Progress Payments in Public Procurement of Construction Works in Nepal

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Abstract **:** Cash is the lifeblood of construction projects. According to the Public Procurement Act 2007 of Nepal, contractors can receive 20% of the total contract amount as advance payment to start the work and progress payments during the work to continue. However, the claim of these cash requires certain obligations to be fulfilled. The challenging matter for the continuation of work is the utilization of such cash to be managed in the planned way. How contractors manage the cash in the construction project is a question these days since many construction projects have time and cost overrun in Nepal. To find the answer to this question interview and document analysis techniques have been used for data collection and analysis. The study has concluded that contractors have to develop the cash flow forecasting ability to manage the cash in the construction projects in the Nepalese context.

Index Terms: Progress Payments, Cash Flow Forecast, Advance Payments, Contractors, Time Overrun

I. INTRODUCTION

1.1 Progress Payments During Construction

The public procurement system is relatively new in Nepal which was begun after the Public Procurement Act (PPA) 2007 was enacted in 2007 and is undergoing various strengthening activities [1]. According to the Public Procurement Act 2007 of Nepal, the contractor is expected to submit progress claims throughout the project. These claims are made by contractors to maintain the cash balance to pay to subcontractors, suppliers, and vendors. In accordance with the contract, the engineer assesses and ensures these claims on the basis of work undertaken, and then issues a progress certificate or Interim Payment Certificate (IPC) for further action for progress payments. Article 48 of the general condition of the contract of contractual document of the Public Procurement Management Office (PPMO) of Nepal has provisioned that the contractor needs to submit the updated activity schedule with an updated cash flow forecast which is the basis of budgeting the project [2]. The cash flow forecast is used for the provision of expected monthly progress payments. But actual payments may vary the amount of work completed. Most of the literature has described the process for progress payments as follows. Firstly, the contractor submits a progress claim to the engineer and the engineer assesses the document, determines the correctness of the claim, and request for correction if needed. Secondly, the engineer issues a progress payment certificate to the contractor after the examination of the document. Lastly, the contractor receives the progress payments on the basis of the certificate in Nepal.

Cash is the lifeblood of construction projects because the fund flow maintains the uninterrupted condition of works. [3] describe that cash is an important resource for day-to-day activities. Proper cash management is essential to complete the construction project successfully. [4] have noted that a profitable construction company can fail because of poor cash flow. The research conducted by [5] revealed a critical factor of delay of a project is caused by poor cash flow management which can be occurred by late payment, insufficient financial resources, and unstable financial market. Late payment may cause the delay of the parties such as client, contractor, engineers and other stakeholders in construction. This may lead to a serious cash-flow problem in supply chain management. Therefore, the construction contractor needs to adjust the cash flow forecast schedule with the work plan to match uncertain future scenarios as early as possible [6]. A poor cash flow management can be caused by too many projects of the contractor at the same time, the poor financial condition of the contractor, unable contractor to the project, poor regular cash flow forecasting, unable to manage credit, and capital lock-up [5].

The contribution of construction industries to GDP is 7.6% in FY 2017/18 [7] and 7.8% in FY 2018/19 [8] in Nepal. There are many causes of delays of the construction projects in Nepal such as client-related factors, contractor related factors, consultant related factors, material related factors, labor and equipment-related factors, financial related factors, contract-related factor, and external factors. Therefore, construction industries are the riskiest, dynamic and challenging business [5]. Special caution for cash management must be taken in accordance with progress, payment, financial status, updated planning, change orders, and other related issues by the contractor to reduce such risks to manage the cash for payments.

As [9] suggest that delayed payment creates an operational risk which leads to project delays because of stoppages to material delivery and low labor productivity. Contractors need progress or interim payments from the client to maintain their working capital [10]. This study is carried out to analyze the capability of the contractors to continue the work in the condition of late payment or even in the non-payment of the progress payment even though [11] reports that most of the contractor's financial capabilities have not been evaluated at the time of selection of bidders. This study searches the answer to the questions for what supply chain effect is observed in the construction sector for the smooth administration of the contract? What delays have been experienced in the projects due to late payment?

1.2 Research Objective

The main objective of this study is to reveal and describe the practices that construction companies in Nepal claim progress payments to maintain cash flow meet up continuation of the project.

II. Literature Review

Delay in construction work leads to conflict between the owners and contractors because it increases the cost of the project and ultimately it leads the termination of contract [12]. One of the causes of delay is financially incapable to continue the work. If there is a halt in the flow of the cash, then there can be a delay of work even failure due to lack of liquidity [13]. In such condition, contractors normally request for progress payment or make great use of the cash generated through operations to continue the projects.

The construction companies build up the portfolio of many individual projects. This is how the layer of cash flow over one another to generate organizational cash flow is maintained. The cash generated from a project may be used to continue another project. Therefore, [13] points out the important aspect that construction companies have to engage in cash flow management strategically. Cash flow management guides the use of cash against a set baseline. Cash flow forecasting is the tool to set a baseline in the early stages of a project [14]. A major method of financial planning is cash flow forecasting in the construction project. Cash flow forecasting enables us to know financial requirements at a different time [15]. But according to [16] most of the construction companies develop financial projections on the basis of estimation and assumptions. Therefore, cash flow forecasting is challenging and inexact since potential problems may be uncertain [17]. According to [1] that budget allocation is based on estimate or ad hoc ground rather than real need in Nepal. He further adds that budget reallocation to the projects is made on the basis of experience from already completed projects. In this condition, how accurate, flexible, and comprehensive cash flow forecasting has to be taken into consideration on the assumption of time delay, cost overrun, cost variation and earned value between planned and actual cash flow [18]. Because cash flow forecasting is important benchmarks for both clients and contractors to identify early warning of cost overrun and project delay [19]. Therefore, [20] suggests in developing the cash flow forecast that possible risk factors have to be predicted early which affects cash flow profiles.

III. Methodology

To collect data necessary for this study, document analysis, face-to-face interviews and the Delphi method have been used. First of all, the relevant literature was studied. The literature review opened the way forward to select the research scope and develop the needed tools for data collection. For collecting necessary data, a questionnaire was developed for the interview.

The structured questionnaire was asked to project manager of the contractors located in Bagmati Province – mid-region – of Nepal. The contractors classified into different specialties, currently working for school building construction under the Emergency School Reconstruction Project of the government of Nepal implemented by Central Level Project Implementation Unit (CLPIU), based on qualification criteria for bidding on government projects were studied. 46 contractors were studied in this research. I used a statistical formula to determine the average. The data collected from the interview and document analysis were calculated using the arithmetic formula and comparison of data was made by observation.

Contractors were categorized according to the performance on the basis of time overrun. Category of the contractors were (i) 12 contractors required additional 100% to 153% time to complete the work, (ii) 10 contractors required additional 50% to 99% time to complete the work, (iii) 8 contractors required additional less than 50% time to complete the work, and (iv) 16 contractors required no additional time to complete the work.

IV. Data Analysis and Results

4.1 The Capability of the Contractor

According to bidding forms of PPMO of Nepal, contractors have to show the capability of overall cash flow requirements to complete the work commitments. They have to fill up designated form given in Section 4 of Bidding Forms to demonstrate access to, or availability of, financial resources such as liquid assets, unencumbered real assets, lines of credit, and other financial means, other than any contractual advance payments [21] (pp 65);[3].

4.2 Advance Payment

According to the contract for the work in CLPIU, 20% of the contractual amount has to be given as advance payment to the contractors against the unconditional bank guarantee from Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal.in a form acceptable to the Employer in amounts equal to the advance payment [2]. According to sub-rule (2) of rule 113 of [22], once the procurement contract is concluded, the Public Entity may give an earlier advance payment of a maximum of 20% of the contract amount to the contractor to support for the cash flow management in the work.

Table 1. Contractors taking advance payment

Total contractors	46	100%
Contractors taking half of the advance payment	4	9%
Contractors taking full advance payment	42	91%

Source: CLPIU 2019

As per

Table *1*, 9% of the contractors wished to receive half of advance payment provision They received a 10% advance payment. But 91% of contractors received full advance payment according to the provision. The question asked regarding the contribution of a 20% advance payment to the project operation was answered by all project managers. They have replied that almost 30% to 40% of work is supported by advance payment and the cash flow management of the contractor. While observing the payment document, 38% of contractors used advance payment timely and the remaining 62% of contractors didn't use the advance payment timely.

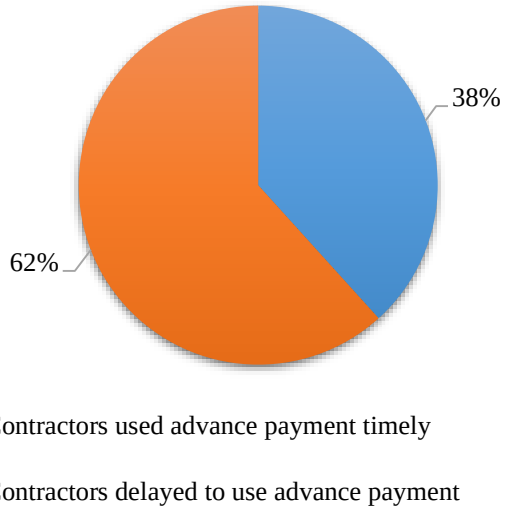


Fig. 1. Utilization of advance payment by contractors
Source: (CLPIU, 2019)

The delay observed to use full advance payment is 3.44 months. All project managers opined that the delay in the utilization of advance payment was a lack of knowledge of cash management. They added that contractors use the cash received as advance payment from the client in another project which leads to the delay of work.

4.3 Status of Progress Payment

1) Components of progress/interim payments: The engineer should visit and walk around the site for the valuation of the work. He has to discuss and agree on the interim valuations with contractor's engineers for the interim certificate recommendations. The following components are included in the valuation document for progress payments in Nepal.

a) Preliminaries: These claims represent site overheads and temporary costs such as site staff, security, hoarding, temporary roads, site accommodation, insurance, plant, site cleaning and so on.

b) Measured work: It involves valuing the completed works on site.

c) Value of variations/change orders: According to GCC 46 of [21], a written or verbal instruction issued by contract administrator to the contractor to carry out additional or substituted work or to omit work.

d) Value of contractual claims or compensation event: According to GCC 50 of [21], additional payment for loss and or expense suffered due to direct result of any delay or disruption to the works caused by the employer or the design consultants or unexpected circumstances.

e) Labor, material, and equipment price fluctuations claims: According to GCC 53 of [21], increase or decrease in prices during the contract period recoverable in the case of increased price and return or deduct the contractual amount in the case of decreased price.

f) Value-added tax (VAT): Value added tax act 1996 of Nepal has provisioned to pay 13% to the construction work. According to GCC 83 of [21], the contractor needs to pay VAT.

2) Cash flow forecast: All contractors didn't prepare any cash flow forecast separate to the work schedule in Nepal. The project manager of contractors replied that contractors use the work schedule as a cash flow forecast baseline. Contractors who have prepared the work schedule can be compared with the progress payment made by the client. The work schedule also has not been made with the consultation with concerned and considering all factors as per the condition of the site. It is merely an assumption of an Engineer. The below reveals the status of time overrun, progress payments, and unclaimed progress payments categorically.

Table 2. Status of time overrun, progress payments, and WIP or unclaimed value of work

Particulars	Delayed by	Average Numbers of Progress Payments Claim	Average Percentage of Value of Progress Payment Claim	Average Percentage of Value of Work Unclaimed/ WIP
The contractor completed worked in the contractual period	No delay	8	12%	10%
Contractors delayed from less than an additional 50% (half) of the total contractual period	Less than 50%	7	14%	10%
Contractors delayed from additional 50% (half) to 99% (less than double) of total contractual period	50%-99%	7	14%	9%
Contractors delayed from 100% (double) to 153% (double and half) of total contractual period	100%-153%	10	9%	10%

Source: CLPIU 2020

a) Contractors delayed from an additional 100% (double) to 153% (double and half) of the total contractual period: I have assumed the worst case of the project to complete that has time overrun by an additional 100% to 153% of the contractual period. The delay is the time overrun or more time than the scheduled completion date [23]. The average percentage of the value of unclaimed of progress payments over physical progress is 7% to 15%. These contractors have claimed the progress payments 12 times at the average rate of 7% to 8%. Similarly, a contractor delayed by 140% of the project period has claimed progress payments 9/10 times at the average rate of 8% to 11%. The average percentage of the value of work unclaimed or Work in Progress (WIP) is 8% to 15%. The good performer in this category of work delayed by an additional 113% also has claimed payments 8/10 times at the average rate of 8% to 11%. The average percentage of the value of work unclaimed or WIP is 6% to 9%. It results that the average rate of progress payments to such contractors in Nepal is 9%, there can be 10 interim/progress payments on average and the average work-in-progress is 10%.

b) Contractors delayed from an additional 50% (half) to 99% (less than double) of the total contractual period: An additional 50% (half) to 99% time overrun to complete the project is normally observed in Nepal. According to contractors Project Manager, the cause of delay can be transportation problems, unavailability of labor, material, equipment, cash flow problem, social conflict, and specific site problem, etc. In the works which are delayed by additional 50% to 99% of the contract period, contractors normally claim 14% of progress payments 7 times on average while the unclaimed value of work or work-in-progress status is 9%.

c) Contractors delayed less than an additional 50% (half) of the total contractual period: An additional period of less than 50% (half) to complete the project in Nepal by contractors is normal. Many types of reasonable problems may cause the delay of projects in Nepal. In the works which are delayed by less than additional 50% of the contract period, contractors normally claim 14% of progress payments 7 times on average while the unclaimed value of work or work-in-progress status is 10%.

d) Contractors working within the contractual period: A contractor who completed the project in a contract period claimed progress payments 12% on average 8 times on average while the unclaimed value of work or work-in-progress status is 10%. According to the GCC 56.1 of [21], the contractor shall be paid a bonus for the work completed earlier than the intended completion date.

4.4 Payment of Progress Payments Claim

After the submission of the claim of the progress payment, the contractor has to be paid within 30 days of submission according to GCC 48.2 and 49.1 of [21]. GCC 49.1 of the [21] further states that the delay of payment without any reason, the interest has to be paid by the employer. The status of progress payments is given in Table 3. Client and consultant have spent more than a stipulated time maximum 141 days 8 times for the contractor who delayed by 153% of project duration in the contract document. The maximum delay days for payments are 141 days and the minimum is 31 days. As per the interview with engineers involved in the progress payments, the claim document delayed for payments had to correct errors more than 4 times. The employer has delayed progress payments due to the correction of errors which is 11%. This percentage reveals that the delay in progress payments doesn't affect the delay of the work.

Table 3. The scenario of delayed progress payments

Number of Total Progress Payments	351	100%
Number of Delayed Progress Payments	38	11%
Number of Timely Progress Payments	313	89%

Source: CLPIU 2020

4.5 Does Delay of Payment of Progress Payments Cause Delay of Work?

According to [5], one of the main causes of delays in construction work is a financial problem. Therefore, financial management is needed for construction companies since [3]; [6] expresses that the unavailability of cash has been a major cause of insolvency of many contractors even if they have a good financial statement. [24] points out that many contractors are using the advance payment to buy land and houses rather than doing project work in Nepal. He further adds that contractors claim the cause of the failure or slow progress happens due to late progress payments. As per [25], among a total of fifty-seven factors causing project delays, inaccurate time estimate; monthly payment difficulties; changes orders; inaccurate cost estimate; poor site management and supervision; inadequate modern equipment; shortage of construction materials; incompetent project team; improper project planning and scheduling; and contractor's financial difficulties were asked to project managers of contractor, client, and consultant. The answer given by research participants reveals that 96% of research participants and 61% of research participants agreed for the contractor's financial difficulties and monthly payment difficulties respectively contribute the delay in works in the construction. All other factors are caused due to poor cash flow managemena t of contractors. Contractor's financial difficulties led to the question its regarding the cause. The cause of financial difficulties was contributed by late payment as per 17%, poor cash flow management as per 45%, financial market instability as per 6% and insufficient financial resources as per 32% of research participants. Most of the research participants pointed out that the absence of cash flow plan is mismanagement of cash.

V. Summary and Conclusion

The causes of construction project delay can be country-specific [26]**.** [4] emphasizes that the construction projects are usually uncertain and unique. Time overruns on construction projects pose great challenges to developing countries [26]. The construction industries in Nepal face the challenges of financial insufficiency because of cash flow estimation during the project implementation which has led to time and cost overrun. The cash flow forecast made on the basis of the work schedule is not really applicable to actual cash flow. Such cash flow cannot fulfill the obligations of various transactions of the projects. Therefore, the predetermined set payments have to be decided prior to a cash flow forecast by contractors in Nepal. The cash flow management can guide the contractors to make the claim of progress payments on a scheduled basis and utilize the advance payment in the right way.

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