

The Effect of Cash Conversion Cycle and Firm Size on the Profitability of Manufacturing Companies

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One of the factors affecting profitability is the cash conversion cycle. Therefore, every company should pay attention to the factors affecting their profitability. The purpose of this research was to identify how the cash conversion cycle and firm size influence the profitability of manufacturing companies. The independent variable of this research was the cash conversion cycle and firm size, measured through the natural logarithm (Ln) of the total assets while the dependent variable was profitability as measured by Return On Asset and Return On Equity. The data used were 309 companies listed on the Indonesia Stock Exchange in the period of 2011-2013 which had a positive profit and equity. The results indicated that the cash conversion cycle had a significantly negative effect on the profitability of the company, whether measured by ROA or ROE with a significance level of 0.024 and 0.0004, while the firm size significantly influenced the companies' profitability as measured by the ROA and the ROE with the significance level of 0.670 and 0.221.

Key words: *Cash Conversion Cycle, Firm Size, Profitability, Return On Asset, Return On Equity.*

Introduction

When a company is built, of course, there is a goal to achieve. Wiagustini (2010:8) states that normally the financial purpose of a corporation is to maximise the value of the company or maximise the shareholders' wealth. A company's value is the price that potential buyers are willing to pay when the company is sold. The higher the value of a company is, the greater the prosperity that will be received by the owner of the company. Maximising corporate value is identical to maximising profit in the economic sense. This is because economic profit is defined as the amount of wealth that can be consumed without making the owner of such property poor.

A company's wealth can be reflected in the information on the financial statement annually issued by a company. The search for information in these financial statements can use certain ratios to determine a company's profitability and whether to invest or not. Two instruments that are often used to present profitability are net capital and working capital management. The way companies manage their working capital will have a significant impact on the corporate's profitability (Deloof, 2003). Deloof's study result indicates that there is a certain level of working capital requirement that has the potential to provide the maximum rate of return for the company.

Profitability ratios consist of Return On Assets (ROA), Return On Equity (ROE) and Net Profit Margin (NPM). Return On Assets reflects how much a company generates profit from the given resources (Mumtaz, 2011). Return On Equity (ROE) is a ratio that indicates a company's ability to generate net income for the shareholders' equity returns. Net Profit Margin (NPM) is a ratio that calculates the extent to which the company is capable of generating net income at a certain level of sales. Net Profit describes the balance between the amount of income and the amount of expenditure (Kabajeh, 2012).

According to Anser (2011), if a company wishes to obtain maximum return, then the company has an important task of estimating and evaluating the cash flow from a business; identifying cash in and cash out, both in the short term and long term, to identify the existence of cash shortage or excess cash, to determine financial and investment plans in the future. It can also help in terms of planning payments to creditors to avoid loss of reputation and consumers' trust and also to avoid potential bankruptcy.

In general, cash management is based on a cash conversion cycle that is considered as an important factor to improve the company's performance. This is because the cash conversion cycle will show how efficient a company is, in terms of paying the bills, collecting payment, and selling its supplies. The cash conversion cycle is one of the major measurements of working capital management and is often considered to be the most efficient way to manage current assets and current liabilities (Attari & Raza, 2012); (Deloof, 2003).

Muscettola (2014) found that the cash conversion cycle did not significantly affect the profitability of a company. Muscettola's study results contradict the research conducted by Yousaf (2014), Majeed *et al* (2013) and Murugesu (2013) who found that (longer?) cash conversion cycles negatively and significantly affected a firm's profitability, where shorter cash conversion cycles had an impact on increasing a company's profitability. Uyar (2009) found a significant negative correlation between the length of the cash conversion cycle and the firm size, where larger firms had shorter cash conversion cycle times. The result of Uyar's research is in line with the results of the Attari and Raza (2012) study, which found a significant negative correlation between the cash conversion cycle and the firm size, which means that the

larger the size of a company, the shorter the cash conversion cycle will be. Doğan (2013) found that the firm size significantly affected the positive profitability of a company, meaning the bigger a company is, the higher its profitability will be. The results of this study differed from the research conducted by Gill *et al* (2010) which stated that firm size did not significantly affect the company's profitability.

The next section of this article will present a literature review and hypotheses about the effects of managerial ownership, firm size, and financial performance on corporate environmental information reporting. The following section is the method of research and results as well as discussion. The final section provides conclusions and suggestions for further research.

Literature Review

Agency Theory

The agency theory is the basic theory that underlies the common practice of a company's business practice. In the agency theory (Jensen & Meckling, 1976), it is explained that there are two parties that interact with each other in a company: the owners of the company (shareholders), and the managers of the company. The shareholders are referred to as the principal, while the managers, the people who are authorized by the shareholders to run the company, are called the agent. The agency theory addresses the conflict between the principal and the agent in terms of the separation of ownership and control of the firm (Jensen & Meckling, 1976), the attitude towards risk, and the decision making and control functions within a company (Fama & Jensen, 1983).

Signalling Theory

The signaling theory realises the problem that occurs in the agency theory, which is the existence of information asymmetry. This theory suggests that information asymmetry can be reduced by one party providing information to the other party. At first, in the market, the seller is assumed to have more information about their products in comparison with the buyers. If the buyers do not have information about a product, but rather a general perception of the product, the buyers will rate all the products at the same price according to their perceptions (Morris, 1987).

Cash Conversion Cycle

The cash conversion cycle is one of the main working capital measurements and is often considered to be the most efficient way to manage current assets and current liabilities (Deloof, 2003); (Attari & Raza, 2012). Padachi (2006) suggests that the cash conversion cycle is a

measurement of overall working capital as it shows the time difference between expenditure on purchases and sales collection. Cash is the working capital element that has the highest liquidity level. Cash means all cash money on hand and that which is stored in the bank in various forms such as deposits and checking accounts. Cash is a means of exchange that allows management to run various business activities. In fact, it is a common practice that, in reality, the success of a company depends on its cash capability to fulfill its financial obligations in time (Wiagustini, 2011:122). According to Sudana (2011), there are four company motivations to make some cash which are: transaction motive, speculative motive, precautionary motive, and compensation balance motive.

Firm Size

A firm size describes the size of a company. In this study, the firm size was measured by the natural logarithm of total assets. According to Jogiyanto (2000:254), a firm size measurement is more relevant by applying the natural log of total assets because it will have a better stability level than by applying other proxies and is more likely to sustain continuously between periods. Companies that are larger in sizes will have larger economic scales and greater negotiation power with their clients and suppliers.

Company Profitability

Profitability is a company's ability to generate profit in a certain period. Profit is always a major concern for shareholders because they earn revenue from profit in the form of dividends. Increased profits can lead to an increase in market prices that also impact on capital gains. Profit is also important for creditors, because it is a source of funds to pay off the company debts.

The Effect of Cash Conversion Cycle on Company Profitability

A slower cash conversion cycle indicates the unfavourable use of corporate resources which have an impact on the company's profitability. To achieve the goal of minimizing cash conversion cycle time, managers must implement policies on the collection of receivables which will increase the company's profitability. In research conducted by Attari and Raza (2012), it was found that the cash conversion cycle affected a company's profitability. Anser and Malik (2012) found that the cash conversion cycle had a significant and inverse effect on profitability, meaning that the shorter the company's cash conversion cycle, the higher the profitability of a firm. Bhutto *et al* (2012) stated a similar notion that the cash conversion cycle affected the company's profitability. Shah and Chaudhry (2013) conducted a study on the relationship between cash conversion cycle and firm profitability by having the firm size as a moderator variable. The result indicated that there was a relationship between the cash

conversion cycle with the profitability of the firm in the textile companies in Pakistan. The research conducted by Murugesu (2013) examined the relationship between the cash conversion cycle and the profitability of firms in the ten listed plantation companies in Sri Lanka, showing that the effect of the cash cycle on overall profitability was significant.

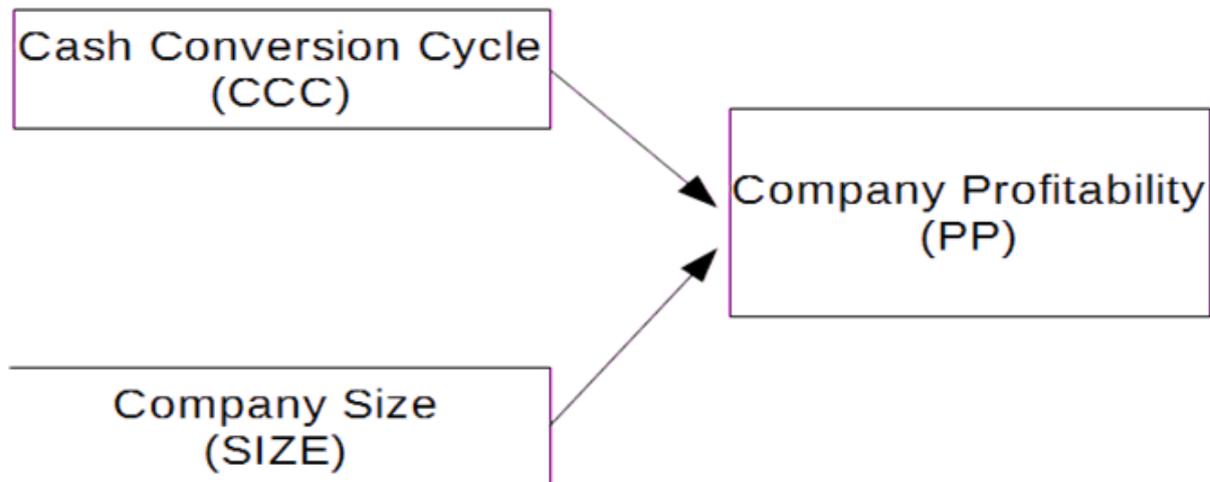
Hypothesis 1 = There is an effect of the cash conversion cycle on the company's profitability

The Effect of the Firm Size on the Company Profitability

From the results of Blease's research (2010), it was found that the impact of firm size on the profitability depended on the industry. In some industries, it was found that the larger the size of the company, the higher the profitability. In a study conducted by Babalola (2013) on the relationship between firm size and profitability in manufacturing companies in Nigeria, it was found that firm size had a positive effect on profitability. This is in line with the research conducted by Attari and Raza (2012) who found a significant influence of firm size towards profitability. Dogan (2013) also examined the relationship between firm size and firm profitability and found a significantly positive relationship between the firm size and the its profitability. However, the research of Gill *et al* (2011) found a conflicting result indicating that firm size did not significantly affect the profitability of the company. Comparable to the study of Uyar (2009) who examined the relationship between the cash conversion cycle towards firm size and profitability on firms listed on the Istanbul Stock Exchange in 2007, there was a significantly negative relationship between the cash conversion cycle with both the firm size and the firm profitability, meaning that the larger the size of a company, the faster the cash conversion cycle while the faster the cash conversion cycle of a company, the higher the profitability of a company.

Hypothesis 2 = There is an influence of the firm size on the company's profitability

Figure 1. Conceptual Framework



Note: bottom left hand box is missing the left side border

Research Methodology

Data Types and Sources

The type of data used was secondary data. Secondary data is a type of data obtained indirectly from the firsthand source (the company). The secondary data consisted of: (1) The company's income statement ending December 31, 2011-2013, (2) The balance sheet of the company ending on December 31, 2011-2013, and (3) the Indonesian Stock Exchange (www.idx.co.id) and the related companies' websites.

Population and Samples

The population in this study were all manufacturing companies listed on the Indonesian Stock Exchange during the period 2011-2013. The sample in the study was based on the following criteria: (1) The manufacturing companies were listed on the Indonesian Stock Exchange in the period 2011-2013, (2) They had published complete financial statements ending December 31, 2011- 2013, and (3) They had an equity value and positive profit in the 2011-2013 financial statements.

Research Variables

The independent variable is a variable whose changes affect or cause changes to the other variables (Anshori & Iswati, 2009:57). The independent variables in this research were the cash conversion cycle (CCC) and firm size (SIZE). The dependent variable is a variable that is

influenced by the changes in the other variables (Anshori & Iswati, 2009: 57). In this study, the dependent variable was the company's profitability.

Operational Definition of Variables

1. Cash Conversion Cycle (CCC)

The cash conversion cycle measures the number of days from the cash expenditures for raw material purchases to the cash receipts from sales of products or services. The length of the cash conversion cycle varies from one company to another and from one industry to another. The parameter employed in the cash conversion cycle is (Uyar, 2009):

$$\text{Cash Conversion Cycle (CCC)} = DIO + DSO - DPO$$

Remarks:

$$\text{Days Inventory Outstanding (DIO)} = \frac{\text{Inventory}}{\text{COGS}} \times 365$$

$$\text{Days Sales Outstanding (DSO)} = \frac{\text{Account Receivable}}{\text{Sales}} \times 365$$

$$\text{Days Payable Outstanding (DPO)} = \frac{\text{Account Payable}}{\text{COGS}} \times 365$$

2. Firm Size (SIZE)

Firm size is the size or amount of assets owned by a company. A firm size is calculated by the logarithm value of the total assets in units of ratio or percent (Babalola, 2013).

$$\text{SIZE} = \text{Natural logarithm (Ln) of Total Assets}$$

3. Company's Profitability (CP)

Profitability is the ability of a company to generate profit in a certain period. Profitability shows how efficient the management's performance is to generate profit by using all available resources. This variable is measured by Return on Asset (ROA) and Return on Equity (ROE) (Bhutto et al, 2011).

$$\text{ROA} = \frac{\text{Earning After Tax}}{\text{Total Asset}} \times 100\%$$

$$\text{ROE} = \frac{\text{Earning After Tax}}{\text{Total Equity}} \times 100\%$$

Hypothesis Testing

The data analysis method used in this research was multiple linear regression methods because the dependent variable (company's profitability) was influenced by more than 1 (one)

independent variable. The referred variables were the cash conversion cycle and the firm size. The usefulness of regression in one of the studies was to predict the dependent variable (Y) if the independent variable (X) was known. The multiple regression analysis testing in this study aimed to determine whether the independent variables (CCC and SIZE) affected the dependent variable (PP).

$$CP = \alpha + \beta_1 CCC + \beta_2 SIZE + e$$

Remarks:

CP = Company's Profitability

α = Constants

β_1, β_2 = Parameter Coefficient

CCC = Cash Conversion Cycle

SIZE = Company Size

e = Error

Results and Discussion

Research Object Description

Based on the criteria that had been determined, the number of eligible samples amounted to 309 companies. The data from this research was secondary data collected from the Indonesian Stock Exchange (IDX).

Table 1: Research Sample Selection Criteria

Variables	2011	2012	2013	Total
Manufacturing companies listed on the IDX	134	135	131	400
Companies with negative equity value and profit	(30)	(30)	(31)	(91)
Total Sample Companies	104	105	100	309

Source: Processed Data

Descriptive Statistical Analysis and Variable Frequency Distribution

Based on Table 1, the dependent variable of ROA had a minimum, maximum, mean and standard deviation values of 0.0005120, 0.65720, 0.0886 and 0.09185 respectively. The largest ROA was held by PT Multi Bintang Indonesia Tbk. in 2013 and the lowest ROA was held by PT Multistrada Arah Sarana Tbk. in 2012. Overall, the value of the company's ROA to be sampled was 0.0886. The positive ROA value indicated that the total assets used for the

company's operations were capable of providing profit for the company, whereas the negative ROA value indicated that the assets used did not benefit the company.

Table 2: Variables Description of the Research in the Period 2011-2013

Research Variables	N	Minimum	Maximum	Mean	Standard Deviation
SIZE	309	25.19	33.00	28.1051	1.55929
CCC	309	-31.02	326.12	105.9839	71.70894
ROA	309	0.0005120	0.6572007	0.0886	0.09185
ROE	309	0.0008596	1.37457	0.1629	0.19045

Source: Processed Data

The dependent variable of ROE had minimum, maximum, mean and standard deviation values of 0.0008596, 1.37457, 0.1629 and 0.19045 respectively. The largest ROE was held by PT Multi Bintang Indonesia Tbk in 2012 and the lowest ROE was held by PT Multistrada Arah Sarana Tbk in 2012. Overall, the ROE of the sampled companies was 0.1633. the ROE measures the rate of return on the shareholders' investment and is calculated based on the division between net income and total equity.

The independent variable of the cash conversion cycle had the minimum, maximum, mean and standard deviation values of -31.02, 326.12, 105.9839, and 71.70894 respectively. The shortest cash conversion cycle was held by PT Voksel Elektrik Tbk in 2011 and the longest cash conversion cycle was held by PT Indo Dharma Synthetic Tbk in 2011. Overall, the length of the cash conversion cycle of the sampled companies was 106 days. A positive cash conversion cycle shows the number of days before the company gets the receivable payment collection. Meanwhile, negative cash conversion cycle becomes an advantage for the company because it means that the company has received payment of receivables before the due date (Attari & Raza, 2012).

The independent variables of firm size had a minimum, maximum, mean and standard deviation values of 25.19, 32.9970, 28.1051, and 1.55929 respectively. The size of the smallest company was held by PT Kedaung Indah Can Tbk while the largest firm size was held by PT Astra International Tbk. Overall, the size of the sample companies was 28.1051. Larger companies have the advantage of having greater opportunities to take advantage of the economic scale to make more efficient production operations.

Hypothesis Testing

Based on the hypothesis developed in the previous chapter, hypothesis testing will be conducted through a simultaneous significance test (F Test), individual parameter significance test (t test) and coefficient determination (R_2). Regression models were developed for hypothesis testing as shown in Table 3. Thus, based on the results of the multiple linear regression analysis in the previous table, the regression model can be interpreted as follows:

$$\text{ROA} = -3.253 - 0.002\text{CCC} + 0.019\text{SIZE} + e$$

Table 3: Hypothesis Testing Results of the Dependent Variable of ROA

Model	Unstandardised Coefficient		Standardised Coefficient
	B	Std. Error	Beta
(Constant)	-3.253	1.278	
CCC	-0.002	0.001	-0.132
SIZE	0.19	0.44	0.025

Dependent Variable: LnROA

Sources: Processed Data

The regression coefficients of the study indicated varying marks of positive and negative. The coefficients marked positive indicated a unidirectional change between the independent variables towards the dependent variable, whereas the coefficient marked negative indicated the direction of the opposite change between the independent variables to the dependent variable. Table 3 shows that constant -3.253 means that if the firm size variable (SIZE), and cash conversion cycle variable (CCC) were constant, the Return On Asset (ROA) would amount to -3.253. The regression coefficient of company conversion cycle (CCC) of -0.002 indicated that if the company conversion cycle variable (CCC) increased by one unit, the Return On Asset (ROA) would decrease by 0.002 times or 0.2%, assuming that the other independent variable was constant. The firm size regression coefficient (SIZE) equalled to 0,019 showed a unidirectional relationship, meaning that when the variable size of the company (SIZE) increased by one unit, the Return On Asset (ROA) would increase equal to 0.019 times or 1.9%, assuming that the other independent variable was constant.

Table 4: F-Test with ROA

F-Test	2.998
Significance	0.051

The F-test result for the profitability as measured by ROA at Table 4 indicated that the value of the F test was equal to 2.998 with a significance level of 0.051. The significance value was greater than 0.05 so that at 5% significance level, it could be concluded that the cash conversion

cycle / CCC (X_1) and firm size / SIZE (X_2) variables combined had no significant effect on the ROA. When tested with a level of significance of 10%, it might be concluded that the variables of the cash conversion cycle / CCC (X_1) and the firm size / SIZE (X_2) combined significantly influenced the ROA with the significance value of 0.051.

Based on the result of the multiple linear regression analysis above, the regression model can be interpreted as follows:

$$\text{ROE} = -3.278 - 0.003\text{CCC} + 0.048 \text{SIZE} + e$$

Table 5 indicated the constant -3.278, meaning that, if the firm size variable (SIZE) and the cash conversion cycle (CCC) were constant, the Return On Equity (ROE) would be -3.227. The regression coefficient of the company's conversion cycle (CCC) of -0.003 indicated that if the company's conversion cycle variable (CCC) increased by one unit, the Return On Equity (ROE) would decrease by 0.003 times or 0.3%, assuming that the other independent variable was constant. Meanwhile, the regression coefficient of the firm size (SIZE) of 0.048 indicated a unidirectional correlation, meaning that when the firm size variable (SIZE) increased by one unit, the Return On Equity (ROE) would increase by 0.048 times or 4.8%, assuming that the other independent variable was constant.

Table 5: Hypothesis Testing Results of Dependent Variable ROE

Model	Unstandardized Coefficient		Standardized Coefficient
	B	Std. Error	Beta
(Constant)	-3.278	1.1120	
CCC	-0.003	0.001	-0.205
SIZE	0.048	0.039	0.071

Dependent Variable: LnROE

Source: Processed Data

Table 6: F-Test with ROE

F-Test	8.351
Significance	0.000296

Furthermore, in Table 6, the F-test results on profitability measured by ROE indicated that the F-test value was equal to 8.351 with a significance level of 0.000296. A significance value smaller than 0.1 means that the cash conversion cycle/CCC (X_1) and firm size/SIZE (X_2) variables simultaneously and significantly affected the ROE.

Table 7: T-Test of Firm Size towards ROA

Variable	t-count	Sig.
Firm Size (SIZE)	0.427	0.670

Table 8: T-Test of Firm Size towards ROE

Variable	t-count	Sig.
Firm Size (SIZE)	1.225	0.221

The value of the t-test of the firm size variable (SIZE) towards the ROA was 0.427 with the significance level of 0.670 and the t-test value of the firm size variable (SIZE) towards the ROE was 1.225 with the significance level of 0.221. The significance values of these two t-tests were greater than 0.1, thus, it can be concluded that the firm size had an insignificant effect on both the ROA and the ROE.

Effect of Cash Conversion Cycle on Company's Profitability

The cash conversion cycle becomes an important aspect of every manufacturing company because the cash conversion cycle helps the management to see how long the amount of cash held in the operating cycle from raw material purchases to supply sales. The cash conversion cycle is a highly effective instrument to see how well a company manages its working capital because, with a good cash conversion cycle, a company can reduce the risk of cash shortage and even bankruptcy. Manufacturing companies are required to be capable of estimating and evaluating the cash flows of the business to identify the cash inflows and cash outflows to prevent cash shortages. The results of this study indicated that there was a significantly negative relationship between the cash conversion cycle with profitability; both the profitability measured by the Return On Assets (ROA) and that measured by the Return On Equity (ROE), meaning that, when the cash conversion cycle was shorter, the profitability would be high. The results of this study were in accordance with the research results of Shah and Chaundry (2013) as well as Murugesu (2013), stating that the cash conversion cycle had a significant effect on profitability.

Effect of Firm Size on Company Profitability

The firm size had an insignificant effect on the company's profitability. The results of this study supported the results of the research conducted by Gill *et al* (2013) which stated that the firm size's effect was not significant to the company's profitability. The results of Kouser *et al* (2012) also stated the similar notion that the company's profitability was not significantly affected by the firm size. However, the results of the research conducted by Attari and Raza (2012) stated a different opinion, stating that the firm size had a significant negative effect on the company's profitability.

From Table 2., we learned that the difference between the minimum and maximum firm size amounted to only 7.81, while the gap between the minimum and maximum values of ROA amounted to 0.6566 or 65.66% and 1.3737 or 137.37% for the ROE. This proves that the changes on ROA and ROE were not caused by the firm size because the firm size tended to not change much from year to year. From the results of this study, it could be concluded that large firm size was not necessarily followed by high profitability because according to the critical theory, every company has an optimal size. The larger the scale of the company, the more the profitability would also increase. Nevertheless, at one point or a certain size, a company would eventually lower the company's profit. Large-sized companies which did not generate large profits were also likely to have passed the optimal size, thus, the profit generated decreased.

Coefficient of Determination (R_2)

Table 9: Multiple Coefficient of Determination and the Coefficient of Profitability to ROA

Coefficient Correlation (R)	0.140
Coefficient Determination (R_2)	0.020

Source: Processed Data

Table 10: Coefficient of Multiple Determination and Correlation Coefficient of Profitability towards ROE

Correlation Coefficient (R)	0.230
Coefficient of Determination (R_2)	0.053

Source: Processed Data

In Table 9, it can be observed that the value of R_2 or coefficient of determination was 0.020, meaning that the change of ROA (Y) variable caused by the cash conversion cycle / CCC (X_1) and the firm size / SIZE (X_2) was of 0.020 or 2% while the rest of 0.98 or 98% was influenced by other variables outside the independent variables applied in the study. In Table 10, it can be seen that the value of R_2 or coefficient of determination was 0.053, meaning that the change of ROE (Y) variable caused by the cash conversion cycle / CCC (X_1) and firm size / SIZE (X_2) were 0.053 or 5.3% while the remaining 0.947 or 94.7% was influenced by other variables outside the independent variable used in the study.

Conclusion

Based on the results of research that had been conducted on the effect of cash conversion cycle and firm size on the company's profitability in the manufacturing companies listed on the Indonesian Stock Exchange in 2011-2013, it can be concluded that together both the cash conversion cycle and the size of the company significantly affected the ROA and ROE. In addition, the cash conversion cycle had a significantly negative effect on the company's



profitability in the manufacturing companies listed on the Indonesian Stock Exchange during the period 2011-2013. This indicated that when the cash conversion cycle of a company got faster, the speed of money also accelerated and caused impacts the increased company's profitability. Meanwhile, the firm size had an insignificant effect on the company's profitability in the manufacturing companies listed on the Indonesian Stock Exchange during the period 2011-2013, meaning that when profitability changes, it was not caused by the firm size.

Limitations of this research include the least of the variables used in this study, while there are many variables that are influenced by certain variables other than the independent variables and the dependent variable. Therefore, the suggestion for future research is to add other independent variables such as the age of the company, the company's operating cash flow and others because this study only used two independent variables with a low coefficient of determination. In addition, researchers can further analyse per sub-sectors for more specific results.

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