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THE STUDY AND ANALYSIS OF CASH-FLOW ON PROJECT CASH FINANCE

Avinash T. Shingan^{#1}, Omkar S. Nigade^{#2}, Varsha N. Nagtilak^{#3}, Anand C. Nagarale^{#4}, Divya S. Ovhal^{#5}
Civil Engineering Department, Savitribai Phule Pune University, Pune #Civil Engineering
Department, Sinhgad Institute of Technology & Science, Narhe, Pune.

Abstract: The effect of cash flow on project finance cash is a crucial aspect of project management and financial planning. Understanding how cash flow dynamics influence project finance cash is essential for project stakeholders to ensure the financial viability and success of their ventures. This study examines the factors and mechanisms through which cash flow impacts project finance cash and explores strategies to optimize cash flow in project finance. The research adopts a comprehensive approach by analyzing various factors that influence cash flow, including revenue generation, operating expenses, debt service obligations, timing of cash flows, and risk management. Additionally, the study investigates the significance of margin, retention, and mobilization in relation to cash flow in project finance. These factors play a crucial role in determining the financial health and sustainability of projects. Through an in-depth analysis of project finance cash, this study aims to provide valuable insights and recommendations for project managers, investors, and financial institutions involved in project finance. By identifying the key factors and their interrelationships, stakeholders can implement effective cash flow management strategies, mitigate risks, and enhance the overall financial performance of their projects.

Introduction:

Nowadays, the construction industry continues to face the effects of the economic crisis. Even so, the current funding system does not encourage companies to improve their practices related to project finance management. With high capital expenditures and a high level of competition in the market, construction companies have to accept a large number of risks, which makes them very vulnerable. In order to stay in the market, the construction companies often participate in tenders with prices increasingly smaller, making them vulnerable to the occurrence of unforeseen events that are inherent in any construction project. In the last annual report (1), the president of FIDIC mentioned that "Unreasonable price competition in the awarding of engineering services is more frequent today than ever before"[1]

Since real estate development has a high profit margin and rate of return, it is one of the highly paid industries. However, it also has disadvantages, such as large investment, long construction cycle, etc. It is easily influenced by many factors, such as domestic and foreign economies, political situations, macro-control policies, so it also has a great risk. In order to ensure the investment benefit, real estate developers must make an effort to avoid risks. In order to avoid risk to the maximum extent, we must perform feasibility research before project investment decisions [1-3]. By investigating and analyzing related aspects affecting the research, feasibility research evaluates advancement, rationality, economy and feasibility among other aspects. The core of the feasibility study is the financial evaluation. The investors make decisions whether to invest or not, according to their evaluation results.[6].

Profit and loss statements as well as balance sheets give the status of a business process at time intervals. Whether the business process has been successfully sustained over this time interval or not, is recognized by the cash flow over this projects under execution. Cash flow assumes even greater importance in modern construction business as companies handle many projects simultaneously that necessitates precise planning for fund management [2]. This planning is done by combining cash flows of all projects over project duration. Most of the cash flow forecasting models proposed by researchers [3] primarily provide mathematical tools to prepare expenditure estimates over execution periods. A few research delves beyond expenditure estimates and integrates the impact of schedule delays, cost escalation and revenue generation with expenditure statements in preparing cash flow. Research work dealing with analysis and interpretation of cash flow statements to draw out critical information for supporting management decisions is also limited [5].

The construction industry impacts labor markets and societies in general. Its competitive advantage is therefore important to both global and local economies. As such, there has to be stringent procedures and regulations to ensure the monitoring of the performance of construction projects. A typical construction project starts with the inception of the concept by the project owner, which then translates into designs by a consultant, and finally work by the contractor to execute the project. This multiparty involvement heightens the inherent risks that could jeopardize the performance of a project. These risks typically impact the important time and cost performance parameters of a project. Risks in construction projects typically fluctuate during the various project stages. Initially, risks related to design errors and design synchronization present real safety and performance risks to a project. Such vulnerabilities in a project, at that stage, are generally attributed to project owners/consultants, as the design is generally their duty. Though, During the construction phase of a project, risks that are credited to contractors present more of a threat to a project. Instances of such risks include long lead items procurement and common construction strategies [10].

Globally, construction projects are led and managed by various stakeholders (such as clients, contractors, consultants, shareholders and regulators) who work together as a single project management team entity (Aje et al., 2015; Navon, 2005; Salami and Mustache, 2015). The construction industry is not only essential for improving the quality of life of citizens through the provision of social and economic infrastructure but also important in generating wealth and contributes significantly to Gross National Product (GNP) (Oke et al., 2016; Windapo and Cattel, 2013). The industry is inextricably embedded within the whole spectrum of an economy and has a multiplier effect that enables other industries (such as manufacturing) to prosper (Ameh and Odusami, 2002; Oforeh and Alufohai, 2000). Within Nigeria, the construction sector accounted for 5.8 per cent of GDP in 1981 but declined to 1.4 per cent of GDP in 2013 (Nigeria Country Report, 2013). The notable decrease in the The contribution of the Nigerian construction sector towards its GDP reveals a deep-seated problem. This is further emphasised by the fact that Nigeria's total GDP has increased by about 495 times its size since 1981, whereas the construction sector's GDP contribution has only grown to 125 times its size. Remarkably, the key drivers of Nigeria's GDP over the past three decades have remained largely unchanged, namely, agriculture (crop production), crude oil production and wholesale and retail trade, while the contribution of the construction sector is comparatively insignificant (Nigeria Country Report, 2013). Yet, Nigeria's construction industry continues to occupy a vital position in the nation's economy and as a provider of the buildings and infrastructure needed to ensure continued economic growth and prosperity (Aibinu and Jagboro, 2002),[4].

In the past fifty years, the construction industry of India has modified enormously in terms of size and complexity of the projects. Project completion on time, customary of quality and within the assigned budget are the common goals of construction projects[1]. Construction project is a very important part of any country's economy, commercial, infrastructure and industrial growth. In most of the projects, there'll be delays and also their impact level varies on every project that depends on many factors like nature and the design of construction, importance of the project etc. Once the project gets delayed, either the delivery time of the project are extended or the progress of the project are accelerated heavily so as to deliver it on time. The previous can cause arbitration, litigation, and penalties etc. and also the latter can cause incur extra price, each can find yourself with loss of money. In worst case, the method of the project also has an effect on the standard of the output that sacrifices the client satisfaction, [8].

1.2 Aim of the project:

The study and analysis of cash flow on project cash finance.

1.3 Objectives:

- 1) To study the concept of cash flow.
- 2) To study factors affecting cash flow.
- 3) To discuss computation of factors affecting cash flow for different parameters.
- 4) To analyse factors and their variation on project cash flow.

1.4 Project finance :

Project finance refers to the financing of construction or development projects, such as highways, bridges, airports, or buildings, where the repayment of debt and generation of cash flows are primarily based on the project's revenue streams. It involves securing funding for the project through a combination of debt and equity investments, often with a consortium of lenders and investors.

1.5 S-curve concept :

S-curve can be used to monitor the cost of a construction project. The s-curve very nearly depicts the progress profile of a construction project, which is characterized by slow progress at the beginning and rapid progress towards the middle, followed by slow progress again towards the end. Standard S-curve diagrams which represent the running cumulative value of contracts are used to produce a running cumulative cost commitment curve by deducting the overall mark-up applied. These curves are then converted (using time delays and retention) into cash in and cash out. The net of these curves gives the predicted cash flows for the contracts .

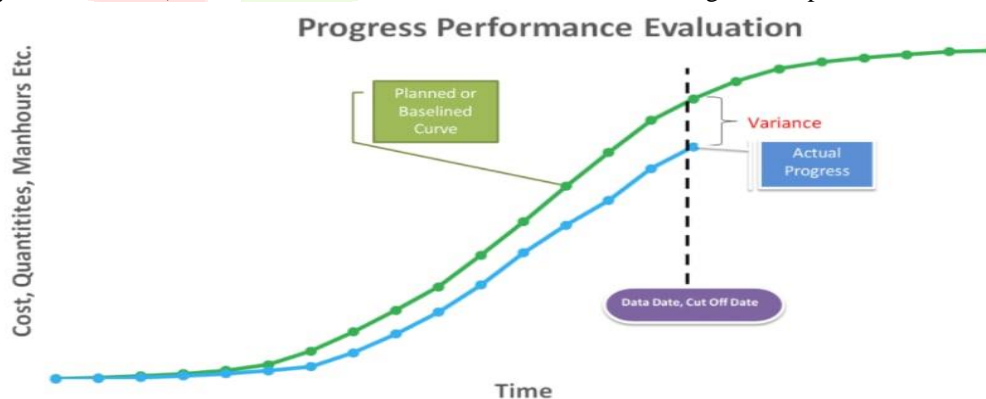


Fig No. 1 : S-curve Diagram

1.6 Project Cash Flow :

Project cash flow refers to the inflow and outflow of cash over the duration of a project. It involves tracking and managing the timing and amount of cash receipts and payments associated with the project.

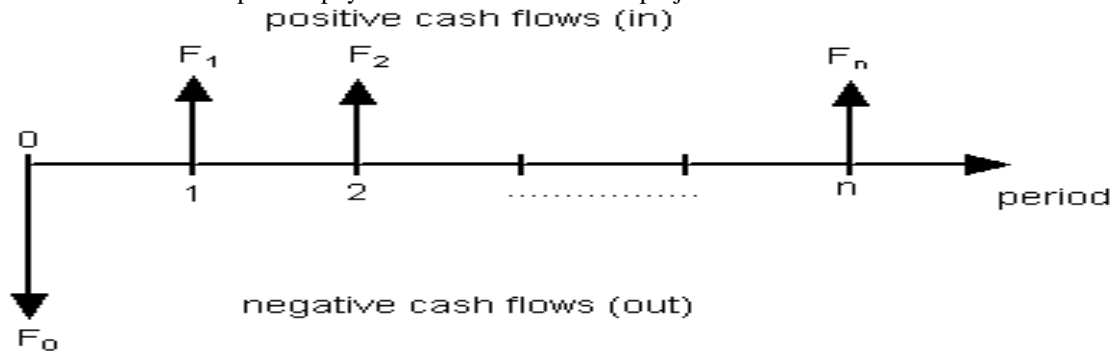


Fig No. 2 : Cash flow Diagram

1.7 Security deposit :

It is an amount of money which shall be deposited by the contractor whose tender has been accepted in order to render himself liable to the department to pay compensation. The security deposit shall be collected by deduction from each running bill of the contractor. It is 5-10 % of the gross amount of the bill.

1.8 Factors affecting project cash flow-

1. Margin
2. Retention
3. Mobilization Advance
4. Credit Period
5. Late Payment
6. Poor cash flow management
7. Insufficient Financial Resources
8. Financial Market Stability

For project, following factors are considered:

1) Margin :

The excess amount over the cost is the margin. The margin factor is an important aspect of construction projects, as it determines the profitability and financial success of a project.

2) Retention :

Retention money is an amount held back from a payment made under a construction contract. We have analyzed the cash flow by taking the retention as 1%, 2% and 3% of the total cost of project.

3) Credit period :

The credit period is the number of days or months that a contractor is allowed to wait before paying a bill. The concept is important because it indicates the amount of working capital that a contractor is willing to invest in its accounts receivable in order to complete the work. We have performed the study on three credit periods as one month delay, two month delay and no delay in payments.

4) Mobilization advance:

A mobilization advance refers to a pre payment or upfront payment made by the client or project owner to the contractor or supplier at the start of a project. This advance is intended to assist the contractor in mobilizing resources, initiating work, and covering initial project expenses.

1.9 Problem Statement:

A cash flow problem occurs when the amount of money flowing out of the company outweighs the cash coming in. This causes a lack of liquidity, which can inhibit your ability to make payments to suppliers, repay loans, pay your bills and run the business effectively.

1.10 Scope of the Project Work:

Scope is limited to analysis of data from a single project along with Wholesale Price Indices (WPIs) and minimum wage rate bulletins over the last decade. Money values are expressed in INR to maintain consistency of data from different sources over a decade. A cash flow statement lists the cash transactions of a company. It summarizes the cash coming in and going out of the firm. There are three major types of activities that the cash flow statement covers: Operating - the activities that the business normally transacts.

1.9 SAMPLE PROJECT

Name of the Project: Bridge across Maan river Connecting Vadegaon and Siddhapur Taluka -Mangalwedha, Dist.-Solapur.

Division: Special Project (P.W.) Division, Solapur.

Long Bridge-220 m length (10m c/c- 22spans), Width-7.50m, Approach-75m on Vadegaon side

Tender cost: Rs. 23121720.00

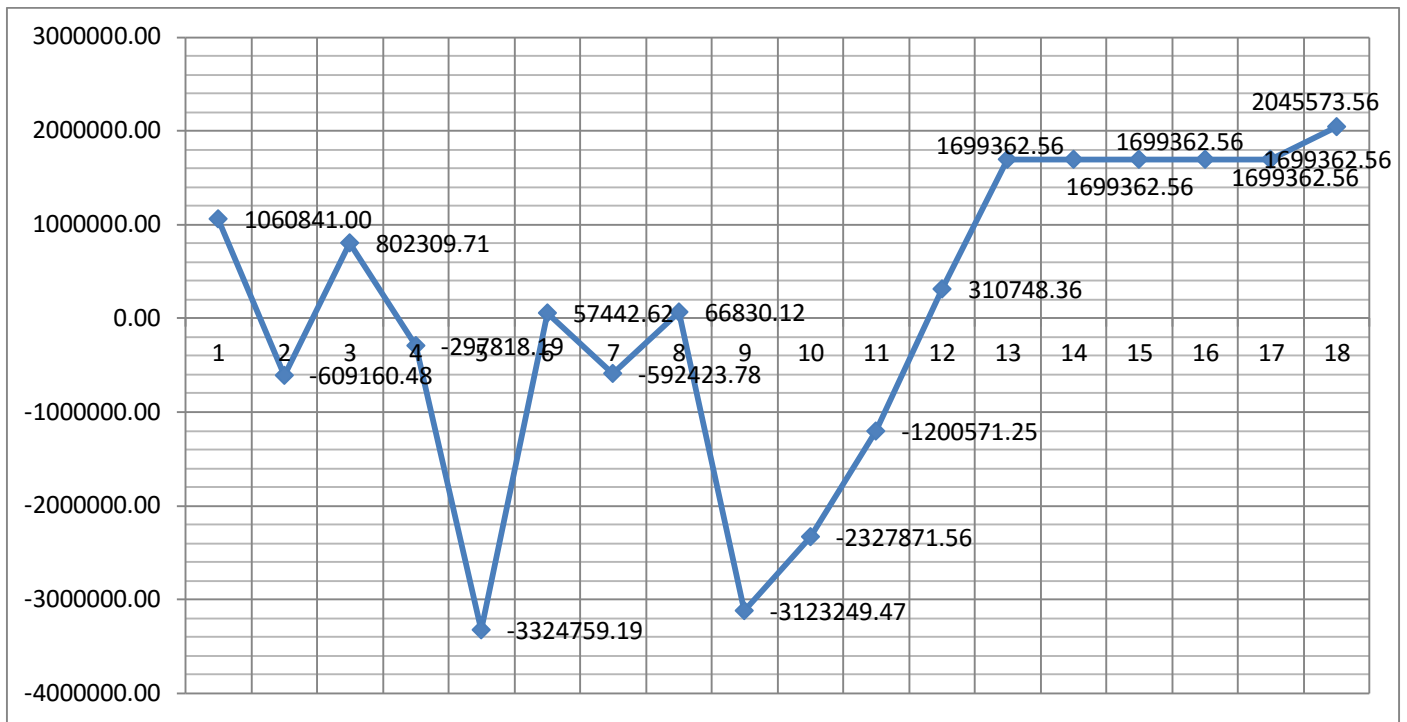
Accepted tender cost (18.8% gross): Rs. 27468603.36

Earnest Money Deposit: Rs. 150000

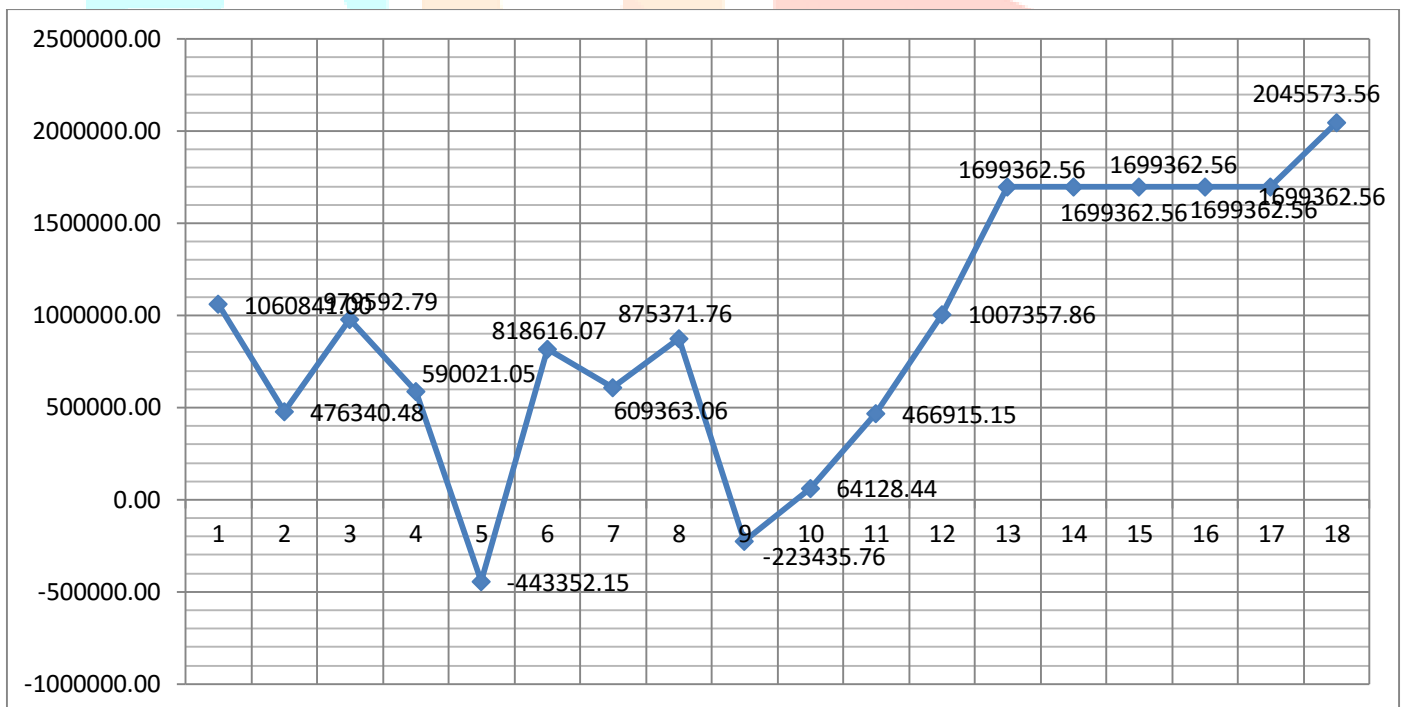
Security Deposit: Rs. 908000

1.10 Result :

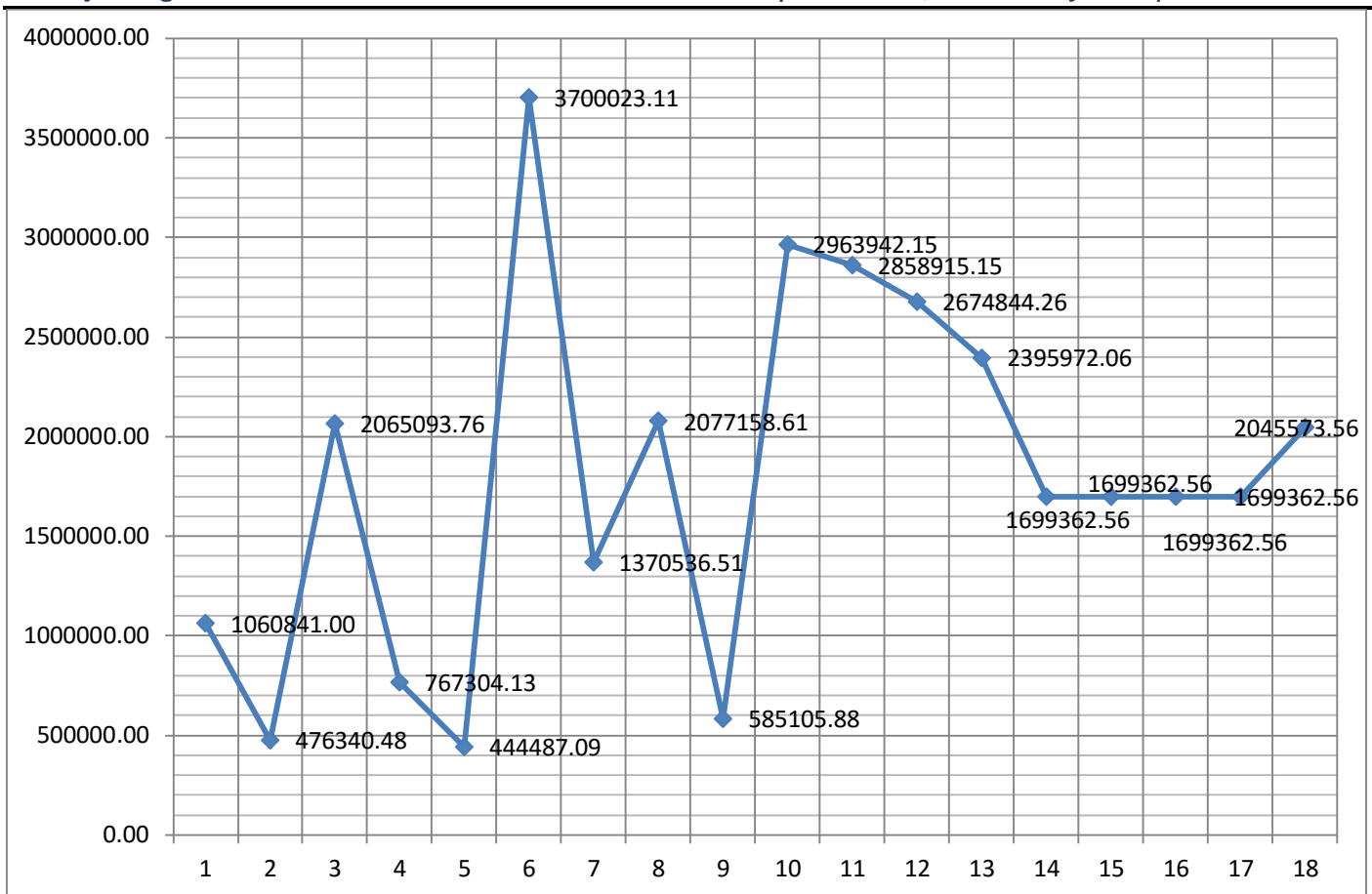
Result with Mobilization Advance



Graph 1: Cashflow
For 8% margin and 1% retention
with no month credit period



Graph 2: Cashflow
For 10% margin and 2% retention
with one month credit period



Graph 3: Cashflow
For 12% margin and 3% retention
with two month credit period

CONCLUSION

1. Margin - By analysing different combinations of margins (8%,10%,12%). It is observed that the contractor has more positive cash flow when he has got a 12% margin with comparison of 8% margin.
2. Retention - By analyzing different combinations of retention (1%,2%,3%). It is observed that the contractor has more positive cash flow when he has 1% retention.
3. Mobilization Advance - It is observed that the contractors' cash-flow remains on the positive side at the initial stage of the project,when the contractor receives mobilization advance. And the cash-flow remains on the negative side, when the mobilization advance is not given.
4. Credit Periods - By studying different combinations of credit periods. It is concluded that the contractor receives more positive cash-flow, when he has more credit period i.e 2 months delay in material payment with a comparison of 0 and 1 month.
5. From contractors perspective 12%, 1% retention and one month delay in payment is a favourable case.
6. From clients perspective 8% contractors margin with 3% retention is favourable case.

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