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Endogenous Determinants Influencing Financial Performance Of Manufacturing Industry: Evidence From Pakistan

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Abstract

The current study examines the Endogenous factors on the profitability of manufacturing companies in Pakistan. The data was selected from the State Bank of Pakistan website. The data set used for this study is the panel data from 2014-2023. The most suitable regression analysis models—the pooled OLS model, the fixed-effect model, and the random effect model—have been applied to examine the effect. Out of the two models, the Breush-Pagan Lagrange Multiplier (LM) and Hausman test were used to determine which model was the best fit. Based on test findings, the Random effect model is the most suitable model for the current study. The results demonstrate that while leverage has a strong and adverse relationship with ROA, all internal variables, such as Tangibility efficiency and effectiveness, have a positive and significant impact on the profitability of the manufacturing sector of Pakistan. Moreover, the size of the firm is insignificant in relation to profitability. It is recommended that the debt portion should be declined to enhance the manufacturing sector's profitability.

Introduction

1. Background

Shareholder wealth maximisation is the firm's starting goal, enhancing the firm's financial performance (Rahman, 2012). Profitability is an essential requirement for a company's long-term survival and performance. It also impacts the company's employment, economic growth, innovation, and technical advancement. (Yazdanfar, 2013). Further, Hofstrand (2009) also declared that measuring a company's profitability is the most crucial way to assess its success. A very profitable company can provide its owners with a sizable return on their investment, while a non-profitable corporation cannot thrive. Also, return on assets affects a company's profitability by exhibiting its capacity to produce a profit as a result of resource efficiency as

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well as efficient management. (Burja, 2011) Similarly, return on equity measured the profitability of equity money that shareholders invested in the company, which influenced the company's profitability (Chandra, 2008). The industry offers numerous possibilities for all stakeholders and makes essential contributions to the expanding economy. According to Rahman et al. (2012), management seeks to maximize shareholder wealth through greater efficiency and productivity. In addition, investors have constant concerns about the company's profitability. For the company's upper echelons, the micro and macroeconomic trends are of the utmost significance since these factors support the establishment of policies (Rahman et al. 2018). Microeconomic performance depends on the effective allocation and management of resources to execute business operations. Its annual financial statements fully reveal a company's performance and financial standing. To achieve long-term performance, businesses need to create, put into execution, and uphold strategies and policies from an economic and financial perspective. A leader's managerial options are made stronger by their capacity to recognise and apply successful initiatives.

Yator (2018) says a firm's board finds potential capital budgeting projects and maximises share price. The share value of a firm is greatly impacted by its financial performance; high profitability encourages expansion, whereas low profitability depresses share value. A company's strategic goals depend on its understanding of profitability, which is influenced by business news and accounting accuracy. During times of crisis, poor readying for mitigation could negatively impact financial health. Financial data is essential for decision-making in the financial sector to enable stakeholders like equity capital. Dependability and market awareness are crucial. Organisational systems balance marketing engagement, but further research is needed to determine the aspects that impact profitability and to better understand profitability. Adopting these formal, structured procedures in offices, factories, and other workspaces is linked to good management. It is seen to improve business performance as measured by social welfare concerns, employee satisfaction, productivity, and customer retention. This serves as the primary foundation for the academic field of management science, and there is a wealth of literature on the theoretical and practical effects of this notion. Effective management holds significance in the field of economics as well. This study examines the impact of five elements on an organization's profitability, drawing on earlier research. According to the financial performance of manufacturing companies, return on assets (ROA) is positively impacted by liquidity, profitability, and revenues; conversely, ROA is negatively affected by leverage and firm size (Matar & Eneizan, 2018). According to research by Rahman, Kakakhel, and Ali (2017), profitability is boosted by size, tangibility, management effectiveness, and economic growth. On the other hand, inflation and financial leverage are negative. Similar variables from these studies are included in the analysis, and return on equity (ROE), return on assets (ROA), Rahman et al. (2018), Omarzai et al. (2021), and Iqbal and Adil (2024) are used to further examine the market power is added to the influence of competition for profitability. To the best of the authors' knowledge, this study includes a small amount of improvement in that it incorporates activity and efficiency ratios, allowing it in the manufacturing sector from the updated years to evaluate the endogenous variable's effects on profitability.

II. LITERATURE REVIEW

For businesses to thrive and satisfy shareholders, profit is essential. Stakeholders gain with social responsibility and charitable giving. To pinpoint the elements that contribute to profit, formulate plans, and focus on return on investment, managers should routinely evaluate performance using metrics related to profitability. A primary goal of financial management is profit, which aims to preserve capital and thrive in cutthroat marketplaces. Businesses want to

be profitable companies that can endure challenging circumstances. Making a profit is required for long-term success and profitability, and a company's capacity to do so steadily in the face of adversity determines how big it can get. (2012) Rahman et al. This study focuses on the profitability of conventional and Islamic banks between 2006 and 2010 and investigates the relationship between internal bank features and efficiency in Pakistan's banking system. The findings indicate that microeconomic indicators and bank characteristics greatly impact profitability and that management may become less efficient as assets increase. Rahman and colleagues (2018) look into this. Based on data collected from 41 companies between 2007 and 2017, the study examines factors that impact Pakistan's insurance sector's profitability. The study's findings show that factors unique to the insurance industry and macroeconomic factors, like corporate risk, debt, and inflation rate, significantly affect profitability. However, size and GDP rate have a big impact. Growth and cash flow are negligible. This paper should be mandatory reading for senior management in Pakistan's insurance sector. In written works, authors generally identify various financial metrics impacting profitability. One of the foremost objectives of financial management and wealth maximisation is profit (Malik et al., 2011). Inefficient businesses do not last in a highly competitive market for very long. According to Eton et al. (2017), a business that isn't making money can't thrive in a competitive market. Businesses should be lucrative and able to survive in the market even in difficult conditions, according to Adebayo and Onyeiwu (2018). Profitability is critical to comprehending a company's development and successful growth strategy and its position in the market (Al-Mwalla, 2012). While growth is viewed as an important component of a company's long-term performance and profitability, profit-making is essential to a business's survival (Abuzayed, 2012). The ability of a business to continually generate a profit, especially in the face of financial problems, decides the growth and success of any enterprise.

In written works, authors generally identify various economic indicators that impact profitability. Any business's primary goal when it is first established is to maximise profit. Business profitability is critical in luring prospective investors into your venture or serving as a prerequisite for long-term sustainability (Prijadi and Desiana, 2017). Corporations should be able to estimate or determine the firm's profitability level for a given time frame. Any business's ability to turn a profit will always be a key component of success, as without it, services would cease to exist (Popa and Ciobanu, 2014). How businesses function has changed due to global market developments, which have forced companies to adopt effective FMP to be profitable and competitive in the worldwide market (Yunis et al., 2018). Excellent and efficient financial management practices would promote enterprise growth regardless of the company's size. The practice of financial management plays a vital role in market penetration, product and service diversification, and growth planning.

This study, conducted by Kant (2018), attempts to assess the factors influencing the profitability of manufacturing firms that trade on the New York Stock Exchange. Age, growth rate, productivity, net asset turnover, leverage ratio, current ratio, firm size, and degree of R&D involvement were among the many factors that were examined. Therefore, the dependent variable is profitability. Data on 250 US manufacturing companies from 2012-2017 was collected from the ORBIS database. The results show positive connections between the dependent variable, profitability, and the following variables: R&D investment, growth rate, employee productivity, leverage ratio, and current ratio. The independent variables of profitability, firm age, and size did not show any statistically significant correlation. Additionally, the findings point to a negative correlation between net asset turnover and profitability.

According to Zubair and Muhammad (2013), working capital management (WCM) is one factor influencing profitability. Thus, it's crucial to recognise that WCM contributes significantly to increased corporate profitability. By using WCM procedures, businesses may be sure they have enough cash to cover any short-term loans and potential operating expenses. The profitability of small businesses is positively correlated with WCM, particularly about trade credit management and cash management (Norah et al., 2015).

Inadequate finances to cover operating expenses and capital expenditures can significantly impact a company's profitability. Poor fund management can also significantly impact (Pais and Gama, 2015). One of the factors influencing profitability that causes firms to fail is inadequate capital. Other factors include inadequate financial planning at your disposal, inability to keep up with the expected growth of the commercial enterprise, and bad business forecasts. Salazar (2012). Liquidity and returns on assets invested by a business entity significantly impact the profitability of any enterprise (Mmbaya, 2013). The managerial choices on investment were shown to be crucial in determining profitability in a study conducted by Popa and Ciobanu (2014) to identify the financial elements that affect the profitability of SMEs. The study found that managerial choices about investments during high inflation, high unemployment, economic downturns, and GDP fluctuations are crucial. (Asare & Angmor, 2015) assessed the impact of debt financing on profitability using trade credit, long-term loans, and short-term loans. The results show a substantial inverse link between the profit margin ratio and return on assets for short-term loans. Businesses would always require in-depth instruction and skill development to use their loans most. Compared to prior loans, new loans typically limit startups' profitability (Banerjee, 2014). This study lacks quantitative data on firm activity, even if it suggests a connection between growth and financial limitations. Small businesses with numerous factors working against their profitability are anticipated to grow more slowly. But (Fitzsimmons, Steffens, & Douglas, 2005) could find no connection between profitability and expansion. The authors proved that growth rates show a non-linear relationship because they are unstable over time. (Margaretha & Supartika, 2016) looked at the variables influencing profitability and found that productivity and industry affiliation had a beneficial impact. Although the authors advise productivity-focused business strategies for firm management, profitability can be impacted by two other factors. Businesses that engage in global commerce are more profitable because of their industry affiliation (Prijadi & Desiana, 2017).

Organisations with effective financial management procedures consistently achieve superior financial results. Ineffective financial management procedures inside the company could hinder corporate expansion and hurt the company. However, effective financial management will help the business thrive, and managers should always strive to avoid making poor financial mistakes, which may always be very expensive for the company. Business managers should have an updated accounting information system, timely and efficient financial reporting, and sufficient working capital to generate profits in the industry to secure their company's long-term sustainability (Yohanes et al., 2018). Efficient financial management techniques are essential to business organisations' health, survival, and profitability (Lakew and Rao, 2014). Profitability, liquidity, investment, and business market values are the main concerns of FMPs.

According to Serghiescu et al. (2014), investors will view tangible assets as a positive metric since they make up a portion of overall assets, and increasing debt levels in this scenario would be entirely natural (Nivorozhkin, 2005). However, in developing nations, having a large proportion of tangible assets relative to total assets does not ensure that the debt issued by lenders will be repaid, as underdeveloped legal systems may hinder or delay the bankruptcy

process. Tangibility and capital structure were found to be positively correlated by Lima (2009) and Imtiaz et al. (2016). Ullah et al. (2017), Harris & Raviv (1990) and Williamson (1988) also came to an agreement that tangibility and capital structure had a favourable correlation. According to Serghiescu et al. (2014), certain empirical research conducted in underdeveloped nations has demonstrated a negative association between the overall leverage and the tangibility of the assets (Nivorozhkin, 2002).

Capital structure is positively impacted by firm size. Firm size significantly affects the capital structure, according to Siddique (2012) in Imtiaz et al. (2016), while Amidu (2007) in Imtiaz et al. (2016) determined that size and leverage have a negative relationship. The trade-off argument suggests that firm size may be an inverse proxy for the likelihood of bankruptcy-related expenses. Larger businesses are found to be less likely to fail and to be more diversified. For a given firm value, they can reduce costs in bankruptcy. According to Imtiaz et al. (2016), larger companies are more likely to have higher debt capacities. They are anticipated to borrow more to maximise the tax benefits from debt due to diversification (Titman & Wessels, 1988). Size, therefore, positively affects leverage. One way to measure the knowledge asymmetry between managers and outside investors is through size. They need to have less debt and be better equipped to issue stock, which is more susceptible to information asymmetry (Rajan & Zingales, 1995). The profitability and activity ratios are two essential analytical techniques that investors use to assess various aspects of a company's financial health. Efficiency ratios evaluate how successfully a corporation uses its resources to achieve those earnings, whereas profitability ratios demonstrate how much profit a company makes.

Theoretical Angle of View

Most of the literature, devoid of testing, concentrates on financial factors that influence profitability. Erroneous estimations might result from limited constructs and improper functional forms. The linear form is the functional form that is most frequently utilised. This study looks at both macro and micro elements that affect how well a company performs, and it finds a connection between profitability and systemic and firm-specific traits.

2.1 Profit Maximization Theory

Marshall (1897, 1890) introduces the theory of profit maximization. The highest possible level of profit is said to be a business entity's ultimate goal. In order to ensure that their business is viable, each person has to contribute their share (Wong, 2011). Economically speaking, the company increases profit by balancing marginal income and expenses. Moreover, the theory states that a corporation's profitability dictates how long it will last. Throughout the profit maximisation process, the company determines the output and pricing of its products to maximise its profit. To calculate profit, subtract total expenses from total revenue. Most businesses want to maximise this difference in order to achieve profits. The margin will be lowered otherwise. The firm's inclination to make the most profit when marginal cost equals marginal revenue drives the cost from marginal income (Wong, 2011). A business optimises profit when it runs at its highest efficiency (i.e. when marginal revenue and marginal cost are equal). A firm's ability to optimise profits is unaffected by changes in fixed costs (Chairal & Tengku, 2010).

2.1.2 Modigliani Miller (1958, 1963)

Modigliani and Miller established the basic tenet that leverage and business value are linked in 1958. However, in 1963, they changed their minds and asserted that borrowing debt might help increase business value after considering how taxes affected the development of value. According to DeAngelo & Masulis (1980), the best leverage would come from managing expenses caused by the financial crisis. Both tax shield effects and non-tax shield effects cause the perks of debt issuance. The former is the tax incentive of lower loan income leading to revenue from non-debt-related factors such as investment tax credit and depreciation. Since the cost of filing for bankruptcy increases with an organisation's financial load, creditors will demand a higher interest rate. In addition, there is age, which increases the danger for a creditor in this case. Benefits from using the services as often as possible will be managed at a low tax avoidance level for a firm's leverage, but costs will climb rapidly as debt does. Therefore, leverage typically reduces from value.

Hypothesis

H1a: Debt ratio is not significant and negatively affects profitability
H1b: Debt ratio has significant and adverse effects on Profitability.
H2a: Tangibility of the firm does not significantly and positively influence profitability
H2b: Tangibility of the firm significantly and positively influences financial performance
H3a: Efficiency is not significant and has positive effects on financial performance
H3b: Efficiency significantly positively affects financial performance
H4a. Effectiveness does not significantly affect financial performance
H4b. Effectiveness has a significant effect on financial performance
H5a. The size of the firm does not significantly affect financial performance
H5b The Size of the firm has a significant effect on financial performance

III RESEARCH METHODOLOGY

3.1 Nature of the Study, Population, sample, and sampling technique

All the non-financial firms publish their data annually for the stakeholders. All the financial information would be available in audited and consolidated financial statements. Moreover, the nature of the data is secondary and will be gathered from the annual reports of the nonfinancial firms. These data files are available on the websites of the State Bank of Pakistan, i.e. Balance sheet analysis. A population is the group of people from which a statistical sample is taken in statistics. So, any group of people that share a feature may be termed a population. A statistically sizable portion of a population, rather than the full population, may also be referred to as a sample. For this reason, the standard deviation, or standard error, of a statistical study of a sample from the full population must be disclosed. The standard error would not exist except in a population-wide study. The population of the current study will be the total non-financial firm. At the same time, the sample size was collected the same time, based on Sekaran & Bougie (2009).

3.3 Data and Sources of Data

As the nature of the study is secondary and panel, the data will be collected from the websites of the respective companies and the websites of the State Bank of Pakistan's balance sheet analysis. On the other hand, panel data, which is a mix of time series and cross-section data,

was used in the study. Various econometric techniques are used for panel data analysis; the most popular and widely used are fixed effect, random effect, and pooled OLS.

$$PROFIT = \beta 0i + \beta 1Debt\ ratit + \beta 2Tangt + \beta 3SiZit + \beta 4efficencyit + \beta 5Effitit + uit$$
$$PROFIT = \beta 0i + \beta 1Debt\ ratit + \beta 2LTangit + \beta 3SiZit + \beta 4efficencytit + \beta 5effectit + + uit$$
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3.4 Model Selection Panel Data

3.4.1 Fixed Effect

Fixed effect models assume that the explanatory and response variables have a fixed or constant connection across all observations. Let us look at how fixed-effect and mixed models incorporate fixed and random effects and can estimate patients' responses. People may mistakenly assume that fixed and random-effects models are comparable. However, the models reflect radically different suppositions analysing the information. Appropriate model selection is crucial for accurately estimating a variety of statistics. More importantly, the model provides a foundation for understanding the scope of the investigation.

3.4.2 Random Effects

The difference between the fixed effects and random effects is that the randomness and lack of correlation between the variation across entities and the predictor or independent variables used in the model is the basis for the random effects model's design:

3.4.3 Pooled OLS

The pooled regression model is one example with constant coefficients, which refers to intercepts and slopes. Researchers can pool all the data for this approach and perform an ordinary least squares regression model. The relationship between one or more independent variables and a dependent variable is estimated using the ordinary least squares (OLS) regression statistical method by limiting the sum of the squares in the variation between the observed and predicted values of the dependent, which is represented as a straight line

3.4.4 The Hausman Test and Breusch pagan test

These tests are used to select the most reliable model among the fixed effect random effect and pooled ols models.

3.5.1 Dependent Variable

Financial Performance

ROA = Net Asset/ Total Assets

A company's stock price frequently correlates with investors' opinions on its performance. An economic phrase that reflects a company's value is "firm performance." It is the total value of all of a company's assets as of a given date. Stock prices and investors' evaluation of a

company's performance tend to be related. Researchers typically utilize ROA, a crucial indicator, in assessing a company's profitability of its total assets and its financial performance (Alama and Hassion, 2014; Rahman and Kakakhel, 2016). It is computed by dividing total revenue by total assets of the business.

3.5.2 Independent Variables

Leverage

Leverage is a type of investing strategy that involves using borrowed funds, especially various financial instruments or cash, to increase the possible return on investment. The following equation can be used to determine financial leverage by Endri et al. (2020) and Rahman et al.(2018).

Financial leverage = Total Debt/Total Assets

Tangibility

Asset tangibility involves determining whether a firm has credit constraints. Businesses with more tangible assets may have easier access to external financial support and can utilise those assets as collateral. Investment and borrowing turn assets into pledgeable assets that can allow additional borrowings, enabling substantial funding in pledgeable assets. Determining tangible resources entails dividing fixed assets by total assets. It is a critical element in figuring out the firm's leverage. Businesses with many physical assets may quickly and risk-free raise additional cash by pledging their assets. Therefore, a positive sign is expected between leverage and tangibility of assets (Rahman et al.2018; Omerzai et al.2021). Tangibility measured by

TA = Fixed Assets/Total Assets

Activity ratio:

The class of financial ratios known as "activity ratios" is used by businesses to evaluate the efficiency with which they can employ the various operating assets on their balance sheet and convert them into revenue or cash. Activity ratios examine fixed assets, inventories, and accounts receivables to determine a company's operating efficiency. It demonstrates the utilisation of the balance sheet's components and a company's financial health. Most the researcher use the proxies like Alivia, N. R., & Chabachib, M. (2013); according to Utami and Prasetiono (2016), Gunadi et al. (2020);

$$\text{NPM} = \frac{\text{Net profit}}{\text{Sales}}$$

Effectiveness

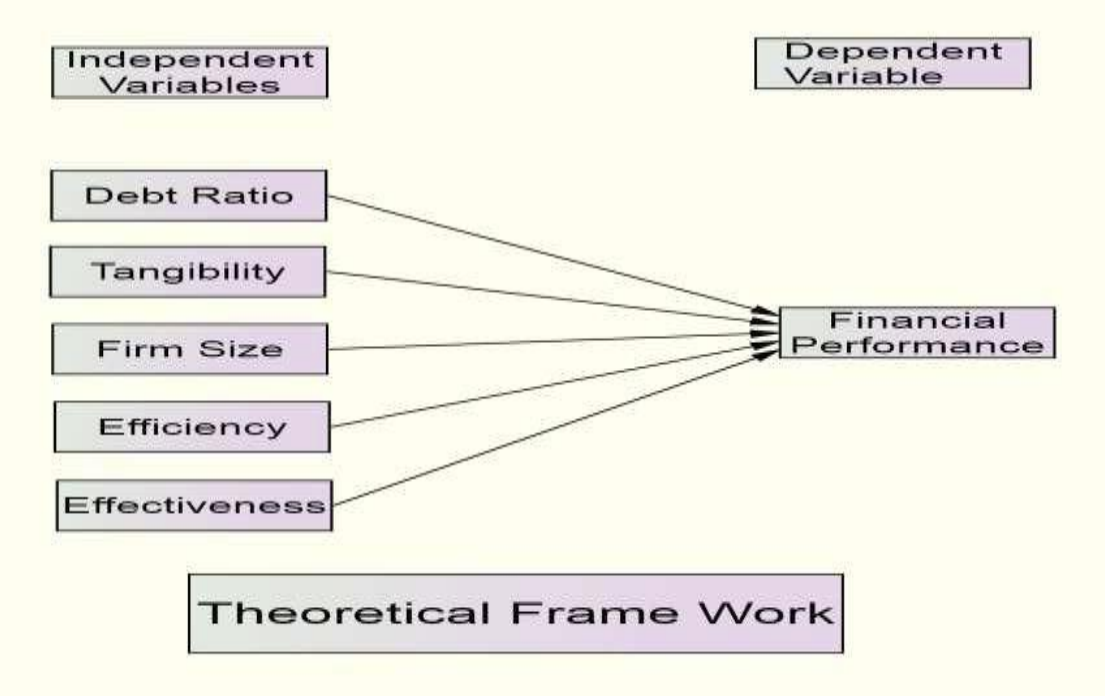
It is the efficiency with which a firm, its employees, and the entire organisation work together to create value. Efficacy may be used in many different business operations. From a management point of view, a company is successful if its employees do the necessary tasks. Total Asset Turnover is a ratio used to assess how well an asset is being used to produce income from sales. The value of the firm increases as its effectiveness. Leilani and Barus (2013) Return

on equity, according to Sunaryo, D. (2020), is the proportion of a firm's total profit after taxes to its capital. The general rule is that the higher the TATO, the higher the ROE, and the better the status of the company owners, the more investors will value the company, which will result in higher stock prices and firm value.

TATO = Sales/ Total Assets

Size

It defines the size or quantity of the work produced by a given firm. A firm's size significantly impacts its profitability and productivity; therefore, evaluating it is essential. Realising a firm's "size" and how it affects the company and the performance of business operations is one of the most crucial entrepreneurial successes in the business entity. In literature, size and profitability have a diverse relationship. The optimal size is something that every firm strives for. Usually, a business starts as a smaller company and develops over its operating term until it reaches the appropriate size. Endri et al. (2020), Omairzai et al. (2021), and Rahman (2018) have shown that size has a positive and statistically significant impact on profitability.
Firm Size = Ln (Total Asset)



The explanatory variables in the above diagram are the manufacturing sector and Industry-level determinants, with the company's profitability (ROA) as the dependent variable—industry-level factors like leverage, Tangibility, Firm size, efficiency, and activity.

Results and Discussion

A research methodology indicates how to collect and examine data pertaining to a certain study topic. It's a strategy used by academics to arrange their research so they can use the selected

research tools to achieve their objectives. It involves all of the important aspects of research, including the overall study framework and the methods for gathering data, analysis, and research design. As these rules might help you understand research methods, you also need to recognize how important it is to choose the right approach for the job.

4.1 Correlation analysis

Bivariate, or correlation, analysis is mainly concerned with determining if a link between variables exists and, if so, the magnitude and how it acts. It shows the intensity from +1 to -1. However, the relation should be between the two threshold values. This relationship depicts the relationship between two variables, which are either positive or negative.

Table 4.1 Summary Statistics (Dependent Variables ROA with Independent as Industrial Level variables)

Variables	ROA	Leverage	Firm Size	Tangibility	Effectiveness	Efficiency
ROA	1.000	-0.5343	0.14623	0.6256	0.34352	0.03253
Leverage		1.000	-.10234	-.0.32325	-0.45132	0.05132
Firm Size			1.000	0.31526	-0.051326	0.51326
Tangibility	-			1.00	0.56312	0.01231
Effectiveness					1.000	-0.06321
Efficiency						1.000

(Data from 2014-203 from the State Bank of Pakistan)

Table 4.2 shows the relationship of variables. The relationship between Profitability (ROA) and Leverage is negative. The profit will decrease when the debt burden increases (-0.5343). Moreover, firm size and leverage are negatively related (-.10234). Tangibility and effectiveness are also negatively associated with Leverage (-.0.32325). Firm size and effectiveness and efficiency and effectiveness are negatively related. In addition, all the other variables are related positively to the table. At the same time, the values are lying between +1 and -1.

Assumption of Regression Analysis

Variables	Coefficient	Standard Error	T-Value	P-Value
Constant	7.21589	2.23327	3.231	0.0013***
Leverage	-14.6549	0.833831	-17.58	0.0064 ***
Firm Size	0.846551	0.522910	1.619	0.1056
Tangibility	1.14621	0.516503	2.219	0.0266 **
Effectiveness	2.87186	0.289814	9.909	.0022 ***
Activity	0.0296294	0.0124856	2.373	0.0177 **
R-squared 0.57350 **Adjusted R-squared 0.52458 F-value= 10**				

The above shape shows the bell shape; therefore, the nature of the data is panel. When the

shape of the data is bell form, the histogram shows that the nature of the data is typical, sone assumption is satisfied. A multicollinearity test was conducted. The value of VIF is less than 10, and the Tolerance 1/vip) value is less than 1. It is reflected that there is no severe multicollinearity issue.

Diagnostic Test

Table 4.2 shows that as per specification, the model must not have serious multicollinearity if the variance inflation factor (VIF) does not exceed five and the tolerance level (measured by one divided by the VIF) does not exceed.2 (Tabachnick & Fidel, 2007). It may be concluded that the model shows no evidence of multicollinearity and is safe to proceed with since, in the current scenario, none of the VIF values are more significant than or even close to 5. None of the tolerance level values are less than or even close to 2.

Table 4.2 Hausman test (Fixed vs Random)

Null hypothesis: GLS estimates are consistent	
Asymptotic test statistic: Chi-square(5) =	29.5748
with p-value =	0.090

The above table shows the results of the Hanuman test on whether to use a fixed effect model or a random effect model. The results show the p-value is not significant. Therefore, the model is fit to use the Random effect model instead of the fixed effect model.

Null hypothesis: Variance of the unit-specific error =	**0**
Asymptotic test statistic: Chi-square(1)	423.034
P-value	0.001231

4.4 Table

Breusch Pagan- Langrage Multiple test (For Pooled vs Random effect Model)

Table 4.4 shows the outcomes, and the Random effect model will be used instead of the Pooled OLS model. The appropriate model for panel data will be the random effect model instead of the Pooled OLS model.

Table 4.5 Random-effects (GLS), using 1896 observation (Dependent variable: ROA)

Source (State Bank of Pakistan from 2014-2023)

Table 4.5 depicts the Random effect model for the panel data model, which is selected by the Hausmen and Brush pagan test. This model investigates the cause and effect of independent and dependent variables. The R-square value shows the overall impact of selected variables on dependent variables, i.e. 57 per cent. At the same time, the remaining impact is due to the other excluded variables. The F value is more than 4, showing the model fit. The t-values of Independent variables show that leverage is negatively but significantly related to the profitability of manufacturing companies. At the same time, the firm's size, efficiency and effectiveness are significant and positively related to the profitability (ROA).

Discussion

The results of industry-level variables such as leverage, firm size, efficacy and efficiency, and tangibility are displayed in Table 4.5. At the same time, the dependent variables of a manufacturing company's profitability are examined for the impact of independent variables. The overall influence of the independent variables on the dependent variable has an R-square value of 57—the independent variable. The industrial sector's profitability has a considerable negative correlation with leverage. As a result, if manufacturing's debt load rises, profitability will fall. The debt ratio causes bankruptcy. Consequently, a high debt load reduces profitability. If businesses rely on outside financing to raise capital, their profitability will decline as soon as the portion they rely on begins to decrease. Interest is paid by a firm when it takes on debt. An increase in borrowing means that the business must pay an increase in interest. This may end in higher operating expenses and decreased profitability for the industry. Our results suggest a rise in efficacy. An increase in effectiveness can boost a company's total profitability by cutting costs, creating a competitive advantage, and increasing productivity, among other things. The outcome is consistent with previous findings about the relationship between leverage and profitability. A few results from Endri et al. (2020), Rahman (2012), Rahman et al. (2018), Zaher Abdel et al. (2019), and Perdana (2020) do not support the findings as they stand. In the manufacturing sector, a firm's profitability has little bearing on its size.

Effectiveness and profitability are positively and significantly correlated, as is well known, since businesses that can innovate and optimise processes to keep raising their efficacy are more likely to experience long-term stability in profitability. Enhanced outcomes: A more substantial corporation than its rivals may gain a competitive edge by offering better products or services, faster delivery, or more affordable prices. Productivity increases often follow an increase in effectiveness. Increased revenue and a more significant market share could come from this. According to studies (e.g. Brynjolfsson and Hitt, 2000; Hitt et al., 2001), businesses that employ more efficient practices typically succeed more in making money. Additionally, our research shows that activity and tangibility benefit a company's profitability. Companies with higher percentages of tangible assets—such as property, plant, and equipment—tend to have lower financial risk and are frequently seen as more creditworthy by lenders, according to research (e.g., Liu and Opong, 2011; Musa et al., 2018). This could lead to increased profitability and lower borrowing costs. Additionally, our data indicates that firm size enhances profitability. Stated differently, a business's size may benefit profitability if it allows larger companies to use their scale and resources to reduce expenses and gain other benefits that boost profitability. An increase in a company's size should increase profitability if there is an association between company size and profitability.

V- Conclusions and policy implication

The study aimed to determine the effect of industry-level factors like Leverage and tangibility—firm size, Efficiency and effeteness from 2014 to 2023. The data was gathered from the State Bank of Pakistan's website (balance sheet analysis). At the same time, the sample size was collected simultaneously based on Sekaran & Bougie (2009). The most reliable models of panel data models were used to investigate the phenomena. The three models, fixed effect, random effect, and pooled model, were checked for the prevailing data; therefore, the most appropriate model was selected using the Hausman and Bruesh Peagon test. The random effect model examines leverage as significantly related to profitability, but its relation is negative. Moreover, Tangibility, efficiency and effectiveness are positive and significantly associated with profitability. The firm size is an insignificant factor in the study. The policymaker should focus on decreasing debt to increase profitability because high debt leads to bankruptcy. The newly launched firm can also enhance profitability because the firm size is insignificant related to profitability. The board of directors should focus on significant variables to improve profitability. The current study uses one variable for profitability. Other proxies could be utilised for profitability.

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