

**STUDY ON PAYMENT DELAYS IN SMALL SCALE  
CONSTRUCTION PROJECTS IN SRI LANKA  
(BASED ON CASE STUDIES)**

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## ABSTRACT

The construction industry plays a very important role in generating wealth and improving the quality of life of the people. It is evident from previous research that there is a close relationship between construction and the national economy of a country. Hence, it is vital to ensure that construction projects are effectively and efficiently implemented. Problems of cash flow due to issues on payment delays to contractors can severely affect the implementation of construction projects. This is critical within the small scale projects in the industry. There are several instances where small companies have been closed due to the payment delays in their projects. According to related literature and the past experience of the industry, it is clear that the Payment Delay to contractors could cause severe impact on the small scale construction projects in construction industry.

The aim of this research work is to study about impacts of payment delays to small scale construction contractors under different scenarios in Sri Lankan context and based on the study, identifying of main causes affecting payment delays and ultimately propose relevant improvements to overcome those payment delays. Research was carried out based on case studies.

Research reveals the payment delays to small scale contractors are significantly high from the side of Clients compared to the Contractors. Main causes are “Due to prevailing internal system of the Client (No of Layers /officers passing the bill) , Cash problems of the client (Non availability of Funds), Additional works requested by client after submission of Final Bill , Non-adherence of correct formats by Contractor, Improper submissions by Contractor(less documentation)”.

There is a high impact on payment delays due to some improper practices of Client i.e. “Lack of inter relationship between internal units and officials, Lack of follow up and guidance by Top Level officials, No fear in contravening conditions of contract and Handling too much work at a time”. There is a high impact on payment delays due to some improper practices of Contractor too i.e. “Lack of Courage & Confidence to complain to relevant parties/Authorities about payment delays and Lack of Unity among contractors”. Clients and Contractors are recommended to follow the proposed improvements under this study to mitigate the payment delays to contractors in small scale level.

***Keywords : Construction Industry, Small Scale, Payment Delay, High Impact, improvements***

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## **Abbreviations**

<b>ICTAD</b>	<b>I</b> nstitution for <b>C</b> onstruction <b>T</b> raining and <b>D</b> evelopment
<b>SBD</b>	<b>S</b> tandard <b>B</b> idding <b>D</b> ocument
<b>NCASL</b>	<b>N</b> ational <b>C</b> onstruction <b>A</b> ssociation of <b>S</b> ri <b>L</b> anka
<b>CIDA</b>	<b>C</b> onstruction <b>I</b> ndustry <b>D</b> evelopment <b>A</b> uthority
<b>LKR</b>	<b>S</b> ri <b>L</b> anka <b>C</b> urrency
<b>GDP</b>	<b>G</b> ross <b>D</b> omestic <b>P</b> roduct

# **CHAPTER 1**

## **1. INTRODUCTION**

Payment delays to Construction Contractors in Sri Lankan industry are a vital issue in both Government and Non Government sector. It tends major causes such as delays on project completion, financial losses for contractor and client, etc. Hence this problem is needed to be studied in depth, to overcome the delays and continue the process of construction without hindrance.

### **1.1 Background**

Payment is considered as the lifeblood of the construction industry because constructions often involve very large capital outlay and take a considerable time to complete (Naseem, 2005). Payment delay is defined as a failure of a paymaster to pay within the period of honoring of certificates as provided in the contract (Harris and Mccaffer, 2003). Construction works involve huge amounts of money and most of the contractors find it very difficult to bear the heavy daily construction expenses when the payments are delayed. Work progress can be delayed due to the late payments from the clients because there is inadequate cash flow to support construction expenses especially for those contractors who are not financially sound (Sambasivan and soon, 2006).

The practice of well-organized timely payments in construction projects is one of the main factors that lead to a success of a project. The importance of payment is further amplified by the fact that the construction industry relatively involves long durations to complete projects, large amounts of money to spend and the wide use of credit payment term rather than payment on delivery in purchasing of materials (Ameer, 2005). The Construction law expert Shy Jacson of Pinsent Masons, the law firm behind OutLaw.Com (Out-Law is part of Pinsent Masons, an international law firm) said that the issues caused by late payments were identified as a major problem in the

construction industry during Sir Michael Latham's review of the construction industry in the 1990s. The Latham Report led to the Housing Grants, Construction and Regeneration Act (Construction Act) in 1996, which had several aims including improving cash flow in the construction industry. According to (Shaba, 2008), the most consultants and contractors stated that the projects suffered from payment delay problems from the owner. Further says, Payment delay from owner to contractor leads to delay of contractors' performance and causes time performance problems. This may also lead to disputes between owner and contractor. All of that will affect the overall performance of a project which has been executed.

The survey by credit reference agency Graydon, on the late payment of trade invoices, found that the companies in the construction sector were worst affected by late payments. 51% of the 500 small businesses surveyed across various sectors said that late payments were "a problem" for their businesses, while 56% of those respondents not paid on time were forced to pay their own suppliers late in turn. Of those firms surveyed in the construction industry, 53% saw late payments as a "significant problem" compared with around 20% of those in other sectors including retailers, distributors and restaurant owners. 31% of construction companies said that they had "almost gone out of business" as a result of late payments, compared with 19% of manufacturers and 5% of retailers (Out-Law.com, 2012). Out-Law.com has also reported on 30th April 2012, that almost one third of small construction companies say that they have come close to being put out of business due to liquidity problems caused by late payments, according to new research.

According to the reports issued by the National Construction Association of Sri Lanka (Southern Branch) in 2008, it is said that the issue of late payment has been considered one of the most important factors to all contractors and to a lesser extent to those who expect speedy completion of a contract. It further states that late payments have been considered as one of the main factors which have led some contractors to abandon the contract. It is generally accepted that delayed payment would cause severe cash flow

problems especially to the contractor and this would have a devastating knock-on effect down the contractual payment chain. The Construction industry in Sri Lanka has a poor record with respect to completion projects on time and conflicts are common in extension of time claims. Due to the complexity of Civil Engineering contracts and the tendencies for delays to occur, completion of projects on time is somewhat unusual in the field of construction in Sri Lanka and has a very poor record in completion of projects on time. Lanka Business Online has reported on Aug 12, 2010, some contractors have been forced to dispose of their company and personal assets purely because of negative cash flows. It further reported that Priyantha Perera, chairman of the National Construction Association of Sri Lanka has stated that the inadequate working capital is the biggest problem faced by the construction industry. This was because of “undue and prolonged delays” in payment and approvals of engineers.

The construction industry plays a very important role in generating wealth and improving the quality of life of the people through the provision of social and economic infrastructure like schools, hospital, houses, roads, airports, ports etc. It is linked to the whole spectrum of the economy and has a multiplier effect that enables other industries to prosper alongside. Hence, it is vital to ensure that construction projects are effectively and efficiently implemented. Problems of cash flow due to issues on late, under and non-payment can severely affect the implementation of construction projects and thus the provision of the nation’s infrastructure and built environment.

## **1.2 Research Problem**

According to the literature and the past experience in the industry, it is clear that the late payment to contractor could cause severe impact on the small scale construction projects and the constructors in Sri Lanka as the payment has been said to be the key feeder of the construction domain. Hence it is vital to carry out a research study to identify the payment delays along with their scenarios and extract the significant factors that are affecting to those delays.

### 1.3 Objectives

The main objectives are as follows;

1. To assess the impacts of payment delays to Small Scale Construction Contractors<sup>1</sup> in Sri Lankan Construction Industry.
2. To identify the causes for payment delays to Small Scale Construction Contractors<sup>1</sup>.
3. To propose improvements to mitigate payment delays in Small Scale Construction Projects<sup>2</sup>.

### 1.4 Scope & Limitations

In this study the main focus is find out the causes for payment delays to contractors of small scale construction projects<sup>2</sup> and ultimately propose methodologies to overcome those payment delays and also propose improvements to mitigate delays. According to the literature, significant numbers of research studies have been carried out based on the questionnaire surveys. Hence here we carry out the research based on the case studies of selected ten completed projects. In this study we have selected small scale construction projects<sup>2</sup> which carried out by the Sarvo-Tech (Pvt) Ltd. which is a Social Enterprise of Sarvodaya Movement<sup>3</sup> having the ICTAD/CIDA<sup>4</sup> Registration of C7<sup>5</sup>. The selected projects are valued less than ten Million Sri Lankan Rupees.

Accordingly, this study is applicable for Measure and Pay type Small Scale Construction Projects in Sri Lankan context and results are useful for CIDA/ICTAD registered Small Scale Construction Contractors in Private Sector. The study is also useful for clients within government institutions, Universities, Non Government organizations and High commissions who handle small scale construction projects in Sri Lankan context.

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- <sup>1</sup>Refer Appendix B; Small Scale Construction Contractors
  - <sup>2</sup>Refer Appendix B; Small Scale Construction Projects
  - <sup>3</sup>Refer Appendix A; The Sri Lankas largest peoples organization
  - <sup>4,5</sup>Refer Appendix B; ICTAD/CIDA; C7

## **1.5 Methodology**

Several completed construction projects have been reviewed carefully as case stories to achieve the objectives of the research.

- A detail literature review was conducted to study previous related research carried out by local and international researchers under the Payment delays to contractors and summarized under the Chapter of Literature review.
- For the data collection ten small scale completed construction projects have been considered. From those projects, fifty four (54) payments were considered.
- The data was statistically analyzed in order to comply with the Objectives.

## **1.6 Outline of the Thesis**

Following this introduction chapter this report is organized as follows:

- Chapter 2 Literature Review  
In this chapter it has widely discussed about the background of payment delays, whys and wherefores, according to the available literature.
- Chapter 03 Design & Methodology  
Chapter 3 discussed the methodology used in this study.
- Chapter 04 Analysis and Discussion  
This chapter includes calculations and the analysis of the data. Results of the analyzed data are statistically graphed here.
- Chapter 05 Conclusions and Recommendations  
Chapter 05 discussed the conclusion from the research work as well as the recommended future works.



## **CHAPTER 2**

### **2. LITERATURE REVIEW**

A comprehensive Literature Survey was carried out to cover the current knowledge in the subject area, by using research papers, industrial reports, research journals, relevant books, magazines, newspapers and electronic media. Especially identifying the issues which are not well addressed in the construction payment related domain was the main motive of this section. The recommendations made by previous research works are also discussed in this chapter. Whether it is either a late payment or not being paid in the guaranteed amounts, it all literally means big problems to the contractors since in both cases it will ultimately affect the company cash flow. In some cases this has been the main reason for some small scale contractors to fall off from the business picture. Cash flow is critical to the construction industry as in any other field. The continuous flourishing cash flow is an essential element in delivering a successful project. Even Lord Denning famously said that cash flow is the life-blood of the construction industry.

In the construction industry, payment is the sum of money paid to contractors, consultants and suppliers after their works, service or materials has been successfully realized or accepted. Payments are so important to these parties that it is a constant headache for them as problems in construction would always be revolving around the poor payment practices. In cases like this, contractors would be directly affected as they are the one who receive and spend the most amounts of monetary sources in a project done. A regular disbursement of interim payment is a critical point for a contractor to help them survive in the construction field. According to Davenport 2010, the Construction Industry Development Board's Construction Industry Indicators (CII) had conducted a survey in Cape Town 2009. The survey indicates that only 42% of contractors were paid on time and 58% of payments to contractor were made 30days or more after invoicing. Payments delays in 2009 show quite a significant deterioration compared with the payment delays in 2007 and 2008.

## **2.1 Construction Industry and the Economy**

The construction industry plays an important role in any country's development process. The industry establishes buildings and infrastructure works required for social economic development which contribute to the overall economic growth. The success of economic development will further lead to an increase in disposal incomes, generating demand for additional construction activities. Therefore, it is important to make sure the economy growth of construction industry is moving smoothly. It is evident from previous research that there is a close relationship between construction and the national economy of a country.

In Sri Lanka, construction contributes around 7-9% to GDP during the last five decades except two extreme contributions of 1% and 6% in 1956 and 1965 respectively. The Industry Report in Sri Lanka in 2011 says that The Sri Lankan construction industry is expected to grow at a rapid pace in the post-conflict scenario. The end of the islands ethnic conflict in 2009 has revived the economic activity and resulted in a strong focus on infrastructure development. The country's construction industry contributes to about 70 percent of the Gross Domestic Fixed Capital Formation and about 8 percent to the country's GDP, with growth since 2003. The industry ranks seventh among the 13 major sectors contributing to the country's GDP. In 2010, Sri Lankas construction industry recorded a growth rate of 9.3 per cent as compared to 5.6 per cent in 2009. Its contribution to the GDP was about LKR 423.4 billion, at constant prices. Greater construction activity was also reflected in 12 per cent annual growth of the building material industry. GDP from Construction in Sri Lanka increased to 95189 LKR Million in the fourth quarter of 2015 from 89090 LKR Million in the third quarter of 2015 as shown in Figure 2.1. GDP From Construction in Sri Lanka averaged 47012.86 LKR Million from 2002 until 2015, reaching an all-time high of 95189 LKR Million in the fourth quarter of 2015 and a record low of 23794 LKR Million in the second quarter of 2002. GDP from Construction in Sri Lanka is reported by the Department of Census and Statistics - Sri Lanka is shown in Figure 2.1.



Figure 2.1: GDP from Construction in Sri Lanka

## 2.2 Defining Delays in Construction Industry

In construction, delay could be defined as the time overrun either beyond completion date specified in a contract, or beyond the date that the parties agreed upon for delivery of a project. A Delay in payment means there is a delays in progress compared to the baseline schedule (Pitcher, 2010). In construction, the word delay refers to something happening at a later time than planned, expected, specified in a contract or beyond the date that the parties agreed upon for the delivery of a project (Pickavance, 2005). (Lo, Fung and Tung, 2006) define delay as the slowing down of work without stopping construction entirely and that can lead to time overrun either beyond the contract date or beyond the date that the parties have agreed upon for the delivery of the project.

(Syed et al., 2002) classify delays into non-excusable delays, excusable non-compensable delays, excusable compensable delays and concurrent delays. Non excusable delays are delays, which the contractor either causes or assumes the risk for. Excusable non-compensable delays are delays caused by factors that are not foreseeable, beyond the contractor's reasonable control and not attributable to the contractors fault or negligence. Compensable excusable delays these are compensable delays are excusable delays, suspensions, or interruptions to all or part of the work caused by an act or failure to act by the owner resulting from owner's breach of an obligation, stated or implied, in

the contract. Concurrent delays occur when both owner and the contractor are responsible for the delay.

### **2.3 Common Construction Delays**

The most common causes of construction delays are;

- Client Driven Delays: Possible changes to initial design, unforeseen financial trouble, slow to make decisions, Unclear about their ultimate goals and desires.
- Contractor Delays Overbooked on other jobs: Poor management skills, Poor communication, Shortfall in number of subcontractors.
- External Consultant Delays: Architect, engineer or other consultant, Timely delivery of project information, Build-ability of design, Difficulty in communication, Priority on construction time, Priority to other projects.
- External Factors: Weather, Restrictive regulations, Public works delays (water, gas, sewer hook-ups, etc.), Bank influence.
- Project Conditions: Function of end use (office, residential, etc) and the additional restrictions that come with Complexity, Location, Access, Power availability.

### **2.4 Concurrent Delays in Construction Work**

Concurrent delay is an issue that arises on most construction projects. Put simply, the issue arises where a project has not been completed on time because of two or more delaying events that operate at the same time one of the delaying events is the responsibility of the project owner and the other is the responsibility of the contractor. For example, an owner instructs a contractor to undertake additional work via a change order. The parties acknowledge that completion of the project will be delayed because of the extra work. However, at the time of carrying out the additional work, the contractor has deliberately reduced its labor resources for reasons unrelated to the variation but, in the event; compound the delay effect of the variation. The delay caused by the additional work and the insufficient resources run concurrently and delay completion of the project by one month. “Time is money” is a settled statement in the construction industry, which

drives and motivates every person engaged in an industry. The financial damages caused by the project delays are generally substantial and ascertaining apposite legal remedy to effectively compensate for delays caused in projects is a vital aspect. In the recent years, there have been frequent debates in the construction industry with regard to the issues and problems involved in the concurrent delays. The issue involved in such delay is to determine the contractors entitlement to extension of time as well as loss suffered from such delay caused by the owner default; and the owner recovery of its actual delay or damages where the contractor fails to complete its given work within stipulated period, due to the contractors responsible delay that is concurrent to the owner caused delay (Singh & Associates, 2014).

Delays can be categorized under following two heads:

- Excusable delay where the claimant is entitled to time extension or compensation, or both under the terms of contract. It is further divided into compensable or non-compensable delays. When an excusable delay is compensable, a party can claim time extension as well as compensation delay caused, and where the excusable delay is non-compensable, in such case the party can only claim for time extension but not compensation (Singh & Associates, 2014).
- Non-Excusable delay- where a party bears the risk of cost consequences including the liability to pay damages for itself but possibly for the other parties as well (Singh & Associates, 2014).

## **2.5 Construction Payments and Delays in Payments**

One contributing reason for payment delays was the contractors, tracking and his accounting system and the manual entry of data into this. The subcontractor would issue reminders for any outstanding payments. The Payment condition patterns are seen to differ between the public sector and the private sector, the payments in time are said to be a key element of a contractors profitability performance, the impact on specialist contractors of payment delay, contractors were dissatisfied with the time lag to receiving

payment, contractor non-payment as a cause of disputes escalating (Carmichael and Balatbat, 2010).

The result found that technical and inspection category was ranked as the highest category in causing the payment delay to main contractors. The results of the survey also indicated that owner financial problems, delay in work approval, major accidents, inaccurate bill of quantities and substandard workmanship were common factors in causing delay payment to main contractor. The evaluation of results showed that main contractors faced moderately several level from delay in payment in building construction projects. Construction delay can be observed by several indication factors. One significant factor is owner's performance in making payment to their creditors. In other words, the prolong time required for the procurement and payment is a strong indicator that company is in financial difficulties (Ayudhya, 2012).

Late payment of invoices is a problem for most suppliers of goods and services. In tough economic times the problem gets worse as cash retention becomes a greater priority. It is frequently the largest and most powerful client groups who are the worst culprits. In the construction industry squeezing sub-contractors and suppliers is almost "accepted practice. A survey of 250 small construction companies in November 2012 found that 97% felt unfairly treated by main contractors, and just 5% of all work was paid for within 30 days. However all suppliers of services have statutory rights as well as those provided by contract (Designing Buildings Wiki, 2014).

Most construction contracts contain a provision allowing you to claim interest on late payment, but some do not. If your contract does not provide for interest, you can usually claim it anyway and at a high rate under the Late Payment of Commercial Debts (Interest) Act 1998. All you need to do is show that the employer has failed to pay sums due to you for a certain period of time and that your contract doesn't contain any substantial remedy for late payment. The rate of interest recoverable can be up to 8% above base rate (Turner, 2015).

## **2.6 The Effect of Payment Delay on Construction Industry**

Delay was generally acknowledged as the most common, costly, complex and risky problem encountered in construction project. Construction project could be susceptible to considerable pressure on the time delay. Such pressure environments lead to extension of time and cost. Delays in construction might be caused by one or a combination of several reasons. It might start with a simple reason and lead to a substantial set of interrelated complex disputes in contract agreement. Most of the typical delays were unrealistic contract duration and cost, differing site conditions, change orders, delays, impact and ripple effects of delays, evaluation the quality and quantity of works, owner furnished items, difference in the interpretation of plans and specifications, unfulfilled duties, acceleration, inefficiency and disruption (Khalil and Al-Ghafly, 1999).

The effects of payment delay according to contractors create cash flow problems, create stress on contractors creates financial hardship, creates negative chain effect on other parties, results in delay in completion of projects, creates negative social impacts, leads to abandonment of projects, results in formal dispute resolution (litigation / arbitration), leads to bankruptcy or liquidation (Danuri et al., 2003). Lip (Lip, 2003) concluded that during the years, with the diminished volume of construction work, contractors are reeling under relentless pressure to tender with little or non-existent margins or as most aptly called suicide bids just to sustain the flow of work orders. Payment to contractors or lack of it is a common cause of disputes in the construction industry. Timeliness of payments affects many contractors, for whom receiving payment delay from their owners is a cause of friction between the two parties.

Delays in interim payments and/or release of retention sums by project owners affect the cash flow of contractors and which in turn affects other project participants down the supply chain. These practices often results in the insolvency of construction businesses operating at the lower end of the supply chain (Ye and Rahman, 2010). Other studies suggest that failure to pay for completed works, delays in payment by agencies to

contractors; improper financial and payment arrangements invariably result in project delays (Alaghbari, Kadir and Salim, 2007).

Very often payment delays which result in disputes drive construction parties to suspend and terminate projects. The construction industry is notorious for its high rate of liquidation and insolvencies. At a larger scale, payment delays drive down the productivity of the industry. For example the stoppage of material delivery to site due to non-payment to suppliers and late issuance of progress payments to main contractors are the top most out of fifty factors that contribute to labour productivity (Kadir et al., 2005).

## **2.7 Reasons for the Payment Delay in Construction Industry**

According to the report by National Construction Association of Sri Lanka (2008), they have classified the payment delay causes as follows:

- Late payments result from lack of capacity, of the entire team, from the borrowers/employers/engineers to manager. It will correspondingly affect to the project at its all stages as it added additional times for execution, planning as well as in all preparation phases.
- Commencing work to suit the needs of politicians haphazardly and later finding it difficult to obtain the necessary funds.
- Variation and extra works payment is paid only with the final payment of the contract. This practice is a limitation to the progress of the work.
- The check and balance system, which is at core of the governments to manage their departments by limiting the consequences of injustice and incompetence.
- Contractors for their part favor more balanced contracts which could help them to resist blackmails and to check the spreading of irresponsible incompetence.

(Ayudhya, 2012) had classified four main categories which were administration, financial, technical and inspection and other common and identified twenty-four causes of payment delay factors. The result showed that main contractors faced moderately severe impact from four main categories of delaying in payment. All the three groups of



respondents generally agreed that the top five causes of delay in payment factors arranged in descending order of severity were owner financial problems, delay in work approval, major accidents, inaccurate bill of quantities and substandard workmanship. The study of (Ye and Rahman, 2010) found that respondents have highest ranked five significant variables out of a total of forty-one variables which can caused the payment delay problems: 1. Cash flow problems due to deficiencies in clients management capacity; 2. Clients ineffective utilization of funds; 3. Scarcity of capital to finance the project; 4. Clients failure to generate income from bank when sales of houses do not hit the targeted amount and; 5. Poor cash flow because of lack of proper process implementation, delay in releasing of the retention monies to contractor and delay in the evaluation and certification of interim and final payment.

## **2.8 Necessity of Payments on Time in Construction Industry**

In accordance to the report of National Construction Association of Sri Lanka (2008) payment is necessary on time because: Cash in hand is fuel to run the project without stopping; The contractor's ability to tender and obtain new work; Payment delays in client agencies ultimately affect the whole industry, economy and the society. This will create bad image of the contractors and the industry; it is very important to contractors to acquire a new technologies, machineries, management techniques and developments in the industry around the world; foreign contractors are able to make such investments because they receive huge financial support from their government with very low interest rates; The contractor's perform their benevolent activities in their areas such as donating funds for charitable projects; The development of contractor's enterprises is their aim as well as the country's aim which can be achieved if the contractors get their payments in time; The construction industry is one of the most significant sources of employment to engineers, technicians, skilled labor and managers. When the monthly salary not paid on the set date the employee as well as his family faces difficulties; a well-structured construction industry is a backbone of a healthy economy.

(Odeyinka and Kaka, 2005) showed that while contractors were satisfied with most of the contractual factors investigated under both procurement systems, they were dissatisfied with two of the factors, namely, time lag between entitlement to receive and actually receiving cash payment and percentage of contract sum retained. This dissatisfaction calls for action to consider devising alternative means of dealing with retention and payment delay.

## **2.9 Remedies for Payment Delay in Construction Industry**

One possible remedy to the payment delay problem by the employer in not paying in time is to allow for the contractor to claim for interest. This affords some relief to the contractor but this can be a double-edged sword for the contractor for it effectively allows the employer to suspend payment and not commit a breach of contract. Another remedy which contractors can resort to is to suspend further performance of his obligations under the contract. According to the understanding of the FIDIC, the contractor may either suspend work or reduce the rate of work, and even has the authority to terminate his employment under the contract after giving notice to the owner, with a copy to the engineer. This can be a safe position taken by the contractor and is in fact one routinely taken by the contractor when non-payment from the employer ensues. But for late payment, this action might be too harsh and impose another problem at site such as illegal suspension of work by the contractor. There are persuasive writings arguing for remains that this is currently not the established law (Nazir, 2006).

The possible solutions according to contractors are the right to regular periodic payment, the right to a defined time frame for payment, the right to a speedy dispute resolution mechanism eg: adjudication, the right to interest due to payment delay, the mandatory creation of a trust account for retention sums, a right to suspend work, the restriction of the right to set-off or withhold sums due, the creation of a right to a lien, the prohibition of "pay when paid" clauses in contracts (Danuri et al., 2003). Contractors and subcontractors indicated that payment bonds, direct payments and the use of trust

accounts were preferred solutions to the payment problems experienced by industry (Ramachandra and Rotimi, 2012).

National Construction Association of Sri Lanka (2008) suggested the improvements as; Speedy formulation and enactment of construction industry payment of security act to safeguard and the advancement of construction industry; Better prepared contract, financial information in real time to the contractor on the funding of the project; The need for better preliminary study has been emphasized in the document about quality assurance. The overall quality assurance system ICTAD is advocating could be used as a check list which would prevent employers to issue flawed or poorly prepared tender documents; The quick and prompt payment terms are therefore crucial to every contractor and sub-contractor. Certification and payment should be the subject of careful strategy and planning; Right of the contractor not to proceed in case of not sufficiently funded increasing work quantities; Right for the contractor not to proceed in case of none payment or of foreseeable situations of non-payments; The right of the contractors that the engineer shall substantiate with reasons in his payment certificate if the certified amount is less than the claimed amount or if payments are withheld.

### **2.10 Payment Limits Specified in ICTAD/SBD/03 Guideline**

The Construction Industry Development Authority (CIDA) is an organization set up by the Government of Sri Lanka to develop and promote the domestic Construction Industry, Contractors, Professionals, Work Force, etc. CIDA has established itself as a recognized and important constituent of the Construction Industry. It was previously known as ICTAD and recently changed the name as CIDA. Standard Bidding Document Procurement of works for Minor Contracts – ICTAD/SBD/03 (Second Edition – January 2007) is recommended for use for works contracts up to 10 million Sri Lankan rupees. Under conditions of contracts;

- Clause 10.12 (Advance Payment) - The employer shall make advance payment to the contractor within 14 days after contractor furnishing an unconditional

guarantee. The amount of advance shall be equivalent to 20% of the initial contract price (less provisional sums and contingencies).

- Clause 10.2 (Valuation of the works) - The Engineer shall check the contractor's monthly statement and certify the amount to be paid to the contractor, within 14 days of receipt of the Contractor's statement.
- Clause 10.3 (Interim Payments) - Within 14 days of delivery of each certificate by the Engineer, the Employer shall pay to the contractor the amount shown in the certificate less retention stated in the certificate.
- Clause 10.4 (Payment at Completion) - The Engineer shall certify any payment that is due to the contractor within 42 days of receiving the contractor's account if it is correct and complete. If it is not, the Engineer shall issue within 14 days a schedule that states the scope of the corrections or additions that are necessary. If the account is still unsatisfactory after it has been resubmitted, the Engineer shall decide on the amount payable to the contractor and issue a payment certificate. The Employer shall pay the contractor the amount certified within 28 days of the issue of the Engineer's certification on the amount due. The contractor will be entitled to interest rate and in the same manner as stipulated in clause 10.9 if payments as stipulated herein are delayed.
- Clause 10.9 (Delayed Payment) - If the Employer makes a late payment the Contractor shall be paid interest on the late payment in the next payment. Interest shall be calculated from the date by which the payment should have been made up to the date when the late payment is made at the prevailing rate of interest of 1% over the lending rate of the Central Bank of Commercial Bank.

### **2.11 Payment Limits Specified in ICTAD/SBD/01 Guideline**

Standard Bidding Document for Procurement of works – ICTAD/SBD/01 (Second Edition – January 2007) is recommended for use on works contracts between 10 million and 100 million Sri Lankan rupees. Under conditions of contracts;

- Clause 42.2 (Payment Certificates) - The Engineer shall check the Contractors monthly statement and certify the amount to be paid to the contractor within 21 days of the receipt of the contractors statement.
- Clause 43.1 (Payments) - Payment shall be adjusted for deduction for advance payment and retention. The employer shall pay the contractor the amounts certified by the Engineer within 14 days of the date of each certificate. If the employer makes a late payment the contractor shall be paid interest on the late payment in the next payment. Interest shall be calculated from the date by which the payment should have been made up to the date when the late payment is made at the rate of interest 1% over the prevailing lending rate of Central Bank to Commercial Banks.
- Clause 51.1 (Advance Payment) - The Employer shall make advance payment to the contractor in an amount equivalent to 20% of the Initial Contract Price excluding provisional sums and contingencies, within 14 Days after furnishing of an unconditional guarantee in a form and by a bank or a company acceptable to the Employer.
- Clause 51.1 (Statement at Completion) - The contractor shall supply the Engineer with a detailed account of the amount that the contractor considers payable under the Contract within 21 days after issuing of Certificate of Completion. The Engineer shall certify any payment that is due to the Contractor within 42 days of receiving the Contractors account if it is correct and complete. If it is not, the Engineer shall issue within 14 days a schedule that states the scope of the corrections or additions that are necessary. If the account is still unsatisfactory after it has been resubmitted, the engineer shall decide on the amount payable to the contractor and issue a payment certificate. The Employer shall pay the contractor the amount certified within 28 days of the issue of Engineers certification on the amount due. The contractor will be entitled to interest rate and in the same manner as stipulated in clause 43.1 if payments as stipulated herein are delayed.

## **2.12 Country wise Analysis**

In this section we have discussed and summarized research studies carried out in Local and International levels related to the payment delays in the construction domain.

### **2.12.1 New Zealand Approach**

(Ramachandra and Rotimi, 2012) has been discussed the payment issues and the possible solutions that could mitigate the payment problems in the New Zealand construction industry. It collates perspective views of construction consultants, contractors and subcontractors on the issue. The results show that payment delays and losses are still prevalent within the industry, in spite of the enactment of the Construction Contracts Act (CCA) to improve cash flow, using speedy dispute resolution measures. The result shows that payment delays are more frequent than losses. On Subcontractors experienced payment delays in 10-80% of the projects undertaken, more than 10-40% experienced by contractors. Most of the participants (44%) indicated that retention sums are very often delayed while final and interim payments are delayed often and sometimes respectively. The following Figure 2.2 gives the analysis of the frequencies by which contractors and subcontractors experience in payment delays and losses. The extent of the problem to subcontractors is higher than contractors.

Regarding the solution of payment problem, consultants and contractors suggested alternative solutions. Contractors and subcontractors prefer the use of payment and retention bonds, direct payment to them as security against payment risks, whereas consultants indicated that payment provisions in the standard forms of contracts and CCA may be more effective solutions to payment problems. However, both parties are in agreement to some extent that the use of trust accounts and retention bonds could help to secure retention monies. Although consultants indicated the payment provisions in

both standard forms of contract and CCA as most effective solutions, the individual provisions are identified as moderately and slightly effective.

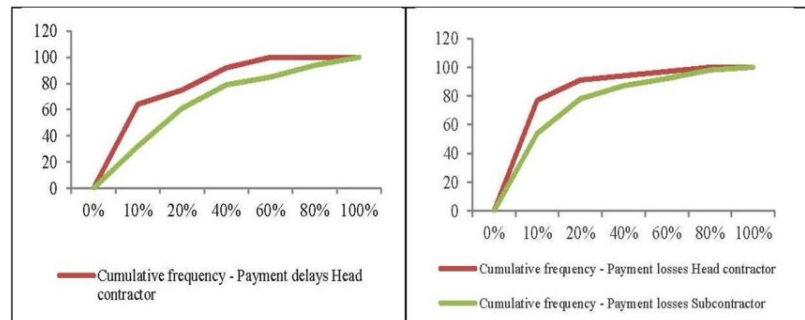


Figure 2.2: Frequencies of Payment Delays and Losses as a % of Total Projects

### 2.12.2 Ghana Approach

The principal objective of the research carried out by (Amoako, 2011) is to investigate the effects of delayed payment and cash flow forecasting of road contractors in the Ghanaian road construction industry, to identify effective options available and strategic methods developed by contractors to improve their cash flow forecasting. From the result of analysis, it was observed that, fifty-one (51) of the road contractors representing 98.1% have experienced delayed payment since 2006. Also, the result showed that delayed payment creates cash flow problems, stress and financial hardship on the contractors and that some reactions to delayed payment adopted by the contractors may have adverse effects on their own businesses.

Amongst the most appropriate solutions to overcome the problem of delayed payment faced by local contractors include: a right to regular periodic payment, a right to a defined time frame for payments and a right to a speedy dispute resolution mechanism. The survey results indicated that the five (5) effects of late payment were: resulting in cash flow problems, making it difficult to procure material and services, creation of enormous stress on contractors, leading to interruption of program of works and likely suspension and resulting in disputes e.g. litigation/ arbitration. There are the five (5)

dominant strategies suggested by contractors were: issuance of a promissory note by the employer, introducing the construction contract act, discounting facility from the banks, leasing of plant and equipment and contractors seeking for loan. It also highlighted the three ways which could be used by contractors to recover long outstanding debts and it includes; "Adjudication", "Litigation" and "Creation of a right to a lien" as right to a speedy dispute resolution mechanism. Where a right to lien it the most popular (Lien is a right to take and hold or sell a property of a debtor as security for a debt until payment is made). However this is the most popular method in Canada and USA.

### **2.12.3 Gaza Approach**

This research study presents causes of the payment delay on construction projects; effects of payment delay and how to determine the effective solutions to mitigate effects and risks of payment delay in Gaza Strip construction industry; in order to reduce their effects and to establish a model to measure the risk of payment delays (Naseer, 2013). In its results, it has shown that the "contractor related factors" is the most important group. This indicates that the contractor relationship in payment delay causes is important and that he plays the main role in these causes. Results of contractor related factors have indicated that "Failure to follow the certain procedures in claims" is the most important factor. This result indicates the clear and systematic procedure in preparing claims by the contractor lead to fast the payments.

Results indicated that the effect "Late payment of salaries" in the first position at effects on contractor group. This indicated that salaries as a result due to payment delay will lead to productivity reduction and thus increase project duration and cost. The top three effective solutions to mitigate effects and risks of payment delay in Gaza Strip according to this study were; contractors should submit timely accurate invoices with complete documents, contractors should chase payment due relentlessly and defined time frame for payment.



Some recommendations have been presented for decision makers in the construction sector: The owners or donors should work within stipulated budget putting in bank account before starting the project execution; Owners should pay progress payment to the contractor on time because it impairs the contractors' ability to finance the work; Contractors are recommended to have enough cash before beginning in any project to avoid the financial problems; Contractors should submit timely accurate invoices with complete documents and chase payment due relentlessly; It is necessary to give the contractor the right to stop or suspend the work until the payment is made. It can be an effective means to mitigate payment delay without the need to instigate other formal procedure such arbitration and litigation; the recovery of interest on payment delay can often be vital for those in business, depend on bank financing, lead to a bad effect on the profitability of construction companies.

#### **2.12.4 Tanzania Approach**

The study by (Kikwasi, 2012) concludes that there still exist a number of causes of delays and disruptions and their effects put construction projects at great risk that have an effect on their performance. These causes are: design changes, delays in payment to contractors, information delays, funding problems, poor project management, compensation issues and disagreement on the valuation of work done. Similarly the effects of these delays are: time over run, cost overrun, negative social impact, idling resources and disputes. It is therefore recommended that adequate construction budget, timely issuing of information, finalization of design and project management skills should be the main focus of the parties in project procurement process. Results also show that clients, consultants and contractors have indicated that they have experienced delays in projects they were involved with varying degrees. In particular 78%, 70% and 56% for clients, consultants and contractors respectively have had projects delayed.

It further stat that: Causes of delays have been identified in various parts of the world such as Malaysia, Saudi Arabia, Jordan, Kuwait, Hong Kong and Thailand. The results reveal that there are differences and similarities as to the causes of delays. Delays and

disruptions have had effects to construction projects. Some of these effects are: times overrun, cost overrun, dispute, arbitration, total abandonment and litigation. The purpose of this study is to identify causes and effects of delays in Tanzanian construction sector.

#### **2.12.5 Kenya Approach**

(Okeyo, Rambo and Odundo, 2015) has assessed the effects of delayed payment of the contractor on the completion of SMHP (Sondur-Miriu hydropower) project in Kisumu County, Kenya. More specifically, the study addressed two research questions: What is the relative importance of delayed payment of the contractor compared to other forms of contractual delays? What is the perceived effect of delayed payment of the contractor on the project's completion? A causal-comparative design was adopted and primary data sourced in May 2011 from 39 senior management staff of contractual parties. Relative importance index (RII) was used to determine the relative importance of perceived effects of delayed payment of the contractor on the project's completion; while Kendells coefficient of concordance was applied to determine the degree of agreement among participants regarding their perceived effects of delayed payment.

The study found that delayed payment of the contractor affected the project by causing: loss of productivity and efficiency (71.8%); increase in time-related costs (71.8%); re-scheduling and re-sequencing of works (69.2%); extension of time and acceleration (69.2%); as well as prevention of early completion (53.8%). The study concludes that timely payment of contractors is crucial for ensuring the continuity of works and completion of infrastructural projects within time, budget, and quality specifications. The study recommends the need for appropriate mitigate measures against potential risks, such as delayed disbursement of funds by external financiers, delayed approval of contractors' payment requests, as well as community participation and involvement of civil society to influence accountability in the management of project funds and expedite disbursement of funds for subsequent project phases.

### **2.12.6 Malaysian Approach**

The main purpose of the study is to identify current problems in relation to late and non-payment issues encountered by contractors in the Malaysian construction industry. (Danuri et al., 2003) has also looked into the effects of late and non-payment with the aims to identify the possible solutions to resolve the issues of late and non-payment, which could effectively create a win-win situation for all the parties involved. The research focused on contractual payments from the employer (government or private) to the contractors. The questionnaire survey indicate that more than 60% of the local contractors have experienced late problem may it be in government funded projects or private funded projects. As for non-payment, about 24.1% and 44.8% of the contractors reported that they have not been paid for the works executed involving government and private clients respectively.

The results of the study indicate that the most frequent causes of late and non-payment include: paymaster's poor financial management, paymaster's failure to implement good governance in business and local culture/attitude. The authors feel that it is necessary for employers' financial capacity and credit rating be made transparent to facilitate contractors in choosing the right employers and to increase chances of the latter getting paid. The survey results also indicate that the three most serious effects of late and nonpayment are "Create cash flow problems, "Create stress on contractors and "Creates financial hardship. It is anticipated that late or non-payment most likely will cause undue financial stress on the contractors and this would have a devastating knock-on effect down the contractual payment chain.

Most of the respondent contractors agreed that a mechanism for avoiding or reducing this problem need to be taken in the form of contractual or statutory rights with the overall mean of 3.72. This study indicates that the three most possible solutions of payment problems are "a right to regular periodic payment, "a right to a defined time frame for payment and "a right to a speedy dispute resolution mechanism, for example,

adjudication with their overall means of 3.72, 3.695 and 3.509, respectively. Result shows that severity of late payment in private sector (Mean=2.89) is more significant than government sector projects (Mean =2.50). Thus, payment in private sector is keener to late payment compare to public sector. Result demonstrates that eighty percent (80%) of the respondents considered late payment for few days says, less than five (5) working days was acceptable and the remaining twenty percent (20%) was on the contrary.

The most significant underlying causes of Late Payment are ; Cash flow problems because of deficiencies in clients management capacity (mean=3.96); Clients ineffective utilization of funds (mean=3.88); Scarcity of capital to finance the project (mean = 3.81); Clients failure to generate income from bank when sales of houses do not hit to targeted amount (mean = 3.72); Poor cash flow because of lack of proper process implementation (mean = 3.66); Delay in releasing of the retention monies to contractor(mean = 3.66); Delay in evaluation and certification of interim and final payment (mean = 3.66).

The validation interviews further supported the findings of Questionnaire survey on the most significant underlying causes of late payment. Five out of eight selected respondents with at least ten years of working experience in the construction industry agreed with the top ranked underlying causes of late payment which is cash flow problem due to deficiencies of clients management capacity. However, to determine the effective remedies to mitigate risks of late payment it was apparent that the respondents have highest rank, to understand and research the owner's ability to pay as most effective solution in mitigation of late payment problems (Mean=3.89), implementation of the construction payment and adjudication Act (mean=3.69), negotiation of payment terms with client to facilitate a healthy cash flow (mean=3.68), obtaining payment due before handover of project to client (mean=3.67), to understand and study the payment requirement of each individual project (mean=3.66) and implementation of financial management to easy cash flow problems (mean=3.65). Six out of eight selected respondents with at least ten years of working experience in the construction industry

agreed with the highest ranked solution which is to understand and research the owners ability to pay in mitigation of late payment.

### **2.12.7 Thailand Approach**

The objective of the study carried out by Ayudhya aims to investigate factors causing delay in payment from owner to main contractor in residential building projects in Thailand in 2012. The interview and questionnaire method has been used. This study had classified four main categories which were administration, financial, technical and inspection and other common and identified twenty four (24) causes of delay in payment factors. The result showed that main contractors faced moderately severe impact from four main categories of delaying of payment. In residential building projects, there were several delays on both interim and final payment of completed work which had been found from interviews. Failure to provide adequate funding resources to main contractors for work done would make it difficult for main contractor to meet agreed objectives.

The first most important factor attributing to the cause of delay in payment from owner to main contractor was owner financial problems. The second most important factor was delay in work approval. There were often complains from main contractors to consultants and owners that the evaluation of both quality and quantity of completed work was caused in late payment. The third most important factor was major accidents. Fatal or serious accidents could cause serious delay to construction schedule. The fourth most important factor was inaccurate bill of quantities. This caused repetition of works and further expense on correction of damages. The payment was only made to main contractor when all required documents were verified. The fifth most important factor was substandard workmanship. A common of this defect was cracks in the structure and foundation of a building.

### **2.12.8 Egyptian Approach**

The research methodology can be summarized in ninety nine (99) different delay factors were categorized into nine (9) major categories and visualized by ranking through the detailed literature review and interview with experts in construction industry. Results declared that respondents rank the factor number 78 Delay in progress payments (Funding problems) as the prime cause of delay in construction projects in Egypt. It was noticed that the first factor Delay in progress payments (Funding problems) related to Owner Related Factor Category the most effect with Relative Importance Index equals to 85.880.

### **2.12.9 Sri Lankan Approach**

With the main purpose of identifying the significant causes of time overrun in construction phase of building projects handled by the Department of Engineering Services (DOES) of Sabaragamuwa Provincial Council (SPC) and to propose mitigate measures a research study was carried out by (Dolage and Rathnamali, 2013). The preliminary investigation of this research revealed that 80% of the building projects handled by the DOES are not completed within the agreed contract period. The research has identified 51 potential factors responsible for the time overrun in the building construction projects undertaken by the DOES.

The most significant factors causing time overrun identified in this research based on the perceptions of all three main parties to the contract namely clients, consultants and contractors are Delay in progress payment by clients, Inaccurate planning and scheduling of projects by contractors, Rainy weather, Unavailability of experienced technical staff, Excessive work in hand of the contractors, Poor liquidity of contractors, Shortage of labourers, Delay in approving extra work and variation, Poor site management and supervision of contractors, Ineffective time management of contractors. General recommendations are the provincial ministries should consider

paying the mobilization advance to contractors having taken all precautionary measures to ensure easy reclaiming. Some Recommendations to Clients are Needs to ensure that sufficient funds are available for uninterrupted payments before awarding the contract; should forward the cash flow forecasting to the Treasury in advance and thereafter should follow it up in order to get the payments released on schedule.

There is another significant study carried out by (Kesvan and Gobidan, 2015). Objective of the study is to study the causes of construction project delays, identify methods to minimize construction project delays and propose proper project planning methods to avoid construction project delays based on Questionnaire. The questionnaire was divided into three main parts, part one is the details of the respondents and organizations in order to get the information about the respondent's details and organization as well. Part two is factors that cause construction project delays in Sri Lankan construction Industry. This part is comprised seven categories such as Client, Contractor, Consultant, Materials, Equipments, Labour and External Factors. Part three is identified mitigation methods to reduce the impact of project delays.

Conclusion of the study is as follows,

- Delay in Sri Lankan construction projects is mostly originated by labour, followed by contractor and client, while external related causes are less important. Client and Contractor specified that labour related causes as sources of delay. Conflicts in sub-contractors schedule, delay in progress payments, weather effects on construction activities, difficulties in financing project, shortage of labour, frequent change of subcontractors, low productivity level of labour, delays in subcontractors work, rework due to errors during construction and effects of subsurface and ground conditions are the top 10 major causes of delay in Sri Lankan construction projects.
- Proper project planning and scheduling and Effective strategic planning are the major mitigation methods to reduce construction project delays in Sri Lanka.

Recommendations of the study are as follows,

- The clients should pay special attention to minimize changes in order during construction so as to avoid delays, pay progress payment to the contractors on

time as it weakens the contractor's ability to finance the work and speed up reviewing and approving of design documents.

- Consultants should focus on avoid delays in reviewing and approving design documents, build up the knowledge and skills of technical staff and improve coordination between parties.
- The contractors should give more attention to improve the knowledge and skills of technical staff and manage the financial resources and plan cash flow by utilizing progress payment.



## CHAPTER 3

### 3. DESIGN & METHODOLOGY

In this chapter the methodology employed to carry out this research is discussed. The framework of the research, the selection of cases and collection of data will be discussed under this section.

#### 3.1 Research Approach and Limitations

This research is a quantitative research study and has been carried out by analyzing the case studies of completed construction projects. This research is carried out according to following three scenarios;

- The Client should pay the contractors bill within 14 days of submission of the bill,
- The Client should pay the contractors bill within 28 days of submission of the bill,
- The Client should pay the contractors bill according to ICTAD/SBD/03 – within specified period after the submission of the Bill.

If payments are not made within above specified periods then those payments are considered as Delayed Payments.

**Delay in Payment:** Under this research all delays are considered in-between the day of bill submitted to client by the contractor and the day of payment tangibly received to contractor

#### 3.2 Data Model: Collection and Sampling

Data has been collected considering 10 number of small scale construction projects (Project values are less than 10 million Sri Lankan Rupees) as shown in Table (3.1). All projects have been completed by the Sarvo-Tech Pvt Ltd (ICTAD registration is C7) which is the social enterprise of Sarvodaya Movement. All projects have been conducted under Measure and Pay basis in accordance to ICTAD/SBD/03 Guidance.

Government institutions, Universities, Non Government organizations and High commissions have been involved for the role of client. Projects have been implemented in several areas of the country including North & East areas.

Table 3.1: Case Study Summary

<b>Case No</b>	<b>District</b>	<b>Client</b>	<b>Contractor</b>	<b>Type of Contract</b>
Case-01	Ampara	NGO (National)	Sarvo - Tech (Pvt) Ltd	Measure & Pay
Case-02	Colombo	University	Sarvo - Tech (Pvt) Ltd	Measure & Pay
Case-03	Colombo	Government	Sarvo - Tech (Pvt) Ltd	Measure & Pay
Case-04	Colombo	Government	Sarvo - Tech (Pvt) Ltd	Measure & Pay
Case-05	Kandy	High Commission	Sarvo - Tech (Pvt) Ltd	Measure & Pay
Case-06	Hatton	High Commission	Sarvo - Tech (Pvt) Ltd	Measure & Pay
Case-07	Colombo	Government (Army)	Sarvo - Tech (Pvt) Ltd	Measure & Pay
Case-08	Colombo	University	Sarvo - Tech (Pvt) Ltd	Measure & Pay
Case-09	Vavuniya	NGO (International)	Sarvo - Tech (Pvt) Ltd	Measure & Pay
Case-10	Colombo	University	Sarvo - Tech (Pvt) Ltd	Measure & Pay

### 3.3 Case Studies

Exact date of submission of each bill to client was notified. Also the date of payment received to contractor was carefully selected. Meantime the specific reasons for delays in each payment were notified. Considering all mentioned points and etc, data was collected for all 10 cases in accordance to the developed formats as shown in Figure 3.1 to Figure 3.10. Also Improper Practices related to payment delays were carefully studied considering selected samples and other relevant facts and tabulated as in the Table 3.3. Project details have been further summarized as shown in Table 3.2.

Table 3.2: Summary of Project details

Case No	Award Amount	Date of Start	Contract Period (days)	Scheduled Date of Completion	Actual Date of Completion	Project Delays (days)
C-01	9,901,071.00	2012.11.26	150	2013.04.25	2014.02.11	292
C-02	2,629,975.00	2012.11.12	60	2013.01.10	2013.06.06	147
C-03	3,452,330.29	2014.07.07	70	2014.09.14	2014.11.25	72
C-04	2,744,603.23	2014.09.17	50	2014.11.05	2014.12.31	56
C-05	6,171,366.30	2014.07.16	180	2015.01.16	2015.05.18	122
C-06	6,166,659.85	2014.07.16	180	2015.01.16	2015.05.12	116
C-07	8,998,504.30	2014.07.30	180	2015.01.30	2015.07.30	180
C-08	5,828,422.18	2014.11.20	90	2015.02.20	2015.05.03	103
C-09	8,083,543.82	2015.07.31	120	2015.12.31	2016.01.30	30
C-10	3,855,321.25	2015.08.24	90	2015.11.24	2016.01.30	67

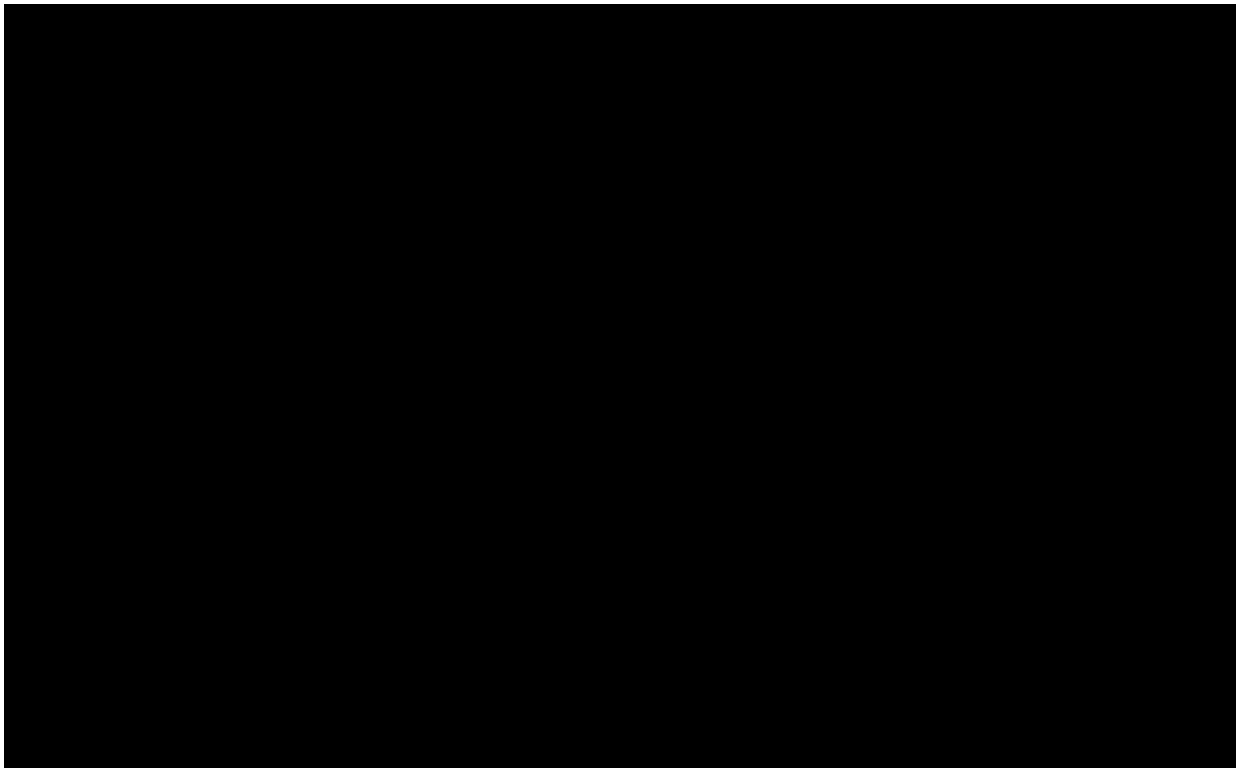


Figure 3.1: Case Study 01 Payment Details

**Project :** Renovation of Body Preservation Tanks and Roof Top Slab at Department of Anatomy at University of Jayawardenapura

Client = University of Sri Jayawardenapura

Contractor = Sarvo Tech Pvt Ltd

Award Amount = 2,629,975.00

Scheduled Date of Completion= 2013.01.10

Date of Start = 2012.11.12

Actual Date of Completion = 2013.06.06

Contract Period = 60 days

Project Delays = 147

245%

Type of Contract = ICTAD/SBD/03; Measure and Pay

Bill No	Date of Submitted	Amount Claimed	Date of Received	Amount Received	No of Days taken	Payment Delays beyond 14 days		Payment Delays beyond 28 days		Payment Delays on ICTAD/SBD/03		Identified main Reasons for delay	Joint Measurements taken Prior to bill submission
						Delay	Cumulative	Delay	Cumulative	Delay	Cumulative		
Advance	2012.11.20	395,995.00	2013.01.03	395,995.00	44	30	30	16	16	30	30	Cash problem of the client (Non availability of fund)	
1st	2012.12.09	282,715.44	2013.02.01	188,668.82	54	40	70	26	42	26	56	Due to internal system of the Client	YES
2nd	2013.02.20	853,087.00	2013.03.26	616,290.85	34	20	90	6	48	6	62	Due to internal system of the Client	YES
3rd	2013.03.25	629,662.61	Cancelled										
Final	2013.06.06	1,134,203.57	2013.08.02	846,323.04	57	43	133	29	77	-13	49	1. Due to internal system of the Client 2. Additional works after submission of bill	YES
Retension	2013.12.09	131,498.75	2014.02.06	131,476.43	59								
		2,797,499.76		2,178,754.14									

3.2: Case Study 02 Payment Details

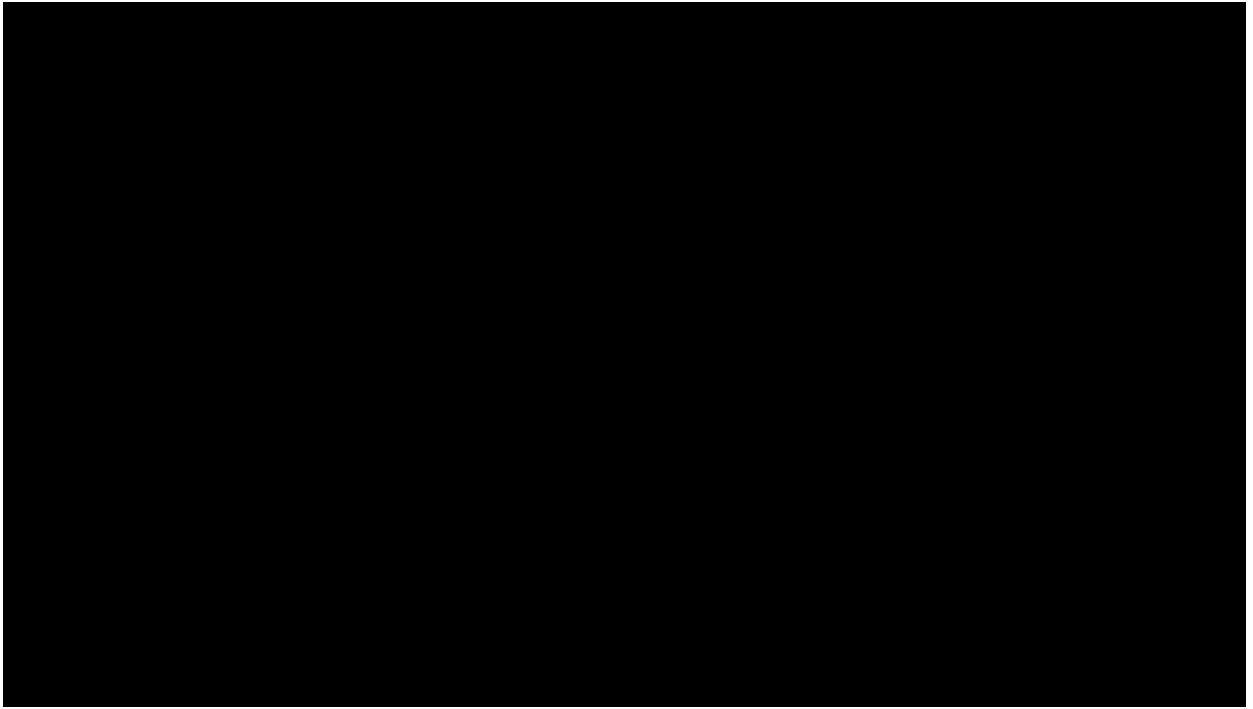


Figure 3.3: Case Study 03 Payment Details

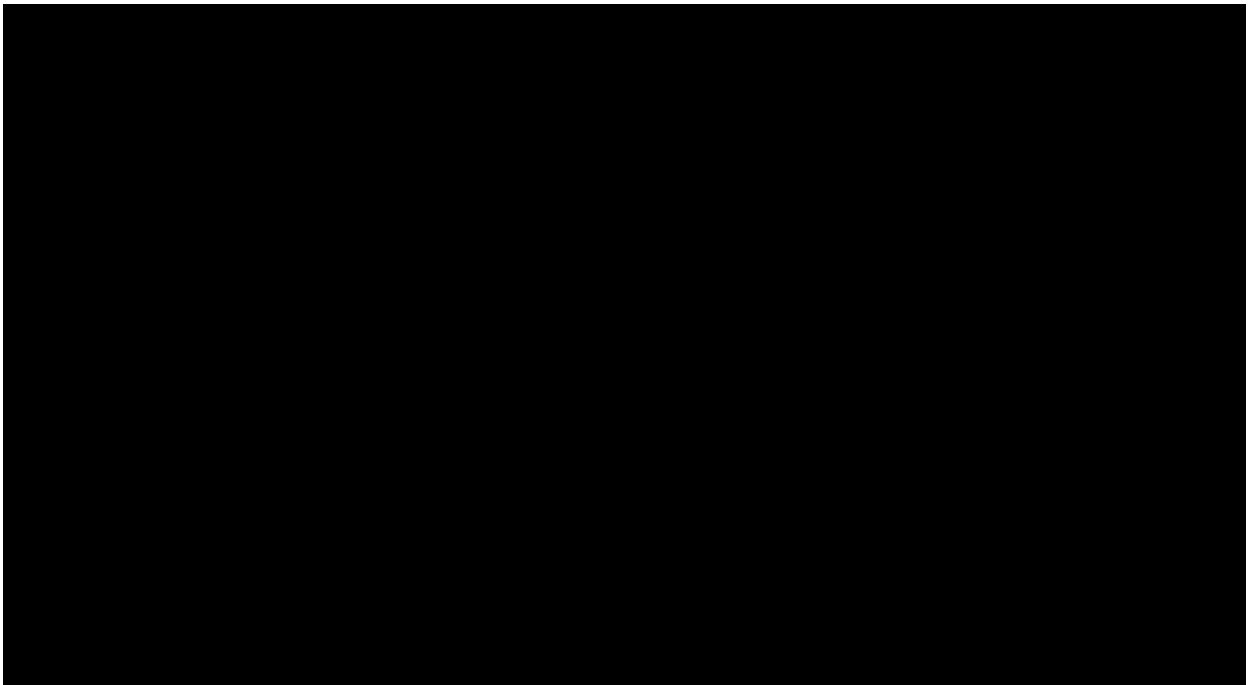


Figure 3.4: Case Study 04 Payment Details

**Project : Up gradation of 10 Child Development Centre in Kandy**

Client = High Commissioner of India

Contractor = Sarvo-Tech Pvt Ltd

Award Amount = Rs.6,171,366.30

Date of Start = 16.07.2014

Contract Period =180 days

Type of Contract = Measure and Pay

Scheduled Date of Completion=16.01.2015

Actual Date of Completion = 18.05.2015

Project Delays =122days

Bill No	Date of Submitted	Amount Claimed	Date of Received	Amount Received	No of Days taken	Payment Delays beyond 14 days		Payment Delays beyond 28 days		Payment Delays on ICTAD/SBD/03		identified main Reasons for delay	Joint Measurements taken Prior to bill submission
						Delay	Cumulative	Delay	Cumulative	Delay	Cumulative		
Advance	25.07.2014	1,234,273.26	08.08.2014	1,234,273.26	14	0	0	-14	-14	0	0	-	
1st	18.11.2014	1,741,026.98	06.01.2015	751,692.60	48	34	34	20	6	20	20	Due to internal system of the Client	No
2nd	08.01.2015	1,678,593.79	31.03.2015	778,062.82								1.improper submission by Contractor 2.Due to internal system of the Client	No
			27.02.2015	144,988.60	73	59	93	45	51	45	65		
3RD	26.02.2015	1,022,301.53	10.04.2015	162,505.01								Due to internal system of the Client	No
			20.05.2015	924,722.94	84	70	163	56	107	56	121		
4TH	24.03.2015	930,442.47	08.06.2015	222,605.01								1.Due to internal system of the Client 2.Cash problem of the client (Non availability of fund)	No
			06.07.2015	566,196.20	102	88	251	74	181	74	195		
5th	10.06.2015	430,219.67	15.07.2015	776,688.57	35	21	272	7	188	7	202	Due to internal system of the Client	No
Final	13.07.2015	413,542.49	23.12.2015	301,062.98	164	150	422	136	324	94	296	1.Due to internal system of the Client 2.Cash problem of the client (Non availability of fund)	No
Retention													
		7,450,400.19		5,862,797.99									

Figure 3.5: Case Study 05 Payment Details

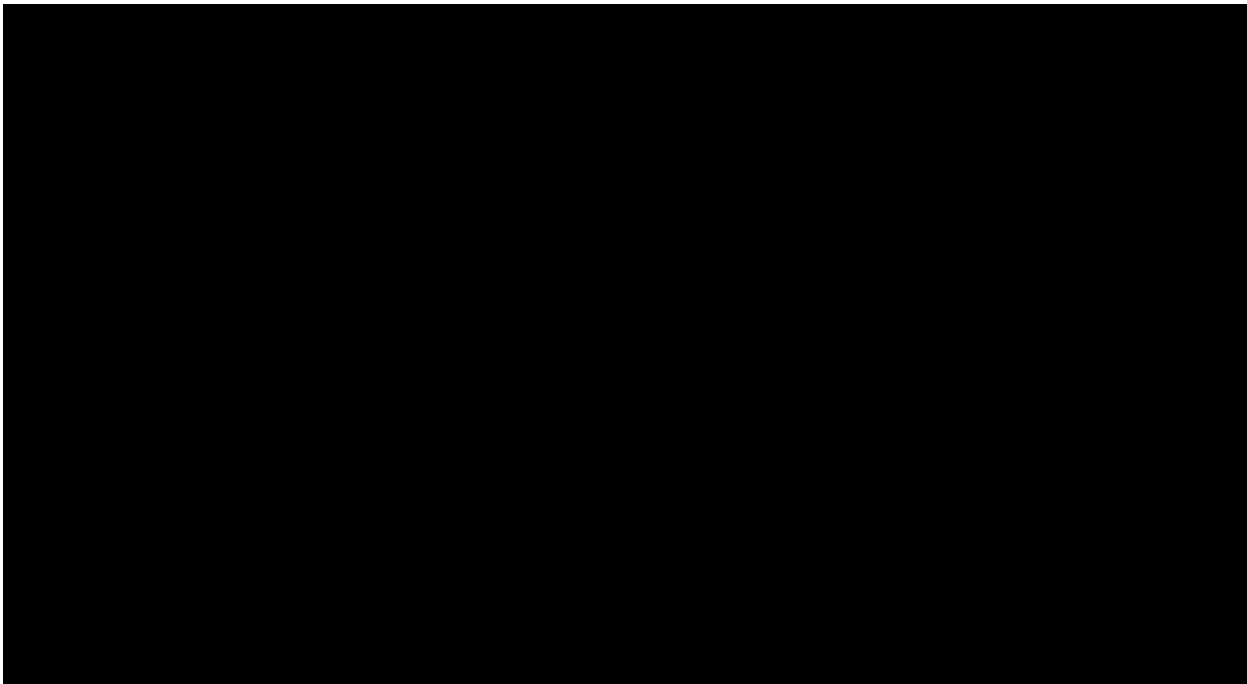


Figure 3.6: Case Study 06 Payment Details

**Project :** 100'-0" x 20'-0" Two Storied Officers' Accommodation Building for RHQ SLSC at Army Cantonment - Panagoda

Client = Sri Lanka Army  
 Contractor = Sarvo-Tech Pvt Ltd  
 Award Amount =8,998,504.30  
 Date of Start =30.07.2014  
 Contract Period =180days  
 Type of Contract = Measure and Pay

Scheduled Date of Completion=30.01.2015  
 Actual Date of Completion =30.07.2015  
 Project Delays =180days

Bill No	Date of Submitted	Amount Claimed	Date of Received	Amount Received	No of Days taken	Payment Delays beyond 14 days		Payment Delays beyond 28 days		Payment Delays on ICTAD/SBD/03		identified main Reasons for delay	Joint Measurements taken Prior to bill submission
						Delay	Cumulative	Delay	Cumulative	Delay	Cumulative		
Advance	25.07.2014	1,799,750.00	23.09.2014	1,799,700.86	60	46	46	32	32	46	46	1.Due to internal system of the Client 2.Cash problem of the client (Non availability of fund)	
1st	14.10.2014	1,532,651.50	08.05.2015	830,504.30	206	192	238	178	210	178	224	1. not follows the correct formats by Contractor 2.Due to internal system of the Client 3.Cash problem of the client (Non availability of fund)	yes
2nd	11.12.2014	1,113,173.13	19.06.2015	1,058,852.76	190	176	414	162	372	162	386	1.Due to internal system of the Client 2.Cash problem of the client (Non availability of fund)	yes
3rd	30.01.2015	2,520,635.59	17.07.2015	1,287,214.97	168	154	568	140	512	140	526	1.Due to internal system of the Client 2.Cash problem of the client (Non availability of fund)	yes
4th	11.03.2015	1,161,874.51	17.07.2015	970,306.80	128	114	682	100	612	100	626	1.Due to internal system of the Client 2.Cash problem of the client (Non availability of fund)	yes
5th	26.06.2015	1,376,904.14	09.11.2015	884,654.37	136	122	804	108	720	108	734	1.Due to internal system of the Client 2.Cash problem of the client (Non availability of fund)	yes
Final	19.08.2015	943,131.72	23.12.2015	461,546.57	126	112	916	98	818	56	790	1.Due to internal system of the Client 2.Cash problem of the client (Non availability of fund)	yes
Retension		449,925.22											
		10,898,045.81		7,292,780.63									

Figure 3.7: Case Study 07 Payment Details

**Project : Renovation of Existing Building for External Examination Unit**

Client = University of Sri Jayawardenapura  
 Contractor = Sarvo Tech Pvt Ltd  
 Award Amount = 5,828,422.18  
 Date of Start = 20.11.2014  
 Contract Period = 90 days  
 Type of Contract = Measure and Pay

Scheduled Date of Completion=20.02.2015  
 Actual Date of Completion = 03.05.2015  
 Project Delays = 103 days 114%

Bill No	Date of Submitted	Amount Claimed	Date of Received	Amount Received	No of Days taken	Payment Delays beyond 14 days		Payment Delays beyond 28 days		Payment Delays on ICTAD/SBD/03		identified main Reasons for delay	Joint Measurements taken Prior to bill submission
						Delay	Cumulative	Delay	Cumulative	Delay	Cumulative		
Advance	24.12.2014	1,165,684.43	29.01.2015	1,045,684.40	36	22	22	8	8	22	22	Cash problem of the client (Non availability of fund)	
1st	10.02.2015	1,679,342.83	01.04.2015	864,798.14	50	36	58	22	30	22	44	Due to internal system of the Client	yes
2nd	05.03.2015	1,219,886.88	07.05.2015	788,443.09	63	49	107	35	65	35	79	Due to internal system of the Client	yes
3rd	27.04.2015	1,804,672.55	26.06.2015	877,361.28	60	46	153	32	97	32	111	Due to internal system of the Client	yes
Final	22.06.2015	1,345,965.09	18.11.2015	1,665,447.47	149	135	288	121	218	79	190	1.Due to internal system of the Client 2.Additional works after submission of bill	yes
Retension		291,421.11											
		7,506,972.89		5,241,734.38									

Figure 3.8: Case Study 08 Payment Details

**Project : Proposed Local Economic Centre at Venkalacheddikulam in Vavuniya**

Client = United Nation Development  
 Contractor = Sarvo-Tech(Pvt)Ltd  
 Award Amount = Rs.8,083,543.82  
 Date of Start = 31.07.2015  
 Contract Period = 120 days  
 Type of Contract = Measure and Pay

Scheduled Date of Completion=31.12.2015  
 Actual Date of Completion = 30.01.2016  
 Project Delays = 30 days 25%

Bill No	Date of Submitted	Amount Claimed	Date of Received	Amount Received	No of Days taken	Payment Delays beyond 14 days		Payment Delays beyond 28 days		Payment Delays on ICTAD/SBD/03		identified main Reasons for delay	Joint Measurements taken Prior to bill submission	
						Delay	Cumulative	Delay	Cumulative	Delay	Cumulative			
Advance		0.00					0%	0	-	-	-			
1st	25.09.2015	946,830.23	09.10.2015	946,830.23	14	0	0%	0	(14)	(14)	(14)	(14)	yes	
2nd	28.10.2015	1,228,123.06	11.11.2015	1,228,123.06	14	0	0%	0	(14)	(28)	(14)	(28)	yes	
3rd	17.11.2015	1,011,073.30	03.12.2015	1,011,073.30	16	2	14%	2	(12)	(40)	(12)	(40)	yes	
4th	11.12.2015	2,677,791.75	28.12.2015	2,677,791.00	17	3	21%	5	(11)	(51)	(11)	(51)	yes	
5th	30.12.2015	915,508.72	17.01.2016	915,508.72	18	4	29%	9	(10)	(61)	(10)	(61)	yes	
Final	15.02.2016	875,599.94	24.03.2016	875,599.94	38	24	171%	33	10	(51)	(32)	(93)	Additional works after submission of bill	yes
Retension														
		7,654,927.00		7,654,926.25										

Figure 3.9: Case Study 09 Payment Details

**Project : Refurbishment of sub wadener's Quarters for Sarasavi Medura Hostel**

Client = University of Sri Jayawardenapura  
 Contractor = Sarvo Tech Pvt Ltd  
 Award Amount = 3,855,321.25  
 Date of Start = 2015.08.24  
 Contract Period = 90 days  
 Type of Contract = Measure and Pay

Scheduled Date of Completion=24.11.2015  
 Actual Date of Completion = 30.01.2016  
 Delays = 67 days 74%

Bill No	Date of Submitted	Amount Claimed	Date of Received	Amount Received	No of Days taken	Payment Delays beyond 14 days		Payment Delays beyond 28 days		Payment Delays on ICTAD/SBD/03		identified main Reasons for delay	Joint Measurements taken Prior to bill submission
						Delay	Cumulative	Delay	Cumulative	Delay	Cumulative		
Advance		-		-		-	-	-	-	-	-		
1st	02.10.2015	987,078.96	10.11.2015	754,675.08	39	25	25	11	11	11	11	Due to internal system of the Client	yes
2nd	19.11.2015	797,270.82	22.01.2016	731,044.90	64	50	75	36	47	36	47	1. Due to internal system of the Client 2. Cash problem of the client (Non availability of fund)	yes
Final	31.01.2016	2,720,996.81	19.04.2016	1,814,185.40	79	65	140	51	98	9	56	2. Additional works after submission of bill	yes
Retension													
		4,505,346.59		3,299,905.38									

Figure 3.10: Case Study 10 Payment Details



Table 3.3: Improper Practices related to payment delays

No	Identification of Improper practices, (based on considered 54 payments in ten completed projects in small scale category)
<b>From Client's side</b>	
1	Lack of inter relationship between internal units and officials within the organization
2	Lack of follow up and guidance by Top Level officials.
3	Lack of knowledge about conditions of Contract.
4	No fear about contravening conditions of contract or delaying of Payments.
5	Not providing time to meet and discuss Issues.
6	Failure to have continuous Progress Meetings.
7	Expectation of some sort of benefits in order to check & pass Bills.
8	Giving priority to known parties.
9	Lack of interest in attending to contractor payments.
10	Handling of too much of work at a time.
11	Low salaries or overall benefits.
12	Taking of too much Leave by related Officials.
<b>From Contractor's side</b>	
1	Lack of Confidence to discuss related payment delays
2	Lack of Courage to complain to relevant parties or Authorities about payment delays.
3	Lack of knowledge about Conditions of Contract.
4	Lack of professional background.
5	Poor communication skills.
6	Less Planning and Commitments.
7	Lack of Unity among contractors.

## CHAPTER 4

### 4. ANALYSIS AND DISCUSSION

This chapter is to analyze and discuss the data obtained through the case studies. The obtained data as explained in chapter 03 will be analyzed using MS Excel and etc. The one project is considered as a Case. Accordingly 10 numbers of separate cases has been considered for the analysis part. Altogether 54 payments have been subjected on this analysis as shown in Table 4.1. The number of days taken for payment is summarized and depicted in Table 4.2.

Table 4.1: Payment Summary

Project	Advance	1st	2nd	3rd	4th	5th	Final	Total
10	8	10	10	7	5	4	10	54

Table 4.2: Payment Summary: Based on Relevant Case Studies

Project	No of days Taken For Payments								Total Project Delays	Original Contract Period
	Advance	1st	2nd	3rd	4th	5th	Final	Total		
Case-01	8	32	52	23	21	107	124	367	292	150
Case-02	44	54	34	-	-	-	57	189	147	60
Case-03	7	53	28	20	-	-	20	128	72	70
Case-04	19	20	25	-	-	-	30	94	56	50
Case-05	14	48	73	84	102	35	164	520	122	180
Case-06	14	62	68	108	100	-	180	532	116	180
Case-07	60	206	190	168	128	136	126	1014	180	180
Case-08	36	50	63	60	-	-	149	358	283	90
Case-09	NA	14	14	16	17	18	38	117	30	120
Case-10	NA	39	64	-	-	-	79	182	67	90

It can be noted that all projects are delayed comparatively to original contract period. It can be further noticed that the Total number of days taken for payments are high when compared with project delays and the original contract period. Accordingly analysis will be further carried out on this framework. Based on the collected data as explained in chapter 3, each case is separately analyzed as shown in Chapter 4.1 with graphical illustration and etc. Three different scenarios considered for payment delays; Payment delays beyond 14 days; Payment delays beyond 28 days; Payment delays considering ICTAD limits.

#### 4.1 Analysis: Case 01

Percentage of project delay is 195%. Payment delays are comparatively less at the consideration of limits in ICTAD/SBD/03, but still high percentage (86%) when compared with original contract period. Summary of analysis is stated in and Table 4.3 Figure 4.1. Quickest payment is Advance and most delayed payment is Final in all three scenarios. Advance, 3<sup>rd</sup> and 4<sup>th</sup> payments made on time when consider the limits of ICTAD/SBD/03.

Table 4.3: Case-01 - Payment Summary Analyzed

	Days	% against Original Contract Period
Original Contract Period	150	
Total Project Delay	292	195%
Cumulative Payment Delays beyond 14 days	255	170%
Cumulative Payment Delays beyond 28 days	143	95%
Cumulative Payment Delays on ICTAD/SBD/03	129	86%

#### 4.2 Analysis: Case 02

Percentage of project delay in case 02 is 245%. Payment delays are comparatively less at the consideration of limits in ICTAD/SBD/03. But still it is high percentage when compared with original contract period, which is 82%. Quickest and most delayed

payments are varied as shown in Figure 4.2 in three different scenarios. In Table 4.4 it has summarized the payment details. Only final payment is made on time when consider the limits of ICTAD/SBD/03.

Table 4.4: Case 02 - Payment Summary Analyzed

	Days	% against Original Contract Period
Original Contract Period	60	
Total Project Delay	147	245%
Cumulative Payment Delays beyond 14 days	133	222%
Cumulative Payment Delays beyond 28 days	77	128%
Cumulative Payment Delays on ICTAD/SBD/03	49	82%

### 4.3 Analysis: Case 03

Percentage of project delay is 103%. Payment delays are comparatively less at the consideration of limits in ICTAD/SBD/03. Full analysis is presented in Figure 4.3 and Table 4.5.

Table 4.5: Case 03 - Payment Summary Analyzed

	Days	% against Original Contract Period
Original Contract Period	70	
Total Project Delay	72	103%
Cumulative Payment Delays beyond 14 days	58	83%
Cumulative Payment Delays beyond 28 days	-12	-17%
Cumulative Payment Delays on ICTAD/SBD/03	-40	-57%

### 4.4 Analysis: Case 04

Percentage of project delay is 112%. Payment delays are comparatively less at the consideration of limits in ICTAD/SBD/03. All payments delayed when the limits of 14 days period is considered. Analysis is denoted in Figure 4.4 and Table 4.6.

Table 4.6: Case 04 - Payment Summary Analyzed

	Days	% against Original Contract Period
Original Contract Period	50	
Total Project Delay	56	112%
Cumulative Payment Delays beyond 14 days	38	76%
Cumulative Payment Delays beyond 28 days	-18	-36%
Cumulative Payment Delays on ICTAD/SBD/03	-46	-92%

#### 4.5 Analysis: Case 05

Percentage of project delay is 68%. Payment delays are comparatively less at the consideration of limits in ICTAD/SBD/03. But still it is high percentage (164%) when compared with original contract period. (Refer Figure 4.5 and Table 4.7). Quickest payment is the Advance and most delayed payment is Final Payment in all three scenarios.

Table 4.7: Case 05 - Payment Summary Analyzed

	Days	% against Original Contract Period
Original Contract Period	180	
Total Project Delay	122	68%
Cumulative Payment Delays beyond 14 days	422	234%
Cumulative Payment Delays beyond 28 days	324	180%
Cumulative Payment Delays on ICTAD/SBD/03	296	164%

#### 4.6 Analysis: Case 06

Percentage of project delay is 64%. Payment delays are comparatively less at the consideration of limits in ICTAD/SBD/03. But still it is high percentage (187%) when compared with original contract period. Quickest payment is the Advance and most delayed payment is Final Payment in all three scenarios. Summary of analysis is stated in Figure 4.6 and Table 4.8.

Table 4.8: Case 06 - Payment Summary Analyzed

	Days	% against Original Contract Period
Original Contract Period	180	
Total Project Delay	116	64%
Cumulative Payment Delays beyond 14 days	448	249%
Cumulative Payment Delays beyond 28 days	364	202%
Cumulative Payment Delays on ICTAD/SBD/03	336	187%

#### 4.7 Analysis: Case 07

Percentage of project delay is 100%. Payment delays are comparatively less at the consideration of limits in ICTAD/SBD/03. But still it is high percentage (439%) when compared with original contract period. (Refer Figure 4.7 and Table 4.9). Quickest payment is Advance and most delayed payment is First Payment in all three scenarios.

Table 4.9: Case 07 - Payment Summary Analyzed

	Days	% against Original Contract Period
Original Contract Period	180	
Total Project Delay	180	100%
Cumulative Payment Delays beyond 14 days	916	509%
Cumulative Payment Delays beyond 28 days	818	454%
Cumulative Payment Delays on ICTAD/SBD/03	790	439%

#### 4.8 Analysis: Case 08

Case 08 has percentage of project delay as 114%. Payment delays are comparatively less at the consideration of limits in ICTAD/SBD/03. But still it is high percentage (211%) when compared with original contract period. (Refer Figure 4.8 and Table 4.10) Quickest payment is the Advance in all three scenarios. Most delayed payment is Final Payment in all three scenarios.

Table 4.10: Case 08 - Payment Summary Analyzed

	Days	% against Original Contract Period
Original Contract Period	90	
Total Project Delay	103	114%
Cumulative Payment Delays beyond 14 days	288	320%
Cumulative Payment Delays beyond 28 days	218	242%
Cumulative Payment Delays on ICTAD/SBD/03	190	211%

#### 4.9 Analysis: Case 09

In case 09 it has projected project delay percentage as 25%. This is comparatively less value. Payment delays are less at all three scenarios when compared with other cases. Summary of analysis is in Figure 4.9 and Table 4.11.

Table 4.11: Case 09 - Payment Summary Analyzed

	Days	% against Original Contract Period
Original Contract Period	25	
Total Project Delay	30	25%
Cumulative Payment Delays beyond 14 days	33	28%
Cumulative Payment Delays beyond 28 days	-51	-43%
Cumulative Payment Delays on ICTAD/SBD/03	-93	-78%

#### 4.10 Analysis: Case 10

Percentage of project delay is 74% in this case. Payment delays are comparatively less at the consideration of limits in ICTAD/SBD/03. But still it is high percentage (64%) when compared with original contract period. Summary of analysis is in Refer Figure 4.10 and Table 4.12.

Table 4.12: Case 10 - Payment Summary Analyzed

	Days	% against Original Contract Period
Original Contract Period	90	
Total Project Delay	67	74%
Cumulative Payment Delays beyond 14 days	140	156%
Cumulative Payment Delays beyond 28 days	98	109%
Cumulative Payment Delays on ICTAD/SBD/03	56	62%

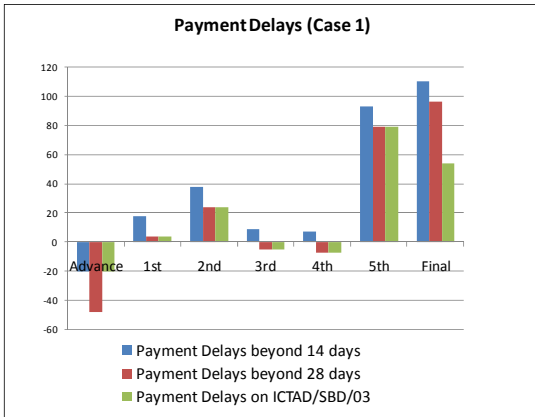


Figure 4.1: Case 01 - Payment Delay

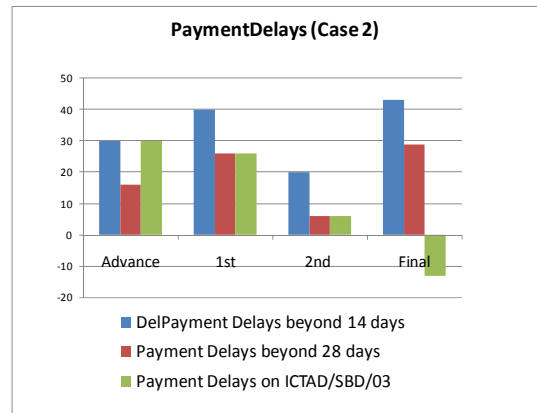


Figure 4.2: Case 02 - Payment Delay

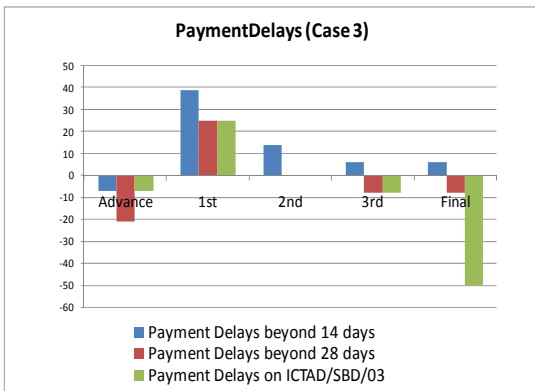


Figure 4.3: Case 03 - Payment Delay

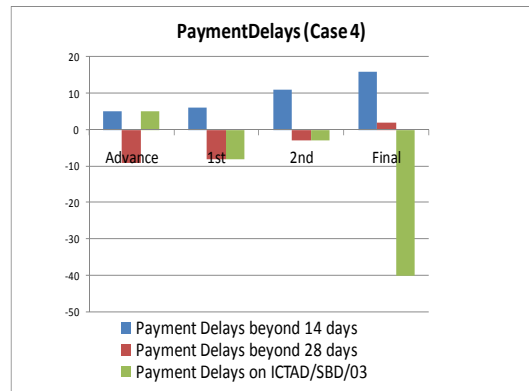


Figure 4.4: Case 04 - Payment Delay



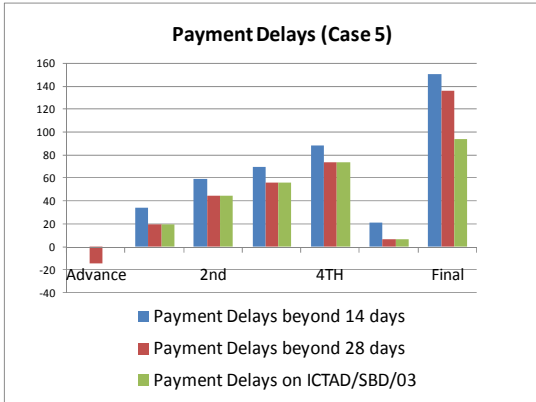


Figure 4.5: Case 05 - Payment Delay

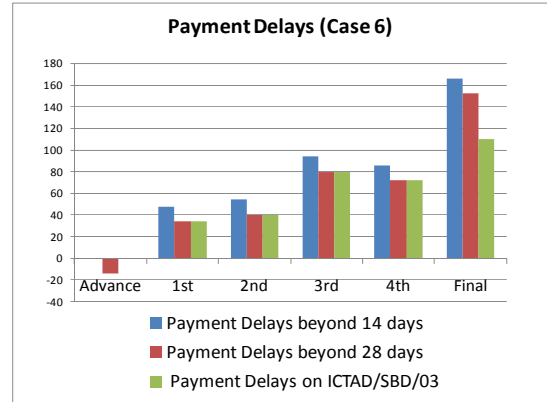


Figure 4.6: Case 06 - Payment Delay

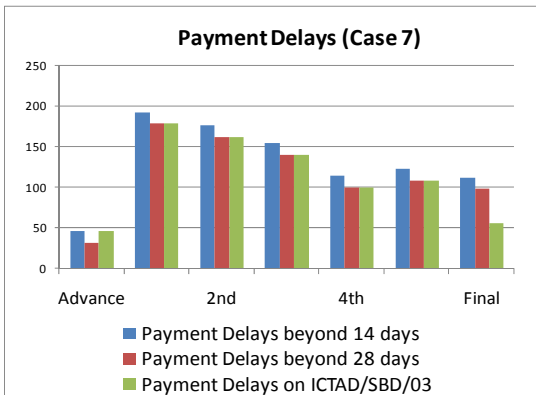


Figure 4.7: Case 07 - Payment Delay

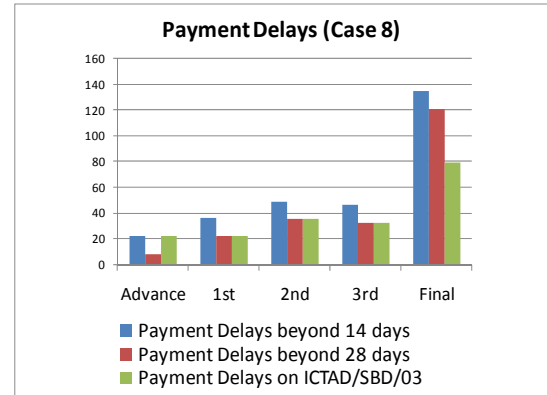


Figure 4.8: Case 08 - Payment Delay

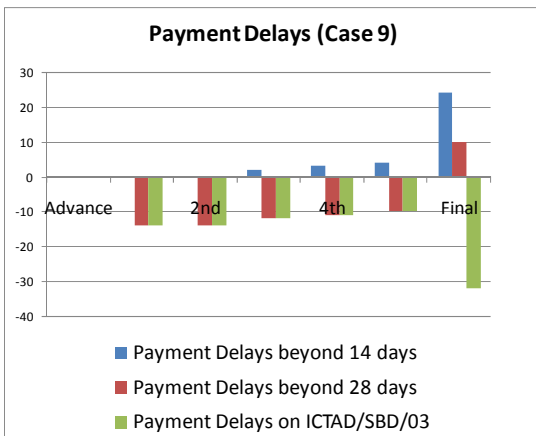


Figure 4.9: Case 09 - Payment Delay

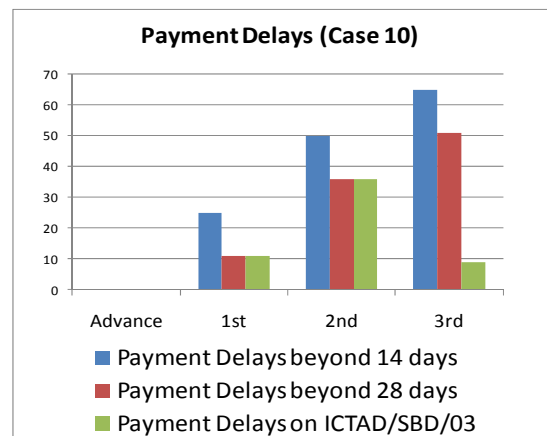


Figure 4.10: Case 10 - Payment Delay

## 4.11 Discussion

In this section we try to see frequency of payments made on time. Also evaluate the impact of payment delays to the category of small scale levels under three different scenarios of 14days limitation and 28days limitation after submission of bills to client by Contractor and also limits of ICTAD/SBD/3.

### 4.11.1 Significance of Timely Payment - Considering 14 Days Limit

Altogether, Fifty Four (54) payments have been considered in this analysis as illustrated in Table 4.13 and Table 4.14. Forty eight (48) numbers of payments are delayed. Only six (6) payments are made on time. Percentage of payment delays to contractor is 89%. Just 11% payments are made on time. It can be further noticed that all payments within a project are delayed in five (5) cases. That mean percentage of all payments delayed in a project is 50%. The analyzed data is further elaborated in Figure 4.11.

Table 4.13: Payment Summary: 14 Days Limit

Projects Cases	Payments ON TIME (Before 14 days)								Occurrence		
	Advance	1st	2nd	3rd	4th	5th	Final	Total	Y	N	
Case-01	Y	N	N	N	N	N	N	7	1Y	6N	
Case-02	N	N	N	-	-	-	N	4	-	4N	
Case-03	Y	N	N	N	-	-	N	5	1Y	4N	
Case-04	N	N	N	-	-	-	N	4	-	4N	
Case-05	Y	N	N	N	N	N	N	7	1Y	6N	
Case-06	Y	N	N	N	N	-	N	6	1Y	5N	
Case-07	N	N	N	N	N	N	N	7	-	7N	
Case-08	N	N	N	N	-	-	N	5	-	5N	
Case-09	-	Y	Y	N	N	N	N	6	2Y	4N	
Case-10	-	N	N	-	-	-	N	3	-	3N	
	Y – Yes ; N-No								54	6Y	48N

Table 4.14: Significance of delays - 14Days limit

Project	Occurrence			
	Yes (Y)		No (N)	
	Y	%	N	%
Case-01	1Y	14%	6N	86%
Case-02		0%	4N	100%
Case-03	1Y	20%	4N	80%
Case-04		0%	4N	100%
Case-05	1Y	14%	6N	86%
Case-06	1Y	17%	5N	83%
Case-07		0%	7N	100%
Case-08		0%	5N	100%
Case-09	2Y	33%	4N	67%
Case-10		0%	3N	100%
	<b>6Y</b>	<b>11%</b>	<b>48N</b>	<b>89%</b>

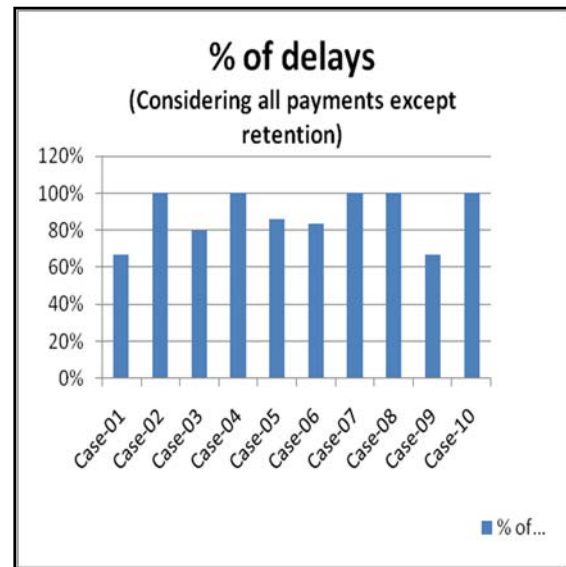


Figure 4.11: Significance of delays - 14Days limit

#### 4.11.2 Significance of Timely Payment - Considering 28 Days Limit

37 numbers of payments are delayed. Only 17 payments are made on time. Percentage of delayed payments is 69%. Just 37% payments are made on time. All payments are delayed in 4 projects (40%). (Refer Table 4.15, Table 4.16 and Figure 4.12)

Table 4.15: Payment Summary: 28 Days Limit

Projects Cases	Payments ON TIME (Before 28 days)								Occurrence	
	Advance	1st	2nd	3rd	4th	5th	Final	Total	Y	N
Case-01	Y	N	N	y	y	N	N	7	3Y	4N
Case-02	N	N	N	-	-	-	N	4	-	4N
Case-03	Y	N	y	y	-	-	y	5	4Y	1N
Case-04	y	y	y	-	-	-	N	4	3Y	1N
Case-05	Y	N	N	N	N	N	N	7	1Y	6N
Case-06	Y	N	N	N	N	-	N	6	1Y	5N
Case-07	N	N	N	N	N	N	N	7	-	7N
Case-08	N	N	N	N	-	-	N	5	-	5N
Case-09	-	Y	Y	Y	Y	Y	N	6	5Y	1N
Case-10	-	N	N	-	-	-	N	3	-	3N
	Y – Yes ; N-No							54	17Y	37N

Table 4.16: Significance of delays - 28Days limit

Project	Occurrence			
	Yes (Y)		No (N)	
	Y	%	N	%
Case-01	3Y	43%	4N	57%
Case-02	0	0%	4N	100%
Case-03	4Y	80%	1N	20%
Case-04	3Y	75%	1N	25%
Case-05	1Y	14%	6N	86%
Case-06	1Y	17%	5N	83%
Case-07	0	0%	7N	100%
Case-08	0	0%	5N	100%
Case-09	5Y	83%	1N	17%
Case-10	0	0%	3N	100%
	<b>17Y</b>	<b>31%</b>	<b>37N</b>	<b>69%</b>

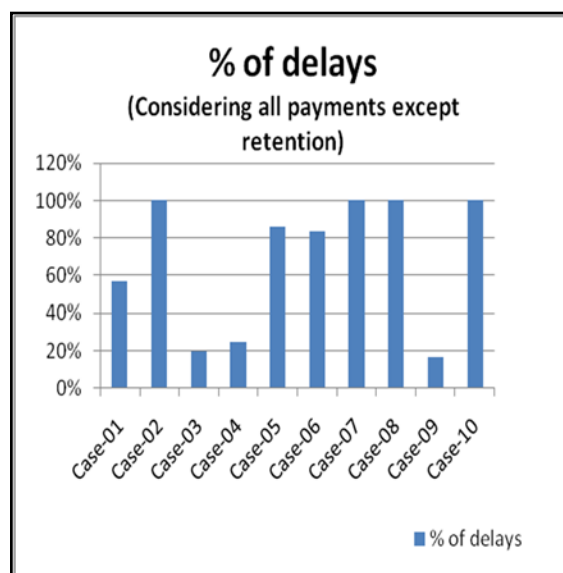


Figure 4.12: Significance of delays - 28Days limit

#### 4.11.3 Significance of Timely Payment - Considering Limits of ICTAD/SBD/03

According to the ICTAD/SBD/03 limits there are 19 payments made on time and 35 delayed. Summary is shown in Table 4.17, Table 4.18 and Figure 4.13.

Table 4.17: Payment Summary: ICTAD/SBD/03 Limit

Projects Cases	Payments ON TIME (Before ICTAD/SBD/03 Limits)								Occurrence	
	Advance	1st	2nd	3rd	4th	5th	Final	Total	Y	N
Case-01	Y	N	N	Y	Y	N	N	7	3Y	4N
Case-02	N	N	N	-	-	-	Y	4	1Y	3N
Case-03	Y	N	Y	Y	-	-	Y	5	4Y	1N
Case-04	N	Y	Y	-	-	-	Y	4	3y	1N
Case-05	Y	N	N	N	N	N	N	7	1Y	6N
Case-06	Y	N	N	N	N	-	N	6	1Y	5N
Case-07	N	N	N	N	N	N	N	7	-	7N
Case-08	N	N	N	N	-	-	N	5	-	5N
Case-09	-	Y	Y	Y	Y	Y	Y	6	6Y	-
Case-10	-	N	N	-	-	-	N	3	-	3N
	Y – Yes ; N-No							54	19Y	35N

Table 4.18: Significance of delays – ICTAD/SBD/03 limit

Project	Occurrence			
	Yes (Y)		No (N)	
	Y	%	N	%
Case-01	3Y	43%	4N	57%
Case-02	1y	25%	3N	75%
Case-03	4Y	80%	1N	20%
Case-04	3y	75%	1N	25%
Case-05	1Y	14%	6N	86%
Case-06	1Y	17%	5N	83%
Case-07	0	0%	7N	100%
Case-08	0	0%	5N	100%
Case-09	6Y	100%	0	0%
Case-10	0	0%	3N	100%
	<b>19Y</b>	<b>35%</b>	<b>35N</b>	<b>65%</b>

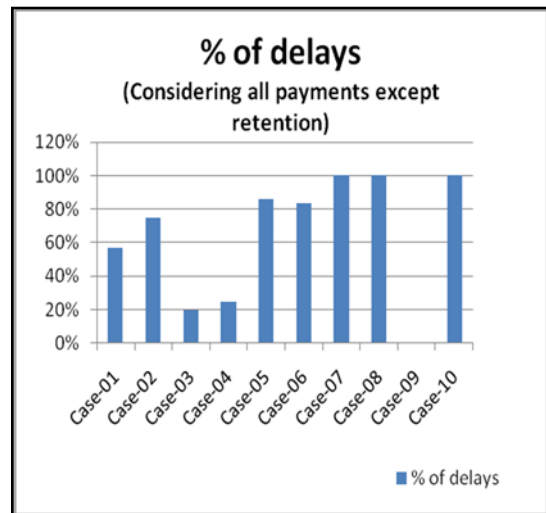


Figure 4.13: Significance of delays – ICTAD/SBD/03 limit

#### 4.11.4 Conclusion

It can be observed that percentage (%) of delayed payments are still high (as shown in Table 4.19 and Figure 4.14) even consideration of the limits in accordance to ICTAD guidelines. Accordingly percentage of timely payments should be improved. It can be observed that percentage of all payments delayed in a project is still high in three different cases as shown in following Table 4.19.

Table 4.19: Payment Delay Summary

#	No of Delayed Payments (N)	% of Delayed Payments	No of Payments made on time (Y)	% of payments made on time	% of all payments delayed in a project
Payment delays beyond 14 days	48	89%	6	11%	50%
Payment delays beyond 28 days	37	69%	17	31%	40%
Payment delays considering ICTAD limits	35	65%	19	35%	30%

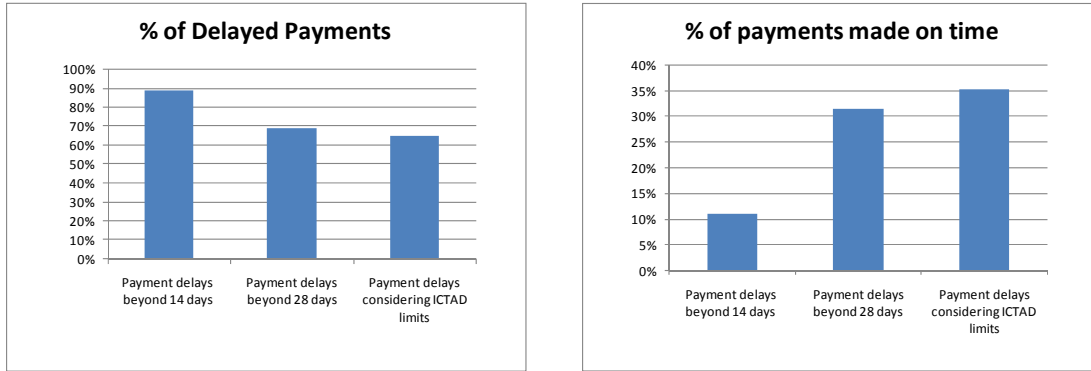


Figure 4.14: Payments on Projects

## 4.12 Most Delayed Payment in a Project

### 4.12.1 Based on Number of Days Taken for Payments

It can be observed that most delayed payment is Final Payment in a project on the basis of no of days taken for payments as shown in Table 4.20 and Table 4.21. The tendency of happening is 80%. It can be also observed that quickest payment is advance payment in a project on the basis of no of days taken for payments. Tendency of happening is 87.5%. (Q means quickest; MD means most Delayed; NA means Not Applicable)

Table 4.20: Summary of No of Days Taken for Payment

Project	No of days Taken For Payments							
	Advance	1st	2nd	3rd	4th	5th	Final	Total
Case-01	8	32	52	23	21	107	124	367
Case-02	44	54	34	-	-	-	57	189
Case-03	7	53	28	20	-	-	20	128
Case-04	19	20	25	-	-	-	30	94
Case-05	14	48	73	84	102	35	164	520
Case-06	14	62	68	108	100	-	180	532
Case-07	60	206	190	168	128	136	126	1014
Case-08	36	50	63	60	-	-	149	358
Case-09	NA	14	14	16	17	18	38	117
Case-10	NA	39	64	-	-	-	79	182

Table 4.21: Summary of Most Delayed Payment & Most Quick Payment

Project	Most Delayed Payment(MD) / Most Quick Payment (Q)						
	Advance	1st	2nd	3rd	4th	5th	Final
Case-01	Q	-	-	-	-	-	MD
Case-02	-	-	Q	-	-	-	MD
Case-03	Q	MD	-	-	-	-	-
Case-04	Q	-	-	-	-	-	MD
Case-05	Q	-	-	-	-	-	MD
Case-06	Q	-	-	-	-	-	MD
Case-07	Q	MD	-	-	-	-	-
Case-08	Q	-	-	-	-	-	MD
Case-09	NA	Q	Q	-	-	-	MD
Case-10	NA	Q	-	-	-	-	MD

#### 4.12.2 Most Delayed Payment Based on Three Different Scenarios

It is analyzed the most delayed payments based on the tree different scenarios. Payment delays beyond 14 days, Payment delays beyond 28 days and Payment delays considering limits of ICTAD/SBD/03. Following statistics were collected according to those criteria as shown in Table 4.22, Table 4.23 and Table 4.24 respectively.

Table 4.22: Most Delayed Payment - beyond 14 Days

Project	No of Payments							
	Advance	1st	2nd	3rd	4th	5th	Final	Total
No of payments considered	8	10	10	7	5	4	10	<b>54</b>
No of delayed payments	4	9	9	7	5	4	10	<b>48</b>
% of delays	50%	90%	90%	100%	100%	100%	100%	89%

Table 4.23: Most Delayed Payment - beyond 28 Days

Project	No of Payments							
	Advance	1st	2nd	3rd	4th	5th	Final	Total
No of payments considered	8	10	10	7	5	4	10	<b>54</b>
No of delayed payments	3	8	7	4	3	3	9	<b>37</b>
% of delays	38%	80%	70%	57%	60%	75%	90%	69%

Table 4.24: Most delayed payment for limits of ICTAD/SBD/03

Project	No of Payments							
	Advance	1st	2nd	3rd	4th	5th	Final	Total
No of payments considered	8	10	10	7	5	4	10	<b>54</b>
No of delayed payments	4	8	7	4	3	3	6	<b>35</b>
% of delays	50%	80%	70%	57%	60%	75%	60%	65%

Based on the above tables it can compare and contrast those statistics as in Table 4.25. There it can be observed that the quickest payment is the Advance payment in all three scenarios while the 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and final payments are being the most delayed payments when considering the payment delays beyond 14 days. In 28 days delay scenario it is clear that the final payment has always been the most delayed one. Payment delays considering limits of ICTAD/SBD/03 it can see that the 1<sup>st</sup> payment has always being paid with a delay.

Table 4.25: Most Delayed Payment - Conclusions

Scenarios	Advance	1st	2nd	3rd	4th	5th	Final	Total
Payment delays beyond 14 days	50%	90%	90%	100%	100%	100%	100%	89%
Payment delays beyond 28 days	38%	80%	70%	57%	60%	75%	90%	69%
Payment delays considering ICTAD limits	50%	80%	70%	57%	60%	75%	60%	65%

#### 4.13 Taking Joint Measurements Prior to Bill Submission

Here 46 payments are considered in between 1st bill and Final bill (inclusive both) within selected 10 projects. It also noted that 29 times (out of 46 payments) have been taken joint measurements prior to submission of bills. Percentage of taking joint measurement is 63%. Accordingly the comparison of Taking Joint Measurements Vs Payment Delays have been considered in three categories i.e. 14 days limitation and 28 days limitation after submission bills to client by Contractor and also limits of ICTAD/SBD/3.



#### 4.13.1 Payment Delays beyond 14 Days Vs Prior Joint Measurements

Joint Measurements have been taken for 29 times prior to submission of bills to client. When compared those 29 bills, only on two occasions payments made on time. 27 payments have been delayed even after taking the Joint Measurements (Refer Table 4.26). Percentage of delaying payments even after having joint measurements is 93%.

Table 4.26: Payment Delays Beyond 14 Days vs. Taking Join measurements

Project		Considering Payment delays beyond 14 days							
		Advance	1st	2nd	3rd	4th	5th	6th	Final
Case-01	Taking Joint measurements		N	N	N	N	N		N
	Payments on time	Y	N	N	N	N	N		N
Case-02	Taking Joint measurements		Y	Y					Y
	Payments on time	N	N	N	-	-	-		N
Case-03	Taking Joint measurements		Y	Y	Y				Y
	Payments on time	Y	N	N	N	-	-		N
Case-04	Taking Joint measurements		Y	Y					Y
	Payments on time	N	N	N	-	-	-		N
Case-05	Taking Joint measurements		N	N	N	N	N		N
	Payments on time	Y	N	N	N	N	N		N
Case-06	Taking Joint measurements		N	N	N	N			N
	Payments on time	Y	N	N	N	N	-		N
Case-07	Taking Joint measurements		Y	Y	Y	Y	Y		Y
	Payments on time	N	N	N	N	N	N		N
Case-08	Taking Joint measurements		Y	Y	Y				Y
	Payments on time	N	N	N	N	-	-		N
Case-09	Taking Joint measurements		Y	Y	Y	Y	Y		Y
	Payments on time	-	Y	Y	N	N	N		N
Case-10	Taking Joint measurements		Y	Y					Y
	Payments on time	-	N	N	-	-	-		N

#### 4.13.2 Payment Delays beyond 28 Days Vs Prior Joint Measurements

According to the case data it has taken the Joint Measurements prior to submission of bills to client in 29 bills. When comparing those 29 bills, only ten times payments are

made on time. 19 bills are being delayed even though it took the Joint Measurements precautions. Percentage of delaying payments upon having joint measurements is 66%. Summarized details are in Table 4.27.

Table 4.27: Payment Delays beyond 28 Days vs. Taking Joint Measurements

Project		Considering Payment delays beyond 28 days							
		Advance	1st	2nd	3rd	4th	5th	6th	Final
Case-01	Taking Joint measurements		N	N	N	N	N		N
	Payments on time	Y	N	N	Y	Y	N		N
Case-02	Taking Joint measurements		Y	Y					Y
	Payments on time	N	N	N	-	-	-		N
Case-03	Taking Joint measurements		Y	Y	Y				Y
	Payments on time	Y	N	Y	Y	-	-		Y
Case-04	Taking Joint measurements		Y	Y					Y
	Payments on time	Y	Y	Y	-	-	-		N
Case-05	Taking Joint measurements		N	N	N	N	N		N
	Payments on time	Y	N	N	N	N	N		N
Case-06	Taking Joint measurements		N	N	N	N			N
	Payments on time	Y	N	N	N	N	-		N
Case-07	Taking Joint measurements		Y	Y	Y	Y	Y		Y
	Payments on time	N	N	N	N	N	N		N
Case-08	Taking Joint measurements		Y	Y	Y				Y
	Payments on time	N	N	N	N	-	-		N
Case-09	Taking Joint measurements		Y	Y	Y	Y	Y		Y
	Payments on time	-	Y	Y	Y	Y	Y		N
Case-10	Taking Joint measurements		Y	Y					Y
	Payments on time	-	N	N	-	-	-		N

#### 4.13.3 Payment Delays According to ICTAD Limits Vs Prior Joint Measurements

Out of the 29 bills where prior Joint Measurements have been taken only 13 payments are made on time. 16 times payments are been delayed even with prior Joint Measurements. Percentage of delaying payment upon having joint measurements is 55%. Summarized details are in Table 4.28.

Table 4.28: Payment Delays According to ICTAD vs. Taking Joint Measurements

Project		Considering Payment delays According to ICTAD limits							
		Advance	1st	2nd	3rd	4th	5th	6th	Final
Case-01	Taking Joint measurements		N	N	N	N	N		N
	Payments on time	Y	N	N	Y	Y	N		N
Case-02	Taking Joint measurements		Y	Y					Y
	Payments on time	N	N	N	-	-	-		Y
Case-03	Taking Joint measurements		Y	Y	Y				Y
	Payments on time	Y	N	Y	Y	-	-		Y
Case-04	Taking Joint measurements		Y	Y					Y
	Payments on time	N	Y	Y	-	-	-		Y
Case-05	Taking Joint measurements		N	N	N	N	N		N
	Payments on time	Y	N	N	N	N	N		N
Case-06	Taking Joint measurements		N	N	N	N			N
	Payments on time	Y	N	N	N	N	-		N
Case-07	Taking Joint measurements		Y	Y	Y	Y	Y		Y
	Payments on time	N	N	N	N	N	N		N
Case-08	Taking Joint measurements		Y	Y	Y				Y
	Payments on time	N	N	N	N	-	-		N
Case-09	Taking Joint measurements		Y	Y	Y	Y	Y		Y
	Payments on time	-	Y	Y	Y	Y	Y		Y
Case-10	Taking Joint measurements		Y	Y					Y
	Payments on time	-	N	N	-	-	-		N

Based on the Table 4.26, Table 4.27 and Table 4.28 it can compare and contrast those statistics as in Table 4.29 and Figure 4.15. Percentage of delaying a payment upon having joint measurements under payment delays beyond 14 days is 93%, under payment delays beyond 28 days is 66%, and under ICTAD limits is 55%. Comparatively delays are over 50% in all three different scenarios.

Table 4.29: Payment Delays upon Taking Joint Measurements: Conclusions

#	No of payments considered	No of joint measurements taken prior to bill submission	% of taking joint measurements	No of Payments delayed upon the taking of joint measurements	Percentage of delaying payment upon the having joint measurements
Payment delays beyond 14 days	46	29	63%	27	93%
Payment delays beyond 28 days	46	29	63%	19	66%
Payment delays considering ICTAD limits	46	29	63%	16	55%

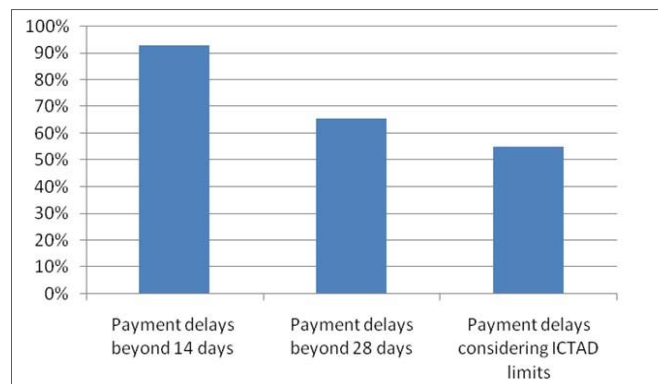


Figure 4.15: Percentage of Delaying Payment upon Taking Joint Measurements

#### 4.14 Reasons for Payment Delays.

In this section it has concerned to extract the reasons for the payment delays. Finally the extracted causes are analytically explained as per 4.14.1.

##### 4.14.1 Identifying Reasons to Payment Delays

- Due to internal system of the client (No of layers passing the bill)

The bill is normally subjected to pass through several individual officers for checking, certifying, recommending, approving or authorizing and paying in the alternative several sub divisions. Accordingly wastage of time is unpreventable.

- Cash problems of the client (Non availability of Funds)  
Cash is not physically available in clients Bank Accounts or in their hands to issue cheques or transfer money or pay in cash. Ultimately payments are delayed due to this issue even though checking, certifying, recommending and approving of bills have been already finalized.
- Time taken to check the bill by client  
Clients take their own time without considering the periods specified for payments in the Contract Document or Agreement.
- Additional works requested by client after submission of Final Bill  
After checking Final Bills if there is any balance amounts against originally approved cost, client requests to carry out some additional works prior to processing or paying of Final Bill.
- Non adherence of correct formats by Contractor  
There are separate billing formats for each project. Contractor should follow the specific formats when preparing his bill.
- Improper submission by Contractor(less documentation)  
Contractor should submit all and necessary supporting documents with his bills. Such as measurement sheets, bar schedules, sketch drawings, warranties, photos, log notes, rate break downs, variation orders, etc.

#### **4.14.2 Ranking Reasons for Payment Delays**

Reasons for payment delays were tabulated as Table 4.30 considering no of occurrence happening within a project. This can be graphically shown as in Figure 4.16. Accordingly, The main cause for payment delay is Due to internal system of the Client (No of layers passing the bill).mean value of occurring delays Due to internal system of the Client (No of layers passing the bill) is 46%, Refer Table 4.30 & Figure 4.16. The second cause for the payment delay is the Cash problem of the client (Non availability of fund) and it is mean percentage of occurring is 36%, Table 4.30.

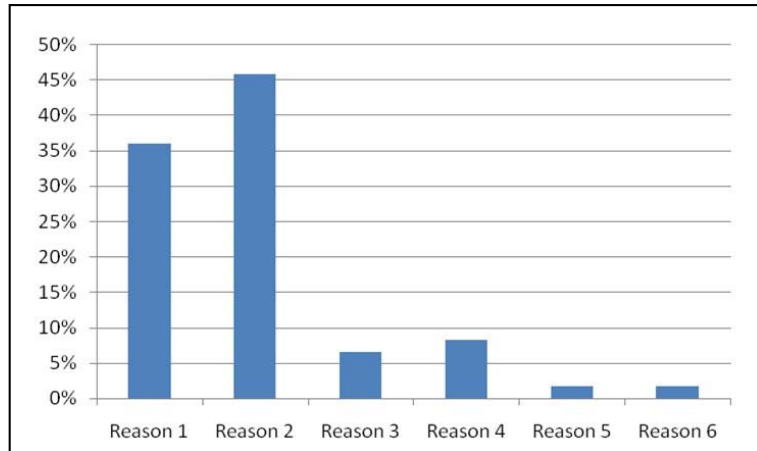


Figure 4.16: Reasons for Payment Delay vs. Occurrence

#### 4.14.3 Analyze Reason 02: No of Layers Passing the Bill

In accordance to Table 4.31 it can be clearly observed that existence of number of layers (officers) for a bill to pass through after submission is a real cause for payment delays. When no of layers are more than 3 it becomes a key factor for the payment delays.

#### 4.14.4 Analysis: Most Affecting Reason for the Payment Delay

It can be observed that payment delay, Due to internal system of the Client (No of layers passing the bill), is the main delaying factor in a project. Its percentage is 55%. The second delaying factor is, Cash problem of the client (Non availability of fund), and percentage is 27%. Summarized details are in Table 4.32.

Table 4.30: Significance of causes for delays within a Project

No	Reason for the delays	No of occurrences											Rank	% of delays
		Case 01	case 02	Case 03	Case 04	Case 05	Case 06	Case 07	Case 08	Case 09	Case 10	Total		
1	Cash problem of the client (Non availability of fund)	3	1	1	3	2	3	7	1		1	22	2	36%
2	Due to internal system of the Client (No of layers passing the bill)		3			6	5	7	4		3	28	1	46%
3	Additional works requested by client after submission of final bill		1						1	1	1	4	4	7%
4	Time taken to check the bill by client	1		3	1							5	3	8%
5	not follows the correct formats by Contractor							1				1	5	2%
6	improper submission by Contractor (less documentation)					1						1	5	2%

Table 4.31: No of Layers /officers passing the Bill

Reason for the delay: " Due to internal system of the Client (No of layers passing the bill)"	Projects									
	Case 01	case 02	Case 03	Case 04	Case 05	Case 06	Case 07	Case 08	Case 09	Case 10
No of Occurrences within the project		3			6	5	7	4		3
% of occurrences within the project	0%	60%	0%	0%	67%	63%	47%	67%	0%	60%
No of layers passing after submission	3	6	3	3	9	9	8	6	3	6

Table 4.32: Occurrences within a Project

No	Reason for the delays	Happening of main reason for delay in a project										Total	Rank	%
		Case 01	Case 02	Case 03	Case 04	Case 05	Case 06	Case 07	Case 08	Case 09	Case 10			
1	Cash problem of the client (Non availability of fund)	■			■			■				3	2	27%
2	Due to internal system of the Client (No of layers passing the bill)		■			■	■	■	■		■	6	1	55%
3	Additional works requested by client after submission of final bill									■		1	3	9%
4	Time taken to check the bill by client			■								1	3	9%
5	not follows the correct formats by Contractor													
6	improper submission by Contractor (less documentation)													

#### 4.15 Satisfaction of Limits Specified in ICTAD/SBD/03 for Payments

Maximum limits under ICTAD/SBD/03 are specified as; For Advance payment: 14 days; For Interim payments: 28 days; For Final Payment: 70 days; Release of Retention: Not considered under this study. In accordance to the Table 4.33 and Figure 4.17 only one project has completed satisfying the specified periods for payments under ICTAD/SBD/03. Accordingly satisfaction of completion projects in accordance to ICTAD/SBD/03 limits is only 10%. Otherwise 90% of projects deviating the payment limits specified in ICTAD/SBD/03.



In accordance to the Table 4.33, delay of payments against ICTAD/SBD/3 limits is 65% when consider all types of payments together. In accordance to the Table 4.34 and Figure 4.18 it has been considered each type of payments separately i.e. Advance Payment, Interim Payment and Final payment. It can be observed more than 50% is delayed in each type.

Table 4.33: Percentage of Delay – ICTAD/SBD/03

Projects	Occurrence			
	Y		N	
	Y	%	N	%
Case-01	3Y	43%	4N	57%
Case-02	1y	25%	3N	75%
Case-03	4Y	80%	1N	20%
Case-04	3y	75%	1N	25%
Case-05	1Y	14%	6N	86%
Case-06	1Y	17%	5N	83%
Case-07	0	0%	7N	100%
Case-08	0	0%	5N	100%
Case-09	6Y	100%	0	0%
Case-10	0	0%	3N	100%
	<b>19Y</b>	<b>35%</b>	<b>35N</b>	<b>65%</b>

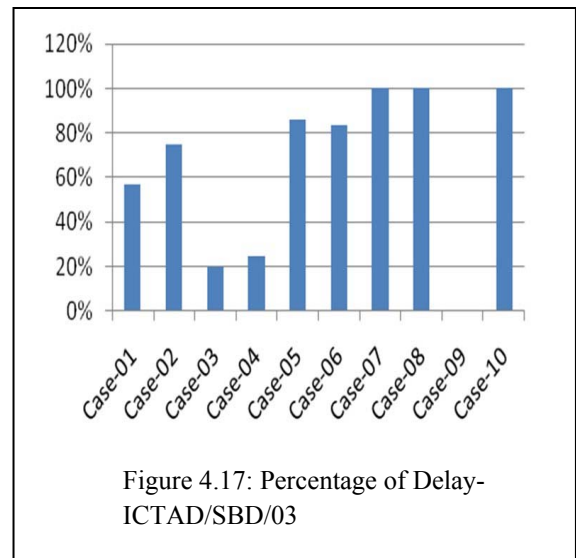


Figure 4.17: Percentage of Delay-ICTAD/SBD/03

Table 4.34: Satisfaction of Limits of ICTAD/SBD/03

Type of payment	No of payments	Satisfaction of limits of ICTAD/SBD/03 (Nos)		Satisfaction of limits of ICTAD/SBD/03 (%)	
		Y	N	Y	N
Advance	8	4	4	50%	50%
1st	10	2	8	20%	80%
2nd	10	3	7	30%	70%
3rd	7	3	4	43%	57%
4th	5	2	3	40%	60%
5th	4	1	3	25%	75%
Final	10	4	6	40%	60%
Total	54	19	35	35%	65%

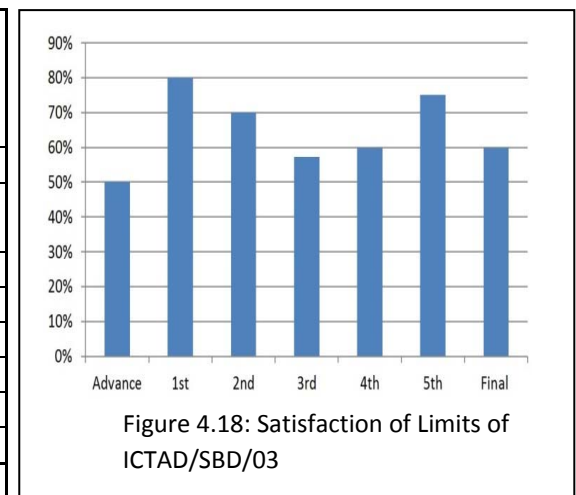


Figure 4.18: Satisfaction of Limits of ICTAD/SBD/03

## **4.16 Improper practices related to payment delays to Contractors,**

### **4.16.1 Identification of Improper Practices**

According to the data of 54 payments of selected ten Small Scales completed projects, the following bad practices were identified and separated, finally analytically explained,

#### **From Client's Side**

- **Lack of inter relationship between internal units and officials.**

Hence some bills for payment are retained unnecessarily in one unit or officer without passed on to the next stage. It is also very difficult to find responsible officials to get correct information related to payments.

- **Lack of follow up and guidance by Top Level officials.**

Unit Heads and Authorized officials do not properly guide and follow up the works of subordinates and fail to give strict instructions to proceed with the payments within specified periods. Accordingly payment process proceeds at a snail's space.

- **Lack of knowledge about conditions of Contract.**

Some officials are not fully aware about Conditions of Contract and also are not very concerned about it. Accordingly they are unaware of the periods specified for payments and penalties. So they take their own time to proceed with payments.

- **No fear in contravening conditions of contract or delaying of Payments.**

Most of the officials have no fear in delaying contractor payments. They believe there is no penalty or any other adverse effect on account of such action. They take their own time to proceed with payments

- **Not providing time to meet and discuss Issues.**

Some local officials run away without giving chances for contractors to discuss about project related matters. Hence existing issues such as delaying of payments, etc drag on unnecessarily without being solved.

- **Failure to have continuous Progress Meetings.**

Proceeding for meetings on time is very poor. Hence there is no opportunity to discuss critical issues such as highlighting of payment delays, etc.

- **Expectation of some sort of benefits in order to check & pass Bills.**

Some officials expect monetary or some other illegal benefits to expedite payments and hold on until such expectations are fulfilled.

- **Giving priority to known parties.**

Very often priority is given to known contractors in process of checking and payment of bills without considering the other contractors. Political influences are also considered in giving priority. Accordingly Payments to some parties are delayed.

- **Lack of interest in attending to contractor payments.**

Officials who are checking bills are not interested in visiting construction sites and checking the progress and taking measurements due to some identified reasons - presence of dust, sunlight and also due to shyness, etc. This is noticed especially among Female officials. Less overall benefits might be a reason.

- **Handling too much of work at a time.**

Some officials are stuck with too much work at a time. When several Bills are received simultaneously those get stuck due to insufficient officials to expedite payments.

- **Low salaries or overall benefits.**

Some officials are getting comparatively low salaries and fewer benefits. Hence they do not attend to their work with enthusiasm and efficiency. Interest is also low to attend on checking the Bills.

- **Taking of too much Leave by related Officials.**

Some officials are getting too much leave. This is on the high side in government sector. They are also entitled to have those leave. Therefore payment process is delayed in the absence of alternative staff to attend to their day to day works.

### **From Contractor's Side**

- **Lack of Confidence to discuss related payment delays**

Contractors are reluctant to directly discuss with clients about payment delays due to fear of reprisals in many forms such as non offering of future Contracts, delaying payments with flimsy reasons - non approvals of variations, etc.

- **Lack of Courage to complain to relevant parties or Authorities about delays**

They don't have much courage to complain to higher or relevant authorities on payment delays in writing or even verbally. They feel that they always play second fiddle to client in the industry and the reality in the construction industry is client's domination.

- **Lack of knowledge about Conditions of Contract.**

Knowledge of this category of contractors is normally very poor on Contract administration procedures and Conditions of Contracts. Therefore they fail to comply with the clauses and miss the opportunities to complain about delays as per provision made in Contracts and also in getting benefits for payment delays.

- **Lack of professional background.**

Most contractors in this category lack higher educational Qualifications and a professional background. They are lethargic in retaining professionals on fulltime basis. Hence it has become a barrier to keep good communication links with client's party which has a good professional background. It is also a reason for them to face the clients with less Confidence.

- **Poor communication skills.**

This is a poor factor of the contractor's side. They are unable to engage themselves in an effective communication process with relevant officials of clients due to lack of required communication skills.

- **Less Planning and Commitments.**

Mostly Contractors are not submitting monthly invoices and they try to submit related invoices after completion of good percentage of works. Thus lack of commitment on their part in submission of monthly invoices.

- **Lack of Unity among contractors.**

There is no unity among the contractors. Therefore they are unable to stand as a strong opposition or as a pressure group for issues like payment delays and obstacles placed on their path in carrying out contract works.

#### 4.16.2 Asses the Impact of Improper Practices

Table 4.35 and 4.36 shows the assessment of relevant improper practices identified in ten Small Projects, considering number of occurrences under each payment.

Table 4.35: Assessment related to Improper Practices

		No of occurrences based on each payments										Total	%
		Case 01	case 02	Case 03	Case 04	Case 05	Case 06	Case 07	Case 08	Case 09	Case 10		
<b>No of Payments</b>		7	4	5	4	7	6	7	5	6	3	54	
<b>No of Payments delayed according to ICTAD/SBD/03</b>		4	3	1	1	6	5	7	5	0	3	35	65%
<b>No of Payments delayed according to 14 days limit</b>		6	4	4	4	6	5	7	5	4	3	48	89%
<b>No of Payments delayed according to 14 days limit</b>		4	4	1	1	6	5	7	5	1	3	37	69%
<b>Improper Practices - From Client's Side</b>													
1	Lack of inter relationship between internal units and officials within the organization	6	3	4	3	6	5	7	5	1	3	43	80%
2	Lack of follow up and guidance by Top Level officials.	4	3	3	2	7	6	6	6	2	3	42	78%
3	No fear in contravening conditions of contract or delaying of Payments.	5	3	3	3	7	6	7	4	0	3	41	76%
4	Expectation of some sort of benefits in order to check & pass Bills.	3	2	2	2	4	4	5	2	1	2	27	50%
5	Giving priority to known parties.	3	2	3	3	4	5	3	3	2	3	31	57%
6	Handling of too much work at a time.	5	3	2	3	6	5	7	4	2	3	40	74%
7	Law salaries or overall benefits.	0	0	1	1	6	5	6	1	0	1	21	39%
8	Taking of too much Leave by related Officials.	0	1	1	1	2	3	1	1	0	1	11	20%
<b>Improper Practices - From Contractor's Side</b>													
1	Lack of Courage & Confidence to complain to relevant parties/Authorities about payment delays.	6	2	3	2	5	4	6	5	3	2	38	70%
2	Lack of knowledge about Conditions of Contract.	1	1	1	1	2	2	3	1	0	1	13	24%
3	Lack of professional background.	3	2	1	1	4	3	2	2	2	2	22	41%
4	Lack of Unity among contractors.	2	3	3	3	6	5	6	5	3	3	39	72%

Then each improper practice was evaluated in accordance to following levels of Impact. Levels of Impact: If No of occurrences > or = 70% - High Impact; If No of occurrences between 40 - 70% - Moderate Impact; If No of occurrences < 40% - Low Impact.

Table 4.36: Level of Impact of Improper Practices

<b>No</b>	<b>Improper practices,</b>  (Identified based on considered 54 payments in ten completed projects in small scale category)	<b>No of occurrences within ten projects</b>	<b>Impact to Payment Delay</b>
<b>From Client's Side</b>			
1	Lack of inter relationship between internal units and officials within the organization	80%	High
2	Lack of follow up and guidance by Top Level officials.	78%	High
3	No fear about contravening conditions of contract or delaying of Payments.	76%	High
4	Handling too much work at a time.	74%	High
5	Giving priority to known parties.	57%	Moderate
6	Expectation of some sort of benefits in order to check & pass Bills.	50%	Moderate
7	Offering Law salaries or overall benefits to staff.	39%	Low
8	Taking of too much Leave by related Officials.	20%	Low
<b>From Contractor's Side</b>			
1	Lack of Courage & Confidence to complain to relevant parties/Authorities about payment delays.	70%	High
2	Lack of Unity among contractors.	72%	High
3	Lack of professional background.	41%	Moderate
4	Lack of knowledge about Conditions of Contract.	24%	Low

#### 4.16.2 Proposed improvements to mitigate payment delays

Following improvements are proposed based on the derived effects due to Improper Practices and Level of Impact.

Table 4.37: Proposed Improvements for payment delays

No	Improper practices,	Effects	Proposal for Improvement
<b>From Client's Side</b>			
1	Lack of inter relationship between internal units and officials	Bills retained unnecessarily in one unit or officer without passing to next stage.	Keep effective and efficient inter relationship between internal units and officials.
2	Lack of follow up and guidance by Top Level officials.	Payment process proceeds at a snail's pace.	Proper guidance and follow ups of works of subordinates by Top Management
3	No fear in contravening conditions of contract or delaying of Payments.	Take their own time to proceed with payments	Good understanding about Conditions of Contracts and practices
4	Handling too much work at a time.	Get stuck to check and pass the payments on time.	Take suitable steps not to assign too much work at a time to one officer
5	Giving priority to known parties.	Some payments are unnecessarily retained.	Equal Treatment towards all contractors
6	Expectation of some sort of benefits in order to check & pass Bills.	Hold Payments until such expectations are fulfilled	Avoid unauthorized or illegal benefits from contractors to expedite payments
7	Offering low salaries or overall benefits to staff.	Not attending to payment process with enthusiasm and efficiency.	Provide Right salaries with other benefits aiming to increase interest on works
8	Taking of too much Leave by related Officials.	Payment process is stuck in the absence of alternative staff to attend.	Ensure continuation of ongoing or inhand works when persons are on leave
<b>From Contractor's Side</b>			
1	Lack of Courage & Confidence to complain to relevant parties/Authorities about payment delays.	Always play second fiddle to client who is always dominating.	Keep strong communication habit with all relevant parties.
2	Lack of Unity among contractors.	unable to stand as a strong opposition or as a pressure group for issues like payment delays	Maintain strong unity among contractors through unions.
3	Lack of professional background.	barrier to keep good communication links, etc with client's party which has a good professional background	Presence of relevant professionals within the company.
4	Lack of knowledge about Conditions of Contract.	Fail to comply with the clauses and miss opportunities for redress to payment delays.	Have good understanding about conditions of contracts and practices

## CHAPTER 5

### 5. CONCLUSIONS & RECOMMENDATIONS

This chapter summarized the findings from the previous chapter and draws the conclusions and recommendations for this study.

#### 5.1 Summary of Findings

**Objective 1:** the Impacts of Payment delays to Small Scale Construction Contractors,

Table 5.1: Impact of Payment delays to Small Scale Contractors

No	Findings (Based on analysis of data collected through 54 payments in ten completed projects in small scale category)	For 14 days limit for payments	For 28 days limit for payment	For ICTAD/SBD/03 limits for payments
1	Significance of payment delays to contractor. (percentage of payment delays for contractor after bill submission)	89%	69%	65%
2	Possibility to delay all types of payments (Advance, Interim & Final) in the same project.	50%	40%	30%
3	Most delayed payment in a Project	Final (100%)	Final (90%)	First (80%)
4	Quickest payment in a Project	Advance (50%)	Advance (38%)	Advance (50%)
5	Significance of Payment delays after taking the Prior Join Measurements.	93%	66%	55%
6	Satisfaction of periods specified for Payments in ICTAD/SBD/03			Advance - 50% Interim – 31% Final – 40%



**Objective 2:** Main causes for payment delays to Small Scale Construction Contractors.

Table 5.2: Main causes for payment delays to Small Scale Contractors

<b>Rank</b>	<b>Main Causes for payment delays,</b> (Based on analysis of data collected through 54 payments in ten completed projects in small scale category)	<b>Significance (%)</b>
Rank 1	Due to prevailing internal system of the Client (No of officers passing the bill).	46%
Rank 2	Cash problem of the client (Non availability of fund).	36%
Rank 3	Time taken to check the bill by client.	08%
Rank 4	Additional works requested by client after submission of final bill.	07%
Rank 5	Non-adherence of correct formats by Contractor.	02%
Rank 6	Improper submission by Contractor(less documentation).	02%

**Objective 3:** Proposed Improvements to mitigate payment delays in small scale Construction Projects.

Table 5.3: Proposed Improvements to mitigate payment delays to Small Contractors

<b>No</b>	<b>Improper practices</b>	<b>Effect to payment delays</b>	<b>Impact on payment delays *</b>	<b>Proposed Improvements to mitigate</b>
<b>From Client's Side</b>				
1	Lack of inter relationship between internal units and officials	Bills retained unnecessarily in one unit or officer without passing to next stage.	High	Keep effective and efficient inter relationship between internal units and officials.
2	Lack of follow up and guidance by Top Level officials.	Payment process proceeds at a snail's space.	High	Proper guidance and follow ups of works of subordinates by Top Management
3	No fear in contravening conditions of contract or delaying of Payments.	Take their own time to proceed with payments	High	Good understanding about Conditions of Contracts and practices

4	Handling of too much work at a time.	Get stuck to check and pass the payments on time.	High	Take suitable steps not to assign too much work at a time to one officer
5	Expectation of some sort of benefits in order to check & pass Bills.	Hold Payments until such expectations are fulfilled	Moderate	Avoid unauthorized or illegal benefits from contractors to expedite payments
6	Giving priority to known parties.	Some payments are unnecessarily retained.	Moderate	Equal Treatment towards all contractors
7	Offering low salaries or overall benefits to staff.	Not attending to payment process with enthusiasm and efficiency.	Low	Provide Right salaries with other benefits aiming to increase interest on works
8	Taking of too much Leave by related Officials.	Payment process is stuck in the absence of alternative staff to attend.	Low	Ensure continuation of ongoing or inhand works when persons are on leave
<b>From Contractor's Side</b>				
1	Lack of Courage & Confidence to complain to relevant parties/Authorities about payment delays.	Always play second fiddle to client who is always dominating.	High	Keep strong communication habit with all relevent parties.
2	Lack of Unity among contractors.	Unable to stand as a strong opposition or as a pressure group for issues like payment delays	High	Maintain strong unity among contractors through unions.
3	Lack of professional background.	Barrier to keep good communication links, etc with client's party which has a good professional background	Moderate	Presence of relevent professionals within the company.
4	Lack of knowledge about Conditions of Contract.	Fail to comply with the clauses and miss opportunities for redress to payment delays.	Low	Have good understanding about conditions of contracts and practices

Level of Impact – Based on number of occurrences within considered payments.

High Impact > or = 70%

Moderate Impact >or = 40% and <70%

Low Impact <40%

## 5.2 Conclusions

The aim of research was to study about impacts of payment delays to small scale construction contractors under different scenarios in Sri Lankan context and identifying of main causes affecting payment delays and ultimately propose improvements to mitigate payment delays. Accordingly this study is applicable for Small Scale Construction Projects and Results are useful for Small Scale Construction Contractors, Clients and Industry.

Research reveals the payment delays to small scale contractors are significantly high and Client factors are comparatively more crucial. The main causes for payment delays to Small Contractors are “Due to prevailing internal system of the Client (No of officers passing the bill), Cash problems of the client (Non availability of Funds), Time taken to check the bill by client, Additional works requested by client after submission of Final Bill, Non-adherence of correct formats by Contractor and Improper submissions by Contractor(less documentation)”.

Several improper practices were identified from the side of Clients for contractor payment delays. “Lack of inter relationship between internal units and officials, Lack of follow up and guidance by Top Level officials, No fear in contravening conditions of contract or delaying of Payments and Handling of too much work at a time” causes a high impact for delays. “Expectation of some sort of benefits in order to check & pass Bills and giving priority to known parties” causes a moderate impact. “Offering low salaries or overall benefits to staff and Taking of too much Leave by related Officials” causes a low impact on payment delays.

Several improper practices were also identified from the side of contractor for payment delays. “Lack of Courage & Confidence to complain to relevant parties/Authorities about payment delays and Lack of Unity among contractors” causes high impact for

delays. Lack of professional background has a moderate impact for delays. Lack of knowledge about Conditions of Contract has a low impact for payment delays.

According to the study Final Payment is mostly delayed and the Advance payment is the quickest to contractors in Small Scale Projects. Getting prior joint measurement is not an effective factor to avoid payment delays within the small scale projects. Result shows that payments made for contractors within the periods allocated under ICTAD/SBD/3 is very poor.

### 5.3 Recommendations

Recommendations are presented as follows for parties involved in construction sector in small scale projects to mitigate payment delays to contractors,

If no of layers (officers) are higher, then the clients to limit to maximum of three layers (officers) to process payments to avoid delays. Clients should keep cash in hand throughout the project to make payments on time to strengthen contractor’s Cash Flow. Clients should make necessary steps in calculating cash savings in their projects before completion of construction works by contractor.

Contractors are advised to follow correct billing formats which are specified for each project and submit all necessary supporting documents with bills to avoid unnecessary delays in their payments. Following Improvements (in Table 5.4) are further proposed to mitigate payment delays to small scale contractors,

Table 5.4: Improvements to mitigate payment delays to Small Scale Contractors

<b>Proposed Improvements For Client’s Side:</b>	<b>Priority Level</b>
Keep effective and efficient inter relationship between internal units and officials	High
Proper guidance and follow ups of works of subordinates by Top Management	High
Good understanding about Conditions of Contracts and practices	High

Take suitable steps not to assign too much work at a time to one officer	High
Avoid unauthorized or illegal benefits from contractors to expedite payments	Moderate
Equal Treatment towards all contractors	Moderate
Provide Right salaries with other benefits aiming to increase interest on works	Low
Ensure continuation of ongoing or inhand works when persons are on leave	Low
<b>Proposed Improvements For Contractor's Side:</b>	<b>Priority Level</b>
Keep strong communication habit with all relevent parties	High
Maintain strong unity among contractors through unions	High
Presence of relevent professionals within the company	Moderate
Have good understanding about conditions of contracts and practices	Low

#### 5.4 Further Recommended studies

- Widen the sample size with more case studies representing different type of Contractors and Clients to capture more strong out comes.
- Find out Best Practices to reduce payment delays considering proposed improvements under this Research study.
- Extend the Study for the projects beyond the limit of 10 million Sri Lankan Rupees (for projects conduct through ICTAD/SBD/01 and ICTAD/SBD/02).

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## **Appendix A**

### **Sarvodaya Rural Technical Services**

Sarvodaya Rural Technical Services (SRTS) (Predecessor of Sarvo-Tech (PVT) Ltd) as Technological Arm of Lanka Jathika Sarvodaya Shramadana Sangamaya (INC) has been involved for around 3 decades in the Construction activities related to Water, Sanitation, Roadways and Housing & Building Sectors in Rural & Semi-urban Communities with Funds from Donor Agencies on a Full Grant Basis.

From year 2005 onwards Donor Funding for Infra-Structure Development Activities on a Full Grant basis declined owing to changes in Funding Mechanisms & Priorities of Donor Agencies. SRTS realized that in order to achieve Organizational Sustainability & function with minimum or no Donor Funding, Unit should transform itself as a Service Provider Rich experiences and the expertise it has developed over the years placed SRTS in a much better position to function as a Service Provider in Constructions rather than being a direct implementer of Projects. Consequently steps were taken to divert its efforts towards Income Generating for Organizational Sustainability

Thus Consultancy Services were extended to several Institutions and Organizations in the form of furnishing of Architectural and Structured Designs, Working Drawings, BOQs and Estimates for Constructions, Assistance for preparation of Tender Documents, Calling for Expression of Interest and Tender Evaluation Process Construction Supervision, Progress Monitoring Checking and Certification of Bills for Payment on an Income Generating Basis. SRTS also undertook Construction Works of New Buildings, Maintenance & Repairs of Existing buildings at Sarvodaya Head Quarters & District Centers etc. ICTAD Registration was required to enter the very competitive Construction Market, Bid for Contracts and Compete with others-market pioneers. Incorporation as a Private Company under the Company Registrar was a pre-requisite for such Registration.

In view of this situation after carefully considering the Advantages and Disadvantages of forming a Private Company and also the impact it will have on the Sarvodaya Concept and Traditions a decision was made to go ahead with the Incorporation of a Private Company with Limited Liabilities and ICTAD Registration and continue to undertake Engineering Construction Works / Services while functioning as a Social Enterprise of Sarvodaya Movement.

Consequently Sarvo-Tech (PVT) Ltd - a Social Enterprise of Sarvodaya Shramadana Movement - was Incorporated in January 2011 under the Companies Act No 7 of 2007, to carry on the Business of Civil Engineering Construction Works and Services, Technical Consultant Managements Services, Planning, Designing and Rendering of Technical Expertise, Guidance and Advice in Construction Works or/and any other Business /Commercial activity subject to the Provisions of the said Companies Act. It's declared Vision is to satisfy Clients/Partners through Sri Lankan Standards of Highest Quality and Cost-effectiveness. Sarvo-Tech (PVT) Ltd obtained ICTAD Registration under M.6 / C.7 Category and now offers Services to all who wish for its Services in Civil Construction Works related to Buildings, Highways, Bridges, Water Supply & Drainage, Irrigation and Land Drainage Dredging, and Reclamation It will charge Fees for the Services rendered from the clients. Being a Social Enterprise of Sarvodaya Shramadana Movement its Surplus Income is to be diverted for Social and Rural Infrastructure Development Activities of Sarvodaya.

## **Appendix B**

### **ICTAD / CIDA**

The Construction Industry Development Authority (CIDA); successor to Institute for Construction Training and Development (ICTAD), is an organization set up by the Government of Sri Lanka to develop and promote the domestic Construction Industry, Contractors, Professionals, Work Force, etc. CIDA has established itself as a recognized and important constituent of the Construction Industry.

Different client organizations had been registering contractors during the past using different criteria. To avoid anomalies and to maintain uniformity, the government decided to register contractors centrally. In 1989 Central Registration scheme was started by ICTAD and it was revised in 1993, 1995 and 2008 & now the registration scheme is being continued by CIDA (Construction Industry Development Authority), (successor to ICTAD). Registration and grading is a screening process for the capabilities of prospective contractors to determine their general ability to undertake different types and sizes of projects without reference to any specific contract.

#### **B.1 Grade C7**

The Contractors who has obtained grade C7, is liable to carry out the projects up to 10 million Sri Lankan rupees as specified in National Registration and Grading Scheme for Construction Contractors by ICTAD/CIDA.

The abbreviations 'C' means - Building & Civil Engineering.

Registration and grading will be determined by evaluating a contractor mainly on his financial capability, the technical ability with staff and plant & machinery, and the experience gained in relevant fields.

Initially under this scheme the contractors were classified under 10 grades (M1 to M10) on financial terms. "M" Grading system was revised in 2008 with the introduction of a

system with grades from C1 to C10 on financial terms. This scheme was revised in 2015 and the new grading system CS2 to C9 introduced.

## **B.2 ICTAD/SBD/03**

Standard Bidding Document ICTAD/SBD/03 is proposed to use for procurement of works for Minor Contracts (Small contracts). This is recommended for work contracts up to Rs.10 million.

## **B.3 Small Scale Construction Constructors**

Small scale contractors in Sri Lanka can be defined as constructors who has ICTAD/CIAD grade C7 or below (who has the upper financial limit of ten Million Sri Lankan Rupees)

## **B.4 Small Scale Construction Projects**

This can be defined as construction projects which are undergone in accordance to ICTAD/SBD/03 guideline.