies of scale (Coad and Rekha, 2010; Goddard et al., 2014). Sales growth and cash flow are vital indicators of a company's core business growth and liquidity, respectively (Javed & Akhta, 2012). Measures such as return on sales, return on assets, and return on equity reveal how efficiently a company earns in relation to sales, utilizes assets, and provides returns to investors. Asset turnover, the ratio of sales to average total assets, reflects the firm's efficiency in generating revenue (Ongore & Kusa, 2013).

Profitability, measured as net income to average assets, correlates with higher asset turnover, predicting better financial performance (Mwirie & Birundi, 2015). Studies highlight the significant influence of asset quality on performance, with larger firms often gaining financial benefits due to their size (Ongore, 2013). Financial measures are advantageous due to their calculation simplicity and globally accepted definitions.

Traditionally, the success of manufacturing firms has been evaluated using financial measures. Financial statement analysis through ratio analysis identifies weaknesses, problem areas, and evaluates financial performance by comparing a firm's performance with others in the industry and assessing trends over time. Financial ratios, such as return on equity (ROE), are particularly emphasized for their utility in evaluating financial statements (Cornett et al., 2008; Brigham & Ehrhardt, 2015).

2.2 Financial Flexibility

Since the popularization of capital structure theories, the literature on financing decisions and their impact on firm value has gained momentum over the past decades. Financial flexibility, which refers to a firm’s ability to access and restructure its financing at a low cost, is considered of first-order importance in relation to entrepreneurs’ financial policy decisions. Rapp et al. (2014) critically evaluate the value of financial flexibility via two channels: mitigating the underinvestment problem and lowering costs of financial distress. However, the value of financial flexibility is not directly observable as it is endogenously determined by prior financial decisions. Empirical studies use different proxies which are not necessarily consistent with each other and lead to some controversial evidence about the effect of financial flexibility on firms’ investment and performance.

Gamba and Triantis (2008) theoretically model the determinants of the value of financial flexibility, which include five key components: growth opportunities, profitability, the effective costs of holding cash, the cost of external financing, and the reversibility of capital. This theoretical measure has been empirically tested in Rapp et al. (2014) and Chortareas and Noikokyris (2021) using different proxies. Overall, there is a consensus in the relevant literature that firms with financial flexibility are more likely to have higher growth opportunities, effective costs of holding cash, cost of external financing, reversibility of capital, and profitability. Chortareas and Noikokyris (2021) also include firm size and age in the measure of financial

flexibility. They argue that younger and smaller firms have a better ability to pursue valuable growth opportunities, making financial flexibility more valuable for them. Furthermore, older firms focus more on the value of existing assets, and younger firms are more likely to pursue unpredictable growth opportunities in the future, which means financial flexibility will be more attractive to younger firms. Similarly, the value of firm size comes primarily from the value of their growth opportunities (Ferrando et al., 2017). Accordingly, the ability to maintain future investments through financial flexibility has greater significance for small firms than for larger firms.

Financial flexibility is also viewed as an evaluation of the necessity for funding and achievement of goals without jeopardizing creditworthiness (Denis and McKeon, 2012). Firms with less financial flexibility might rapidly fall into financial distress and be forced to take actions that healthy firms would consider detrimental to long-term shareholder wealth (Fahlenbrach et al., 2021). DeAngelo and DeAngelo (2007) explain that financial flexibility can be measured by the firm's leverage and cash-holding levels. As stressed in Modigliani and Miller (1963), a conservative leverage policy may be adopted by firms to maintain "substantial reserves of untapped borrowing power," which allow them to raise external funds. It is easier for firms with more borrowing power to access the external capital markets and raise funds (Arslan-Ayaydin et al., 2014). Firms with financial flexibility are also judged by cash holdings and their ability to face unexpected future shocks (Denis, 2011).

2.3 Financing Mix (Debt to Equity)

One of the most critical decisions in financial management is selecting a combination of diverse sources of funds, which requires a thorough evaluation (Kafle & Ghimire, 2020). These sources include short-term debt, long-term debt, preferred stock, and common stock or equity stock financing. Determining the optimal combination of these sources is a challenging task for financial managers. The perfect combination minimizes risks and costs while maximizing profits and shareholder wealth. The financing combination decision is a continuous process that reaches its optimal state when it maximizes the firm's market value, involving a balance between risks and returns.

The debt-to-equity ratio is a measure of a company's long-term solvency, indicating the proportion of funds that originate from creditors versus investors (Nzotta, 2018). This ratio, defined as debt divided by equity (Akaji et al., 2012), assesses an organization's ability to satisfy long-term obligations. Omaliko and Okpala (2020) note that a company's debt equity financing combines its financial obligations, impacting its capacity to meet stakeholders' needs. Thus, the financing combination is pivotal in business operations, with significant implications for long-term viability (Akaji et al., 2021).

Equity capital, representing shareholders' interests after liabilities are deducted, can take forms such as common stock, preferred stock, share premium, revenues reserves, capital surplus, retained earnings, and reserves (Choi, 2014). Share capital, raised by issuing shares in exchange for cash or other consideration, includes ordinary shares and preferred stock (Uremadu & Efobi, 2012). Pandey (2009) observed that a company's capital structure should maximize fund utilization and adaptability to shifting conditions. In a highly complex and competitive environment, considering the effect of capital structure decisions on overall profitability is crucial.

Various perspectives exist on the financing mix. According to Stephen, Westerfield, and Jordan (2003), it refers to the proportion of debt to equity used to finance production and business activities. This relationship between long-term debt and equity is crucial due to its influence on profitability and value. However, the optimal financial blend remains an unresolved question. Despite numerous hypotheses, no definitive model has emerged to determine it (Kafle & Ghimire, 2020).

Modigliani and Miller (1958) theorized that the combination of equity and debt financing does not affect a firm's value, assuming no taxes, no bankruptcy costs, no transaction costs, equal borrowing costs, flawless market information, and no arbitrage. Later modifications acknowledged that leverage impacts value under corporate income taxes. They proposed that financing decisions are irrelevant in a perfect capital market, asserting that a firm's value is determined by its actual assets, not its securities. However, real-world imperfections like corporate taxes and bankruptcy expenses influence the firm's value and capital structure (Lawal, 1989). Studies by Warner (1977) and Chua and McConnel (1982) indicated that large firms' diversified financial flows make them less susceptible to bankruptcy. Myers (1977) emphasized the significance of future growth opportunities in a company's market value. These market imperfections support the importance of capital structure decisions.

When a business improves its financial standing, it might increase its reliance on loan financing. Long-term debt financing, with a payback duration of more than a year, is often used to fund capital development (Ifureze et al., 2022). This ratio indicates a company's long-term financial health, including its ability to satisfy debt commitments. A decreasing long-term debt to total assets ratio over time may indicate reduced reliance on debt (Graham & Harvey, 2001). Long-term financing options are more accessible in nations with competitive banking systems and developed capital markets (Pelham, 2000). However, long-term debt is less common in poorer nations due to weak contractual frameworks (Ifureze et al., 2022).

Long-term debt can maximize shareholder return but may lead to agency difficulties (Jensen & Meckling, 1976). It is frequently used to finance investments with a long payback period. Despite potential risks like credit supply shocks, long-term debt financing positively impacts investment and performance. However, it might skew managers' incentives and reduce performance. Studies on the correlation between long-term debt and profitability have yielded mixed results. Muhammad et al. (2022) found profitability positively correlated with debt, while Dang et al. (2020) discovered high long-term debt levels might negatively affect return on equity.

Short-term debt, often with a maturity of less than a year, has received less academic attention (Dawar, 2014). Despite mixed empirical findings, short-term debt's impact on financial performance is debated. Short-term financing offers low interest rates and immediate financial solutions without long-term commitment (Yazdanfar & hman, 2015). Short-term borrowing, prevalent in dysfunctional credit markets like Nigeria, can reduce profits due to high costs and lack of transparency (Kagame, 2014). Nonetheless, some studies suggest that prioritizing short-term obligations might boost performance and profitability (Bendavid et al., 2017).

In summary, the financing mix in manufacturing firms, encompassing both long-term and short-term debt, is a complex and multifaceted issue. Balancing debt and equity is crucial for minimizing risks and maximizing returns. While theoretical frameworks and empirical studies offer insights, the optimal financing combination remains context-dependent and influenced by various factors, including market conditions and firm-specific characteristics.

2.4 The Impact of Financial Flexibility on Financial Performance

Financial flexibility plays a pivotal role in shaping the investment decisions and overall performance of manufacturing firms. This review synthesizes findings from various studies to examine how financial flexibility influences financial performance, particularly within the context of manufacturing.

Biddle et al. (2009) introduce the concept of using residuals from an investment efficiency baseline model as a firm-specific proxy for deviations in expected investment levels. Their approach underscores the importance of understanding how deviations from expected investment can be indicative of financial flexibility's impact on firm performance. Similarly, Richardson (2006) develops an accounting-based framework to measure over-investment and free cash flow, revealing that over-investment tends to be more prevalent in firms with surplus cash flow, aligning with agency cost theories.

Dabla-Norris et al. (2012) further contribute by constructing a public investment efficiency index, although its applicability differs from accounting-based frameworks in evaluating investment management. This underscores the diverse approaches in assessing financial flexibility's influence on investment efficiency across different institutional contexts.

Investment decisions, as highlighted by various scholars, are crucial determinants linking financial flexibility to firm performance (Raza et al., 2021). During economic crises, the role of financial flexibility becomes pronounced, enabling firms to navigate uncertainties and capitalize on emerging opportunities (Alkaraan et al., 2023b). Gamba and Triantis (2008) and De Jong et al. (2012) emphasize how financial flexibility mitigates investment distortions, allowing firms to pursue investments aligned with their strategic objectives, particularly evident during periods like the Asian financial crises (Arslan-Ayaydin et al., 2014).

Contrasting perspectives emerge in recent studies. Gregory (2020) finds that in BRIC countries, financial flexibility shows no significant association with immediate capital expenditures, suggesting that governmental interventions may mitigate firms' flexibility in investment decisions. This challenges earlier findings that underscored financial flexibility's direct impact on investment capacity (Ma and Jin, 2016; Chang and Ma, 2018).

Empirical evidence consistently supports the notion that conservative leverage policies enhance financial flexibility (Graham and Harvey, 2001; Bancel and Mittoo, 2004; Brounen et al., 2006). Such policies allow firms to maintain reserves of borrowing power, facilitating better access to external financing during favorable investment opportunities (Marchica and Mura, 2010). This underscores how financial flexibility not only influences investment decisions but also enhances a firm's ability to respond to market opportunities.

Overall, the literature reveals a nuanced relationship between financial flexibility and financial performance in manufacturing firms. While it enhances firms' resilience and ability to pursue strategic investments, the effectiveness of financial flexibility can vary significantly across different economic contexts and regulatory environments. Future research should explore these dynamics further to provide deeper insights into how manufacturing firms can optimize their financial flexibility to achieve sustainable performance outcomes.

This review integrates findings from diverse studies to offer a comprehensive understanding of the impact of financial flexibility on financial performance within the manufacturing sector. These studies illustrate that there is a positive relationship between financial flexibility on financial performance.

2.5 The Impact of Financial Flexibility on Financing Mix

Financial decisions within firms, particularly in manufacturing sectors, are increasingly recognized as pivotal to their operational flexibility and strategic maneuverability. DeAngelo and DeAngelo (2007) assert that these decisions are heavily influenced by the imperative to maintain financial flexibility. This concept is exemplified in empirical findings that highlight managers' inclination towards share repurchases, especially for distributing cyclical profits or non-operating cash flows, as opposed to more rigid forms of payout like dividends (Guay and Harford, 2000; Jagannathan, Stephens, & Weisbach, 2000). Such preferences underscore a strategic approach to capital allocation that prioritizes adaptability over immediate financial commitments.

Graham and Harvey (2001) reinforce these observations through their survey of CFOs, revealing a consensus among financial executives that share repurchases enhance a firm's financial flexibility. This preference suggests that flexibility considerations play a significant role in shaping firms' capital

structure decisions. Capital structure, defined as the blend of debt and equity financing, reflects these strategic choices. Frank and Goyal (2009) elaborate on the implications of this mix, noting that while debt financing offers immediate capital infusion, it also imposes fixed financial obligations that may constrain future flexibility and growth opportunities.

Theoretical frameworks such as the trade-off theory (Kraus and Litzenberger, 1973; Myers and Majluf, 1984) and the pecking order theory (Myers and Majluf, 1984) provide insights into how firms navigate these decisions. The trade-off theory posits that firms balance the tax benefits of debt against the potential costs of financial distress, influencing their financing choices. In contrast, the pecking order theory suggests that firms prefer internal financing (retained earnings) first, followed by debt, and lastly equity issuance, based on the principle of least resistance.

Empirical studies, including those by Frank and Goyal (2009), identify several determinants—such as industry norms, asset tangibility, profitability, and market conditions—that significantly influence firms' leverage decisions. These factors underscore the complex interplay between financial flexibility, capital structure, and firm performance, illustrating how firms strategically manage their financial resources to optimize operational agility and growth prospects.

In conclusion, the relationship between financial flexibility and the financing mix in manufacturing firms is complex and multifaceted. Most of the illustrated studies assert a positive relationship between financial flexibility and the financing mix. If the financing mix depends on share repurchases over dividends, it leads to increasing financial flexibility. While Frank and Goyal (2009) study have a contrasting perspective. the financing mix may lead to restricted financial flexibility if it focuses on using debt. the decision to use debt leads to a financial obligation. This financial obligation reduces its financial flexibility (Frank and Goyal, 2009) .

2.6 The Impact of Financing Mix on Financial Performance

Research into the impact of financing mix on the financial performance of manufacturing firms provides valuable insights into the complex relationship between debt structure and operational effectiveness. Hayati et al. (2022) investigated this relationship among firms listed on the Indonesia Stock Exchange from 2016 to 2020. Their study, employing panel data regression, revealed nuanced findings: while short-term debt showed no significant

correlation with return on assets (ROA), long-term debt exhibited a negative impact on ROA. Conversely, a positive correlation emerged between ROA and sales growth, highlighting the interplay between financing choices and growth indicators. These results underscore the importance of strategic debt management in optimizing profitability metrics such as net profit margins (NPM) and ROA, crucial for financial decision-making and investor considerations.

Akaji et al. (2021) extended this exploration to Nigerian firms, focusing on the effects of debt-equity financing on performance metrics like return on equity (ROE). Their study, using an OLS regression model, found that a balanced utilization of debt and equity positively influences firm performance. This suggests that Nigerian firms may benefit from a diversified financing approach, leveraging both debt and equity to enhance long-term sustainability and operational resilience.

In a similar vein, Henry et al. (2020) examined the impact of short-term loans on small and medium-sized enterprises (SMEs) in Uganda. Their findings underscored the detrimental effects of excessive short-term debt on SMEs' financial health, advocating instead for cost-cutting measures and strategic reinvestment to bolster profitability without over-reliance on debt financing.

Dinh & Pham's (2020) study on Vietnamese pharmaceutical firms highlighted the role of capital structure in shaping financial outcomes. By analyzing the relationship between financial leverage, long-term assets, and return on equity (ROE), they demonstrated that a well-balanced mix of debt and equity enhances profitability. This study suggests that firms benefit from a robust capital structure that supports growth while managing financial obligations effectively.

Umobong and Ayebanengiyefa (2019) contributed further insights by examining the capital structure dynamics of food and beverage companies listed on the Nigerian Stock Exchange. Their research revealed significant correlations between different debt ratios and market performance proxies such as Tobin Q and earnings yield. These findings suggest that optimizing the composition of debt and equity can significantly impact market valuation and profitability, emphasizing the need for strategic financial planning and management in enhancing corporate performance.

Collectively, these studies underscore the critical role of financing mix in influencing financial performance across manufacturing firms. They highlight the importance of strategic debt management, the integration of equity financing, and the implications for growth and profitability metrics. By understanding these dynamics, firms can make informed decisions that optimize capital structure and enhance overall financial health in dynamic and competitive markets. Some studies assert a positive relationship between financing mix and financial performance (Akaji et al., 2021; Dinh & Pham's, 2020; Umobong and Ayebanengiyefa, 2019) and other studies describe the relationship between them as mixed (Hayati et al., 2022).

1. METHODOLOGY

3.1 Data and Sample Selection

The study focuses on the entirety of industrial and manufacturing firms registered on the Egyptian Stock Exchange. The sample includes the three most prominent industrial leaders: Eastern Company for Tobacco and Cigarettes, Misr Aluminum Company, and Egyptian Financial and Industrial Company, observed from 2018 to the current year (source: www.amwal-mag.com). The researchers utilized the annual consolidated financial reports issued by these companies from 2002 to 2020, extracting the necessary financial ratios from these documents.

The Eastern Company for Tobacco and Cigarettes boasts an ISO 9001 certification. Founded on July 12, 1920, by a decree from Sultan Ahmed Fouad, the company's initial capital was 25,000 pounds, dedicated to tobacco. This investment spurred the production of new cigarettes, leading to the Armenian Cigarette Company in Egypt conceding to the burgeoning Eastern Company. By 1927, the Eastern Company had absorbed the Egyptian smoke industry. Prominent figures involved in this effort included Armenians like Melkonian, Jamsrajan, and Ibekian, as well as Greeks such as Sousa, Makhridis, and Papatholigo. Additionally, the founders of the Maspero foundation contributed to this growth. The company’s strategy involved not only local dominance but also expanding its market to Sudan, Palestine, and Syria for five years. Notably, between 1927 and 1930, several Armenians established small factories, including the renowned "Matousian" brand, known for "Cleopatra" cigarettes. Following nationalization, these entities were unified under the "Al-Sharqiya Tobacco" brand, which is a shareholding company in Egypt (source: www.easternegypt.com/).

Misr Aluminum is one of Egypt's monumental industrial projects, inaugurated in 1969 at Nag' Hammady, approximately 100 kilometers north of Luxor. This historic region, flanked by the banks of the Nile River, boasts a 7,000-year-old civilization and provided a strategic location for the company's establishment. Several key factors influenced the selection of Nag' Hammady as the site for the aluminum factory: its proximity to the High Dam Power Transformers Station (500 kV), closeness to the port of Safaga for receiving alumina and green coal, and the availability of abundant manpower for initiating site preparation and construction activities. The location choice also aimed at fostering community development by building schools, constructing and paving roads, and extending railway lines for worker transportation. Additionally, distributing industrial projects across various governorates supported urban expansion into desert areas, protecting agricultural land. This initiative contributed to the development of Upper Egypt by introducing a high-tech project in a previously barren desert, leading to the creation of residential cities around the plant. These cities were equipped with housing, tree-lined avenues, hospitals, sports fields, schools, shops, a bank, a police station, and a post office. Production commenced in 1975, marking the rise of aluminum metal. By July 1983, the facility expanded to five production lines, and a sixth line was added in October 1997. In April 2010, all production lines were modernized and upgraded to pre-baked cells, boosting the annual production capacity to 320,000 tons (source: www.egyptalum.com.eg).

The Egyptian Financial and Industrial Company (EFIC), a joint-stock enterprise, engages in the production and marketing of agricultural chemicals. EFIC's origins trace back to 1929. It was nationalized in 1961 and remained under state ownership until 1996, when a new privatization program mandated that 65% of the equity be offered through an initial public offering, with an additional 10% allocated for employee purchase. The company specializes in producing phosphate fertilizer, sulfuric acid, and other by-products through its two primary plants located in Kafr El-Zayat and Assiut (source: www.emis.com).

The study investigates the performance of companies listed in the Egyptian manufacturing and industrial sector, using Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin ratio as dependent variables. These ratios are considered profitability ratios that are used universally to assess and indicate company performance and health, as they show how well a company

utilizes its assets to produce profit and value to shareholders. (Poznanski et al., 2013; Maulidya et al., 2019; Al-Adwani & Zwickri, 2020). Return on Assets (ROA) is determined by the ratio of net income to total assets. Similarly, Return on Equity (ROE) is measured by the ratio of net income to total equity. The Net Profit Margin ratio is calculated as the ratio of net income after tax to net sales .

The independent variable in this analysis is financial flexibility. According to Al-Asadi (2021), financial flexibility is measured in several ways. For leverage, it is expressed using the equity multiplier, which is calculated as the ratio of total assets to total equity (Saunders & Cornett, 2012). For liquidity, it is measured by the current ratio, calculated by dividing current assets by current liabilities and then multiplying the result by 100% (Hasanaj & Kuqi, 2019). Net cash flow is measured by summing the cash balance at the beginning of the period, net operating cash flow, net financing cash flow, and net investment cash flow (Stickney et al., 2010).

The mediator variable in this research is the financing mix. This term encompasses all types of funding sources used to finance a company's total assets, distinguishing it from the capital mix, which pertains solely to long-term and permanent financing sources such as long-term debt, ordinary shares, and retained earnings. Therefore, the capital mix is a subset of the overall financing mix (Hindi, 2000). According to Rajan and Zingales (1995), the financing mix can be measured using the debt ratio, also known as leverage. While there is no consensus in previous financial studies on a singular method for calculating the debt ratio, the choice of method depends largely on the analysis's objective. The three most common methods for calculating the debt ratio are:

1. Total Sum Method: The debt ratio is calculated by dividing the sum of all liabilities by total assets.

2. Ratio of Loans to Total Assets: This method expresses the debt ratio as the sum of short-term and long-term loans divided by total assets, excluding other liabilities.

3. Loan-to-Capital Ratio: Here, the debt ratio is determined by dividing the sum of short-term and long-term loans by the capital.

In this study, the financing mix will be measured using leverage (debt ratio) according to the first method, which is the ratio of total liabilities (non-ownership rights) to total assets (Ammar, 2017).

3.2 Analytical framework

In econometrics, panel data refers to a dataset that includes observations on multiple variables over different time periods for the same group of individuals, units, or entities. This multidimensional dataset enables the analysis of data collected over time. Panel data analysis is a statistical method widely used in disciplines such as social sciences and econometrics. Its purpose is to examine data that spans multiple periods and relates to the same individuals or entities (Adefemi, 2017).

This study employs an empirical approach, utilizing secondary panel data collected from 2002 to 2020. The analysis employs three statistical techniques: descriptive analyses, panel data unit-root (stationarity) tests, and panel data structural equation modeling.

3.2.1 Descriptive Analysis

Descriptive analysis is a statistical method used to summarize or provide an overview of sample or population data. This involves examining the characteristics and distribution of the data using various tools and techniques. These tools include presenting data in tables, frequency distributions, graphs, diagrams, and pictograms. Descriptive analysis also includes calculating measures such as medians, means, and standard deviations to understand the central tendency and variability of the data (Anggraeni et al., 2021). By employing descriptive analysis, researchers can gain insights into the fundamental features and patterns within the data under investigation.

3.2.2 Panel Data Unit-Root (Stationarity) Tests

The concept of stationarity or unit-root tests for panel data is largely attributed to the pioneering work of Lin and Levin, who conducted significant studies in 1992, 1993, and 2002. Their research built upon the unit root test initially developed by Dickey and Fuller for time series analysis (Badrawi, 2015). Performing unit-root tests is vital in panel data analysis as it ensures the stability or stationarity of the data series, which is essential for producing reliable results and avoiding spurious regressions.

Within this domain, four main tests are available: the Levin, Lin, and Chu t-test; the Im, Pesaran, and Shin W-stat; the ADF-Fisher Chi-square test; and the PP-Fisher Chi-square test. The null hypothesis in all these tests posits the presence of a unit root, indicating non-stationarity. Conversely, the alternative hypothesis suggests the absence of a unit root, indicating stationarity (Baltagi,

2014). Unit-root analysis can rely on the results of a single test, multiple tests, or the majority of tests. In this study, the researchers will utilize only the Levin, Lin, and Chu t-test. This choice is based on the fact that the LLC test is one of the earliest unit root tests developed for panel data and has been widely used in the literature (Buscemi & Alem, 2012).

3.2.3 Panel Data Structural Equation Modelling (SEM)

Standard Structural Equation Modeling (SEM) represents a sophisticated evolution in data analysis techniques, building upon and expanding traditional methods such as analysis of variance (ANOVA), multiple regression analysis, and factor analysis (Hoyle, 2012a). SEM allows researchers to address a range of interconnected research questions through a single, integrated analysis by modeling the relationships among multiple independent and dependent variables simultaneously (Gefen et al., 2000). This technique facilitates the estimation of relationships between both observed and latent variables, as well as among latent variables themselves. Additionally, SEM accommodates both continuous and categorical observational variables (Hoyle, 2012a). Given the characteristics of the conceptual model, generalized panel data SEM is chosen as the primary statistical method for testing the empirical model.

Standard SEM and panel data SEM differ primarily in the statistical techniques they employ to handle data. In this research, Stata/MP 17 is used, with sem and gsem commands serving distinct functions: sem fits standard linear SEMs, while gsem accommodates generalized SEMs. The gsem command extends beyond linear models to include generalized linear models, multilevel mixed models, and models with categorical latent variables, among others.

In sem, the responses are continuous, and the models are linear regression. Conversely, gsem handles responses that may be continuous, binary, ordinal, count, or multinomial. It supports various modeling approaches, including linear regression, panel data regression, gamma regression, logit, probit, ordinal logit, ordinal probit, Poisson, negative binomial, and multinomial logit.

A key difference between standard linear SEMs and generalized SEMs lies in their assumptions. Standard linear SEMs typically assume that all endogenous and exogenous variables, whether observed or latent, follow a joint normal distribution with mean μ and variance matrix Σ. This includes

error variables among the latent exogenous variables. Generalized SEMs, however, relax the joint-normality assumption for observed variables and categorical latent variables. They treat observed exogenous variables as given and produce estimates based on their values (Cain, 2021). While this may seem a minor distinction, it has significant implications for research, as demonstrated in this study.

In both standard and panel data structural equation modeling (SEM), unobserved variables are referred to as latent variables, factors, or constructs. These latent variables are measured indirectly through one or more observable indicator variables that reflect or represent the latent construct.

The general SEM framework comprises two main types of sub-models: the measurement model and the structural model. The measurement model delineates the relationships between latent variables and their observable indicator variables. When an SEM model focuses solely on this measurement model, it is known as a confirmatory factor analysis model.

On the other hand, the structural model specifies the relationships between latent variables and observed variables that are not indicators of the latent variables. When an SEM model includes only the structural model, it is termed a path analysis model. Both confirmatory factor analysis and path analysis are considered special cases within the broader framework of SEM (Hoyle, 1995).

In SEM, similar to path analysis, variables are categorized as exogenous and endogenous. Exogenous variables are those that influence other variables within the model but are not influenced by other endogenous variables. Conversely, endogenous variables are those that are affected by exogenous variables and potentially other endogenous variables within the model. Both exogenous and endogenous variables can be observed or treated as latent variables, depending on their roles in the model.

Structural Equation Modeling (SEM) offers several key advantages compared to other techniques (Collier, 2020):

1. **Simultaneous Analysis:** SEM enables researchers to examine the influence of independent variables on multiple dependent variables simultaneously, providing a comprehensive view of the relationships among variables.
2. **Error Consideration:** It accounts for measurement error, allowing researchers to address and correct errors in prediction relationships.

3. **Holistic Testing:** SEM facilitates the testing of the entire model rather than focusing on individual relationships. This contrasts with simpler techniques, such as regression, which typically test only one dependent variable at a time, do not account for measurement errors, and emphasize individual relationships over the overall model.

Given the multitude of fit indices available, it is tempting to select those that represent the best fit. However, this approach should be avoided as it oversimplifies the analysis by disregarding important information. Kline's (2016) examination of Panel Data Structural Equation Modeling (PDSEM) using the Stata statistical program reveals several key points:

1. Variable Desirable Values: Desirable values for fit indices can vary depending on the specific test used. Researchers should be cautious about relying on a single measure.

2. Comprehensive Testing: Researchers should request all available goodness-of-fit tests, as specific tests can be extracted from particular outputs by specifying the appropriate options.

3. Likelihood Ratio Tests: Stata provides two likelihood ratio tests:

- Model χ^2 Test: This test compares the model to a saturated model, which fits the covariances perfectly. It helps determine if the model fits as well as the saturated model.

- Baseline vs. Saturated Comparison: This test compares the baseline model, which includes the means, variances of observed variables, and covariances of observed exogenous variables, against the saturated model. Various definitions of the baseline model exist, and this test helps assess if the baseline model fits as well as the saturated model.

4. Population Error: The Root Mean Square Error of Approximation (RMSEA) is reported with its 90% confidence interval. Interpreters often check if the lower bound is below 0.05 and the upper bound is above 0.10. A lower bound below 0.05 suggests that the fit is close, while an upper bound above 0.10 suggests a poor fit. The Pclose value, indicating the probability that RMSEA is less than 0.05, is used to assess how close the predicted moments are to the population moments.

5. Information Criteria: The Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) are reported. While these indices provide limited information individually, they are useful for comparing models. Smaller values are preferred.

6. Baseline Comparison: The Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) are reported. Values close to 1 indicate a good fit, with TLI also known as the non-normed fit index.

7. Residuals: The Standardized Root Mean Squared Residual (SRMR) and the Coefficient of Determination (CD) are reported. An SRMR of 0 indicates a perfect fit, with values considered "small" if below 0.08. The CD, akin to R^2 for the entire model, should be close to 1 for a good fit.

These insights guide the interpretation of fit indices and help ensure a comprehensive evaluation of the SEM model's performance.

Following hypothesis were developed for testing by application of above-mentioned methods:

- **H1**: There is a statistically significant positive direct impact of the Egyptian industrial and manufacturing sector listed companies' financial flexibility on its financial performance.
- **H2**: There is a statistically significant negative indirect impact of the Egyptian industrial and manufacturing sector listed companies' financial flexibility on its financial performance through its financing mix.
  - ✓ **H2-1**: There is a statistically significant negative direct impact of the Egyptian industrial and manufacturing sector listed companies' financial flexibility on its financing mix.
  - ✓ **H2-2**: There is a statistically significant negative direct impact of the Egyptian industrial and manufacturing sector listed companies' financing mix on its financial performance.

Figure 1 shows the general empirical SEM model used to test the two hypotheses of this research, as shown below:

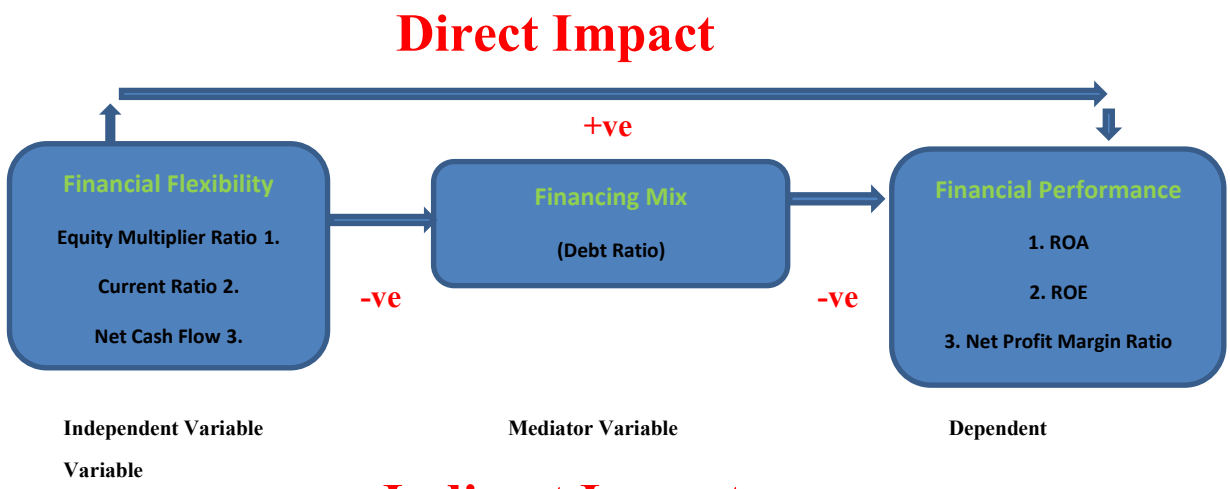


Figure 1: The General Empirical SEM Model

3.3 Results and Discussion

3.3.1 Descriptive Analysis

In Panel A of Table 1, the summary statistics offer vital insights into the financial performance indicators—specifically, Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin ratios—alongside their related variables. The ROA Index spans from -13.8% to 32.6%, with an average and midpoint of 10.4% and 8.7%, respectively, and a standard deviation of 8%. The ROE Index ranges from -31.3% to 87.2%, showing an average of 22.5% and a median of 19.9%, accompanied by a standard deviation of 19.5%. Additionally, the Net Profit Margin ratio extends from 23% to 31.6%, with a mean of 13.3%, a median of 12.5%, and a standard deviation of 8.9%.

Conversely, for the financial flexibility indicators, such as the Equity Multiplier Ratio, Current Ratio, and Net Cash Flow, the Equity Multiplier Ratio varies between 1.313% and 3.943%, averaging at 2.09%, with a median of 2.056% and a standard deviation of 0.436%. The Current Ratio fluctuates from 0.499% to 3.470%, with a mean of 1.202%, a median of 1.079%, and a standard deviation of 0.547%. Net Cash Flow ranges from -1,211,365 L.E. to 4,731,684 L.E., with an average of 740,088 L.E., a median of 394,371 L.E., and a standard deviation of 1,150,608.194 L.E. The mediator variable, which is the financing mix measured by the Debt Ratio, oscillates between 0% and 74.6%, with an average of 44.3%, a median of 48.3%, and a standard deviation of 18.1%.

In Panel B of Table 1, the concurrent bivariate correlations among the analyzed variables are presented. Initially, all correlations between each variable and the others are below 0.80, suggesting no significant multicollinearity (Gujarati, 2003). These correlations display varied signs, possibly aligning or deviating from anticipated directions based on existing theories and literature. However, it's essential to remember that correlation indicates a linear relationship and does not imply causation (Ratner, 2009). Thus, the researcher focuses on the regression coefficients within the Panel Data Structural Equation Model (PDSEM) to accurately determine directional effects.

Table 1: Describing Research Variables

Panel A: Descriptive Statistics

	ROA	ROE	Net Profit Margin Ratio	Equity Multiplier Ratio	Current Ratio	Net Cash Flow	Debt Ratio
Mean	0.104	0.225	0.133	2.090	1.202	740088	0.443
Median	0.087	0.199	0.125	2.056	1.079	394371	0.483
Standard Deviation	0.080	0.195	0.089	0.436	0.547	1150608.194	0.181
Minimum	-0.138	-0.313	-0.230	1.313	0.499	-1211365	0
Maximum	0.326	0.872	0.316	3.943	3.470	4731684	0.746

Panel B: Correlations Matrix

	ROA	ROE	Net Profit Margin Ratio	Equity Multiplier Ratio	Current Ratio	Net Cash Flow	Debt Ratio
ROA	1						
ROE	0.914	1					
Net Profit Margin Ratio	0.795	0.776	1				
Equity Multiplier Ratio	0.195	0.525	0.210	1			
Current Ratio	0.195	-0.039	-0.105	-0.520	1		
Net Cash Flow	0.762	0.764	0.628	0.238	0.278	1	
Debt Ratio	-0.210	-0.059	0.072	0.331	-0.242	0.124	1

Source: Microsoft Excel 2019 Output

3.3.2 Panel Data Unit-Root (Stationarity) Tests

In the Levin-Lin-Chu unit root test, the null hypothesis posits that the data contains unit roots, indicating non-stationarity. Conversely, the alternative hypothesis suggests that the data is stationary. The null hypothesis is accepted if the p-value exceeds the significance threshold of 0.05. The test results are presented in Table 2 as follows:

Table 2: Results of the Levin-Lin-Chu unit root test

Variables	t-Statistic	p-value
ROA	-6.3152	0.000
ROE	-5.198	0.000
Net Profit Margin Ratio	-3.6939	0.000
Equity Multiplier Ratio	-1.8425	0.033
Current Ratio	-2.8413	0.002
Net Cash Flow	-5.958	0.000
Debt Ratio	-4.6627	0.000

Source: EViews 13 Output

Given that the probability value (p-value) ranges from 0.00 to 0.033, which is significantly lower than the statistical significance level of 0.05, we reject the null hypothesis (H0) and accept the alternative hypothesis (H1). This indicates that the data for the study variables are stationary and do not contain unit roots, meaning they are stable in the long run.

3.2.3 Panel Data Structural Equation Modelling (SEM)

Table 3 illustrates the SEM results for the dependent variable's measures, organized into three panels: Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin ratios, as follows:

Table 3: SEM Results

Model	Variables	Direct Impact (Coef.)	P>|z|	Indirect Impact	Total Impact	Decision
Panel A: ROA						
1	**Equity Multiplier Ratio**	-0.0054	0.805	-0.02375	-0.029	**Full Mediation**
	Debt Ratio	-0.279	0	-	-0.279	
	Equity Multiplier Ratio --> Debt Ratio	0.084887	0.024	-	0.084887	
2	**Current Ratio**	0.005875	0.729	0.003847	0.009722	**No Mediation**
	Debt Ratio	-0.28365	0	-	-0.28365	
	Current Ratio --> Debt Ratio	-0.01356	0.664	-	-0.01356	
3	**Net Cash Flow**	1E-07	0	8E-09	1E-07	**Partial Mediation**
	Debt Ratio	-0.12651	0	-	-0.12651	
	Net Cash Flow --> Debt Ratio	-7E-08	0.011	-	-6.6E-08	
Panel B: ROE						
4	**Equity Multiplier Ratio**	0.038179	0.031	-0.032	0.006566	**Full Mediation**
	Debt Ratio	-0.37241	0.455	-	-0.37241	
	Equity Multiplier Ratio --> Debt Ratio	0.084887	0.024	-	0.084887	
5	**Current Ratio**	0.009574	0.807	0.004517	0.014092	**No Mediation**
	Debt Ratio	-0.3331	0.045	-	-0.3331	
	Current Ratio --> Debt Ratio	-0.01356	0.664	-	-0.01356	
6	**Net Cash Flow**	2E-07	0	0	2E-07	**No Mediation**
	Debt Ratio	-0.01922	0.868		-0.01922	
	Net Cash Flow --> Debt Ratio	-7E-08	0.011	-	-6.6E-08	
Panel C: Net Profit Margin Ratio						
7	**Equity Multiplier Ratio**	-0.00474	0.84	-0.0245	-0.02924	**Full Mediation**
	Debt Ratio	-0.28863	0	-	-0.28863	
	Equity Multiplier Ratio --> Debt Ratio	0.084887	0.024	-	0.084887	
8	**Current Ratio**	0.01224	0.494	0.003936	0.016176	**No Mediation**
	Debt Ratio	-0.29024	0	-	-0.29024	
	Current Ratio --> Debt Ratio	-0.01356	0.664	-	-0.01356	
9	**Net Cash Flow**	1E-07	0	1E-08	1E-07	**Partial Mediation**
	Debt Ratio	-0.14972	0.005	-	-0.14972	
	Net Cash Flow --> Debt Ratio	-7E-08	0.011	-	-7E-08	

Source: Stata/MP 17 output

Panel A: ROA

The structural equation model (SEM) analysis results for the dependent variable Return on Assets (ROA) and the independent variables (Equity Multiplier Ratio, Current Ratio, and Net Cash Flow), with the mediating variable Debt Ratio, are as follows: In the second model, the results are not significant, indicating that the mediating variable Debt Ratio does not affect the relationship between the Current Ratio and ROA. However, the first model reveals a negative effect of the Debt Ratio on the relationship between the Equity Multiplier Ratio and ROA, with a value of -0.023. Additionally, the Equity Multiplier Ratio positively influences the Debt Ratio, with a value of 0.084 and a statistical significance of 0.024, which is significant at a level of less than 5%. Despite the significant effect of the mediator variable, the Equity Multiplier Ratio does not significantly impact ROA. In the third model, all relationships are significant. The mediating variable Debt Ratio positively affects the relationship between Net Cash Flow and ROA. The Net Cash Flow variable negatively impacts the Debt Ratio, with a statistical significance of 0.011, which is less than 5%. Consequently, the indirect effect is 7%, meaning that approximately 7% of the Net Cash Flow's impact on ROA is mediated by the Debt Ratio. The mediated effect is about 0.1 times as large as the direct effect of Net Cash Flow on ROA. Significant direct impacts are observed in models 1 and 3, while significant indirect impacts, considering the mediator variable, are found only in model 3.

Panel B: ROE

The analysis results of structural equation models for Return on Equity (ROE), with the independent variables (Equity Multiplier Ratio, Current Ratio, and Net Cash Flow), and the mediating variable Debt Ratio, are summarized as follows: From the fourth model, it is evident that the Equity Multiplier Ratio has a positive effect on ROE, with a value of 0.03. Additionally, the Equity Multiplier Ratio positively influences the mediating variable Debt Ratio, with a value of 0.084. However, there is no significant direct effect of the Debt Ratio on ROE. Regarding the indirect effect, the Debt Ratio negatively impacts the relationship between the Equity Multiplier Ratio and ROE. The fifth and sixth models are insignificant, indicating that the mediating variable does not affect the relationship between the independent variables and ROE. In conclusion, the significant indirect impact, considering the mediator variable, is valid only for model 4.

Panel C: Net Profit Margin Ratio

The results of the structural equation models analysis for the dependent variable Net Profit Margin Ratio and the independent variables (Equity Multiplier Ratio, Current Ratio, and Net Cash Flow) with the mediating variable Debt Ratio are as follows: In the seventh model, the indirect effect of the Debt Ratio indicates a negative impact on the relationship between the Equity Multiplier Ratio and the Net Profit Margin Ratio, with a value of -0.024. However, there is no significant direct effect of the Equity Multiplier Ratio on the Net Profit Margin Ratio, as the significance value is 0.84, which is greater than 5%. In the ninth model, the mediating variable Debt Ratio positively affects the relationship between Net Cash Flow and the Net Profit Margin Ratio. Significant direct impacts are observed in models 7 and 9. For the significant indirect impact, considering the mediator variable, it is valid only for model 9.

Thus, the researchers accept both the direct and indirect impact hypotheses, considering the signs of the coefficients. This type is referred to as "partial mediation," since the direct impact remains significant after the mediator is introduced into the model (Z Awang, 2014). In summary, financial flexibility has a positive direct impact on financial performance. Additionally, financial flexibility has a negative indirect impact on financial performance through the mediator variable, financing mix.

The Stata statistical program estat gof code under PDSEM provides multiple goodness-of-fit statistics because, across fields, different researchers use different statistics. The researchers should not print them all and look for the one reporting the result they seek (Kline, 2016).

Table 4: SEM Model Fit Indices

Fit Index	Output		
	Equity Multiplier Ratio	Current Ratio	Net Cash Flow
Panel A: ROA			
Absolute Fit Indices			
Chi-Square χ2	18.860	14.216	101.444
p > 0.05	0.000	0.003	0.000
Population Error			
RMSEA	0.000	0.000	0.000
90% CI, lower bound	0.000	0.000	0.000
upper bound	0.000	0.000	0.000
pclose	1.000	1.000	1.000
Information Criteria			
AIC	-139.977	-109.518	1393.295
BIC	-125.675	-95.217	1407.596
Baseline Comparison			
CFI	1.000	1.000	1.000
TLI	1.000	1.000	1.000
Size of Residuals			
SRMR	0.000	0.000	0.000
CD	0.083	0.005	0.785
Panel B: ROE			
Absolute Fit Indices			
Chi-Square χ2	9.382	4.183	57.461
p > 0.05	0.025	0.242	0.000
Population Error			
RMSEA	0.000	0.000	0.000
90% CI, lower bound	0.000	0.000	0.000
upper bound	0.000	0.000	0.000
pclose	1.000	1.000	1.000
Information Criteria			
AIC	-44.850	-13.837	1522.926
BIC	-30.549	0.464	1537.228
Baseline Comparison			
CFI	1.000	1.000	1.000
TLI	1.000	1.000	1.000
Size of Residuals			
SRMR	0.000	0.000	0.000

CD	0.091	0.004	0.609
Panel C: Net Profit Margin Ratio			
Absolute Fit Indices			
Chi-Square χ2	18.162	13.885	65.663
p > 0.05	0.000	0.003	0.000
Population Error			
RMSEA	0.000	0.000	0.000
90% CI, lower bound	0.000	0.000	0.000
upper bound	0.000	0.000	0.000
pclose	1.000	1.000	1.000
Information Criteria			
AIC	-133.546	-103.454	1434.809
BIC	-119.245	-89.153	1449.110
Baseline Comparison			
CFI	1.000	1.000	1.000
TLI	1.000	1.000	1.000
Size of Residuals			
SRMR	0.000	0.000	0.000
CD	0.083	0.011	0.601

Source: Stata/MP 17 output

The previous table 4 above shows the fit indicators of the PDSEM model. From the results of this table, we conclude that:

١. Likelihood Ratio

- chi2: indicates the comparison of the current model with the base model.
- p > chi2: A value of 0.000 indicates that the null hypothesis is rejected, which means that the current model is better than the basic model

Therefore, the significance value of all models ranges from 0.00 to 0.025, which is less than 5%, which indicates rejecting the null hypothesis and accepting the alternative hypothesis that the estimated models are better than the basic models, but the fifth model is not significant.

٢. Population Error

- RMSEA: A value of 0.000 indicates the root mean square error of approximation and is ideal as the value is preferably closer to zero.
- 90% CI, lower bound: A value of 0.000 indicates the lower bound of the 90% root mean square error of approximation.

- upper bound: A value of 0.000 indicates the upper bound of the 90% interval of the root mean square error of approximation.
- pclose: A value of 1.000 indicates the probability that the RMSEA is less than or equal to 0.05, indicating a good model fit

The test results indicate that all models are statistically appropriate

٣. Information Criteria

- AIC: The value indicates the AIC information criterion, and the lower the value, the better the model. The model values range from -13.837 to 1434.809
- BIC: The value refers to the BIC information standard, and the lower the value, the better the model. Model values range from 0.464 to 1449.110

٤. Baseline Comparison

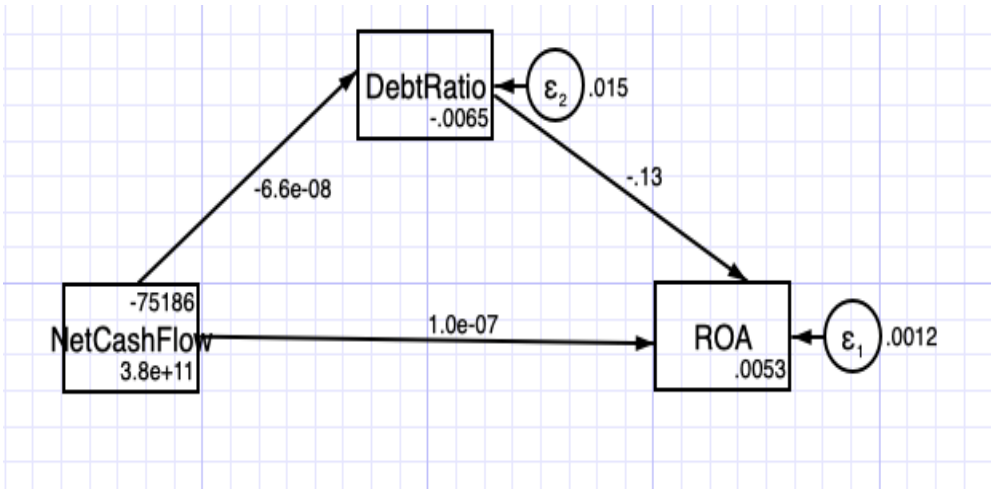
- CFI: A value of 1.000 indicates a comparative fit index, and a value of 1 indicates an excellent fit.
- TLI: A value of 1.000 indicates the Tucker Lewis Index, and a value of 1 indicates an excellent fit.

٥. Size of residuals

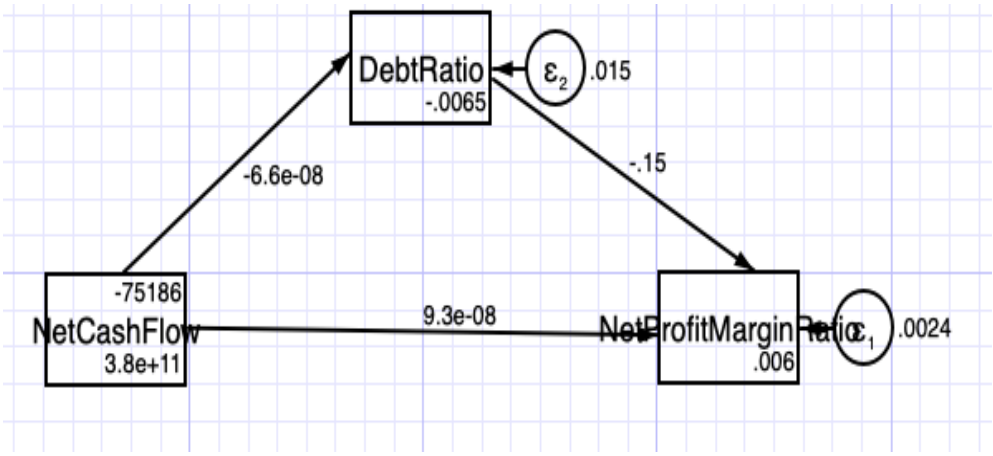
- SRMR: A value of 0.000 indicates a standardized root mean square residual, and a value of zero indicates a perfect fit.
- CD: The value indicates the coefficient of determination, which is the proportion of variance explained by the model.

By analyzing the results of the previous table, it can be said that the **third** and **ninth** models have an excellent fit based on the different metrics, with RMSEA, CFI, TLI and SRMR all indicating that the model is a good fit to the data.

Figure 2 illustrates the estimation of the two partial mediation structural models (Model 3 and Model 9) used to test the research hypotheses. Based on this model and the statistical outputs presented in Tables 3 and 4, the researcher accepts both hypotheses: the positive direct impact of financial flexibility on financial performance and the negative indirect impact through the financing mix.



Model 3



Model 9

Figure 2: The Estimation of the two Partial Mediation SEM Models

4. DISCUSSION, CONCLUSION & SUGGESTIONS

4.1 Discussion

This study explores the dynamic relationship between financial flexibility and the performance of Egyptian companies listed in the industrial and manufacturing sectors, with a particular focus on the mediating role of their financing mix. The findings reveal a distinctly positive influence of financial flexibility, highlighting the crucial role of effective financial management in achieving key financial objectives, such as improving performance metrics like return on assets and net profit margin. Empirical evidence consistently

supports the idea that conservative leverage strategies enhance financial flexibility (Graham and Harvey, 2001; Bancel and Mittoo, 2004; Brounen et al., 2006). These strategies enable companies to maintain borrowing reserves, thereby ensuring better access to external financing during advantageous investment opportunities (Marchica and Mura, 2010). This underscores how financial flexibility not only impacts investment decisions but also bolsters a firm's ability to seize market opportunities. The empirical analysis, spanning from 2002 to 2020, affirms the long-lasting effects of financial flexibility, reinforcing its significance in strengthening the financial performance of Egyptian industrial and manufacturing companies.

Additionally, the study uncovers a largely negative and statistically significant relationship between financial flexibility and the financing mix, particularly in this sector. The relationship between financial flexibility and financing mix in manufacturing firms is intricate and multifaceted. Most literature suggests a positive correlation between financial flexibility and the financing mix, especially when financing decisions favor share repurchases over dividends, thereby increasing financial flexibility. However, the study by Frank and Goyal (2009) offers a contrasting view. They argue that the financing mix can constrain financial flexibility if it leans heavily on debt, as debt creates financial obligations that reduce flexibility (Frank and Goyal, 2009).

Moreover, the research identifies a predominantly negative and statistically significant impact of the financing mix on financial performance within the sector. While some studies indicate a positive relationship between the financing mix and financial performance (Akaji et al., 2021; Dinh & Pham, 2020; Umobong and Ayebanengiyefa, 2019), others describe this relationship as mixed (Hayati et al., 2022).

Furthermore, the mediating effect of the financing mix on the relationship between financial flexibility and performance reveals a noteworthy finding—a negative and significant impact. This is identified as "partial mediation," where the direct effect remains significant even after the mediator is introduced into the model (Z Awang, 2014). This reflects the intricate interplay of governance structures, investment strategies, and strategic financial decisions. Balancing debt and equity to optimize the capital structure while preserving financial flexibility is essential for enhancing a firm's performance and overall value.

4.2 Conclusions

Based on the analysis and discussion of the findings, the conclusions derived from this study are as follows:

1. Significant Positive Influence of Financial Flexibility on the Financial Performance of Egyptian Listed Companies in the Industrial and Manufacturing Sectors: The study underscores a strong positive relationship between financial flexibility and financial performance. This suggests that greater financial flexibility is closely linked to enhanced overall financial performance.

2. Significant Negative Effect of Financial Flexibility on the Financing Mix of Egyptian Listed Companies in the Industrial and Manufacturing Sectors: Another critical finding is the negative impact of financial flexibility on the financing mix. This indicates that increased financial flexibility tends to reduce the reliance on debt within the financing mix.

3. Significant Negative Impact of Financing Mix on the Financial Performance of Egyptian Listed Companies in the Industrial and Manufacturing Sectors: The study also reveals a negative relationship between the financing mix and financial performance. This suggests that a lower proportion of debt in the financing mix is associated with better financial performance.

4. Financing Mix as a Mediator Alters the Influence of Financial Flexibility on Financial Performance in Egyptian Listed Companies within the Industrial and Manufacturing Sectors: The research highlights the mediating role of the financing mix in the relationship between financial flexibility and financial performance, resulting in a negative effect. This implies that the interaction between financial flexibility and financial performance is complex and can take on a reversed dynamic when the financing mix acts as a mediator.

4.3 Suggestions

In future studies, researchers could pursue several directions to further develop the findings of this study:

1. Investigating Additional Determinants of Financial Performance: Future research could examine other factors influencing the financial performance of Egyptian listed companies in the industrial and manufacturing sectors. By incorporating different time periods and a broader range of companies within this sector, the research could yield more representative and diverse outcomes.

2. Expanding the Sector Focus: Researchers might consider extending this study beyond the industrial and manufacturing sectors to include other sectors. Analyzing various sectors could provide a more comprehensive understanding of how financial flexibility impacts financial performance across different market segments. In this case, researchers must account and control, using control variables for each sector to isolate and demonstrate the difference between findings of each sector.

3. Accounting for External Influences: Future empirical research could integrate external factors such as global health crises, political events, and socio-economic developments in the MENA region. Examining the effects of events like the COVID-19 pandemic and ongoing geopolitical conflicts might reveal how these occurrences shape the relationship between financial flexibility, financing mix, and financial performance.

4. Exploring Bidirectional Relationships: Investigating the bidirectional effects between each pair of variables through Granger causality tests could offer valuable insights into the causal relationships between financial flexibility, financing mix, and financial performance.

5. Practical Implications and Audience Focus: The findings of this study could provide important insights for practitioners and academics in the industrial and manufacturing sectors. Future research could explore how the impact of financial flexibility on financial performance changes when mediated by variables other than the financing mix, offering practical guidance for decision-makers.

By exploring these avenues, future research can deepen the understanding of how financial flexibility and financing mix interact to influence firm performance across different contexts and time periods, providing valuable insights for companies and policymakers alike.

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أثر المرونة المالية على الأداء المالي - الدور الوسيط للمزيج التمويلي: دليل من الشركات المدرجة في القطاع الصناعي في مصر

المستخلص:

تهدف هذه الدراسة إلى استكشاف الدور الوسيط لمزيج التمويل في تشكيل تأثير المرونة المالية على الأداء المالي للشركات المدرجة في البورصة في القطاع الصناعي في مصر وذلك باستخدام دراسة تطبيقية. استخدم البحث بيانات ثانوية تم جمعها من مصادر مختلفة، تغطي الفترة من ٢٠٠٢ إلى ٢٠٢٠. ويركز التحليل على ثلاثة من أبرز الشركات المدرجة في هذا القطاع: الشركة الشرقية للتبغ والدخان، وشركة مصر للألومنيوم، والشركة المالية والصناعية المصرية، مع ملاحظة أن تصنيف هذه الشركات كأبرز شركات القطاع يُنسب من عام ٢٠١٨ حتى الوقت الحاضر. تم صياغة فرضيتين أساسيتين وفحصهما من خلال نمذجة المعادلة الهيكلية للبيانات المقطعية (PDSEM) باستخدام Stata / MP 17 للتحقق من صحة هذه الفرضيات. تؤكد النتائج صحة الفرضيات وتلقي الضوء على الترابط بين المتغيرات المحددة داخلها. بشكل ملحوظ، وتتوافق النتائج مع النتائج النظرية المتوقعة.

بالنسبة للبحث المستقبلي، يتم تقديم العديد من الاقتراحات. أولا، استكشاف العوامل الإضافية التي تؤثر على الأداء المالي للشركات المصرية المدرجة في القطاع الصناعي. من خلال دمج أطر زمنية مختلفة ومجموعة أوسع من الشركات في هذا القطاع. يمكن أن يسفر البحث عن نتائج أكثر شمولا وتنوعا. ثانيا، النظر في توسيع هذه الدراسة لتتجاوز القطاع الصناعي لتشمل قطاعات أخرى. قد يوفر تحليل قطاعات متعددة فهما أوسع لكيفية تأثير المرونة المالية على الأداء المالي عبر قطاعات السوق المختلفة. في هذه الحالة، يجب على الباحثين الحساب والتحكم، باستخدام متغيرات رقابية لكل قطاع لعزل وإظهار الفرق بين نتائج كل قطاع. ثالثا، دمج التأثيرات الخارجية مثل الأزمات الصحية العالمية والتطورات السياسية والتغيرات الاجتماعية والاقتصادية في منطقة الشرق الأوسط وشمال إفريقيا. يمكن أن يكشف التحقيق في آثار أحداث مثل جائحة COVID-19 والتوترات الجيوسياسية المستمرة كيف تشكل هذه العوامل العلاقة بين المرونة المالية ومزيج التمويل والأداء المالي. رابعا، يمكن أن يوفر فحص التأثيرات ثنائية الاتجاه بين كل زوج من المتغيرات من خلال اختبار غرانجر للسببية رؤى قيمة حول الروابط السببية بين المرونة المالية ومزيج التمويل والأداء المالي. وأخيرا، فإن استكشاف كيف يمكن لتأثير المرونة المالية على الأداء المالي أن يتغير عند توسيط متغيرات أخرى غير مزيج التمويل أن يقدم رؤى عملية لصناع القرار. ومن خلال اتباع هذه الاتجاهات، يمكن للبحوث المستقبلية تعميق فهم كيفية تفاعل المرونة المالية ومزيج التمويل لتشكيل أداء الشركة عبر سياقات وفترات زمنية متنوعة، مما يوفر رؤى قيمة للشركات وصانعي السياسات على حد سواء.

الكلمات المفتاحية: المرونة المالية، الأداء المالي، المزيج التمويلي، المتغير الوسيط، قطاع الصناعة والتصنيع، مصر، الشركة الشرقية للتبغ والدخان، شركة مصر للألومنيوم، الشركة المالية والصناعية المصرية البيانات المقطعية، نمذجة المعادلة الهيكلية (SEM).