# Determinants of Profitability for Manufacturing Companies in Indonesia 2018-2020

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**Abstract**. *Profitability has become one of the most researched topics. However, some of studies have different results. This study is aimed to gain a better understanding of some factors that might have significant effects on profitability. This study examines the influences of internal and external factors on the profitability of companies within the manufacturing sector listed in the Indonesia Stock Exchange (BEI) during 2018-2020. This research utilizes secondary data and a quantitative approach through multiple linear regression. This study includes profitability as dependent variable, with firm size, firm age, liquidity, capital structure, firm growth, capital intensity, and macroeconomic indicator as independent variable. There are 789 observations that used within the study. These observations consisted of 263 companies in 3 years. Firm size, firm age, liquidity, firm growth, capital intensity, and macroeconomic indicator have significant and positive effect on profitability. Capital structure is found to have significant and negative influence on profitability.*

**Keywords.** *Capital Intensity; Firm Growth; Liquidity; Profitability.*

**Abstrak**. Profitabilitas menjadi salah satu topik yang sering diteliti. Meskipun demikian, beberapa penelitian memiliki hasil yang berbeda. Studi ini ditujukan untuk memperoleh pemahaman yang lebih baik mengenai beberapa faktor yang mungkin memiliki pengaruh terhadap profitabilitas. Studi ini menguji berbagai pengaruh dari beberapa faktor, baik internal maupun eksternal, terhadap profitabilitas dari perusahaan-perusahaan dalam sektor manufaktur yang terdaftar dalam Bursa Efek Indonesia (BEI) selama tahun 2018-2020. Penelitian ini menggunakan data sekunder dan pendekatan kuantitatif melalui regresi linier berganda. Studi ini menggunakan profitabilitas sebagai variabel dependen, serta ukuran perusahaan, usia perusahaan, likuiditas, struktur pendanaan, pertumbuhan perusahaan, intensitas pendanaan, dan indikator makroekonomi sebagai variabel independen. Terdapat 789 observasi yang digunakan dalam studi. Observasi-observasi ini meliputi 263 perusahaan selama jangka waktu 3 tahun. Ukuran perusahaan, usia perusahaan, likuiditas, pertumbuhan perusahaan, intensitas pendanaan, dan indikator makroekonomi ditemukan memiliki pengaruh yang signifikan dan positif terhadap profitabilitas. Struktur pendanaan ditemukan memiliki pengaruh yang signifikan dan negatif terhadap profitabilitas.

**Kata kunci**.  Intensitas Pendanaan; Likuiditas; Pertumbuhan Perusahaan; Profitabilitas.

## INTRODUCTION

The pandemic in 2020 took the world into a recession. Indonesia experienced a correction for its economic growth since the first quarter of 2020. During 2014-2019, Indonesia had always recorded a GDP growth of around 5% each year. This growth entered the first negative growth in years, scoring -2.07% in 2020.

Pervan et al. (2019) mentioned the importance of profitability determinants testing for companies and its significance as globalization expands and increases competition within the market. Nguyen et al.

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(2019) also highlighted the importance of profitability-themed research within the economy, strategic management, accounting, and finance. With crises during 2020 around the world, testing profitability determinants is becoming more crucial.

Many researchers in the past have done research in profitability determinants. Nguyen et al. (2019) found a significant and positive influence of firm size on Return on Assets (ROA), while Lazăr (2016) found it to be significant and negative. The influence of firm age on ROA also experienced debates; Pervan et al. (2019) found it significant and positive. Meanwhile, Lee et al. (2017) found significant and negative results. Nanda et al. (2018) and Lim et al. (2020) found a significant and positive influence of the current ratio towards ROA, although Pervan et al. (2019) and Nguyen et al. (2019) found insignificant and positive results. Isik et al. (2017) and Lazăr (2016) found that Debt-to-Asset Ratio (DAR) has a significant and positive influence on ROA. Lazăr (2016) found that firm growth has a significant and positive influence on ROA, but Lim et al. (2020) disagreed with their insignificant and negative result. The capital intensity was studied by Isik et al. (2017) and found its significant and positive influence on ROA, while Pervan et al. (2019) found an insignificant and positive influence. As a macroeconomic indicator, GDP growth was studied by Pervan et al. (2019) and Isik et al. (2017), to which both found a significant and positive influence on ROA.

The objects used in this study are companies within the manufacturing sector listed in Indonesia Stock Exchange (BEI). The manufacturing sector consisted of materials, industrials, consumer staples, and consumer discretionary sectors. Together, these sectors formed 48% of all publicly traded companies in BEI. Therefore, it is essential to understand the profitability that represents the performance of this sector. With the results of previous studies and researches that showed different results, this research is aimed to gain a better understanding of the influences of firm size, firm age, liquidity (current ratio), capital

structure (DAR), firm growth, capital intensity, and macroeconomic indicator (GDP growth) towards profitability (ROA) in Indonesia.

The novelty of this research lies in three aspects: first, it examines the antecedents of company profitability based on a combination of internal and external factors in one analysis model so that it is expected to provide a more complete explanation. Second, it is implemented in the manufacturing sector's performance, which is the most dominant sector because it is formed of 48% of all companies that go public on the IDX. Third, this study includes the COVID-19 pandemic period, which significantly impacts the correction of economic growth, leading to a recession. This research is expected to provide knowledge and serve as an improvement of previous research. Therefore, the research findings can be considerations or references for companies and future research.

As a ratio used to measure a firm's performance, profitability reflects the results of many policies and decisions made by the firm (Brigham et al., 2011). One of the most commonly used ratios for this purpose is ROA. According to several past studies, the firm size that represented the firm's assets has positive influences on profitability. This is mainly explained by economies of scale achieved by larger companies. These results are explained by better efficiency (Bhattacharyya et al., 2009), more significant market share (Lee, 2009), faster growth that allows the firm to maintain its position within the market (Van Biesebroenck, 2005), and effectivity gained from economies of scale (Doğan, 2013).

**H1:** Firm size has a positive influence on profitability.

Firm age represents years of firm's operation since established showed a debate regarding its influence within past research. Ilaboya et al. (2016) discovered a positive influence because of the learning curve acquired by older firms. Other research found negative influence because of overinvestment agency problem (Aharoni, 1982, Gedajlovic et al., 2002), increasing costs followed with

slower growth and lowering of R&D costs (Loderer et al., 2010), and decrease in productivity (Coad et al., 2013). Akben-Selçuk (2016) also supported these negative results.

**H2:** Firm age has a negative influence on profitability.

Liquidity showed different results according to some studies in the past. Positive influences showed that companies were able to adapt better (Goddard et al., 2005), which this result was also supported by Rehman et al. (2015) and Alarussi et al. (2018). A negative influence was found in previous research, argued that over-liquidity caused loss of profit (Eljelly, 2004), also loss of sales efficiency because of over-stocking (Vintilă et al., 2016).

**H3:** Liquidity has a positive influence on profitability.

Representing leverage used by the firm, capital structure's effects on profitability also came with other arguments in previous research. Arguments stating positive influence are based on tax reduction theory because profitable firms relied on optimal usage of debt financing (Abor, 2005, Gill et al., 2011). The negative influence was explained by interest expense theory, in which interest rates are to increase as debt increases, and pecking order theory (Myers et al., 1984), to which firms with high debt ratios indicated low profitability. This negative influence is also supported by Shubita et al. (2012).

**H4:** Capital structure has a negative influence on profitability.

Strong growth, representing sales growth, is found to influence profitability positively. This is due to the growth of capital which encouraged economies of scale. Besides, management supported firm growth for even bigger firm profitability (Geroski et al., 2003). Acquired capital was later used to increase profitability (Asimakopoulos et al., 2009). The study conducted by Lee (2009) and Fuertes-Callen et al. (2018) also supported this result.

**H5:** Firm growth has a positive influence on profitability.

Previous studies found a positive influence of capital intensity, representing the amount of investment done by a firm towards profitability. The high investment could pose a barrier to entry, allowing firms to set prices above competitive prices (Prince et al., 1993). This result is also supported by Lee (2009) and Grazzi et al. (2015).

**H6:** Capital intensity has a positive influence on profitability.

GDP growth is often used as an indicator of macroeconomics due to its ability to describe the economic cycles (Mwangi, 2013). The positive influence of GDP growth towards profitability had been observed by McDonald (1999), Shuanglin et al. (2006), Lu et al. (2008), Mwangi (2013), and Egbunike et al. (2018).

**H7:** Macroeconomic indicator has a positive influence on profitability.

## RESEARCH METHODOLOGY

This research began by identifying the research gap from previous research, followed by problem identification. Later, a literature review was done to form hypotheses in the research. After that, data testing was conducted from the gathered data.

This research is basic research to understand several variables' influences on firm performance, measured with profitability. The research is causal research to discover the influences of independent variables towards dependent variables within the study. A quantitative approach was used alongside secondary data from BEI and Badan Pusat Statistik (BPS).

The dependent variable used in the study is ROA, which calculates net income over total assets. There are seven independent variables, which are firm size (SIZ, natural logarithm of total assets), firm age (AGE, number of years firm operated since establishment), liquidity (CR, current ratio, current assets over current liabilities), capital structure (DAR, total liabilities over total assets), firm growth (GROW, percentage of sales growth), capital intensity (CAPIN, total assets over sales), and macroeconomic indicator (GDPGR, GDP growth, percentage

of GDP growth). Therefore, all the variables use the ratio as their level of measurement.

The population used in this research involved firms within the manufacturing sector listening in BEI during 2018-2020 with complete available independent and dependent variables. The financial statement of the said firms should also start on January 1 and end on December 31. The data were later processed to fulfill the research requirements before being statistically processed. Then, analysis and result interpretation were conducted.

Data were processed into descriptive and multiple linear regression analyses. Descriptive analysis was used to understand the values of minimum, maximum, mean, and median for each variable without the effects of other variables. Multiple linear regression analysis was used to understand the influences of independent variables towards dependent variables within the following equation:

$$ROA = \alpha + \beta_1 SIZ + \beta_2 AGE + \beta_3 CR + \beta_4 DAR + \beta_5 GROW + \beta_6 CAPIN + \beta_7 GDPGR + e$$

Which $\alpha$ represents constant, while $\beta$ for coefficient, and e for error.

In order to choose the best-fitting model, the Chow test and Hausman test were carried out. Classic assumption tests were also conducted through normality tests, multicollinearity tests, heteroscedasticity tests, and autocorrelation tests. Hypotheses testing was later done through F test, t-test, and determination coefficient test.

## RESULT AND DISCUSSION

Using listed firms in the manufacturing sector during 2018-2020 as research objects, 789 observations were acquired. This number is the result of 263 qualifying firms out of 359.

Table 1. Descriptive Analysis

|  | ROA | SIZ | AGE | CR |
|---|---|---|---|---|
| **Mean** | -0.001505 | 14.64564 | 35.96578 | 7.512053 |
| **Median** | 0.018829 | 14.63950 | 36.00000 | 1.502420 |
| **Maximum** | 0.607168 | 19.67902 | 109.0000 | 2726.451 |
| **Minimum** | -4.798697 | 5.326731 | 2.000000 | 0.021327 |
| **Std. Dev.** | 0.284129 | 1.758361 | 17.83789 | 100.7994 |
| **Skewness** | -13.11369 | -0.434736 | 1.194025 | 25.29505 |
| **Kurtosis** | 212.0357 | 5.240852 | 5.997941 | 674.6836 |
| **Jarque-Bera** | 1459117 | 189.9320 | 482.9481 | 14915985 |
| **Probability** | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| **Sum** | -1.187553 | 11555.41 | 28377.00 | 5927.010 |
| **Sum Sq. Dev.** | 63.61486 | 2436.364 | 250734.1 | 8006495 |
| **Observations** | 789 | 789 | 789 | 789 |

|  | DAR | GROW | CAPIN | GDPGR |
|---|---|---|---|---|
| **Mean** | 0.840787 | -0.047556 | 6.819679 | 0.027076 |
| **Median** | 0.472497 | 0.011402 | 1.315323 | 0.050182 |
| **Maximum** | 90.98972 | 3.160111 | 1724.718 | 0.051743 |
| **Minimum** | 0.006362 | -4.144790 | 0.034694 | -0.020695 |
| **Std. Dev.** | 4.606860 | 0.454594 | 67.57537 | 0.033807 |
| **Skewness** | 16.05529 | -1.485135 | 22.13520 | -0.705974 |
| **Kurtosis** | 282.9817 | 22.92291 | 540.7652 | 1.500000 |
| **Jarque-Bera** | 2610960 | 13338.87 | 9571599 | 139.5083 |
| **Probability** | 0.000000 | 0.000000 | 0.000000 | 0.000000 |

| | | | | |
|---|---|---|---|---|
| **Sum** | 663.3809 | -37.52149 | 5380.726 | 21.36325 |
| **Sum Sq. Dev.** | 16723.85 | 162.8450 | 3598347 | 0.900626 |
| **Observations** | 789 | 789 | 789 | 789 |

The minimum, maximum, mean, and median values of each variable are shown above. From this table, it is understandable that all variables had a Jarque-Bera probability of 0.0000, which indicated the data were not normally distributed. This research assumed a normal distribution based on Central Limit Theorem because of its considerable number of observations (Dielman, 1961).

Table 1. Multicollinearity Test

| | SIZ | AGE | CR | DAR | GROW | CAPIN | GDPGR |
|---|---|---|---|---|---|---|---|
| **SIZ** | 1.0000 | | | | | | |
| **AGE** | 0.2176 | 1.0000 | | | | | |
| **CR** | -0.0909 | -0.0274 | 1.0000 | | | | |
| **DAR** | -0.1833 | -0.0757 | -0.0114 | 1.0000 | | | |
| **GROW** | 0.1354 | -0.0320 | -0.1361 | -0.1620 | 1.0000 | | |
| **CAPIN** | -0.0230 | -0.0671 | 0.0691 | -0.0130 | -0.3075 | 1.0000 | |
| **GDPGR** | 0.0002 | -0.0401 | 0.0292 | -0.0151 | 0.3065 | -0.0350 | 1.0000 |

The result of the multicollinearity test above showed no signs of multicollinearity among independent variables used. This research also assumed no autocorrelation, mainly in time-series data, because the study used a data panel (Gujarati et al., 2008).

The regression model was chosen through the results of the Chow and Hausman tests. Chow test showed a cross-section chi-square probability of 0.0000, meaning the fixed-effects model is more befitting.

Hausman test showed a cross-section random probability of 1.0000 signaling invalidity, which means the fixed-effects model fit the best for this research. Before executing the regression, the heteroscedasticity test was conducted through the White test. The result showed existing heteroscedasticity within the data. White-cross section and cross-section weight were used in coefficient covariance and GLS weight to resolve this.

Table 2. Regression Results

| Dependent Variable: ROA | | | | | | |
|---|---|---|---|---|---|---|
| **Independent Variable** | **Coefficient** | **Std. Error** | **t-Statistic** | **Probability** | **Hypothesis** | **Interpretation** |
| Constant | -1,769679 | 0,017153 | -103,1729 | 0,0000 | | |
| SIZ | 0,102654 | 0,000989 | 103,8431 | 0,0000[***] | Positive | Accept |
| AGE | 0,008649 | 0,000536 | 16,12720 | 0,0000[***] | Negative | Reject |
| CR | 9,61E-05 | 3,74E-05 | 2,567677 | 0,0105[**] | Positive | Accept |
| DAR | -0,067893 | 0,001711 | -39,67065 | 0,0000[***] | Negative | Accept |
| GROW | 0,076534 | 0,005108 | 14,98402 | 0,0000[***] | Positive | Accept |
| CAPIN | 0,000148 | 7,72E-06 | 19,17679 | 0,0000[***] | Positive | Accept |
| GDPGR | 0,467397 | 0,001859 | 251,4598 | 0,0000[***] | Positive | Accept |
| R-squared | | | 0,969164 | | | |
| Adjusted R-squared | | | 0,953182 | | | |

| | |
|---|---|
| F-Stat | 60,63961 |
| Probability (F-Stat) | 0,000000 |
| N | 789 |

Note: **, *** represent significance at 5% and 1%

According to Table 3, the following equation can be formed.

$$ROA = -1.7697 + 0.1027\ SIZ + 0.086\ AGE + 9.61E\text{-}05\ CR - 0.0679\ DAR + 0.0765\ GROW + 0.0001\ CAPIN + 0.4674\ GDPGR + e$$

Table 3 shows the results of the data panel regression test, along with previously formed hypotheses and their interpretations. Through t-test, it is known that all independent variables have significant influences towards dependent variable (ROA). Firm size (SIZ) showed a positive and significant influence on profitability. Firm age (AGE) was found to have a positive and significant influence on profitability. Liquidity (CR) indicated a positive and significant influence on profitability. Capital structure (DAR) showed a negative and significant influence on profitability. Firm growth (GROW) had a positive and significant influence on profitability. Capital intensity (CAPIN) was found to have a positive and significant influence on profitability. Macroeconomic indicators (GDPGR) had a positive and significant influence on profitability.

Firm size was found to have a positive and significant influence on profitability with the coefficient of 0.102654 and P<0.05, meaning the hypothesis was accepted. This result aligned with the research of Tarziján et al. (2010), Nanda et al. (2019), and Cheong et al. (2021). The result can be explained through economies of scale possessed by larger companies (Tarziján et al., 2010). Big companies can also increase the working process's efficiency and more varying investment opportunities, which allows expansions that benefit the firm.

Firm age was found to have positive and significant influence towards profitability with coefficient of 0.008649 and P<0.05, meaning the hypothesis was rejected. This

result is supported by studies of Hatem (2014), Qureshi et al. (2014), and Samosir (2018). Older firms were able to accumulate experience that allows longer learning curve, which might not be available to younger firms. Longer learning curve allowed firms to boost its efficiency in resources usage. Besides, older firms are more likely to have better reputation within the market (Hatem, 2014).

Firm age was found to have a positive and significant influence on profitability with the coefficient of 0.008649 and P<0.05, meaning the hypothesis was rejected. This result is supported by studies of Hatem (2014), Qureshi et al. (2014), and Samosir (2018). Older firms accumulated experience that allows a longer learning curve, which might not be available to younger firms. A longer learning curve allowed firms to boost their efficiency in resources usage. Besides, older firms are more likely to have a better reputation within the market (Hatem, 2014).

Capital structure was found to have a negative and significant influence on profitability with the coefficient of -0.067893 and P<0.05, meaning the hypothesis was accepted. This result aligned with the studies of Qureshi et al. (2014), Alarussi et al. (2018), Dioha et al. (2018), Cheong et al. (2021), and Tsiapa (2021). The more enormous liabilities the firm has, the immense burden the firm has to carry. This could potentially increase interest expense, thus decreasing firm profits (Cheong et al., 2021).

Firm growth was found to have a positive and significant influence on profitability with the coefficient of 0.076534 and P<0.05, meaning the hypothesis was accepted. This is supported by Dioha et al. (2018), Tsiapa (2021), and Yadav et al. (2021). Firm growth is essential, especially for newer companies, since it is tightly related to firm survivability (Cowling, 2004). This affects the company's growth opportunities in the future,

as well as profit generation. Besides, assuming that companies are profit-oriented, they will always try to increase the revenue to increase profitability.

The capital intensity was found to have a positive and significant influence on profitability with the coefficient of 0.000148 and $P<0.05$. the meaning hypothesis was accepted. Previous researches that supported this result are Tyagi et al. (2017) and Nakatani (2019). The bigger the capital intensity, which represents the investment amount, the higher profitability that the firm can attain. This is explained through increasing productivity (Heshmati et al., 2018). Aside from that, capital intensity also encourages the company to achieve economies of scale (Novotná et al., 2020), which could also become a competitive advantage.

The macroeconomic indicator was found to have a positive and significant influence on profitability with the coefficient of 0.467397 and $P<0.05$, meaning the hypothesis was accepted. This aligned with studies by Cyril et al. (2020) and Yadav et al. (2021). GDP reflects business cycles at the macro-level (Yadav et al., 2021), which allows it to describe the existing business environment. This result could be interpreted as a good business environment that encourages firms to have better profitability.

The result of the F test showed 0.0000, indicating that the independent variables (SIZ, AGE, CR, DAR, GROW, CAPIN, and GDPGR) altogether have a significant influence on profitability. The coefficient determination test showed that independent variables could explain 96.92% ($R^2$) or 95.32% (adjusted $R^2$) of the dependent variable (ROA). The remaining 3.08-4.68% cannot be explained through independent variables within this research.

## CONCLUSION

This research aimed to understand profitability determinants through data acquired from listed firms within the manufacturing sector in BEI during 2018-2020. A total of 789 observations were done and analyzed using multiple linear regression. From 7 hypotheses, six were accepted, and one was rejected. Firm size, firm age, liquidity, firm growth, capital intensity, and macroeconomic indicator were found to have a positive and significant influence on profitability. Capital structure was found to have a negative and significant influence on profitability. Firm age, which was found to have a different result from its hypothesis, was explained by the possibility of older manufacturing firms in Indonesia with a learning curve that is not available to younger firms.

This research had its limitations. The data used within the research was limited to the manufacturing sector in BEI during 2018-2020 only, which might not be able to explain other sectors or firms outside the scope. Despite its limitations, with the number of observations done, the results of this research may become a reference or consideration for companies, especially for decision making. It can be concluded that firms need to heed both internal and external factors which might affect profitability. This research might serve as a reference for further developments for future research. This can be done by widening the research scope or duration of observation conducted.

## REFERENCES

Abor, J. (2005). The effect of capital structure on profitability: an empirical analysis of listed firms in Ghana. *The journal of risk finance, 6*(5), 438-445.

Aharoni, Y. (1982). State-owned enterprise: An agent without a principal. In L. Jones (Author), *Public Enterprise in Less Developed Countries* (pp. 67-76). Cambridge: Cambridge University

Press. doi:10.1017/CBO9780511752988.005

Akben Selçuk, E. (2016). Does firm age affect profitability? Evidence from Turkey. *International Journal of Economic Sciences, 5*(3).

Alarussi, A. S., & Alhaderi, S. M. (2018). Factors affecting profitability in Malaysia. *Journal of Economic Studies*.

Asimakopoulos, I., Samitas, A., & Papadogonas, T. (2009). Firm-specific and economy wide determinants of firm profitability: Greek evidence using panel data. *Managerial Finance, 35*(11), 930-939.

Bhattacharyya, S., & Saxena, A. (2009). Does the firm size matter? An empirical enquiry into the performance of Indian manufacturing firms. *An Empirical Enquiry into the Performance of Indian Manufacturing Firms (March 13, 2009)*.

Brigham, E. F., & Ehrhardt, M. C. (2011). *Financial Management: Theory and Practice-13th*. South-Western Cengage Learning.

Cheong, C., & Hoang, H. V. (2021). Macroeconomic factors or firm-specific factors? An examination of the impact on corporate profitability before, during and after the global financial crisis. *Cogent Economics & Finance*, *9*(1), 1959703.

Coad, A., Segarra, A., & Teruel, M. (2013). Like milk or wine: Does firm performance improve with age?. *Structural Change and Economic Dynamics*, *24*, 173-189.

Cowling, M. (2004). The growth–profit nexus. *Small Business Economics*, *22*(1), 1-9.

Cyril, E. J., & Singla, H. K. (2020). Comparative analysis of profitability of real estate, industrial construction and infrastructure firms: evidence from India. *Journal of Financial Management of Property and Construction*.

Dioha, C., Mohammed, N. A., & Okpanachi, J. (2018). Effect of firm characteristics on profitability of listed consumer goods companies in Nigeria.

Doğan, M. (2013). Does firm size affect the firm profitability? Evidence from Turkey. *Research Journal of Finance and Accounting*, *4*(4), 53-59.

Egbunike, C. F., & Okerekeoti, C. U. (2018). Macroeconomic factors, firm characteristics and financial performance. *Asian Journal of Accounting Research, 3*(2), 142-168.

Eljelly, A. M. (2004). Liquidity-profitability tradeoff: An empirical investigation in an emerging market. *International journal of commerce and management, 14*(2), 48-61.

Fuertes-Callen, Y., & Cuellar-Fernandez, B. (2019). *Inter-relationship between firm growth and profitability in a context of economic crisis* (No. ART-2019-111279).

Gedajlovic, E., & Shapiro, D. M. (2002). Ownership structure and firm profitability in Japan. *Academy of management journal*, *45*(3), 565-575.

Geroski, P. A., Machin, S. J., & Walters, C. F. (1997). Corporate growth and profitability. *The Journal of Industrial Economics*, *45*(2), 171-189.

Gill, A., Biger, N., & Mathur, N. (2011). The effect of capital structure on profitability: Evidence from the United States. *International Journal of Management*, *28*(4), 3.

Goddard, J., Tavakoli, M., & Wilson, J. O. (2005). Determinants of profitability in European manufacturing and services: evidence from a dynamic panel model. *Applied Financial Economics*, *15*(18), 1269-1282.

Grazzi, M., Jacoby, N., & Treibich, T. (2016). Dynamics of investment and firm performance: Comparative evidence from manufacturing industries. *Empirical Economics*, *51*(1), 125-179.

Gujarati, D. N., & Porter D. (2008). *Basic Econometrics* (5th ed.). McGraw-Hill Education.

Hatem, B. S. (2014). Determinants of firm performance: a comparison of European countries. *International Journal of Economics and Finance*, *6*(10), 243-249.

Heshmati, A., & Rashidghalam, M. (2018). Labour productivity in Kenyan manufacturing and service industries. In *Determinants of economic growth in Africa* (pp. 259-286). Palgrave Macmillan, Cham.

Ilaboya, O. J., & Ohiokha, I. F. (2016). Firm age, size and profitability dynamics: a test of learning by doing and structural inertia hypotheses. *Business and Management Research*, *5*(1), 29-39.

Isik, O., & Tasgin, U. F. (2017). Profitability and its determinants in Turkish manufacturing industry: Evidence from a dynamic panel model. *International Journal of Economics and Finance*, *9*(8), 66-75.

Lazăr, S. (2016). Determinants of firm performance: evidence from Romanian listed companies. *Review of Economic and Business Studies*, *9*(1), 53-69.

Lee, C. C., Chen, M. P., & Ning, S. L. (2017). Why did some firms perform better in the global financial crisis?. *Economic research-Ekonomska istraživanja*, *30*(1), 1339-1366.

Lee, J. (2009). Does size matter in firm performance? Evidence from US public firms. *international Journal of the economics of Business*, *16*(2), 189-203.

Lim, H., & Rokhim, R. (2020). Factors affecting profitability of pharmaceutical company: an Indonesian evidence. *Journal of Economic Studies*.

Loderer, C., & Waelchli, U. (2010). Firm age and performance. *MPRA Paper No. 26450*.

Lu, F., Song, G., Tang, J., Zhao, H., & Liu, L. (2008). Profitability of China's industrial firms (1978–2006). *China Economic Journal*, *1*(1), 1-31.

McDonald, J. T. (1999). The determinants of firm profitability in Australian manufacturing. *Economic Record*, *75*(2), 115-126.

Mwangi, F. K. (2013). *The effect of macroeconomic variables on financial performance of aviation industry in Kenya* (Doctoral dissertation, University of Nairobi).

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of financial economics*, *13*(2), 187-221.

Nakatani, R. (2019). Firm performance and corporate finance in New Zealand. *Applied Economics Letters*, *26*(13), 1118-1124.

Nanda, S., & Panda, A. K. (2018). The determinants of corporate profitability: an investigation of Indian manufacturing firms. *International Journal of Emerging Markets, 13*, 66-86.

Nanda, S., & Panda, A. K. (2019). A quantile regression approach to trail financial performance of manufacturing firms. *Journal of Applied Accounting Research*.

Nguyen, T. N. L., & Nguyen, V. C. (2019). The determinants of profitability in listed enterprises: a study from Vietnamese stock exchange. *The Journal of Asian Finance, Economics, and Business*, *7*(1), 47-58.

Novotná, M., Leitmanová, I. F., Alina, J., & Volek, T. (2020). Capital Intensity and Labour Productivity in Waste Companies. *Sustainability*, *12*(24), 10300.

Pervan, M., Pervan, I., & Ćurak, M. (2019). Determinants of firm profitability in the Croatian manufacturing industry: evidence from dynamic panel analysis. *Economic research-Ekonomska istraživanja*, *32*(1), 968-981.

Qureshi, M. A., & Yousaf, M. (2014). Determinants of profit heterogeneity at firm level: evidence from Pakistan. *International Journal of Commerce and Management*.

Rehman, M. Z., Khan, M. N., & Khokhar, I. (2015). Investigating liquidity-profitability relationship: Evidence from companies listed in Saudi stock exchange (Tadawul). *Journal of Applied Finance and Banking*, *5*(3), 159.

Republik Indonesia. Kementerian Keuangan. (2020). *Ancaman Resesi Tak Dapat Dihindari, 92% Negara di Dunia Mengalaminya*. https://www.kemenkeu.go.id/publikasi/berita/ancaman-resesi-tak-dapat-dihindari-92-negara-di-dunia-mengalaminya/

Samosir, F. C. (2018). Effect of cash conversion cycle, firm size, and firm age to profitability. *Journal of Applied Accounting and Taxation*, *3*(1), 50-57.

Shuanglin, L. I. N., & Wei, R. O. W. E. (2006). Determinants of the profitability of China's regional SOEs. *China economic review*, *17*(2), 120-141.

Shubita, M. F., & Alsawalhah, J. M. (2012). The relationship between capital structure and profitability. *International Journal of Business and Social Science*, *3*(16), 104-112.

Tarziján, J., & Ramirez, C. (2010). Firm, industry and corporation effects revisited: A mixed multilevel analysis for Chilean companies. *Applied Economics Letters*, *18*(1), 95-100.

Tsiapa, M. (2021). Performance of large firms in Greece during the unstable period of 2011–2016: lessons from the weak parts of Europe. *European Journal of Management and Business Economics*.

Tyagi, S., & Nauriyal, D. K. (2017). Firm level profitability determinants in Indian drugs and pharmaceutical industry. *International Journal of Pharmaceutical and Healthcare Marketing*.

Van Biesebroeck, J. (2005). Firm size matters: Growth and productivity growth in African manufacturing. *Economic Development and Cultural Change*, *53*(3), 545-583.

Vintilă, G., & Nenu, E. A. (2016). Liquidity and profitability analysis on the Romanian listed companies. *Journal of Eastern Europe research in business & economics*, *2016*, 1-8.

Yadav, I. S., Pahi, D., & Gangakhedkar, R. (2021). The nexus between firm size, growth and profitability: new panel data evidence from Asia–Pacific markets. *European Journal of Management and Business Economics*.