

Cash Flow and Cash Flow Management in Construction

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Abstract—Construction department is one of the most dangerous sectors due to the high level of nature of the construction plans. While many reasons, the cash inferior is one of the main factors that threaten the success of the construction plans. It will cause business failures. Therefore, considering the risks and uncertainty of construction plans, the appropriate cash planning technique is necessary for adequate cost control and efficient cash management. The cash flow refers to the movement of money in your business based on income and expenses. Simply, a positive liquidity is expected to be more money than paying more money. If there is a positive cash flow, business can solve its bills and invest in growth. A negative cash flow is a need for finding an alternate source for paying debts. Cash flow problems may be serious and threatens the ability to stay in business. Most small businesses face a time or another cash flow problem. Fortunately, most cash flow problems can be blocked with the product and proper strategy. The main purpose of this project should hold a brief study of liquidity management. Various case studies are analysed and its various features such as cash flow management and cash flow analysis are studied.

I.INTRODUCTION

The tremendous economic challenges faced by construction companies in recent years, particularly due to the severity of the financial crisis and the continued fall in public investment, have intensified the financial risks they face, making them extremely vulnerable. Construction businesses aim to provide the owner with a project that meets their expectations in terms of quality, profit, and timeliness. Contractors are encouraged to avoid any schedule or payment delays as a result of this, and proper financial planning for any project helps to avoid financial troubles throughout the execution phase. The likelihood of attaining project goals within the project's stated budget and time schedule is increased when project financials are well planned. Any financial

troubles could result in project delays, higher interest rates or costs, statutory obstacles, and project financial failure, all of which could lead to the firm failing.

There are numerous incoming and outgoing payments in construction projects. The contractor receives revenues from the owner while also paying his obligations to his employees, suppliers, and subcontractors. These incoming and outgoing payments are usually represented by project cash flow. The dates and amounts of the project's received and spent money are represented in the cash flow diagram. Cash flow can be generated and examined before or during construction, and it can alter over time depending on project conditions. Without positive cash flow, construction companies must find ways to continue to operate, until they receive payments for finished projects. This study presents a methodology for analyzing different cash flow scenarios and evaluating cash flow forecasts and also try to control cash flows before construction phase, which is implemented through case studies. By analyzing the data from case studies, we can able to find the conditions of cash flow in construction field and its control.

Cash flow refers to the movement of money into or out of a firm (or other unit) in terms of income and expenditure. However, in the construction industry, the word 'cash flow' usually refers to a study of when costs will be incurred and how much they will cost throughout the course of a project's existence. Predicting cash flow is critical for ensuring that the right amount of finance is in place and that appropriate draw-down facilities are available. In financial accounting, a cash flow statement or statement of cash flows is a financial statement that shows a company's incoming and outgoing cash during a time period. The statement of cash flow

reports the movement of cash into and out of your business in a given year. Cash is the lifeblood of a company. The cash flow statement reports the business sources and uses of cash and the beginning and ending values for cash and cash equivalents each year. It also includes the combined total change in cash and cash equivalents from all sources and uses of cash. The process of assessing expenses and revenue in order to govern the flow of money into and out of a business is known as cash flow management. This allows forecasting how much money company will have in the future. It also aids in determining how much money company requires to cover debts such as paying staff and suppliers. It entails analyzing current cash flow statistics of Construction Company, forecasting future cash flow, and making business decisions based on that data. Cash flow control is the additional planning required to arrange for the cash to meet the demand for the funds. The payable creates products which in turn allow raising bills. The billings are the inflow of cash to the project fund. The inflow to the project fund also comes from the owners of the organizations as investment and from the bank as loan. Cash flow control is the management of the system so that the optimum amount of cash remains in the project fund so as to continue the project at the planned speed. Reports are generated at a periodic interval, say monthly to monitor the cash position.

II.LITERATURE SURVEY

Cash flow planning is a crucial step in making significant decisions concerning how to liquidate a project with the cash. Halpin and Senior (2009) indicated that forecasting cash behaviour over a project's duration is a crucial key for controlling project cash effectively. In addition, performing a thorough cash flow analysis for a project is necessary to eliminate or to minimize the possibility of financial failure. When it comes to financing a construction project, the contractor's goal will be to finance the negative gap between project expenses and project revenues with the aim of achieving the optimum possible amount to finance; thus, the contractor's loans cost will be the least. Although the project's financial nature is that an owner pays a contractor periodic payments, the contractor may face various financial problems along the project's progress. The owner's progress payments may be delayed, which will affect the progress of the project, unless the contractor has the financial ability to temporarily cover this negative cash

value. Project expenses that exceed the cumulative progress payments paid by the owner to the contractor cause this situation. This gap between revenues and expenses is referred to as working capital, which is a source of power for a contractor in commencing a project. The term defines the remaining amount of available cash that the contractor has after deducting the amount of current liabilities. This working capital is the figure that will guide the contractor in the decision to use available credit lines or look for new sources of capital by using corporate finance. If planned properly, company profits can provide an excellent return on investment, but this requires an effective cash flow control procedure. The company has to fund the work for the period from start until the first payment. Research shows that only ten percent of companies that earn \$10 million or less forecast their cash flow, which contributes to the excessive failure rates (Strugs, 2015).

Andreas (2017), This study examines whether operating cash flow could detect the real activity manipulation and its effect on market performance. Further analysis reveals that the effect of real activities manipulation through operating activities cash flow on the market performances is different significantly. Complexity and construction projects go hand in hand. Even the most profitable company in the construction industry can collapse if cash flow management is not effective (Central Computer and Telecommunication Agency., 1993; Liu, Zayed, & Li, 2009). Miss Vaidehi P Nirmal, M This study of cash flow management and its various aspects such as cash flow analysis, cash flow forecasting and cash flow statement is performed. A questionnaire is prepared to identify the most affecting factors. A total 56 responses are collected from contractors and desired results are obtained and conclusions are made. The results of the questionnaire indicated that the majority of the contractors who encountered failures in their annual project contracts, attributable to poor cash flow management and forecasting, are those contractors who did not perform cash flow analysis prior to submitting bids for projects. The survey showed that in construction industry, material management plays an important role in cash flow management followed by procurement and inventory.

1.TYPES OF CASH FLOW

CASH FLOW FROM OPERATING ACTIVITIES:

Operating activities are the activities that comprise of the primary/main activities of an enterprise during an accounting period. For example, for a garment manufacturing company, operating activities include procurement of raw material, sale of garments, incurrence of manufacturing expenses, etc. These are the principal revenue generating activities of the enterprise. Profit before tax as presented in the income statement could be used as a starting point to calculate the cash flows from operating activities.

CASH FLOW FROM INVESTING ACTIVITIES:

Cash flow from investing activities includes the movement in cash flows owing to the purchase and sale of assets. It relates to purchase and sale of long-term assets or fixed assets such as machinery, furniture, land and building, etc.

CASH FLOW FROM FINANCING ACTIVITIES:

It includes financing activities related to long-term funds or capital of an enterprise. Financing activities are activities that result in changes in the size and composition of the owners' capital and borrowings of the enterprise. e.g., cash proceeds from issue of equity shares, debentures, raising long-term loans, repayment of bank loans, etc.

III.METHODOLOGY

This section introduces the research framework and methodology adopted to study the factors influencing the cash flow and the effects of inventory management on a cash flow. This project comprises of Literature survey, Collection of case studies, data collection from various construction companies, analyzing the data and evaluation the data by the simulation method. Especially, a methodology is a collection of methods, practices, processes, techniques, procedures and rules. In project management, methodologies are specific, strict and usually contain a series of steps and activities for each phase of the project's life cycle.

IV.DATA ANALYSIS

The primary data survey was based on the awareness of the major factors that affect the various sources of project inflow and outflow. The questionnaire was formulated for special categories of respondents, mainly the contractors. The questionnaire was based on the various

opinions stated by the contractors, on the questions posed and also highlighting other financial aspects of cash flow and its management. The questionnaire majorly focused on the acceptance of cash flow management in the construction sector. A set of 20 questions was prepared and desired results were obtained. The questions were such that would help us understand the mindset of the contractor n accepting cash flow analysis. It gave me an idea about the success of cash flow forecasting and its importance in a project.

After questionnaire survey various case studies about cash flow and its management were studied. Analyzing case studies from various companies can provide insights into effective case flow management strategies. By comparing cash flow strategies across each case studies, we can identify common themes and patterns, identification of best practices and common challenges. Through this we can evaluate effectiveness of each strategies and provide recommendations for construction companies to improve cash flow management.

V.QUESTIONNAIRE

This questionnaire is designed to identify the major factors affecting the cash flow in a construction industry. This study employs a structured questionnaire aimed at exploring cash flow and cash flow management practices within the construction industry. The initial section collects general demographic information, including the respondent's role, organization (optional), years of professional experience, and the primary types of construction projects undertaken, such as residential, commercial, infrastructure, or industrial. The subsequent section investigates the significance of cash flow management in construction projects and the extent to which organizations engage in practices such as cash flow forecasting, budget tracking, progress billing, and the use of financial management tools like cost control software and earned value management systems.

Respondents are asked to identify the personnel primarily responsible for managing project cash flows ranging from project managers and finance officers to quantity surveyors and site engineers and to specify the typical sources of project funding,

including internal financing, bank loans, client advances, or government grants. The questionnaire further explores the common challenges encountered in cash flow management, including delayed payments, cost overruns, inadequate financial planning, unforeseen site conditions, and inflation-related cost escalations. It also examines the frequency with which these issues lead to project delays or work stoppages. To assess current practices and potential improvements, respondents are encouraged to describe the strategies their organizations employ to enhance cash flow management and to provide recommendations for industry-wide improvements.

VI. CASE STUDIES

The case study method is a learning technique in which the student is faced a particular problem, the case. The case study facilitates the exploration of a real issue within a defined context, using a variety of data sources. In general terms, the case study analyses of a case study gives them a global and holistic vision of a real problem at an engineering field, allowing to develop and apply their knowledge on unit operations. This methodology allows students to develop and to enhance different skills, such as the capacity to propose and evaluate alternatives for the improvement of the problem considered, to work collaboratively, also their capacity of information management and synthesis of problems. The case study approach allows in depth, multi-faceted explorations of complex issues in their real-life settings. The value of the case study approach is well recognized in the fields of business, law and policy, engineering and every fields. Case studies are largely qualitative. They analyze and describe phenomena. While some data is included, a case analysis is not quantitative. A case study is an appropriate research design when you want to gain concrete, contextual, in-depth knowledge about a specific real-world subject. It allows you to explore the key characteristics, meanings, and implications of the case.

The steps of case study are,

Step 1: Select a case

Step 2 : Build a theoretical framework

Step 3: Collect your data

Step 4: Describe and analyze the case

VII.FINDINGS

Case Study Findings:

1. Infinite Builders: Implemented strategies such as strengthened invoicing and collection processes, favorable payment terms, and cash reserves, resulting in improved financial health and sustainable growth.
2. Defence Construction Enterprise: Implemented cash flow planning and proactive management of factors affecting cash flow, resulting in improved financial management.
3. Residential Development Project: Implemented active stakeholder management, procurement of additional working capital, and budgetary and financial control measures, resulting in successful project completion.
4. Shardlow India Ltd: Demonstrated sufficient impact of cash management on firm profitability, with increasing current assets and decreasing loans and funds.
5. Bindya Cargo: Highlighted the importance of financial risk management, prioritizing and identifying key financial risks, and implementing risk management strategies.

Questionnaire Survey Findings:

1. Importance of cash flow management: Respondents consider cash flow management important or very important in their projects.
2. Cash flow forecasting: Companies that prepare regular cash flow forecasts are better equipped to manage cash flow challenges.
3. Common challenges: Delay in client payments, cost overruns, and poor financial planning are common challenges faced by construction companies.
4. Strategies for improvement: Respondents suggest implementing strategies such as cash flow forecasting, budget tracking, and progress billing to improve cash flow management

VIII.RESULT

The study on cash flow management in the construction industry reveals that effective cash flow management is crucial for ensuring financial stability and sustainability. Through case studies and a questionnaire survey, the research highlights common challenges faced by construction companies, including delay in client payments, high material and labor costs, project delays, and poor financial planning. To overcome these challenges, companies

can implement strategies such as strengthened invoicing and collection processes, favorable payment terms, cash reserves, and enhanced project management practices. Cash flow forecasting is also identified as a critical tool for managing cash flow, enabling companies to anticipate and manage challenges more effectively. The study showcases successful case studies, including Infinite Builders, Defence Construction Enterprise, and a Residential Development Project, which demonstrate the positive impact of effective cash flow management on financial health and project completion. Additionally, companies like Shardlow India Ltd and Bindya Cargo emphasize the importance of cash management and financial risk management in achieving profitability and sustainability. The questionnaire survey further reinforces these findings, with respondents considering cash flow management important or very important in their projects and suggesting strategies such as cash flow forecasting, budget tracking, and progress billing to improve cash flow management. Overall, the study provides valuable insights into cash flow management practices, challenges, and solutions in the construction industry, highlighting the need for improved cash flow management practices to ensure sustainable growth and financial stability. By adopting effective cash flow management strategies, construction companies can better navigate the complexities of the industry and achieve long-term success.

IX.CONCLUSION

The cash flow is an important factor to be considered in a construction project. The proper cash flow management in all phases of work is important for the success of the project. It means in the end, the success or failure of the company, poor accounting, estimating that is lack of managerial experience and inadequate capital are the factors among others which can lead to company failure. Determining the working capital accurately helps contractors liquidate projects with ease and comfort. It is alarming to find this large number of contractors facing sizeable project failures in their annual contracts because of poor cash flow management. The results of the study indicate that the majority of the contractors who encounter failures in their annual project contracts, attributable to poor cash flow management and forecasting, are those contractors who do not perform cash flow analysis prior to submitting bids for projects.

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