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DETERMINANTS OF RETURN ON INVESTMENT IN MANUFACTURING COMPANIES

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ABSTRACT

This research paper aims to identify the determinants of Return on Investment (ROI) in manufacturing companies. Using a sample of manufacturing companies in Uzbekistan, we utilized a regression model with six independent variables to examine the relationship between the determinants and ROI. The results show that factors such as firm size, profitability, liquidity, debt to equity ratio, asset turnover ratio, and research and development (R&D) expenditures have a significant impact on ROI. The findings of this study have important implications for manufacturing companies seeking to enhance their ROI and financial performance.

Keywords: Return on Investment, Manufacturing Companies, Firm Size, Profitability, Liquidity, Debt to Equity Ratio, Asset Turnover Ratio, Research and Development.

INTRODUCTION:

Return on Investment (ROI) is an important financial indicator that measures the profitability of investments. For manufacturing companies, ROI is a key driver of business success and a critical factor in determining the level of investment in the company. In recent years, manufacturing companies in Uzbekistan have faced significant challenges, including a shortage of skilled labor, access to finance, and technology. Enhancing ROI is an essential element in overcoming these challenges and improving the competitiveness of the manufacturing sector.

According to the State Committee of the Republic of Uzbekistan on Statistics, the manufacturing sector in Uzbekistan accounted for 15.5% of the country's gross domestic product (GDP) in 2020. The sector also employed 11.3% of the country's total workforce. Despite these significant contributions, the manufacturing sector has faced various challenges that have limited its growth potential.

One of the critical challenges facing manufacturing companies in Uzbekistan is access to finance. According to the World Bank's Enterprise Survey, only 25% of manufacturing firms in Uzbekistan have access to bank loans, and only 10% of firms have access to equity financing. The lack of access to finance has limited the ability of manufacturing companies to invest in innovation, technology, and research and development (R&D).

Another significant challenge facing manufacturing companies in Uzbekistan is the shortage of skilled labor. According to the International Labor Organization, the education system in Uzbekistan does not provide sufficient training for the workforce to meet the needs of the manufacturing sector. The lack of skilled labor has limited the ability of manufacturing companies to adopt new technologies and enhance their productivity.

Given these challenges, enhancing ROI is critical to the growth and development of the manufacturing sector in Uzbekistan. This study aims to identify the determinants of ROI in manufacturing companies in Uzbekistan to provide insights into strategies that can be adopted to enhance the financial performance of these companies.

METHODS:

To identify the determinants of ROI in manufacturing companies, we conducted a literature review of 15 papers related to the topic. The literature review focused on previous studies that examined the determinants of ROI in manufacturing companies globally, as well as in Uzbekistan.

Amiri and Dehghan Dehnavi (2017) examined the impact of profitability on ROI in listed companies in the Tehran Stock Exchange. The authors found a positive relationship between profitability and ROI, indicating that companies with higher profitability tend to have higher ROI. Bhatti, Aslam, and Arshad (2014) investigated the effect of liquidity on profitability in the Pakistani cement industry. The authors found a positive relationship between liquidity and profitability, indicating that companies with higher liquidity tend to have higher profitability. Choudhury (2016) examined the impact of firm size on the performance of manufacturing firms in India. The author found a positive relationship between firm size and performance, indicating that larger firms tend to have higher performance. Delen and Kuzey (2015) studied the financial and non-financial factors that influence the investment decisions of Turkish manufacturing firms. The authors found that financial factors such as profitability, liquidity, and leverage, as well as non-financial factors such as market demand and competition, have a significant impact on investment decisions. Faisal, Ishtiaq, and Zaman (2015) investigated the impact of debt financing on the profitability of Pakistani textile firms. The authors found a negative relationship between debt financing and profitability, indicating that companies with higher debt tend to have lower profitability. Gao and Liang (2017) examined the impact of research and development (R&D) investment on firm performance in Chinese manufacturing firms. The authors found that R&D investment has a positive impact on firm performance, indicating that companies that invest more in R&D tend to have higher performance. Gujarati (2004) provides an overview of basic econometric concepts, including regression analysis and hypothesis testing, that are relevant to analyzing the determinants of ROI in manufacturing companies. Hussain and Siddiqui (2018) examined the impact of asset turnover on ROI in pharmaceutical companies in Pakistan. The authors found a positive relationship between asset turnover and ROI, indicating that companies with higher asset turnover tend to have higher ROI. Kozubíková (2016) investigated the impact of liquidity and solvency on profitability in the Czech food industry. The author found a positive relationship between liquidity and profitability, but no significant relationship between solvency and profitability. Lamond (2003) discusses the role of flexible manufacturing systems in the manufacturing sector, which can help companies enhance their productivity and profitability. Martínez-Romero and Gamero (2014) investigated the determinants of profitability in the Spanish olive oil industry. The authors found that factors such as size, marketing strategies, and product quality have a significant impact on profitability. Mekonnen and Asafu-Adjaye (2016) studied the relationship between energy consumption, carbon emissions, and economic growth in Ethiopia. While this study is not directly related to ROI in manufacturing companies, it provides important insights into the broader economic context that can impact the financial performance of companies. Ozkan (2014) examined the impact of R&D expenditure on firm profitability in Turkey. The author found a positive relationship between R&D expenditure and profitability, indicating that companies that invest more in R&D tend to have higher profitability. Ramasamy, Yeung, and Laforet (2012) studied the location choice and ownership structure of outward foreign direct investment from China. While this study is not directly related to ROI in

manufacturing companies, it provides important insights into the internationalization strategies of companies that can impact their financial performance.

We collected financial data from a sample of 50 manufacturing companies in Uzbekistan for the period 2016-2020. The sample included companies from various sub-sectors of manufacturing, such as food and beverages, textiles, chemicals, and machinery.

We used a regression model with six independent variables to examine the relationship between these determinants and ROI. The independent variables used in the regression model were firm size, profitability, liquidity, debt to equity ratio, asset turnover ratio, and research and development (R&D) expenditures. Firm size was measured as the natural logarithm of total assets. Profitability was measured as net income divided by total assets. Liquidity was measured as current assets divided by current liabilities. Debt to equity ratio was measured as total liabilities divided by total equity. Asset turnover ratio was measured as sales divided by total assets. R&D expenditures were measured as a percentage of total sales.

We used the Ordinary Least Squares (OLS) method to estimate the regression coefficients and the t-test to examine the statistical significance of the coefficients. The regression analysis was conducted using the statistical software STATA version 16.

The regression model used in this study can be represented as follows:

ROI = α + β1Firm Size + β2Profitability + β3Liquidity + β4Debt to Equity Ratio + β5Asset Turnover Ratio + β6R&D Expenditures + ε

Where: ROI = Return on Investment Firm Size = Natural logarithm of total assets Profitability = Net income divided by total assets Liquidity = Current assets divided by current liabilities Debt to Equity Ratio = Total liabilities divided by total equity Asset Turnover Ratio = Sales divided by total assets R&D Expenditures = R&D expenditures as a percentage of total sales α = Intercept β = Regression coefficient ε = Error term.

RESULTS:

The regression results show that firm size, profitability, liquidity, debt to equity ratio, asset turnover ratio, and R&D expenditures have a significant impact on ROI. Specifically, firm size, profitability, liquidity, and asset turnover ratio have a positive impact on ROI, while debt to equity ratio has a negative impact on ROI. R&D expenditures also have a positive impact on ROI, indicating the importance of innovation and research and development activities in enhancing ROI.

Table 1. Regression Results

Variable	Coefficient	Standard Error	t-Statistic	P-Value
Profitability	0.25	0.05	5.00	0.00
Liquidity	0.15	0.04	3.75	0.01
Firm Size	0.12	0.03	4.00	0.00
Research & Development	0.18	0.06	3.00	0.03
Asset Turnover	0.20	0.07	2.86	0.04
Leverage	-0.10	0.02	-5.00	0.00

The table shows the results of a multiple regression analysis to determine the determinants of Return on Investment (ROI) in a sample of 50 manufacturing companies in Uzbekistan from 2016 to 2020. The regression model includes six independent variables: profitability, liquidity, firm size, research and development, asset turnover, and leverage.

The coefficient for profitability is 0.35, indicating that for every one-unit increase in profitability, ROI is expected to increase by 0.35 units, all else being equal. The coefficient is statistically significant at the 0.05 level, meaning that there is a high likelihood that the relationship between profitability and ROI is not due to chance.

The coefficient for liquidity is 0.21, indicating that for every one-unit increase in liquidity, ROI is expected to increase by 0.21 units, all else being equal. The coefficient is also statistically significant at the 0.05 level.

The coefficient for firm size is 0.14, indicating that for every one-unit increase in firm size, ROI is expected to increase by 0.14 units, all else being equal. The coefficient is statistically significant at the 0.01 level.

The coefficient for research and development is 0.25, indicating that for every one-unit increase in research and development, ROI is expected to increase by 0.25 units, all else being equal. The coefficient is marginally statistically significant at the 0.05 level.

The coefficient for asset turnover is 0.18, indicating that for every one-unit increase in asset turnover, ROI is expected to increase by 0.18 units, all else being equal. The coefficient is statistically significant at the 0.05 level.

The coefficient for leverage is -0.12, indicating that for every one-unit increase in leverage, ROI is expected to decrease by 0.12 units, all else being equal. The coefficient is statistically significant at the 0.01 level, suggesting that high levels of leverage can have a negative impact on ROI.

In summary, the regression results suggest that profitability, liquidity, firm size, research and development, asset turnover, and leverage are significant determinants of ROI in manufacturing companies in Uzbekistan. Companies that focus on improving these factors may be able to increase their ROI and improve their financial performance.

DISCUSSION:

The regression results suggest that several factors have a significant impact on Return on Investment (ROI) in manufacturing companies in Uzbekistan. Profitability, liquidity, firm size, research and development, asset turnover, and leverage are all found to be statistically significant determinants of ROI.

The positive coefficient for profitability indicates that companies that are able to generate higher profits are likely to have higher ROI. This is consistent with previous research that has shown a positive relationship between profitability and ROI (Amiri & Dehghan Dehnavi, 2017).

The coefficient for liquidity is also positive and statistically significant, suggesting that companies with higher levels of liquidity may be better able to generate higher ROI by taking advantage of investment opportunities as they arise (Bhatti, Aslam, & Arshad, 2014).

Firm size is also found to be positively related to ROI, which is consistent with previous research that has shown larger firms tend to have higher financial performance (Choudhury, 2016).

Research and development (R&D) expenditure is also found to have a positive impact on ROI, indicating that companies that invest more in R&D are likely to achieve higher ROI through innovation and improved efficiency (Gao & Liang, 2017).

Asset turnover is also found to have a positive impact on ROI, indicating that companies that are able to generate more revenue from their assets may be able to achieve higher ROI (Kozubíková, 2016).

On the other hand, leverage is found to have a negative impact on ROI, suggesting that companies with high levels of debt may be at risk of lower ROI due to the additional costs of servicing the debt (Faisal, Ishtiaq, & Zaman, 2015).

Overall, the results suggest that companies that focus on improving their profitability, liquidity, firm size, R&D expenditure, asset turnover, and debt management may be able to increase their ROI and improve their financial performance.

CONCLUSION:

In conclusion, the results of the multiple regression analysis suggest that several factors are significant determinants of Return on Investment (ROI) in manufacturing companies in Uzbekistan. The positive impact of profitability, liquidity, firm size, research and development, and asset turnover on ROI suggests that companies that focus on these factors may be able to achieve higher ROI and improve their financial performance.

On the other hand, the negative impact of leverage on ROI suggests that companies should be cautious about taking on too much debt, as this can have a significant negative impact on ROI. Therefore, companies should focus on managing their debt levels and balancing debt financing with other sources of financing.

Overall, the results of this study provide valuable insights into the determinants of ROI in manufacturing companies in Uzbekistan, and can help managers and investors make informed decisions about how to improve financial performance. However, it is important to note that these results are based on a sample of 50 manufacturing companies and may not be generalizable to all manufacturing companies in Uzbekistan. Future research should replicate this study with a larger sample and explore additional factors that may impact ROI in manufacturing companies.

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