International Journal of Financial, Accounting, and Management (IJFAM)
ISSN: 2656-3355, Vol 6, No 3, 2024, 313-331 https://doi.org/10.35912/ijfam.v6i3.2120

Impact of customer default on cash conversion cycle and net working capital in construction company

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Article History
Received on 29 April 2024
1st Revision on 29 June 2024
2nd Revision on 10 July 2024
3rd Revision on 2 September 2024
Accepted on 13 September 2024

Abstract

Purpose: This study aimed to determine the effect of customer default on the Cash Conversion Cycle and Net Working Capital in construction companies.

Method: This study uses secondary data from companies' financial reports to calculate the Cash Conversion Cycle, Net Working Capital, and Spearman's rho Correlation Test to determine the relationship between the two variables.

Results: The results show that SOE customer default affects the condition of the Cash Conversion Cycle, especially in 2023, where the Cash Conversion Cycle value in Q123 (85 days) and Q223 (64 days), but the worst Cash Conversion Cycle results during the observation period are in Q122 (134 days). In Net Working Capital, there are only three periods with negative results: Q219 (-3.1B), Q319 (-461M), and Q421 (-4B), but not in 2023, because in 2023, the result is positive (or liquid). Spearman's rho Correlation Test shows that the relationship between the two variables is negatively correlated by -0.319, and the significance is 0.184, or the two variables are not significant.

Limitations: This study was limited to construction companies in Bandung. The data taken from 2019 to Q3-2023 only focus on the influence of SOE customer defaults on the company's Cash Conversion Cycle and Net Working Capital.

Contribution: This study provides the best solution to the problem of customer default in the Cash Conversion Cycle and Net Working Capital in a construction company. If the solution is applied to the company, an implementation plan is created to fix the problem.

Keywords: *Cash Conversion Cycle, Net Working Capital, SOE's customer, Customer Default*

How to Cite: Maesaroh, M., & Faturohman, T. (2024). Impact of customer default on cash conversion cycle and net working capital in construction company. *International Journal of Financial, Accounting, and Management,* 6(3), 313-331.

1. Introduction

Infrastructure plays a crucial role in Indonesia's economic growth by addressing common challenges and fostering economic expansion. According to Komunikasi (2023), the increase in economic growth is supported by an increase in domestic demand; household consumption grew by 5.23%, along with increased mobility, improved income expectations, and controlled inflation, which grew by 10.62%, mainly driven by Central Government and Local Government employee spending. Overall, investment growth increased to 4.63%, driven primarily by the improvement in non-building investment, as reflected in the improved growth of capital goods imports. In addition, building investment grew positively in line with continued infrastructure development in various regions. However, overall exports contracted by 2.75%, especially exports of goods in line with the weakening global economy amidst strong growth in service exports supported by an increase in foreign tourist visits. Based on the above conditions, it can be concluded that infrastructure development increases economic growth.

Most infrastructure has been controlled by the state (public sector) over the past three decades (Chigora et al., 2021). As in Indonesia, infrastructure development or infrastructure projects, such as toll roads and bridges, are always dominated by state-owned companies because of their readiness and government support compared to private companies. According to Ahdiat (2022), in 2020, the Indonesian government opened around 36.8 thousand tenders or auctions for infrastructure projects with a total value of Rp 180.07 trillion, and the tenders with the highest contract value are won mainly by State-Owned Enterprises (SOE). This was revealed by the Indonesia Corruption Watch (ICW) on June 1, 2022, which indicated that four of the top ten most contracted infrastructure providers or vendors in 2020 were SOEs. Of the many private companies in Indonesia, PTABC (as a sample construction company) became a vendor for several infrastructure projects, specifically toll roads for state-owned companies. PT ABC provides ready-mix concrete for several toll-road projects by state-owned companies. PT ABC is a private company engaged in the construction sector and supplies ready-mix concrete for several toll road projects throughout Indonesia, particularly Java and Sumatra. PT ABC's sales value is dominated by state-owned companies; in 2021, state-owned companies dominate 50.5% and 56.8% in 2022, and 58.1% in 2023. Meanwhile, private companies and individual customers accounted for only 19.7% in 2021, 23.4% in 2022, and 30.8% in 2023.

On the Liputan6 news page (Melani, 2023), state-owned construction was in the spotlight in 2023 because of the hot issue in mid-2023 regarding the alleged manipulation of the financial reports of the two state-owned construction issuers. The impact is that state-owned construction companies are experiencing cash flow difficulties because the profit margin of state-owned construction is only 2-3 percent and several projects are said to be at a loss. Paskalis (2023) notes that this problem had an impact on the debt owned by state-owned companies. A company's maturing debts experience delays in payments to suppliers in the context of financial restructuring, a symptom of a pile of debt. Some SOEs must be audited and monitored for cash outflows and inflows, as well as financial reporting. Therefore, based on this information, we find that the issue of default related to BUMN has an impact on the company's liquidity condition at PTABC. This can be seen in Table 1, which shows the data on accounts receivable (AR) and revenue in 2023 at PT ABC.

Table 1. Data of Account Receivable (AR) and Revenue in 2023 at PT ABC

MONTH	REVENUE	% REVENUE	AR	%AR
JAN	6.743.867.500	13,26%	44.110.874.230	86,74%
FEB	10.837.563.881	23,19%	35.891.571.599	76,81%
MAR	3.386.259.425	5,43%	59.031.440.128	94,57%
APR	9.376.922.670	22,93%	31.518.662.900	77,07%
MAY	91.140.177	0,23%	40.162.071.608	99,77%
JUN	3.797.881.757	7,33%	48.025.812.277	92,67%
JUL	5.582.851.250	11,40%	43.377.386.338	88,60%
AUG	11.362.227.763	23,55%	36.880.413.655	76,45%
SEP	12.095.573.501	20,39%	47.214.288.673	79,61%

Source: Author’s Data Processing Results Based (2024)

Referring to Table 1, apart from March, sales revenues exceeded 10% in May and June, but were notably lower in these months: March at 13.26% (6,743,867,500), May at 43% (3,386,259,425), and June at 7.33% (3,797,881,757). Meanwhile, accounts receivable in these periods were notably high: March at 94.57% (59,031,440,128), May at 99.77% (40,162,071,608), and June at 92.67% (48,025,812,277). As previously discussed, sales at PT ABC were heavily influenced by state-owned

enterprises, such as PT AA and PT BB, in 2023. Table 1 illustrates that the significant size of accounts receivable is largely due to defaults by state-owned customers. In June, trade receivables amounted to 92.67% (48,025,812,277), while sales receipts were only 7.33% (3,797,881,757). This period coincided with defaults from several state-owned enterprises and a policy of delaying payment obligations to the suppliers. Consequently, SOE customers opted to delay payments to PT ABC using installation plans or withholding payments to manage their cash flow effectively.

Therefore, we find that payment defaults will significantly affect liquidity of the cash received by the company from selling its products. Liquidity is the proportion of an organization's ability to earn money. cash at this time to fulfil its commitments and attached to the organization's revenue and current resources and obligations in its segment (Mappadang, Wijaya, & Mappadang, 2021; Subramanyam, 2014). According to Mandasari (2023), if a company has sufficient liquid assets or cash available, it can meet its obligations and avoid financial problems such as default or reputational losses.

The company's liquidity is measured using the Cash Conversion Cycle (CCC) and Net Working Capital (NWC). Supported by the statement that CCC and NWC are ratios that can be used to measure the extent of a company's liquidity (Abuzayed, 2012; Deloof, 2003; Hayundaniswara & Faisal, 2022; Knauer & Wöhrmann, 2013) and Yilmaz and Acar (2019) liquidity is measured by several ratios and indicators however, the most commonly used measure is the cash conversion cycle (CCC). Hence, by measuring CCC and NWC, it is expected that this research can determine how customer default affects a company's liquidity as measured by using the Cash Conversion Cycle (CCC) and Net Working Capital (NWC), and what should be considered to keep the company liquid and affect its sustainability.

2. Literature review

Below are several theories, and previous research will be used as the theoretical basis for conducting this research.

2.1 Cash Conversion Cycle (CCC)

Cash Conversion Cycle (CCC) by Zutter and Smart (2021) is the length of time between when a firm pays cash for its raw materials and when it receives cash from collecting its receivables. Companies with a long cash conversion cycle must wait a long time after they pay their suppliers before they receive payments from customers. The gap between when a firm pays and when it receives payment creates a need for financing to sustain operations. Another definition of the cash conversion cycle is the “net time interval between actual cash expenditures on a firm’s purchase of productive resources and the ultimate recovery of cash receipts from product sales’ (Egbunike & Oranefo, 2023; Richards & Laughlin, 1980). An illustration of the CCC and its components is shown in Figure 1.

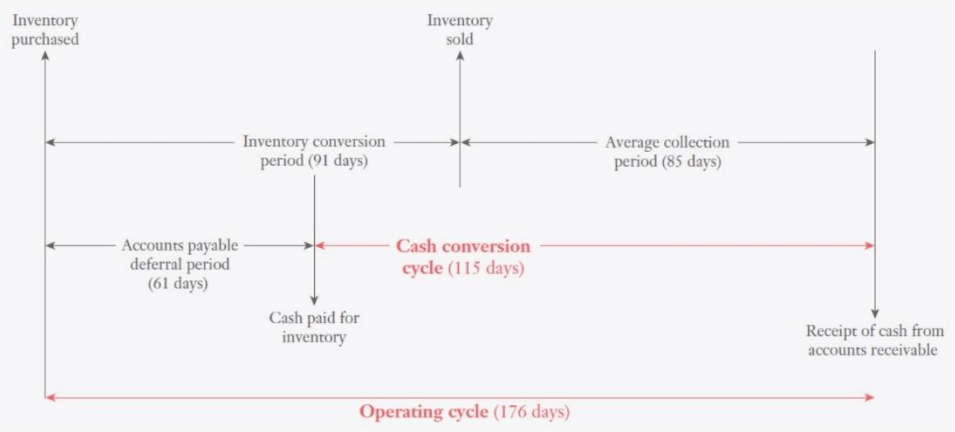

Figure 1 Cash Conversion Cycle Model
Source: Titman, Keown, and Martin (2021)

Based on Figure 1, the cash conversion cycle model by Titman et al. (2021) is the purchase of items for inventory, sale of items from inventory for credit, and collection of accounts receivable. The time required for the entire process is known as the operating cycle. However, for firms that can purchase items for their inventory on credit using accounts payable, the cash conversion cycle is shorter than the operating cycle by the number of days that the firm has to pay its accounts payable. In Fransisca, Shalahuddin, Wendy, Giriati, and Hasanudin (2023), as cited in Liadi and Suryanawa (2018), cash conversion cycles are essential to the company because the calculation involves the number of days and the average it will take a company to convert its inventory into sales, debt billing, and the redemption of debt. Its main goal is to get the cash conversion cycle as low as possible to improve the efficiency level in managing the company's cash flow (Zeidan & Shapir, 2017) (Yazdanfar & Öhman (2014)) Firms with more efficient CCCs are more liquid, require less financing, and are more profitable, which is supported by the finding that private firms have significantly lower CCCs than their public counterparts (Anagnostopoulou, 2012; Zeidan & Shapir, 2017). However, when the economy is unstable, companies adapt to changes in the economy owing to changes in demand and supply chain disruption (Sini & Nainggolan, 2023). This means that the CCC will significantly influence the company's decisions to run the company, and when the CCC becomes shorter, it will be good for the company. This is supported by Zeidan and Shapir (2017). As cited in Emongor (2023), a shorter CCC indicates that a firm can sell its inventory more quickly and collect cash from customers, leading to increased liquidity and reduced financing requirements. Managers can then create more value by shortening the CCC (Kaddumi & Ramadan, 2012; Le, Vu, Du, & Tran, 2018).

CCC is considered to greatly influence the company's liquidity, significantly the company's cash, as stated in Mandalaputri, Fettry, and Felisia (2021). CCC is used by the company as a basis for calculations to assess projects that generate profits for the company and create positive company performance trends in terms of the company's accounts receivable, inventory, accounts payable, and whether the company has high liquidity due to a small CCC or vice versa.

It can be concluded that CCC is very important in knowing the company's liquidity. If the CCC is smaller, it means that the company is more liquid because it uses less working capital and earns more income from sales. The formula for the cash conversion cycle is as follows:

1. **The inventory conversion period** is the average number of days that an item is held in the inventory before being sold (Titman et al., 2021). The faster the inventory conversion period, the lower the investment costs on inventory, such as procurement, storage, and maintenance (Adiwibowo, 2021; Munawir, 2004). The ICP component was calculated using the following formula (Titman et al. 2021):

$$\text{Inventory Conversion Period} = \frac{365}{Cost\ of\ good\ sold \div Inventory}$$

2. **The Average Collection Period** is the average number of days taken to collect an account receivable (Titman et al. 2021). The faster the receivables are collected, the lower the risk of loss of uncollectible receivables and the lower the working capital investment for sales with receivables receivables (Adiwibowo, 2021; Sukmawati, 2019). The formula for the Average Collection Period is as follows (Titman et al., 2021):

$$\text{Average Collection Period} = \frac{Receivables}{Annual\ Credit\ Sales \div 365}$$

3. **The payables deferral period** measures the number of days on average the firm has to pay its suppliers who have provided the firm with trade credit, which is the source of account payable (Titman et al., 2021). When accounts payable increase, the company receives cash worth the balance, thereby increasing working capital for the company's operations. On the other hand, when a company pays its business debts, cash comes out of the company, reducing the working capital for operations (Adiwibowo, 2021; Sukmawati, 2019; Van Horne & Wachowicz, 2005). The following is the formula for the payable deferral period (Titman et al., 2021):

$$\text{Payables Deferral Period} = \frac{365}{Cost\ of\ Good\ Sold \div Accounts\ Payable}$$

4. **In the cash conversion cycle,** each component is given a number, and the cash conversion cycle can be expressed by the following equation (Titman et al., 2021):

(1)	+	(2)	-	(3)	=	(4)
Inventory conversion period	+	Average Collection Period	-	Payables deferral period	=	Cash conversion cycle

2.2 Net Working Capital

The NWC component comprises current assets and liabilities. According to Jordan, Jaffe, Westerfield, and Ross (2022), current assets are cash and other assets that are expected to convert to cash within the year. Current assets are presented on the balance sheet in the order of their accounting liquidity, the ease with which they can be converted to cash, and the time it takes to convert them. Four of the most important items in the current asset section of a balance sheet are cash and cash equivalents, marketable securities, accounts receivable, and inventories. Current liabilities are obligations that are expected to require cash payments within one year (or within the operating period if it is longer than one year). The three major items found as current liabilities are accounts payable, expenses payable (including accrued wages and taxes), and notes payable.

Thus, the definition of NWC proposed by Jordan et al. (2022) Net Working Capital is current assets minus current liabilities. Net working capital is positive when current assets are greater than liabilities. Formulizes of net working capital, the following terms are used in the model:

Current assets	-	Current liabilities	=	Net working capital

However, other studies state that poor management of working capital impedes the rate of return on invested resources by firms (Oranefo & Egbunike, 2023; Owolabi & Alu, 2012), and working capital is important because it can protect the company from adverse consequences in the form of a decrease in current assets, allowing the company to pay off its short-term obligations on time, and allowing the company to operate more efficiently because it is not difficult to obtain the raw materials, services, and supplies needed when needed (Adiwibowo, 2021; Munawir, 2004). Another study states that for liquidity, a lack of working capital can account for inefficiencies in a company's operation (Al-Mohareb, 2019), and that an inefficient (high) NWC would cause company value to decrease. This decline in company value is caused by a reduction in free cash flow due to excessive investment in working capital (Hayundaniswara & Faisal, 2022; Wasiuzzaman, 2015). Then other research on Raza, Riaz, Riaz, and Salman (2023) states that net working capital is crucial for assessing a company's short-term liquidity and operational efficiency. If the value is too low or even negative, this indicates that the company is experiencing liquidity difficulties. On the other hand, if it is too large, it shows that the company is inefficient in managing its assets (Siregar, Pambudi, & Septiana, 2022). Therefore, it can be concluded that the company's NWC must be at an optimal number, not too low or too high, so that it can be said to be liquid.

2.3 Conceptual Framework

To observe whether customer defaults affect the CCC and NWC of a company, this study measures CCC, NWC, and its components. The conceptual framework of this study is illustrated in Figure 2.

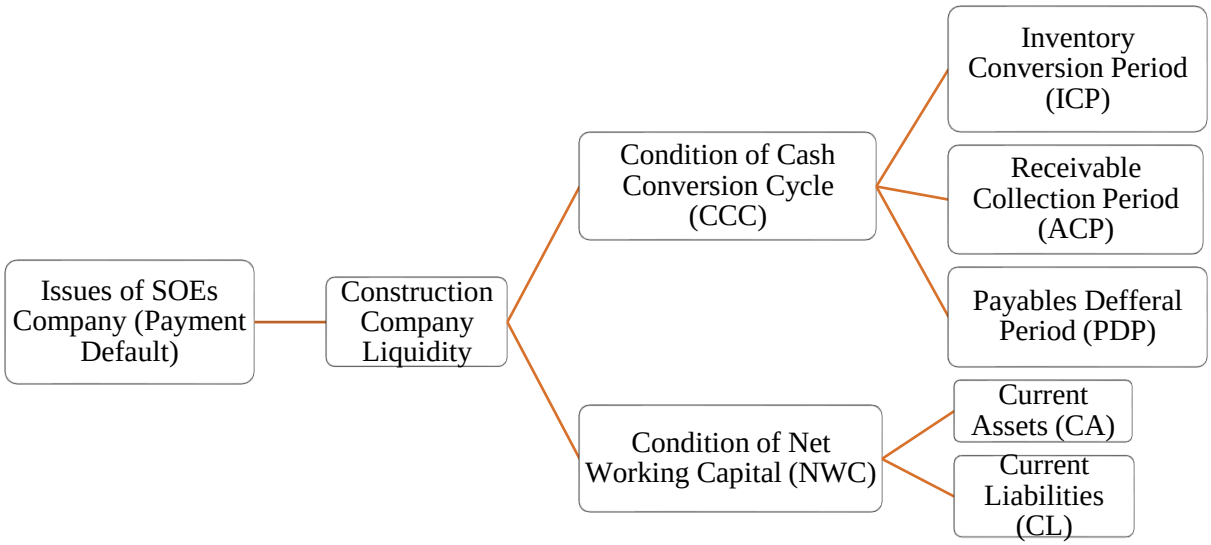

Figure 2 Conceptual Framework
Source: Author (2024)

In Figure 2, the issue of customer default in state-owned companies is a problem that ultimately affects the liquidity of the company. The liquidity of the company is measured using CCC and its components ICP, ACP, and PDP. CCC reflects how long it takes for a company to convert its investment in working capital such as inventory, receivables, and payables into cash. If the impact of customer default on CCC results is too long, it can be seen that customer default affects CCC, and it is not good for the company, and vice versa. Furthermore, NWC was obtained from the difference between (CA and CL). If CA is greater than CL (NWC positive), it can be known that the company's NWC is good and customer default does not affect NWC because the company is considered capable of paying its current obligations and vice versa. Supporting state by Eton, Mwosi, and Mpora (2022), management needs to know how much working capital needs to be kept on hand for everyday operations and should maintain an efficient and effective policy on working capital. Based on the above description, the research hypotheses developed in this study can be presented as follows:
H1: Customer defaults have an impact on CCC and its components.
H2 Customer defaults have an impact on NWC.
H3: CCC and NWC are closely related

3. Research Methodology

In planning your research design, you will need to decide whether to follow a quantitative, qualitative, or mixed-methods research design. Each of these methodological choices will require careful consideration of strategies and time horizons, along with data collection procedures and analysis techniques, to achieve a coherent research design (Saunders, Lewis, & Thornhill, 2023). The methodology used in this research is quantitative research, where the quantitative research design will involve collecting numerical data on companies that will be used to analyze what the resulting numbers mean. In this research, the method used to collect data is secondary data, which is the company's annual financial reports such as balance sheets and profit and loss, which are presented in quarterly form and have been published for the years 2019-2022 to Q3 2023.

According to Sugiyono (2020), data analysis is the process of systematically searching and compiling data obtained from interviews, field notes, and documentation by organizing data into categories, breaking it down into units, synthesizing, compiling into patterns, choosing which ones are important and which ones will be studied, and making conclusions so that they are easily understood by oneself and others. The analytical data used in this study were as follows.

Tabel 2. Research Variables

No	Variable Name	Symbol	Variable Formula
1	Inventory Conversion Period	ICP	$\frac{90\ days *}{Cost\ of\ good\ sold \div Inventory}$
2	Average Collection Period	ACP	$\frac{Receivables}{Annual\ Credit\ Sales \div 90\ days *}$
3	Payable Deferral Period	PDP	$\frac{90\ days *}{Cost\ of\ Good\ Sold \div Accounts\ Payable}$
4	Cash Conversion Cycle	CCC	ICP + ACP – PDP
5	Net Working Capital	NWC	Current Assets (CA) – Current Liabilities (CL)

*90 days because the data used is in quarters

Source: Author (2024)

After calculating the research variables in Table 2, the next step was to conduct a correlation test. In Saunders et al. (2023), a correlation coefficient enabled the quantification of the strength of the linear relationship between two ranked or numerical variables. This coefficient (usually represented by the letter *r*) can take any value between +1 and −1. A value of +1 indicates perfect positive correlation. This means that the two variables are precisely related, and that as the values of one variable increase, the values of the other variable will increase. In contrast, a value of −1 represents a perfect negative correlation. Again, this implies that the two variables are closely related. However, as the values of one variable increased, those of the other variables decreased. For data collected from a sample, one will need to know the probability of a correlation coefficient or one more extreme (larger) having occurred by chance alone. As outlined earlier, if this probability is very low (usually less than 0.05), the relationship is usually considered statistically significant. If the probability is greater than 0.05, the relationship is usually considered not statistically significant.

According to Schindler (2022), spearman's rho (ρ) correlation is another ordinal measure. Along with Kendall's tau, it is also frequently used with ordinal data. Rho correlates the ranks of the two ordered variables. As a special form of Pearson's product-moment correlation, rho's strengths outweigh its weaknesses. Below is the spearman's rho (ρ) correlation formula.

$$rs = \frac{6\sum d^2}{n^3 - n}$$

where n is the number of ranked subjects.
where d is the difference between the ranked subjects.

Therefore, the test conducted in this research is the Spearman' s rho (ρ) correlation test to determine the correlation between CCC and NWC.

4. Results and Discussions

In this chapter, the research analyses, provides business solutions, and develops an implementation plan in accordance with the issues found in this research.

4.1 Cash Conversion Cycle (CCC) and Net Working Capital (NWC) Analysis

In this chapter, we analyze the CCC and NWC conditions and the correlation between the two variables in the research period Q1 2019 to Q3 2023 at PT ABC.

4.1.1 Cash Conversion Cycle (CCC)

Table 3 shows the results of the calculation of CCC and its components, which are ICP, ACP, and PDP for the entire research period that have been carried out starting from Q119 to Q223.

Tabel 3. CCC of Q1 2019 -Q3 in 2023

Quarterly	Inventory Conversion Period (ICP)	Average Collection Period (ACP)	Payables Deferral Period (PDP)	Cash Conversion Cycle (CCC)
Q119	52	90	36	106
Q219	52	30	15	67
Q319	44	0	12	33
Q419	30	10	24	15
Q120	4	57	10	51
Q220	5	22	1	26
Q320	3	19	2	20
Q420	4	27	21	10
Q121	40	90	95	35
Q221	14	38	26	27
Q321	4	35	13	26
Q421	10	27	30	7
Q122	47	159	73	134
Q222	13	80	66	27
Q322	6	64	71	-1
Q422	5	40	30	15
Q123	6	173	94	85
Q223	9	90	35	64
Q323	3	53	29	27

Source: Processed data by Excel (2024)

Table 4.1, it shows the results of the calculation of CCC, and its components in the period Q119–Q223 fluctuated, as in Q119, where ICP was 52 days, ACP was 90 days, PDP was 36 days, and CCC was 106 days. The result of this period is one of the longest CCC results during the observation period. If analysed based on one of the CCC components, ACP, it shows that the age of ACP reaches 90 days, because the company only received trade receivables from PT ABC in May or in the second quarter in which the value of sales in this period is equal to the value of trade receivables. Furthermore, in ICP, the time it takes to turn raw materials into sales is 52 days (1 month, 22 days). Apart from that, in the PDP component, payment of the company's trade payables can be made after 35 days because the company pays the trade payables that are due to suppliers with operational funds from the parent company PT ABC, so there are no trade payable bills whose payments are postponed. According to Hutchison, Farris-II, and Anders (2014); Mandalaputri et al. (2021), a positive result indicates the number of days the company must borrow or commit capital while waiting for payment from customers. It can be concluded that in Q119 CCC's lifespan is quite long because the period for receiving trade receivables and raw materials until sales receipts is longer than the period for paying trade payables.

Furthermore, in the Q219 period based on the calculations in Table 4.1, it shows that ICP is 52 days, ACP (30 days), PDP (15 days) and CCC is 67 days. Compared to the Q119 period, CCC in this period has smaller or better results than the previous period. Since this period ACP or revenue from sales was received by the company after 30 days, where in this period many customers made payments on receivables due on bills in the first quarter. Then for PDP, which is the payment of accounts payable in this period, it is only 15 days. It is because the company has received trade receivables for bills that are due at the end of May to pay the company's overdue obligations faster. It can be concluded that CCC in this period is smaller and better than the previous period because the period of receipt of accounts receivable has decreased and payment of accounts payable has also decreased.

In Q122, the company reported a prolonged CCC value 134 days, with ICP at 47 days, ACP at 159 days, PDP at 73 days. This represents the longest CCC recorded during the observation period, indicating that it took the company over 4.5 months to convert its operations into cash and meet its obligations. This was largely influenced by the extended period, approximately 5.3 months, required to

collect receivables from customers. The accumulation of unpaid accounts receivable contributed to the increased ACP value, reflecting delays in customer payments. Then, suppose the issue related to PT AA's default in the first quarter of 2022, which according to Dirgantara (2022), still reached 54%, PT AA has made efficient cash outflows for the company by prioritizing the payment of larger debts and postponing payments to several vendors. Until PT AA's unbilled trade receivables have been received. Trade receivables at PT ABC in Q421 reached 44%, and Q122 reached 62%, so the receipt of trade receivables at PT ABC will greatly influence the policy regarding priority payments made by PT AA and make the age of ACP large. Then for PDP in this period, it is 73 days and is a longer period for paying accounts payable compared to the Q421 period, it is because in this quarter the company only paid a few supplier bills which were of small value while the payment of supplier bills such as materials was postponed for many times. Based on the analysis above, it is found that the company's CCC results are very long because there is an imbalance between cash outflows and cash inflows at PT ABC, thus making the conversion of all CCC components longer.

Moving to Q123, PT ABC reported an ICP of 6 days, ACP of 173 days, PDP of 94 days, resulting in a CCC of 85 days. This CCC value is longer than that of Q422 by 85 days, or nearly 3 months. The extended ACP duration of 173 days, equivalent to over 5 months, was due to delayed receipts for sales invoiced in Q422, with only a small portion received during Q123. Additionally, the company withheld payments to some trade payables and staggered payments to suppliers of production materials over 94 days, keeping trade payables significant. This period was marked by customer defaults in the company's first quarter, compounded by delays in payment from state-owned enterprises (SOE) involved in construction projects. These delays affected PT ABC's financial standing, as payments from SOE took longer than expected due dates, thereby extending the CCC compared to previous periods. However, it's notable that despite these challenges, the CCC in Q123 does not represent the worst observed during the monitoring period, with longer CCC values recorded in Q119 and Q122.

In Q223, it shows the age of ICP (9 days), ACP (90 days), PDP (35 days), and CCC 64 days. In this period, the company's CCC period began to be approximately 2 months for the period of receipt of sales and payment of debts to suppliers. The company's ACP began to decline from 173 days to 90 days, meaning that the company only received trade receivables after 3 months, and during this period that the SOE construction company began to pay more bills, but on the other hand, the company still withheld payment of some of their vendor bills, including PT ABC so that the remaining receivables were still large. Hence, it is what causes the CCC value to be shorter.

After analysing the observation period Q119-Q323, the research will analyse the CCC in movement every quarter. The following is the movement of CCC on PT ABC for the period Q119-Q323.

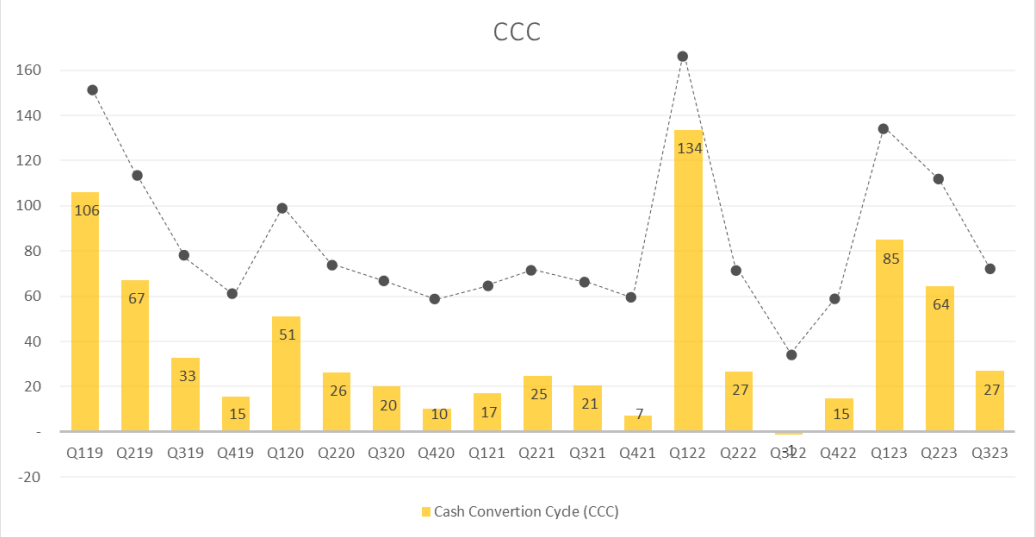

Figure 2. CCC Movement During Q119 – Q323 Period in PT ABC
Source: Processed data by Excel (2024)

Based on Figure 2, the movement of CCC from Q1 2019 to Q3 2023 fluctuates greatly. As in Q119 to Q419, the company's CCC value continues to decline or the CCC age becomes shorter, as well as in 2020, CCC in Q120 continues to decline until Q420. Based on the statement of Mandalaputri et al. (2021) having a low CCC is a good thing, but companies still have to pay attention to whether with a low CCC, the company will experience losses due to losing profitable customers and suppliers. It can be concluded that the shorter the CCC, the better the company, meaning that the company has managed cash outflows and cash inflows effectively, but has to be careful not to lose potential partners.

In addition, CCC is longer in Q119 and Q120 because sales receipts in this period are longer than accounts payable payments, and because customers only started paying sales bills smoothly in Q2-Q4, so CCC continues to decline, and the period is shorter. In 2021, Q121 to Q421, the curve is different from 2019 and 2020 because, in Q121, the company withheld payment of several overdue supplier invoices because the company had not received much income from sales, while production was started by PT ABC. When a company withholds payment, it will have an impact on a shorter CCC. This makes the CCC in Q121 shorter than Q420, in Q221 CCC longer, and in Q321 to Q421 CCC shorter again. This is because, in Q221, the company began to receive a lot of income from sales, which means that payments to suppliers can be made, which causes the difference between receipts and payments to be smaller or CCC to be shorter. Then, in 2022, the movement of CCC is almost the same as that in 2019 and 2020, where in that year, the CCC value in Q1-Q3 will continue to fall or be significantly shorter. However, in Q4, the CCC value is slightly longer but still in good condition because the revenue from sales was successfully received by the company in Q2 2022. Then, related to the issue of SOE customers, where in Q122, the CCC value is the largest compared to other periods. Due to PT AA delaying payment of accounts payable to several vendors, including PT ABC, the amount of unpaid receivables is still large. Therefore, it will affect ABC's accounts receivable, which is increasing.

Apart from the CCC value that has decreased between Q1-Q3, it is different in Q4, where the CCC value has increased again or is longer because if accumulated total sales receipts from state-owned customers are not comparable to total trade receivables, the remaining trade receivables are still quite large until the end of 2022. On the other hand, the company still makes payments on accounts payable in line with the cash owned by PT ABC and withholds some payments with long maturities, which makes the CCC value in this period quite long compared to Q322. Finally, in 2023, the curve will decrease or become shorter, as in 2019 and 2020 in Q1-Q4 and 2021 in Q1-Q3. The CCC value in 2023 is no longer than that in Q119 and Q122, which reached more than 100 days or more than three months. This means that the company managed to streamline cash inflows and outflows during this period, such as withholding some vendor payments until trade receivables were received or paying off overdue bills for installation. Therefore, it can be concluded that although the default of SOE customers that hindered the receipt of trade receivables in 2023 was the worst, it did not make the CCC value the longest during the observation period.

4.1.2 Net Working Capital (NWC)

Based on Ross, Westerfield, and Jordan (2017) as cited in Siregar et al. (2022) net working capital is current assets and current liabilities that can generate positive working capital when current assets are greater than current liabilities. The following are the results of CA, CL, and NCW for all periods of research from Q119 to Q223.

Table 4. NWC of PT ABC from Q1 2019 -Q3 in 2023

Quarterly	Current Assets	Current Liabilities	NWC
Q119	14.958.767.403	10.536.798.268	4.421.969.135
Q219	19.429.154.894	22.582.976.924	-3.153.822.030
Q319	7.655.332.147	8.117.093.197	-461.761.050
Q419	20.087.492.105	8.231.020.790	11.856.471.315
Q120	6.487.241.620	4.148.221.446	2.339.020.174
Q220	29.215.975.480	2.119.015.338	27.096.960.143
Q320	28.573.863.235	2.702.195.421	25.871.667.814

Quarterly	Current Assets	Current Liabilities	NWC
Q420	42.340.833.255	23.111.629.990	19.229.203.266
Q121	21.493.870.949	16.906.834.723	4.587.036.226
Q221	16.241.598.874	7.987.384.171	8.254.214.703
Q321	18.853.729.214	17.072.669.318	1.781.059.896
Q421	37.213.833.813	41.217.132.971	-4.003.299.158
Q122	39.462.550.860	33.351.045.587	6.111.505.273
Q222	45.949.381.337	35.907.697.332	10.041.684.005
Q322	73.181.937.653	55.338.745.897	17.843.191.756
Q422	70.684.587.936	63.193.099.055	7.491.488.881
Q123	68.186.438.802	63.102.395.995	5.084.042.807
Q223	58.994.206.478	56.074.119.194	2.920.087.283
Q323	80.307.007.329	58.809.568.370	21.497.438.960

Source: Processed data by Excel (2024)

Based on Table 4, the net working capital of PT ABC shows fluctuations in each quarter. For instance, during Q119 and Q419, the company reported positive NWC values, indicating that its current assets exceeded its current liabilities. This suggests that the company could meet its short-term obligations for three months. Specifically, in Q119, cash and trade receivables of 11,784,671,961, exceeded current liabilities of 10,536,798,268. Similarly, in Q419, cash and trade receivables amounted to 11,520,909,571, while trade payables were lower at 8,231,020,790, reinforcing the ability of total current assets during these periods to cover current obligations for three months. In contrast, during Q219 (-3,153,822,030) and Q319 (-461,761,050), PT ABC reported negative NWC values, indicating that its current assets were insufficient to cover current obligations. For instance, in Q219, current liabilities exceeded current assets, which amounted to only 19,429,154,894. This was due to the company's reliance on operational funding loans from its parent company from January to April, as sales receipts were only received in May 2019, as analyzed in the CCC Q119. Consequently, trade payables continued to rise until sales receipts arrived, and the company's receipts in the first and second quarters were insufficient to surpass trade payables for operational funding loans and material purchases each month, resulting in negative NWC during this period. Furthermore, Q319 also reported a negative NWC, with current liabilities exceeding current assets of -461,761,050. This imbalance occurred because during this period, the BAST (Minutes of Handover) necessary for invoicing production in September (2nd quarter) was received only from October to December (4th quarter). Consequently, the value of trade receivables in current assets was less than the material costs, which accumulated as current debt in Q319.

From Q120 to Q321, PT ABC maintained a positive NWC, indicating that its operations could cover business debts from 2020 through the 3rd quarter of 2021. During this period, the company successfully collected revenue from sales and managed to make timely debt payments. However, Q421 shows a negative NWC of -4,003,299,158, signifying that current assets fell short of current liabilities. This was influenced by sales advances of 15,147,041,572 received by the company, recognized as current debt in this period. The corresponding sales invoices for these advances were scheduled for the first quarter of 2022, resulting in debt surpassing current assets. From Q122 to Q422, PTABC maintained a positive NWC, ensuring that current assets were sufficient to cover current debts as they matured. Despite a delay in the payment of trade receivables from the PT AA in the first quarter, the company's efficient operations maintained a positive NWC. Similarly, in 2023, the company continued to report a positive NWC, which is consistent with its performance in 2022.

The following is a graph of the NWC movement during the observation period at PT ABC.

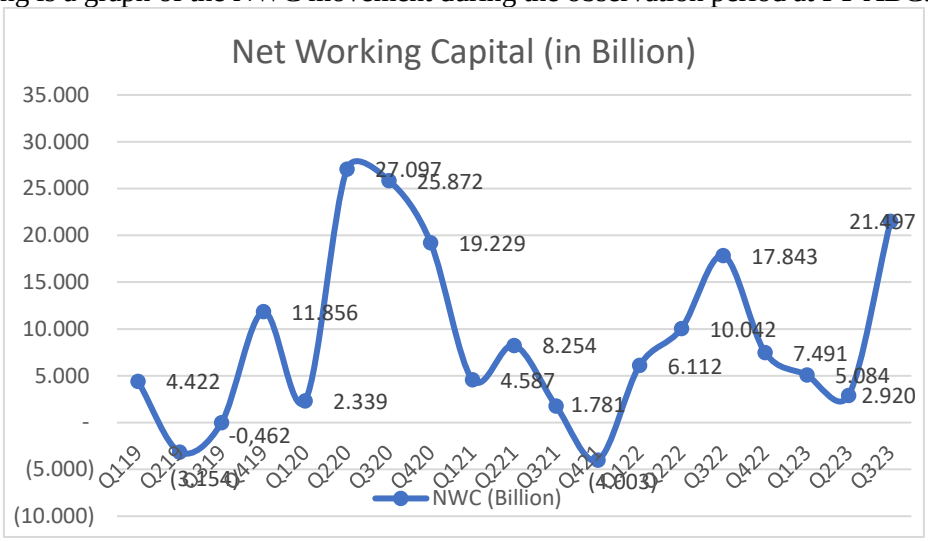

Figure 3. Movement of NWC During Period Q119 – Q323 in PT ABC
Source: Processed data by Excel (2024)

According to Figure 3, the movement of the NWC from Q119 to Q323 predominantly shows positive values, with negative values occurring only in Q219 (-3.154B), Q319 (-0.462B), and Q421 (-4.003B). In 2019, Q119 and Q419 recorded positive NWC values, whereas Q219 showed negative NWC due to delays in sales receipts, necessitating additional current debt through operational funding loans. This imbalance caused business debts to exceed the company's current assets. The negative NWC trend persists into Q319, driven by a large number of sales invoices that could only be collected in the first quarter of 2022, preventing current assets from surpassing current liabilities.

In contrast, 2020 witnessed consistently positive NWC values, despite a decline from Q220 to Q420. Throughout this period, PT ABC consistently maintained a positive NWC. In 2021, NWC showed fluctuations: Q121-Q321 reported positive values, but Q421 returned to negative values due to specific operational factors, as previously explained. During Q421, the company received sales advances recognized as current debt, with invoices scheduled for 2022, resulting in current assets not exceeding the recognized current debt. From 2022 to Q3 2023, PT ABC continued to report positive NWC values.

Based on this analysis, it can be concluded that during the observation period from Q119 to Q323, the NWC at PT ABC only showed negative values in Q219, Q319, and Q421. Issues related to SOE in 2022 and 2023 did not significantly worsen the NWC values.

4.1.3 Correlation of Cash Conversion Cycle (CCC) and Net Working Capital (NWC)

Following the analysis of CCC and NWC, a study of the relationship between these two metrics was conducted. As demonstrated by Hayundaniswara and Faisal (2022), CCC and NWC are ratios used to gauge a company's liquidity. A shorter CCC indicates a faster cash turnover or greater liquidity. Similarly, NWC measures a company's capability to meet short-term obligations.

Based on the results in Table 4 for NWC and Table 3 for CCC at PT ABC, it is evident that in Q219 (67 days) and Q319 (33 days), the company's CCC exceeded its usual period of 30 days, indicating operational disruptions where inventory conversion took longer than expected. Concurrently, NWC was negative for Q219 (-3.514B) and Q319 (-0.462B), signifying the company's inability to meet its obligations due to insufficient current assets compared to business debts. Conversely, in Q322, CCC was -1 d, indicating faster trade receivables than trade payables, while NWC was positive at 17.843B, demonstrating the company's ability to manage business debts through operational activities. In contrast, Q421 showed a CCC of 7 days and a negative NWC of -4.003B, reflecting a short CCC period but a negative NWC. This anomaly occurred because certain debts at PT ABC were higher than those

in other periods, affecting only the NWC calculation and not the CCC. Moving to Q1-Q3 2023, despite longer CCC calculations compared to Q122 and Q119, the NWC remained positive. This period coincided with business issues related to payment default.

Based on this analysis, it can be concluded that there was a negative relationship between CCC and NWC. A shorter CCC indicates the efficient use of working capital without an increase, resulting in a higher or positive NWC, and vice versa.

To strengthen the analysis, Spearman's rho correlation test was carried out, which is a non-parametric statistical test. Table 5 shows the results of the Spearman's rho correlation test.

Table 5. Spearman's rho Correlation Test Results

Correlations

			cash_conversion_cycle	net_working_capital
Spearman's rho	cash_conversion_cycle	Correlation Coefficient	1.000	-.319
		Sig. (2-tailed)	.	.184
		N	19	19
	net_working_capital	Correlation Coefficient	-.319	1.000
		Sig. (2-tailed)	.184	.
		N	19	19

Source: Processed data by SPSS (2024)

Based on Spearman's rho correlation test results in Table 5, the correlation coefficient between the cash conversion cycle (CCC) and net working capital (NWC) is -0.319. This indicates a sufficiently negative relationship between CCC and NWC. However, at a significance level of 0.184, which is greater than 0.005, the relationship between these two variables was not considered statistically significant. The non-significant test results imply that positive NWC does not necessarily imply a small CCC (indicative of good liquidity). The NWC reflects the balance between current assets and liabilities, indicating short-term financial health. However, this does not fully capture liquidity issues when trade receivables exceed cash holdings. This imbalance can lead to larger trade payables (current liabilities) and smaller cash reserves (current assets) when receivables are not promptly collected, affecting overall liquidity.

Therefore, CCC, which considers cash and trade receivables, better describes liquidity than NWC alone. This insignificant correlation suggests that companies should prioritize CCC calculations to better understand liquidity, as NWC does not fully reveal the underlying liquidity challenges observed in this research.

4.2 Business Solution

After analyzing the CCC and NWC of PT ABC, it can be seen that the CCC and NWC of the company are quite fluctuating; therefore, through this research, a solution is provided to manage CCC and NWC better and more liquid. The following are several business solutions that can be implemented by companies to optimize the Cash Conversion Cycle (CCC) and Net Working Capital (NWC) at PTABC:

1. Focus on Retail Sales: Problems with SOE customers that often occur make cash inflows and company cash very influential; by implementing this solution, the company can improve its financial condition, after comparing the CCC value in 2022 to 2023 for projects alone with the CCC for projects and retail. If the company adds revenue from retail sales, it can shorten the CCC by an average of seven days (a week); it is good for the company so that it can pay its current liabilities more quickly and not delay paying its current liabilities. This can be used as a solution because we see the increasing size of retail sales in companies where the average retail sales have

reached 27% of total sales in 2020-Q3 2023 at PT ABC. Figure 6 shows a forecast for the balance sheet and profit and loss scenario assuming an increase in retail sales of 35%.

FORECASTING BALANCE SHEET OF PT ABC

Assets		**Liabilities & Equity**	
Cash	20.774.549.028	Account Payables	49.255.052.487
Marketable Securities	-	by sales project	32.015.784.116
Account Receivables	100.760.254.986	by sales retail	17.239.268.370
by sales project	86.526.227.626	Accruals	-
by sales retail	14.234.027.360	Short-Term Debt	77.426.132.619
Other account receivables	27.770.552.282	Current Portion of Long-Term Debt	-
Inventories	5.539.923.582	**Total Current Liability**	**126.681.185.106**
by sales project	3.600.950.328		
by sales retail	1.938.973.254		
Total Current Asset	**154.845.279.878**	**Long-Term Debt**	**295.724.000**
Land			
Plant and Equipment, Net	13.942.971.536	Preferred Stock	11.000.000.000
Intangibles, Net	-	Common Stock	
Asset under Construction	1.178.312.482	Retained Earnings	31.989.654.791
Total Fixed Asset	**15.121.284.018**	**Total Equity**	**42.989.654.791**
Total Asset	**169.966.563.896**	**Total Liability & Equity**	**169.966.563.896**

Figure 6. Forecasting of Balance Sheet in PT ABC
Source: Processed Data (2024)

In Figure 6, the forecasted balance sheet for asset components highlights a notable 58% increase solely in accounts receivable, equating to 4% of the total sales growth. Net sales are anticipated to increase by 65% from project sales and by 35% from retail sales. Conversely, other receivable accounts are projected to decrease by 2%, accounting for 16% of the total net sales. This reduction is attributed to a decrease in down payments for purchases. Further analysis of accounts receivable reveals a decrease from 41% in net sales in Q3-2013 to 35% under these assumptions. This adjustment stems from a shift in the process of receiving prepayments for retail sales, where work commences after sales receipt owing to company regulations. Unlike project sales, which involve contracts spanning to 1-2 years, retail sales at PTABC typically follow a Purchase Order (PO) model. This operational practice leads to a decrease in trade receivables, and subsequently reduces the CCC. In the scenario where retail sales account for 35% of total sales, the retail CCC is projected at -7 days, indicating a 7-day faster cash conversion compared with the Q323 project sales CCC of 27 days.

Figure 7 presents the forecasted income statement for PT ABC, detailing further financial projections.

FORECASTING INCOME STATEMENT OF PT ABC

Net Sales:		**173.785.922.870**
by sales project		133.117.273.271
by sales retail		40.668.649.599
Cost of Goods Sold:	-	**152.614.952.209**
by sales project	-	116.900.643.982
by sales retail	-	35.714.308.228
Gross Profit		**21.170.970.661**
Selling Expenses		-
G&A Expenses	-	9.684.567.568
Depreciation & Amortization		-
Interest Income		386.164.001
Total Operating Profit		**11.872.567.094**
Interest Expenses		-
Tax Expenses	-	1.508.383.793
Net Profit		**10.364.183.300**

Figure 7. Forecasting of Income Statement in PT ABC
Source: Processed Data (2024)

According to Figure 7, several assumptions are evident, including an increase in net sales from retail operations to 35%, marking an 8% growth compared to Q3-2023, which stood at 27%. This growth projection is underpinned by the expectation that the average Net Profit Margin (NPM) will increase by 1% annually from 2021 to 2023, reaching 8% in this scenario. Consequently, it is anticipated that NPM for retail sales, at 25%, will surpass that of project sales, which is 8%. This suggests that retail sales at PT ABC are expected to yield higher profitability than project sales. The decision to target a 35% increase in retail sales for 2024 is supported by management plans to expand operations with an additional batching plant at PTABC. Furthermore, the company has secured new projects, including the IKN project and ongoing work on the Solo-Jogja toll road, which are expected to contribute to growth in retail sales. Insights from interviews conducted with Senior Staff in Cost Control & Accounts Receivable reinforce optimism regarding ABC's prospects in the retail sales segment for 2024.
"*During the weekly internal meetings in 2024, the company's directors emphasized that both project and retail targets had increased compared to the previous year. The outlook for projects has improved with the establishment of a new batching plant, while the retail sector has been poised for growth due to the commencement of the Solo Jogja toll road project. PT NE, a subcontractor for this project, continues to rely on us for a ready-mix concrete supply, building on collaborations initiated in late Q4 2023.*

Furthermore, our batching plant in Muara Enim is preparing for increased retail sales this year, anticipating the demand from several private companies for our ready-mix concrete products. Currently, we are in the process of finalizing contract values and purchase orders (Senior of the Cost Control Division, March 13, 2024).

Therefore, the prospect of retail sales increasing by 35% can occur at PT ABC, and focusing on retail sales is one of the best solutions for the company.

2. Renegotiation to extend payment due dates (AP): Companies often withhold payments on due trade debts, and the risk that arises in the long term is that suppliers may not want to become PTABC suppliers at any time. Therefore, adding maturity time will reduce a company's inability to pay its business debts.
3. Efficient Project Management: Companies can maximize the use of software and applications that support the acceleration of billing: 1) using PERURI digital stamp providers to create sales invoices for faster distribution of bills via email, and 2) compliance with timely payments, such as implementing Virtual Account (VA) and prepayment rules that receipts for retail sales must be

made before production is carried out, because if receipts can be made before production is carried out and CCC will be more likely to be zero or CCC will be shorter in addition to the distribution of billing invoices also becomes faster.

Therefore, the three business solutions above, which focus on retail, optimization, and efficiency, are expected to solve the problem of defaults from SOE customers that have an impact on the company's liquidity. By implementing one of these solutions, the company can anticipate and control possibilities that may occur in the future and affect the sustainability of the company.

4.2 Implementation Plan

Based on the three solutions in the previous sub-chapter, one solution was selected to carry out the implementation plan, that is, business solution number 1, where the company focuses on retail sales. This solution is considered to be the best solution according to the scenario in which the company uses it. Table 8 presents the implementation plan for the PT ABC.

Table 8. Implementation Plan of Focus on Retail Sales (PT ABC)

No	Program	Duration (month)	Timeline								PIC
			1	2	3	4	5	6	7	8	
1	Identify problems and start making plans for solutions. Plans carried out:	2									BOD, BP, and HO Team
a	Plan the target to increase retail sales	1									BOD, BP, and HO Team
b	Market research	1									BOD, BP, and HO Team
c	Marketing techniques training	2									Marketing Division
d	A marketing strategy	1									Marketing Division
e	Customers list	1									BOD, BP, and HO Team
f	New partnership proposal	1									Procurement & Cost Control Division
g	Create a RAB for retail sales targets and estimate product selling prices	1									Cost Control, Marketing, and Finance & Accounting
2	Implementation and monitoring progress	5									PM, HO Teams (Div. of Cost Control, Marketing and Finance & Accounting)
3	Evaluation of the implementation plan	1									BOD, BP, and HO Team

Source: Processed Data (2024)

At the implementation plant (1) Identify problems and start making plans for solutions (Month 1-2). At this stage, an implementation plan is created that should be carried out by the company. This stage is conducted by all the PICs in stage 1. Executed plan:

1. An internal meeting was conducted to plan a target of increasing retail sales by 35%.
2. Market research identifies the potential of BP, which has many private companies involved in ongoing toll projects.
3. Provide marketing technique training for the marketing department. As the target market is retail, the company needs a different approach to customers; therefore, training for marketing and sales staff needs to be implemented in the company.
4. Create a marketing strategy with different marketing techniques for retail (such as (1) discounted selling price if the purchase is more than 50 m^3 (according to management agreement), (2) ability to pay ½ of the total bill for existing customers, and (3) discounted price if a new customer makes the 2nd PO, etc.).
5. Make a list of existing customers (potential customers) and search for potential new customers.
6. Create new partnership proposals for retail sales and offer them to potential customers.
7. Create RAB for retail sales targets in targeted BP and estimate a product selling price that is more competitive with other retail companies.

Implementation and monitoring progress (Month 3-7) at this stage, the company begins to implement the plan that has been developed. This stage takes five months because it refers to the maximum history of retail work, which is a period of five months until the work is completed.

Evaluation of the implementation plan (Month 8) after the implementation of the solution, the company must evaluate whether the solution is effective or not on the company's performance in producing short CCC and positive NWC that affect the company's liquidity.

Based on the implementation plan above, as a supplier of construction companies, it is expected that the company can optimize net working capital, increase profitability, and optimize CCC value from reaching a very long value.

5. Conclusion

This research aims to analyze the CCC and NWC conditions at PT ABC, and then choose the best solution from several alternative solutions that suit the company's current payment default problems.

5.1. Conclusion

Referring to the research background regarding the effect of SOE customer defaults on CCC and NWC, the conclusions of this research are first on CCC and its components. Problems related to defaults on SOE customers have an impact on CCC, especially in 2023, when the CCC value in that period is quite long but not the worst CCC during the observation period because PT ABC postponed payment of trade payables to suppliers in the same period. Then, in NWC during the observation period, it can be seen that NWC is negative in only three quarters, but not in 2023, because in 2023, the company's NWC value is positive or its current assets are considered capable of meeting its current liabilities. It can be interpreted that the company's NWC is liquid because if a problem occurs in 2023, the company can still pay its obligations and take steps to manage current assets and liabilities and keep the company's cash flow from worsening. Furthermore, the relationship between CCC and NWC after analysis in this research is inversely proportional, meaning that when the age of the company's CCC becomes shorter, NWC becomes greater (positive) and vice versa. Then, after conducting Spearman's rho correlation test, it can be seen that the relationship between CCC and NWC is not significant, meaning that if the NWC is positive, it does not guarantee that CCC will be small (good condition). Therefore, the company is advised to focus only on CCC because it does not reflect the problems that occurred in this research.

5.2. Limitation

The results of NWC and CCC in this research may differ depending on the object of research, because the object of this research is a construction company, the results are as analyzed here, but if further research uses other sectors, it does not rule out the possibility that the results of CCC will be longer or shorter. NWC also depends on the sector used because the components for calculating NWC for a company will be different; for example, at PT ABC, which is material, the COGS value will be very large compared to a service company whose maintenance value is greater. Furthermore, in analyzing the liquidity of a company, more financial calculations can be made; not only CCC and NWC, as in this research, but other financial ratios (solvency, liability, profitability, and liquidity) can be analyzed.

5.3. Suggestion/Recommendation

Recommendations for the company that can be given in this research follow three 3 alternative business solutions. According to the observations in this research, the best solution for a company is to focus on retail sales in addition to project sales in the expectation that it can help the company maintain its cash flow so that the company can be liquid. Another reason is that PT ABC procedures allow retail sales to reduce the CCC period to be shorter, even to zero, and NWC is certainly not negative. Furthermore, the company will try a business solution implementation plan that has been in place for eight months to evaluate its success. For future research, a more in-depth analysis of CCC and NWC as well as risk measurement of the implementation plan can be performed.

Acknowledgment

This research would not have been possible without the support of the company that became the sample in this research (PT ABC), colleagues at SBM ITB, and parents who always prayed for the feasibility of completing this research.

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