
OPTIMIZING THE CASH CONVERSION CYCLE IN PROJECT-BASED MANUFACTURING: A CASE STUDY OF BAJEL PROJECTS LIMITED**Sanjyot Dhamdhare and Dnyanesh Bandgar****ABSTRACT**

This research examines the enhancement of the Cash Conversion Cycle (CCC) in project-based manufacturing, concentrating specifically on Bajel Projects Limited. Managing the cash conversion cycle well is important for keeping cash flow, making operations more efficient, and making more money. This is especially true in industries like engineering, procurement, and construction (EPC) and project-based industries where projects take a long time and payments are frequently late. The study aims to examine the essential elements of the cash conversion cycle, such as receivable days, payable days, and inventory holding period, and assess their influence on the organization's financial performance. The study employs financial data and trend analysis to identify significant challenges faced by project-based firms in the management of working capital. The results show that optimal supplier credit and efficient receivable management greatly increase liquidity and lower financing costs. To maximize the cash conversion cycle, the study recommends strategic measures like digital invoicing, milestone-based billing, and better contract management. The study adds to the body of knowledge on project-based manufacturing and emphasizes how crucial cash flow optimization is to long-term success.

Key Words: Project-Based Manufacturing, Working Capital, Liquidity, Cash Conversion Cycle, and EPC Sector.

INTRODUCTION

Managing working capital is very important for the financial stability of project-based industries. Companies in the engineering, procurement, and construction (EPC) sectors have long operating cycles because of project execution timelines, milestone-based billing, and late payments from customers. Because of this, it is very important to manage cash, inventory, and receivables well. The Cash Conversion Cycle (CCC) tells you how long it takes a business to turn its investments in inventory and other resources into money from sales. A shorter CCC makes it easier to get cash, reduces the need for outside financing, and increase the profits.

Bajel Projects Limited works on infrastructure and power transmission projects. These projects need a lot of working capital because they have a lot of inventory and long periods of time to collect payments. So, optimizing the CCC is very important for keeping the business running and making money. The main goals of this study are to analyze the company's CCC and find ways to increase working capital efficiency in project-based manufacturing.

LITERATURE REVIEW

Pawan Kumar Sharma and Satish Kumar (2018) examined the correlation between working capital management and profitability in Indian enterprises. Their study, which was published in the *International Journal of Financial Management*, found that the Cash Conversion Cycle is a good way to measure how well a company is using its cash. The study found that companies with shorter CCCs tend to do better financially because they cut down on inventory costs and improve cash flow.

Rajiv Singh and Neha Pandey (2021) investigated working capital practices in manufacturing firms. Their research, published in the *Indian Journal of Finance*, identified inventory management as the paramount factor in optimizing the CCC. They proposed contemporary methodologies, including Just-in-Time (JIT) and demand forecasting.

The Journal of Management Research published the work of **Anil Kumar and K. Suresh in 2022**. They discovered that project-based manufacturing companies face various obstacles, including extended production cycles and postponed receivables. The study highlighted the importance of managing contracts and billing based on milestones to improve cash flow.

In the *International Journal of Emerging Markets*, **Mehul Patel, Rakesh Shah, and Priya Desai (2023)** emphasized the function of ERP systems and digital technology in working capital optimization. According to their research, automation and real-time monitoring lower inventory and increase the effectiveness of receivables. In their study that was published in the *Global Business Review*, **Amit Gupta and Sonal Verma (2024)** came to the conclusion that improving the Cash Conversion Cycle increases shareholder value, liquidity, and operational performance. They suggested improving credit control, lowering finished goods inventory, and negotiating better terms with suppliers.

In general, prior research suggests that an ideal CCC enhances liquidity and profitability. However, little is known about project-based engineering companies like Bajel Projects Limited, where contract-based operations and late payments have an impact on working capital. As a result, the current study concentrates on examining and improving the Cash Conversion Cycle in these kinds of businesses.

Research Gap

The majority of research on the Cash Conversion Cycle concentrates on conventional manufacturing companies. There has been little research on project-based manufacturing industries where project timelines, customer payments, and supplier contracts affect working capital cycles. This research fills this gap by examining the CCC in a project-focused EPC company.

Objectives of the Study

- To evaluate Bajel Projects Limited's Cash Conversion Cycle.
- To determine how effectively inventory, receivables, and payables are being managed.
- To study CCC's effects on profitability and liquidity.
- To recommend methods for project-based manufacturing that maximize working capital.

RESEARCH METHODOLOGY

• Research Design

A descriptive and analytical research design is used in this study. The purpose of the study is to examine and assess project-based manufacturing's Cash Conversion Cycle (CCC). The working capital structure is understood through the use of the descriptive approach, while analytical tools are applied to assess trends and financial performance.

• Nature of Study

This study is quantitative, relying on numerical financial data sourced from secondary methods. The study concentrates on quantifying the inventory period, receivable period, and collection period, along with their effects on liquidity and working capital management.

• Source of Data

The current study utilizes secondary data derived from internal financial records and working capital information given by Bajel Projects Limited during the internship. The data includes information about accounts receivable, project billing, and how well working capital is doing. We also got more secondary data from annual reports, company disclosures, and research articles that were related.

• Method of Sampling

Due to the availability of financial data and its relevance to project-based manufacturing, the study employs purposive sampling and concentrates on a single company, Bajel Projects Limited.

• Tools and Technique

The Cash Conversion Cycle (CCC) is the main financial tool used in this study to assess Bajel Projects Limited's working capital efficiency and liquidity management. The CCC helps in calculating how long it will take the business to turn its working capital investments into cash inflows.

• Formula

The following formula is used to determine the Cash Conversion Cycle:

$$CCC = \text{Receivable Days} + \text{Inventory Days} - \text{Payables Days}$$

Data Analysis and Interpretation

The Working Capital Cycle (WCC) and its elements are analyzed for Bajel Projects Limited in this section. The effectiveness of inventory, receivables, and payables management is assessed using the working capital cycle. The cycle shows how long it takes the business to turn working capital investments into cash inflows.

• Inventory Days

Examine annual patterns in inventory turnover. High inventory levels are maintained in project-based firms to guarantee continuous project execution.

• Receivables Days

Due to late customer payments in EPC projects, receivables make up a significant portion of working capital. The analysis shows if collection efficiency has increased or decreased.

- **Payables Days**

To control cash flows, businesses bargain for supplier credit. Although it may have an impact on supplier relationships, an increase in payable days enhances liquidity.

- **Trend in Cash Conversion Cycles**

The overall CCC trend shows that working capital management is effective. Improved cash flow and operational efficiency are reflected in a declining CCC.

Cycle of working capital

WCC = inventory days + receivable days - payable days.

Raw materials consumption	2,230,625,309.10
Raw material consumption per day	6,111,302.22
Raw material inventory	132,938,941.00
RM conversion period	21.75
WORK IN PROGRESS	
Cost of production	4,323,643,094.80
Cost of process per day	11,845,597.52
Work in progress inventory	5,111,525.47
WIP conversion period	0.43
FINISHED GOODS	
Cost of goods sold	1,139,042,720.31
Cost of goods sold per day	3,120,664.99
Finished goods inventory	153,252,008.07
FG conversion period	49.11
COLLECTION PERIOD	
Credit sales at cost	1,172,662,442.52
Sales per day	3,212,773.82
Debtors	123,836,371.00
Debtors' collection period	38.55
CREDIT DEFERRAL PERIOD	
Credit purchase	672,459,292.70
Purchase per day	1,842,354.23
Creditors	44,637,635.49
Creditor's deferral period	24.23
GROSS OPERATING CYCLE	109.84
NET WORKING CYCLE	85.61

- The company's raw material conversion period is 21.75 days, which is within the 15–30day range that is typical for manufacturers in the industry. This indicates that before being sent to production, raw materials are kept in stock for roughly three weeks. This is acceptable, but the business can think about bringing it down to the lower end of the typical range and freeing up capital tied in raw inventory by enhancing supply chain coordination and implementing strategies like Just-in-Time (JIT) procurement.
- Compared to the manufacturing standard of 1 to 7 days, the Work-in-Progress (WIP) Conversion Period is much better at 0.43 days. This indicates a very effective production process with little input-to-output latency. High throughput and low inventory costs are guaranteed when such efficiency is maintained.
- The Finished Goods Conversion Period is 49.11 days, which is marginally longer than the typical manufacturing company range of 20 to 45 days. This indicates that completed goods are stored for more than seven weeks prior to being shipped to clients. Long holding times raise the risk of product obsolescence and storage expenses. To cut this time down to 30–40 days, the business should examine its demand forecasting, apply inventory classification (such as ABC analysis), and better match production with sales trends.
- Within the industry standard of 30 to 45 days, the Debtors Collection Period is 38.55 days. This demonstrates that client payments are being received within a fair amount of time. Even so, cash flow always benefits from additional advancements. This time frame can be shortened toward the 30-day mark by

implementing automated follow-ups, imposing stringent credit terms, and providing early payment discounts.

- However, the Creditors Deferral Period is only 24.23 days, which is a little shorter than the typical manufacturing range of 30 to 60 days. This indicates that the business is paying suppliers earlier than is customary, which may unnecessarily strain cash flow. The company may be able to better balance its outflows and inflows by negotiating for longer credit terms or bulk purchase agreements.
- When all of these phases are combined, the company's Gross Operating Cycle is 109.84 days, and its Net Working Capital Cycle (also known as the Cash Conversion Cycle) is 85.61 days after accounting for the period of creditors. A net cycle of 60 to 90 days is typical for a manufacturing company, indicating that the business is functioning within a reasonable range. Still, there are chances to further shorten the cycle by lowering the holding of finished goods and marginally enhancing credit terms and collections.

RESULT AND DISCUSSION

Bajel Projects Limited maintains a reasonably efficient working capital structure, according to an analysis of its Working Capital Cycle and Cash Conversion Cycle (CCC). The operating cycle's largest component is the total inventory holding period, especially the finished goods period, which is marginally longer than the industry norm. This implies that a sizable portion of money is invested in inventory, which presents a chance to increase liquidity through improved inventory management and demand forecasting.

Effective credit and billing practices are demonstrated by the receivables collection period, which falls within the acceptable industry range. Cash flow can be improved, though, by further reducing collection days through better follow-up, digital invoicing, and more robust contract terms. The company pays suppliers earlier, which could put pressure on liquidity, as evidenced by the creditors' deferral period being comparatively shorter than industry standards. Optimizing cash outflows could be achieved by negotiating longer credit terms.

The company's Net Working Capital Cycle, which is 85.61 days, is generally within the acceptable range for manufacturing companies. However, the Cash Conversion Cycle can be further shortened by optimizing supplier credit, decreasing finished goods inventory, and increasing the

efficiency of accounts receivable. This will boost financial performance, increase liquidity, and lessen reliance on outside funding.

OPTIMIZATION STRATEGIES

➤ Lower the amount of finished goods in stock

To reduce inventory holding and free up blocked capital, improve demand forecasting and production planning.

➤ Boost the Collection of Receivables

To shorten the time it takes to collect money and speed up cash inflows, improve credit control and make sure that bills are sent on time.

➤ Strike Better Terms for Credit

To balance cash inflows and outflows and ease liquidity pressure, extend supplier credit whenever feasible.

➤ Use Technology Tools

To efficiently track and manage the cash conversion cycle, use working capital monitoring tools and ERP systems.

CONCLUSION

With reference to Bajel Projects Limited, this study investigated the optimization of the Cash Conversion Cycle (CCC) in project-based manufacturing. With its CCC falling within the acceptable industry range, the results demonstrate that the company maintains a stable working capital position. However, the main factors affecting the duration of the cash conversion cycle are receivables collection and inventory holding, particularly finished goods.

According to the study, the CCC can be considerably decreased by enhancing demand forecasting, fortifying billing and collection procedures, and negotiating better credit terms. A cash conversion cycle that is optimized will increase liquidity, lower financing costs, and boost overall financial performance. For project-based manufacturing companies to achieve operational efficiency and long-term sustainability, effective working capital management is crucial

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