A STUDY ON SPECIALIZED SUBCONTRACTORS' PAYMENT PRACTICES IN SRILANKA

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Degree of Master of Science in Construction Law and Dispute Resolution

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Dissertation submitted in partial fulfillment of the requirements for the degree Master of Science in Construction Law and Dispute Resolution

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DECLARATION

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ABSTRACT

The construction industry in Sri Lankan plays a vital role in the country development. There are several factors determining the efficiency of the construction industries. One of the important factors impair the efficiency of the industry is the payment delays experienced by the specialists small-scale sub-contractors, who implement the project activities at grass-root level. As a consequence, the construction project targets cannot be achieved. The aim of this paper is investigate the specialized subcontractors' payment practices in Sri Lanka.

In order to ascertain the payment delays period, causes for the delays and the challenges faced by the small scale specialized sub-contractors, information was collected through structured questionnaire surveys. Two separate surveys (Survey-one and Survey-two) were conducted with respondents. In Survey-one, the interim payment application provided by the respondents was carefully examined and the relevant data extracted and recorded in the questionnaires. The data collected in both the studies were analyzed using standard statistical procedures. The results of Survey-1 revealed that the majority of the specialized sub-contractors experienced payment delays of 1-2 weeks and the average payment delay was 11 days. Majority of interim payments application took 2-3 weeks for certification and the average was 14 days. Further, majority of certified interim payment application are paid in 1-2 weeks and average certified interim application payment done in 12 days.

In Survey-two The collected data were analyzed by using frequency distribution and relative important index (RII).Revealed that the top five causes of delay payment in the descending order of importance are contracting practices, lack of security of payment, delay in certification, employer's poor financial management and local culture. The Study-two also revealed that the top five challenges faced by specialized sub-contractors in delay payments in the descending order of importance are cash flow, delay in completion of project, insolvency, financial resource and market challenges. Appropriate mitigation strategies have been recommended to contain the sub-contractors payment delays for the successful implantation of construction industries to achieve the desired project targets.

Key words *- Sri Lanka, construction industry, payment delays, specialized subcontractors, Interim Payment application,*

DEDICATION

This dissertation is to my beloved family, in appreciation of their encouragement and support to pursue my career in academia and obtain this highest qualification in my life.

ACKNOWLEDGEMENT

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LIST OF ABBREVIATIONS

JCT - Joint Contract Tribunal Form of Contracts

NEC - New Engineering Contracts forms

FIDIC - International Federation of Consulting Engineers

HGCRA - Housing Grants, Construction and Regeneration Act 1996

CIDB - Construction Industry Development Board

SBD -Stranded Bidding Document

SP-C - Specialized Subcontractors

ICTAD - Institute for Construction Training and Development

CIDA - Construction Industry Development Authority

CHAPTER ONE

1.0 INTRODUCTION

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 (Ameer Ali, 2005). Payment problems have plagued the construction industry nationwide (Wu et al., 2011). Payment defaults remain chronic and prevalent issues that affecting the entire delivery chain of construction industry (Pettigrew, 2005). Well-timed run of money is required for the achievement of a construction project, commencing the owner in the direction of the contractor downwards to the subcontractors, sub-subcontractors, suppliers, and vendors (May & Siddiqi, 2006). Clients delay payment or do not pay the main contractors on time, the sub-contractors, suppliers, hirers and everyone in the construction value chain will suffer its consequences and will eventually have effects on the project and its' beneficiaries as a whole (Whitfield, 1994).Any party who is higher in the payment structure withholds or delays payment, the subordinate parties suffer from payment problems (El- adaway et al., 2016). The general contractor's performances are strongly dependant on subcontractors (Albino & Garavelli, 1998).

The modern constructions are tending to be more specific and complex in nature of its technology, size and scale. As a result, main contractor prefers to subcontract the work because of insufficient resources or lack of expertise in a specific area (Chamara et al., 2015). Subcontractors perform 80–90% of the direct construction work (Mohammad, 2009). Subcontractors could bring unique skills and talents for specialized work such as steel work, installation and other sophisticated facility systems (Hinze & Tracey, 1994).

A failure of the Contractor getting regular and timely payment could result in project delay, reduced profitability and in the extreme case, the company may go into liquidation (Euginie, 2006). Payment delays and losses primarily affect the cash flow of contractors which is crucial to the success of construction projects and the survival of the industry (Ang, 2006). Frequent payment delays could lead to additional financing and transaction costs and eventually place parties down the chain in insolvency situations (Euginie, 2006). The risk of late or non-payment in construction industry could be adversarial and disastrous and subsequently, affect the economic growth of the country (Rahman & Ye, 2010) Payment issues in the construction industry are considered a factor of significant concern to all the players in the industry (Kaliba et al., 2009). The practice of timely payment in construction projects is a major factor that can contribute to a project's success (Empey, 2013).

1.2 Problem Statement

The larger and more complex the project, most of the work is subcontracted (Eccles, 1981). Ability of the general contractor and consultant to deliver the project within time, quality and cost depends largely on performance of subcontractors (Mbachu, 2008). Subcontracting is used much more extensively on housing and building construction projects than on engineering and industrial projects (Clough & Sears, 1994). Piyasoma (1994) stated more than 80% of specialized works were done by the subcontractors in Sri Lanka. Payment default particularly delayed and non-payment is known by the industry to stay as a main problem (Ameer Ali, 2005). According to Construction Industry Working Group on Payment (2007), problems in payment at the higher end of the hierarchy will lead to a serious knock-on cash flow problem down the chain of contracts. Bottom-layer subcontractors are not only under-paid but often receive delayed interim or final payments (Vivian et al., 2011).

Failed to ensure on-time payment to subcontractors is commonly led to cash flow difficulties (Andrew et al., 2001). Delays in payment can lead to extension of time; non-completion; termination or abandonment of contract (Ameer, 2005). This problem also will directly effect to workers who can create stress on contractor and

also create financial hardship to parties which is involved in the Industry (Construction Industry Development Board (CIDB), 2006). Many small scale construction firms have suffered financial ruin and bankruptcy because of delays in payment, the unlucky contractor, failing to repay loans in a timely fashion had his business put into liquidation (Thwala & Mvubu, 2009).

Therefore there is a need to identify the actual payment delay days, important causes of payment delay and challenges of payment delay to small scale specialized subcontractors. So, this study looking specialized subcontractors delay payment practices in Sri Lanka construction industry.

1.3 Aim of the Study

The aim of the study is to investigate the specialized subcontractors` payment practices in Sri Lanka.

1.4 Objectives of the Study

The specific objectives are

- To determine the payment delays of small scale specialized sub-contractors
- To identify the causes for the delays of subcontractors' payment.
- To identify challenges faced by small scale specialized subcontractors due to late payment.

1.5 Scope and Limitation

This study focused on specialized subcontractors delay payment practices in Sri Lankan construction industry. The CIDB (2005) states that the large numbers of small scale contractors have moved into 0.5m to 2m tendering. In this study which looks at the small scale specialized sub contractors who involved in building project contract value less than two million. Delays with interim and final payments, as well as onerous contract conditions faced by construction firms, can also impose huge constraints on the industry. Many construction firms have suffered financial ruin and

bankruptcy because of delays in payment, which are common with private project Thwala & Mvubu 2009). In particular, the study paid specific attention to the specialized small-scale sub-contractors where a regular disbursement of interim payment is the main method of payment to the contractor.

Specialized subcontractors were selected from the Construction Industry Development Authority (CIDA) registered contracting organizations under grade SP-C 4 to grade SP-C 5, field of building construction works. Registration and grading was 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. Grade sp-c 4 financial limits are10 million ≥ X > 02 million and sp-c 5 is less than two million. The data for this study had been gathered through detailed interim payment application and the total contract sum amount was less than two millions. The information collected was only from building construction projects in the Colombo metropolitan area.

1.6 Research Methodology

Comprehensive Literature Review: This is the most important source provider for this study. To improve the available information, a comprehensive literature review conducted to gather more information. The literature reviews includes samples from many foreign and local journals, periodical articles, text books, dissertations, and electronic materials.

Questionnaire Survey: This carried out by specialized subcontractors who are involved in the construction of building project CIDA grade SP-C 4 and SP-C 5 and the project contract sum amount is less than two million to analysis the specialized subcontractors' interim payment application.

1.7 Chapter Breakdown

Chapter I: Introduction

It being with background of the research, problem statement, aim, objectives, scope, limitation and methodologies proposed to achieve the objectives of the research.

Chapter II: Literature Review- Payment Practices and Related Issues

This chapter comprises the review of the past research work done in relation to the sub-contractors delay payment practices in Sri Lanka and elsewhere, the causes and challenges of sub-contractors' delay payment and the research gaps. Literature survey was carried out with the support of books, conference papers, refereed journal articles and unpublished documents. The yield upon this literature review is used to build-up the background to the research problem.

Chapter III: Research Methodology

This chapter explains the research methodology as research settings, choice of design and approach, data collection and data analysis and the limitations of the study.

Chapter IV: Analyses and Research Findings

The results obtained through the analysis of the data are discussed and this was ultimately achieving the research objectives.

Chapter V: Conclusions and Recommendations

This chapter provides the conclusion and recommendations and provides further research areas that can be carried out in relation to this dissertation.

CHAPTER TWO

2.0 LITERATURE REVIEW – SPECIALIZED SUBCONTRACTORS` PAYMENT PRACTICES AND RELATED ISSUES

2.1 Introduction

A brief introduction to the research was given in chapter one. Accordingly, this chapter aims to synthesize the current knowledge level regarding the research area. The researcher focuses in this literature review is to provide theoretical foundation of knowledge about subcontractors payment practices in Sri Lanka construction industry.

2.2 The Construction Industry

Construction is defined by Eccles (1981) as the erection, maintenance, and repair of immobile structures, the demolition of existing structures, and land development. Construction industry according to Graydon (2012) defined as that sector of the economy which plans, designs, constructs, alters, maintains, repairs, and eventually demolishes buildings, of all kinds, civil engineering works, mechanical and electrical engineering structures and other similar works. The construction industry plays an important role in any country`s development process it is both growth-initiating and growth-dependent (Abdullah, 2004).

According to Fales (1991) the construction industry is a major contributor to a nation's economy. 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 (Sin, 2006). The construction industry is a major contributor to the development of economies in Sri Lanka.

2.3 Importance of Subcontractors in Sri Lankan Construction Industry

Subcontractor is a common term used in construction (Kumaraswamy & Matthews, 2000). Over the past few years, studies have confirmed that subcontractors execute a significant portion of the construction work (Arditi & Chotibhongs, 2005). The modern constructions are tending to be more specific and complex in nature of its technology, size and scale as a result, main contractor prefers to subcontract the work because of insufficient resources or lack of expertise in a specific area (Yik & Lai, 2008). The specialized works make construction process more complex and specialized knowledge and experience are needed to execute some works (Chamara et al., 2015). The success of a construction project requires the timely flow of money from the owner to the contractor down to the subcontractors, sub-subcontractors, suppliers, and vendors (Chamara et al., 2015).

The general contractor's performances are strongly dependant on subcontractors (Mbachu, 2008). Due to the uniqueness of each construction project, the work force is transient, multiple craft are involved, each project are planned and worked in short time frames, and variety of materials and equipments required, one single construction project is often sublet to many subcontractors (Perng et al., 2005). Subcontractors are specialist in the execution of a specific job they act as an agents of the production system of the contractor company in supplying materials, manpower, equipment, tools or designs (Kumaraswamy & Matthews, 2000). In the past two decades, subcontracting has been utilized extensively in the construction industry. The larger and more complex the project, the more the work is subcontracted (Eccles, 1981) Subcontractors can contribute more than 50% (Albino & Garavelli, 1998). 57% of the gross work done (including small scale repair and maintenance) in the construction industry involves the buying-in of material and subcontracting services (Dainty et al., 2001). Kumaraswamy and Matthews (2000) even argue that subcontractors can contribute to the total construction project value for as much as 90%. It is common to subcontract 80% to 90% of the construction work to subcontractors (Mohammad, 2009). Piyasoma,(1994) stated that the above

situation is similarly applied in the Sri Lankan context as it had found that more than 80% of specialized works were done by the subcontractors in Sri Lanka. Main categories of subcontractors in the construction industry are domestic, specialist, Nominated and the labour only subcontractors. Abdullahi (2014) corroborated that the appointment of the subcontractor is treated as something entirely beneficial to main contractor - a purely, domestic matter. domestic subcontracting in its usefulness to main contractor; as reduction in the workload and risk of the construction project, supervisory role for domestic subcontractor, checking and evaluating subcontractor performance. CIDB (2013) affirmed that the basic characteristic, of nominated subcontracting is the power to choose by client, which makes instructions to come from the client representative to the main contractor to enter into contract with the nominated and approved subcontractor. Abdullahi (2014) explained that labour-only subcontracting occurs when a firm or person is been employed to supply labourers to perform part of main contractor's work. Main-contractor provides materials, plants and equipment needed to execute the job. CIDB (2013) defined a labour only subcontractor as a person who provides labour to main contractors for the performance of certain work in the construction industry.

The main contractor supplies material and pays wages to the labourers. Hinze and Tracey (1994) define a specialty contractor as a subcontractor who is hired to perform specific tasks on a project. Specialization of some firms has led to a state whereby contractor performs less than fifty percent of the work with his own forces. Thus, specialty or trade subcontracting is when a particular tradesman or specialized services contractor is called to perform part of the main contractor's work (Khalfan et al., 2004). Building trades and services such as plumbing, electrical, tiling, painting, bricklaying, soil testing, lift installation, ceiling installation; window sill, etc are done mostly by specialist or tradesmen (Hinze & Tracey, 1994). Gunderson and Rick (2013) emphasize that in construction, specialty items are usually more effectively performed by subcontract. Trade and specialty subcontractors make their own arrangement regarding materials sometimes and are more responsible for their oversight.

2.4 Method of Payment Practices in Construction Industry

Payments in the construction industry defined as "a monetary consideration for the contractors‟ performance or work done" (Judi & Rashid, 2010). Rahman and Ye (2010) defined payment as the sum of money paid to contractors, consultants and suppliers after their works, service or materials has been successfully realized or accepted. Therefore, payment always plays the significant point throughout the completion of the project (Sin, 2006 & Saad, 2008). The nature and the various types of contractual payments that could be delayed or defaulted by the employer may further be classified as interim, stage or milestone, advance payments, payment of retention monies and final payments (Ramachandra, 2013).

2.4.1 Interim or Progress Payment Practices in Construction Industry

Interim payment or the progress payment methods is the most common payment method during the contract period. Progress payments generally monthly payments are made to the contractor as per the payments certificates based on interim (monthly) physical work done with the financial valuations and then the contractors make arrangements to make the payments to sub-contractors as well as suppliers (Kenyatta et al., 2015). Interim payment refers to payments made in intervals based on interim valuations of work carried out during the month or any other agreed time frame (Mitchell, 2013).The purpose of interim payment is to ensure that the contractor is regularly paid throughout the progress of the work which leads to maintain cash flow, thus minimizing any deficit which may otherwise affect the smooth running of the project (Jayalath, 2013).

The interim or progress payments are affected by the issuance of 'interim certificates' (Harban Singh, 2003). An interim certificate is actually the periodic certification for the payment due to contractor (Ansah, 2011). The failure of the certifier to issue the relevant 'interim' certificates in line with the stipulation of the contract can expose his employer to a possible claim of breach of contract by the contractor (Tony, 2006). The frequency of periodic payment could be varied from a

fortnight to a month. The actual duration is normally the period as agreed to in the contract conditions signed.

2.4.2 Stage Payment Practices in Construction Industry

Stage payments could be described as performance or event based payment where a contract sum is allocated on defined work stages or phases and payment is pegged upon completion of the agreed stage (Ashworth, 2012). Each specified milestone can be independent or cumulative and once approved as complete payment is usually made in full, less agreed retention amount. Work measurements may not be necessary in this model as the proportions of payment schedules are fixed (Kenyatta et al., 2015). Stage payment method is used when payments are made after completion of specified in the particular contract document. Base on amount of work done of the total contact amount payments are made in more than one stage as per the contract agreement. This method is often used in lump sum contracts. The payments are made on completion of work of agreed stages as agreed by the Parties (Ansah, 2011). Certificates will be issued for payment on completion of work at the agreed stages. It is condition that payment should be made on completion of particular stages of work.

2.4.3 Advance Payment Practices in Construction Industry

Advance payment of a contract is a sum which is a percentage depending on contract document paid to the contractor by the employer before the commencement of work (Amoako, 2011). Advance payments are defined as the money paid in advance to the contractor by the client of any contract to execute the work under one or more contracts as per Hussin (2009). This refers to instances where a sum of money is paid upfront to the contractor before work is executed on site. Besides agreements as to the terms of the advanced money, the contractor may be required to furnish the employer with an advance payment bond as a surety **(**Kenyatta et al., 2015).

This advance payment will be deducted from the payments due to the contractor for the contract's positive cash flow (Marzuki, 1988). The main purpose of

implementing this scheme is to assist the contractor to start up and finance the contract without having to resort to unnecessary and costly external borrowings. According to SBD published by CIDA the employer will provide an advance payment subject to a maximum amount of 20% of the contract price whereas, FIDIC does not mention the limit of advance payment to be paid. However, according to both FIDIC and SBD, value of advance payment shall be reduced through the interim payments to the contractor, recovered within 90% work completed.

2.4.4 Retention Payment Practices in Construction Industry

This refers to the portion of the money progressively deducted from each interim or stage payments on work that has not reached practical completion. The purpose of the retention is to protect the employer from defective work, overpayment and contractor insolvency and at the same time act as an incentive to the contractor to complete the works. Sometimes one half of the retainer known as moiety of retention is retained for purposes of attending to defects liability period as may be agreed (Kenyatta et al., 2015). Retention is a sum of outstanding money after the release of final payment (Ang, 2006). In general, retention sum is deducted at each monthly payment, to provide the client with some security that the contractor will return to repair any defects during the defects liability period (RICS, 2012). In practice, the owner retains 10% of the completed work from each payment until the withheld amount reaches 5% of the contract amount (Chen, 2011). Koksal (2009) stated that the retention money is retained against the risk of non-compliance of work on time of the contractor. Hence, if the contractor fails to correct the defects then the retention held may be used to fund the payment of others to correct the defects (RICS, 2006).

2.4.5 Final Payment Practices in Construction Industry

Final account is the sum agreed to be paid at the end of the contract by the owner to the contractor and final payment is done upon the submission of final account and the issuance of final certificate (Ismail et al., 2012). Final payments made through issuance of a final certificates through the process of re-measurements resulting to a final account settlement after practical completion and defects liability period

(Kenyatta et al., 2015**).** Final certificate is intended to be conclusive evidence that where and to what extent the quality of materials or the standard of workmanship is to be the reasonable satisfaction of the architect, the same is to such satisfaction (The Aqua Group, 1996).

In general, the contractor will submit a final account to the consultant and a reconciliation of the contract sum will be made. Final accounts also finalize disputes under the contract, normally those arising from valuations, quality of work, decisions on extensions of time, losses and expenses (Chappell et al., 2009). Chappell et al (2009) Point out the clauses dealing with final accounts often impose on the parties' conclusively unless objection is made within a prescribed period and if the contractor does not dispute the areas disagree with it may be too late to argue these points after the submission of final account.

2.5 Nature of Payment Defaults in Construction Industry

Regular financial injection is crucial to ensure the contractor is able to precede work diligently (Hasmori et al., 2012). Adversely, any payment defaults will give knocking effect on the whole of construction business chain (Karib et al., 2008). Issues of payment have plagued the construction industry for a long time. Ameer (2005) defined late payment as the failure by the employer to pay the contractor within the time stated in the contract. He also defined that non-payment occurs when the contractor is not being paid at all for his work.

Non-payment by the employer can simply means that an employer fails to honour his payment in a timely manner or refusal of total payment that is meant to be paid for the progress of construction works (Lee et al., 2014). Late-payment is defined as failure of a paymaster to pay within the period of honoring of certificates as provided in the contract (Harris & McCaffer, 2003). The parties involved in the process of payment claim such as client, contractor, architect, quantity surveyor, banker and other construction players may cause a payment to be delayed (Eriksson & Westerberg, 2011). Table 2.1 provides brief definition of payment defaults happened in construction industry, namely under payment, late payment and non-payment.

Table 2.1: Type of Payment defaults

Payment defaults	Description
Under Payment	The certified and paid amount by the client is lower than the value of contractor's work done.
Late Payment	Client taking longer time than the allocated time (beyond the period of honoring certificate) to issue/making payment to the contractor.
Non-Payment	No payment is release to contractor albeit the contractor has completed certain area of works.

(Judi & Muhamed Sabli, 2010)

2.6 Delayed Payments Practices in Construction Industry

It has been noted in the reference of Thwala and Phaladi (2009), Delays with interim and final payments, as well as onerous contract conditions faced by construction firms, can further impose large constraints on the construction industry. Due to of delays in payment, many construction firms have suffered bankruptcy and financial ruin which are similar government contracts.

Ameer (2005) defined late payment as the failure by the Employer to pay the contractor within the time stated in the contract. It stated in FIDIC Clause 14.7 (b) the amount certified in each interim payment certificate within 56 days after the engineer receives the statement and supporting documents or, at a time when the bank's loan or credit (from which part of the payments to the contractor is being made) is suspended, the amount shown on any statement submitted by the contractor, within 14 days after such statement is submitted. Any discrepancy shall be rectified in the next payment to the contractor; and deeply describe clause no 14.8 according to the delayed payment.

2.7 Contractual Provisions for Better Payment Practices

Contractually the conditions of contract probably constitute the heart of the documentation whereas the drawings, specification and bill of quantities are essentially practical tools in virtually every day use. The conditions of contract are more often referred to where a difference of opinion or potential dispute arises. In Sri Lanka commonly used forms of contract is FIDIC and SBD. In such forms of contract, the payment procedures and provisions to save the contractor from payment issues have been clearly mentioned.

2.7.1 Payment under FIDIC 1999

FIDIC is well known for its work drafting standard form conditions of contract for the worldwide construction industry, particularly in the context of higher value international construction projects. The 1999 Red Book is globally the most commonly used standard form contract for construction and engineering works. Conditions of contract, identifies the basic principles of procurement and construction contract. In this condition of contract, the project of the work is prepared by the employer or made it prepared, execution of the construction work by the contractor is provided for.

2.7.1.1 Clause No 14.7- Advance Payment

The first instilment of the advance of the advance payment within 42 days after issuing the letter of acceptance or within 21 days after receiving the documents in accordance with sub-clause 4.2 (performance security) and sub clause 14.2 (advance payment), whichever is later.

2.7.1.2 Clause No 14.6 & 14.7- Interim Payment

Engineer issues the interim payment certificate within 28 days after receiving the interim payment application from the contractor. Payment will be made within 56 days after the engineer receives the statement and supporting documents or at a time

when the bank's loan or credit is suspended, the amount shown on any statement submitted by the contractor within 14 days.

2.7.1.3 Clause No 14.7- Final Payment

Engineer issues the final payment certificate within 28 days after receiving the final statement with supporting documents from the contractor. Payment will be made within 56 days after the employer receives the final payment certificate from the engineer or at a time when the bank's loan or credit is suspended, the undisputed amount shown in final statement within 56 days after the date of notification of the suspension in accordance with sub clause 16.2 (termination by contractor)

2.7.1.4 Clause No 14.9 -Retention Payment

One half of the amount will be paid when the taking over certificate has been issued, second half at the end of defect liability period.

2.7.1.5 Provisions for Payment Issues

According to sub clause 14.8, if the client delays the payment the contractor shall be entitled to receive financing charges compounded monthly on the amount unpaid during the period of delay. Interest is made at the annual rate of three percentage points above the discount rate of the central bank in the country.

In accordance with sub clause 16.1, if the engineer fails to certify in accordance with sub clause 14.6 (issue of interim payment certificate) or the employer fails to comply with sub clause 2.4 (employer's financial arrangements) or sub clause 14.7 (payment), the contractor may after giving not less than 21 days notice to employer, suspend or slow down the work until issue of payment certificate or reasonable evidence of payment. In accordance with sub clause 16.2, the contractor shall be entitled to terminate the contract if the engineer fails to issue the payment certificate within 56 days after receiving a statement and supporting documents or the contractor does not receive the payment within 42 days after the expiry of the time stated in the sub clause 14.7.

2.7.2. Payment under ICTAD/SBD/2

In Sri Lanka, standard forms of contract for construction are published by the Institute for Construction Training and Development (ICTAD). ICTAD conditions of contract suitable for local building construction works. The government of Sri Lanka had approved the said document in August 1988 to use in the state sector for both building and civil engineering construction works, which was prepared by the ICTAD, commonly known as the 'ICTAD conditions of contract'. 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).Since the building and civil engineering construction works have some differences in their character and contract administration. 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.

2.7.2.1 Clause No 14.6 -Advance Payment

In advance payment first installment within 14 days after issuing letter of Acceptance in accordance with sub clause 4.2 (performance security) and 14.2 (advance payment)

2.7.2.2 Clause No 14.5 & 14.6 - Interim Payments

Engineer issues the interim payment certificate within 21 days after receiving the interim payment application from the contractor. Within 14 days after the employer receives the interim payment certificate from the engineer, payment will be made.

2.7.2.3 Clause No 14.6 & 14.10 - Final Payment

Engineer issues the final payment certificate within 28 days after receiving the final statement with supporting documents from the contractor. Within 56 days after the employer receives the final payment certificate from the engineer.

2.7.2.4 Clause No 14.8 - Retention Payment

Retention payment one-half of the amounts will be paid when the Taking over certificate has been issued, second half at the end of defect liability period.

2.7.2.5 Provisions for Payment Issues

According to sub clause 14.7 contractors shall be entitled to receive financing charges compounded monthly on the amount unpaid during the period of delay. Interest is made at the prevailing rate of interest of 1% over the lending rate of the central bank to commercial banks.

In accordance with sub clause 16.1, if the Engineer fails to certify in accordance with sub clause 14.5(issue of interim payment certificate) or 14.6 (payment), the contractor may after giving not less than 56 days notice to employer, suspend or slow down the work until issue of payment certificate or reasonable evidence of payment.

In accordance with sub clause 16.2, the contractor shall be entitled to terminate the contract if the engineer fails to issue the payment certificate within 56 days after receiving a statement and supporting documents or the contractor does not receive the payment within 56 days after the expiry of the time stated in the sub clause 14.6.

2.8 Causes of Delay Payment to Specialized Subcontractors

There are many factors that are said to be causing the delayed payment problems in construction industries (Nazir, 2006). There is a need therefore to identify the contributing factors which lead to a situation of delayed payments. Based on the research done by Abdul-Rahman and Berawi (2006), there are eight identified causes of late and non-payment includes Client's poor financial and business management, Withhold of payment by client, Contractor's invalid claim and etc. Based on the literature review various factors have been identified as the potential causes of delayed payment in specialized subcontractors in Sri Lanka construction industry.

2.8.1 Employer's Poor Financial Management

It is anticipated that employers' poor financial management could cause them to have insufficient operating funds when they are obliged to pay the payees (Ansah 2011). Payment is considered as the life blood of the construction industry because construction projects often involve very large capital outlay (Ameer-Ali, 2005). A delayed payment by a party who is involved in the process of payment claim may have an influence on the supply chain of payment in whole. Problems in payment at the higher end of the hierarchy will lead to a serious knock-on cash flow problem down the chain of contracts (Abdul-Rahman, Takim, & Min, 2009).

The research by Hasmori et al. (2012) has identified factors in paymaster's poor financial management. The factors are:

- Cash flow problems because of deficiencies in client's management capacity.
- Client's ineffective utilization of funds.
- Scarcity of capital to finance the project for instance, client's need money to roll.
- Poor cash flow because of lack of proper process implementation.
- Financial failure due to bankruptcy or winding up paymaster other business activities and overlook the ripple effect of economic downturn on cash flow.

2.8.2 Employer's Withholding Payment

As provided in many standard forms of contract, the employer may withhold payment to the main contractor or subcontractor for a variety of reasons. Such reasons are major defective construction work, disputed work, failure to comply with any material provision of the contract, third party claims filed or reasonable evidence that a claim will be filed, and failure to make timely payments for project resources (Reeves, 2003). These reasons may cause the employer to refuse to make payments which will result in delayed payments. Hasmori et al. (2012) stated that client's employees are wrongfully holding the payment and most of the time they do this to obtain some kind of gift from contractors once they pay out the payment. Hence, contractors have to tolerate this action to get their payments. Besides that, the employer for the paymaster may withhold payment to the main contractor or sub-contractor for a variety of reasons such as major defects in construction works, dispute works, failure to comply with any material provision of the contract, third party claim filed or reasonable evidence that the claim will be filed and failure to make timely payment for the project resources. Yee and Abdul Rahman (2010) identified clients deliberate delay for their own financial advantages, delay in releasing of the retention monies to contractor and willful withholding of the payment for personal reasons are the cause of the paymaster's withholding of payment.

2.8.3 Conflict among Parties Involved

Payment, not unexpectedly, has always been the main subject of disputes (Adballa & Hussein, 2002). Hasmori et al. (2012) indicated that payment not unexpectedly, has always been the main subject of disputes. It is anticipated that conflict if unsettle will escalate into dispute which can also cause late and non-payment. Moore et al. (1992) stated that a construction project involves so many parties, such as owners, designers, construction main contractors, subcontractors, maintenance contractors, and material suppliers, that some interface problems can arise, for example, the lack of cooperation, limited trust, and ineffective communication leading to an adversarial relationship among all these project stakeholders. This kind of relationship induces

project delays, difficulty in resolving claims, cost overruns, litigations, and compromise project quality.

2.8.4 Lack of Security of Payment

Delayed payments, whether from the main contractors or from the client, are seen as the most critical issue facing subcontractors in the industry. Main contractors are not obliged to provide payment guarantees or surety for subcontractors as they rarely receive these themselves from the client. The 'pay when paid' clause in contracts could cause delayed payment issues especially to the subcontractors (Ameer-Ali, 2005). A subcontractor is a person or a company hired by a general contractor to perform part of the work of a construction job. The pay-when-paid clause often used in contracts agreement between main contractors and sub-contractors or between housing developers and main contractors (CIDB, 2004). "Pay when paid" or also known as "back to back" method of payment is relevant especially in the case of nominated sub-contractor when the main contractor has not been paid by the Employer (Artidi & Chotibongs, 2005). Pay when Paid, which defer the time when payment is due from a main contractor has received payment from the employer. It could be cause late payment and not payment issue especially to sub-contractor.

2.8.5 Delay in Certification

According to Yee and Abdul Rahman (2010) delay in certification by parties involve in the project might also cause of late payment issues. The parties involve may delay in approving the application for payment claim due to certain reasons which may arise because of his own or other parties involve. Al-Hazmi (1987) stated that when the subcontractor finishes a section of his work, he must submit it to the approval of the contractor. If the contractor accepts this work, he in turn will submit it to the owner. The owner must approve this work before the subcontractor can proceed with the remaining portion of his work. This process is often lengthy and the subcontractor may be held back from proceeding with his work. This kind of delay may cause a problem between the contractor and his subcontractor. Alinaitwe et al.

(2007) indicated that the inspection delay affecting productivity. The low productivity leads to interface problem between main contractor and subcontractor.

2.8.6 Contracting Practices

Contractual relations between the main contractor and the subcontractor are often governed on an ad hoc basis or by using less sophisticated documentation (Lowe, 2009). The failure to sign a formal contract is generally viewed as being disadvantageous to the subcontractor. However, both main contractors and subcontractors in this survey were adamant that while the contract specifies the roles, rights and relationships between the parties, their effectiveness depends on goodwill and on the desire of the parties for collaborative working relationships (Bassam, 2009).

The subcontractors who do not sign contracts with the main contractors stated that they relied on trust and verbal agreements. The reasons advanced for the lack of formal contracts include: the small size of the jobs and short duration of works which was assumed to render contracts unnecessary, preferring to base their relationship on trust; lack of formal company registration documents on the part of the subcontractor; and the reluctance of main contractors to formalise agreements so as to avoid audit trails of payments (CIDB, 2013). Many subcontracts are awarded without any formal discussion taking place between the contractor and the subcontractor. This may increase the probability of a conflict after construction work has begun (Hinze & Tracey, 1994).

2.8.7 Technical Problems

Reeves (2003) stated that the main reasons for late payment is when there are errors in submitting claims. This includes claims without adequate supporting documents, wrongly calculated claims and those submitted without using the right procedures and when this happens, contractors need to resubmit the claims and repeat the whole process after making necessary corrections (Adballa & Hussein, 2002). The payment of the tender awarded would commonly be based on the progress of the project. The

contractors need to submit the progress billing attached with the approve percentage of completion by the authorized person in charge. Most of the problems occur when contractors missing some necessary documents required. In order to avoid delay in paying the contractors, the payment officers have to make sure that documentation is complete.

2.8.8 Weak Management Practices

Many subcontractors have weak management practices, especially financial and cash flow management and generally lack business systems affecting their ability to execute work successfully. The construction industry has always faced challenges in relationship management, such as less cooperation, limited mutual trusts, ineffective communication, etc (Clough et al.,2015).Performance of subcontractors was poor due to several factors as selection process, bonds and insurance, payment method for subcontractors, site safety, critical site coordination, migration of subcontractors' labour, back charging, and involvement of contractors' personnel. Other than that, the lack of qualified and experienced management supervisory staff, inappropriate contract conditions, and communication difficulties as further issues which can be affected on subcontractors' performance (Chamara et al., 2015).

2.8.9 Lack of Proper Communication

Poorly communicated information exists when instructions or requirements from the clients are not explicitly transmitted to or shared with the subcontractor. These may be in the form of project objectives, milestones and urgency of the project. Sometimes information is communicated in the dying moments of its schedule. Late orders and not allowing for sufficient time in both preparation and execution of a project build up pressure on subcontractors and results in the products not meeting the highest quality, or even less than the desired requirements . Poorly communicated information by the contractor to the subcontractor may lead to incorrect pricing. Pressure is regularly applied by the contractor on subcontractor to reduce prices and at the same time essential information is held back, making it almost impossible to allow for proper pricing and working (Othman, 2007). Huang et al. (2008) identified

communication problems that might lead to serious inefficiency, such as poor planning and scheduling and lack of a management system updating new information. Also, he emphasized that coordination is so critical to the quality of the project. Poor communication between the two parties may delay work progress (Al Hammad, 1990).

2.8.10 Local Culture

An attitude is commonly accepted by the industry or society in general can become a culture (Danuri et al., 2012). Clients assume contractors will finance the project in advance for any payment problems (Hasmori et al., 2012). Thus, this could be due to the inherent culture of payment issues in the construction industry that the contractors perceived such issues for a few days were acceptable. However, the contractors do not want negative attitude to be accepted as a culture in the industry. Though, Britain construction industry is prone to late payment culture with payment of debts due to subcontractors and suppliers being made on average 53 days after invoices or applications for payment have been rendered (Johnston, 1999). In such a way, delaying payment becomes a culture in the industry.

2.9 Delay Payment Challenges to Specialized Sub contractors in Construction Industry

Payment as the sum of money paid to contractors, consultants and suppliers after their works, service or materials has been successfully realized or accepted (Rahman,&Ye,2010).Therefore, payment always plays the significant point throughout the completion of the project and the ease of cash flow is an essential element in delivering a successful project (Karib et al., 2008). A delayed payment by a party who is involved in the process of payment claim may have an influence on the supply chain of payment in whole. According to the Construction Industry Working Group on Payment (2007) problems in payment at the higher end of the hierarchy will lead to a serious knock-on cash flow problem down the chain of contracts. Regular financial injection is crucial to ensure the contractor is able to precede work diligently (Hasmori, et al., 2012). Adversely, any payment defaults

will give knocking effect on the whole of construction business chain (Karib et al., 2008). To add, as each and every key player in construction industry are linked between one and another, hence, contractor is not the only party that affected, but owner and project itself will suffer in the event of payment defaults (Abraham, 2012).

Client factor is identified as a major factor causing the delay in construction with the inability to make payment due to economic background and lack of financial arrangement for the project (Hussin, 2009). It was stated that all problems in construction industry arise when payment is not received at the exact amount or date. The operation of the payment system is not for the most part smooth and exposed parties along the bottom of the supply chain to a greater risk of insolvency. The client regularly postpones payment to the main contractor which in this way influenced the supplier and subcontractors. This unfavorable influences the efficiency and soundness of the whole business (Mohd Badroldin, et al., 2016).

Lack of payment to contractors is a common cause of disputes in the construction industry. According to Artidi and Chotibongs (2005) all the problems in the construction industry begin when payment in the exact amount due by the date shown on the statement is not received. Disagreements then lead to arguments as relationships sour, and the stage is set for conflict; finger-pointing, blaming and judging, buck-passing and lawyers. Projects exceed initial time estimates and costs escalate and extensive delays are experienced. There are constant issues among key players of the industry, as payment defaults would always be revolving around in construction industry (Karib et al., 2008). As such, contractors would be the direct and tremendous affected party due to the fact that Contractor is the party who upfront their capitals to ensure project delivery before receives payment from client (Karib et al., 2008).

Delayed payments further affected contractor performance, workers leave, funds be delayed and bringing the negative information to construction. Effective cash flow can be profitable, cash shortages on the other hand result in increased cost such as

interest charges on loans, delayed payment penalties, loss of vendor discounts for early payment, cash flow improvement eliminate their cost and create opportunity for more favorable payment terms on some type of purchases (Amoako, 2011). The consequences of unregulated payment system led the construction industry into the present dilemma of payment default. It is necessary to understand the structure of the industry and the way in which payment is distributed within a construction contract in order to examine properly the effects of payment default in the industry.

The possible impacts of delayed payment have been identified as follows:

- Creates financial hardship: It is anticipated that delayed payment can create financial hardships for the contractor (Gow, 2006).
- Creates a negative chain effect on other parties: As stated by Davis Langdon and Seah Consultancy (2003), 'the construction payment blues have domino effects'. A delayed payment by one party may affect the entire supply chain of payment of a construction project.
- Creates cash-flow problems: It is universally accepted that delayed payment affects the contractor's cash flow, which in turn can affect the progress of the works and profitability.
- Results in a delay in completion of projects: According to Abdul-Rahman and Berawi (2006), a financial problem is confirmed by the view of top management in the survey as being the main cause of delay, in addition to manpower shortage.

2.9.1 Cash Flow Challenges

Cash flow is one of the most common cash forecasting and cost control technique that has been widely used by most of the construction companies for a long time. Cash flow defines the expenses and revenue of the single project or whole company per time and reflects their present and future situations by demonstrating net cash conditions. Cash flow is a financial model necessary to count the demand for money to meet the project cost and the pattern of income it will generate (Smith, 2008). Cash flow management has long been recognized as an important tool and proper

cash flow management is crucial to the survival of a construction company because cash is the most important resource for its day-to-day activities.

A consequence of the chain payment structure is the repercussion of the failure of one party on the other parties. This is true about all actors: the failure of the bank to support the client, the contractor or the subcontractor or the contractor's failure to support work. all other parties are affected, each to a various degree ranging from loss of income to a full-blown insolvency (Odeyinka, & Kaka,2005). The most important aspect of cash flow management is to avoid extended cash shortages which are caused by having too great a gap between cash inflows and outflows. Cash flow management is defined as a process of monitoring, analyzing and adjusting projects' cash flow. Cash flow is the life-blood of the construction industry and ease of cash flow is an essential element in delivering a successful project (Construction Industry Working Group on Payment, 2007). A well managed cash flow is important to enable the delivery of a successful project by performing a cash flow analysis on a regular basis to identify cash flow problems.

In analyzing the cash flow of a project, cash flow forecasting is an essential method to head off cash flow problems. Following next is to develop and employ strategies that will maintain an adequate cash flow for the project. Therefore, a well managed cash flow will improve the project's cash flow and subsequently improve the timely performance of a project. Conversely, a poorly managed cash flow represents the opposite. The causes to poor cash flow management can be categorized into:

- Contractor handles too many projects at the same time.
- Contractor's instable financial background.
- Unqualified contractor underbidding the project cost.
- Lack of regularly cash flow forecasting.
- Poor credit arrangement with creditors and debtors and capital lock-up.

Most of the contractors has limited working capital and relies on cash flow from projects to pay sub-contractor and suppliers. Disruption causes financial hardship and even failure lower down the money chain. Delayed payments can result in financial

stress due to inaccurate cash forecasts and for inaccurate cash flow management. Proper cash flow plays a strategic role even when firm is not financially stressed. General condition of contract and penalty clauses can be used to pass down the line risk by allocating them to a small specialist contractor who has to accept the danger or not be employed resulting in the parties down the line being more valuable to the risk of delayed payments.

The owner's failure to pay is among the risk factors that affect the construction's project time and/or cost (Wong & Hui, 2006). Late or delayed payment from clients can be categorized as a type of financial risk involving a high level of uncertainty (Tazelaar & Snijders, 2010). Financial stress may result from a combination of delayed payments with inaccurate cash forecasts and/or deficiencies in cash flow management (Kaka & Price, 1991). Proper cash flow management plays a strategic role even when a firm is not facing financial stress (Barbosa & Pimentel, 2001). Contract conditions and penalty clauses are often used to pass risks "down the line" by allocating them to organizations in the supply and production chain. The organization least able to carry the risk, such as the small specialist contractor, has to accept the risk or not win the work. Parties further down the line will consequently be more vulnerable to this risk.

2.9.2 Financial Resource Challenges

A survey by Ubaid (1991) concluded that the contractor's resources is one of the major measures on the contractors' performance that causing delays. The resources include financial resources, human resources, material resources and equipment resources. However, only the financial resources are focused in the research as Abdul-Rahma and Berawi (2006) addressed that lack of funds may affect the project's cash flow and lead to delay of site possession which consequently causes delays to the project as whole. The factors that would cause insufficient financial resources are:

- Difficulties in getting loan from financiers
- Allocation of government budget not in place.

2.9.3 Market Challenges

According to Abdul Rahman et al. (2009) the external factor of poor economic conditions such as currency and inflation rate would significantly give impact to project's cash flow and hence affects the timely performance of the project. The causes to financial market instability which will then lead to cash flow problems in construction project include:

- Increment of interest rate in repayment of loan.
- Inflation of material prices, labor wages and transportation costs.
- Increment of foreign exchange rate for imported materials and plants.

The independent variables include late payment, poor cash flow management, insufficient financial resources, and financial market instability. Poor cash flow management by a client of a construction project will cause a late payment to contractor (Ahmed et al., 2003). The delay payment for work done from client will affect the cash flow of the contractor. Besides, the instability of financial market would imply extra financial commitments that are beyond the capacity of the contractor which he or she is not prepared for such extra costs (Abdul-Rahman et al., 2011). As a result, the contractor would need to seek for additional financial resources in terms of loans from financial institutions such as banks. In some occasion, the loans are difficult to obtain from financial institutions as they have a strictly regulated checklist of borrowers' financial situation. Due to failure or delay in getting loans, shortage of financial resources at the time will lead to cash flow shortfalls which consequently cause delays in project (Abdul-Rahman et al., 2011). In essence, each independent variable is interrelated with each others. The relationship between independent variable forms a continual cycle.

To the contractors internal project control is an interval part of any successful project management process. This is important for the overall financial control of the project so that the relationship between work completed and the cost to the contractor for carrying out can be maintained at intervals to ensure successful project completion.

2.9.4 Delay in Completion of Project

Issues of payment delays and losses cause delay in completion of project (Sambasivan & Soon, 2006). Sambasivan and Soon (2006) described that 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 not made or delayed. Work progress can be delayed because there is inadequate cash flow to support construction expenses especially for those contractors who are not financially fit. Atout, Jones and Ren (2008) explained that delay in monthly payment from the client significantly disturbs the contractor's cash flow. Thus, it will be reflected in the work progress and it can cause major delay to the project. Failure to make payments in a timely manner will slow down work progress with the inevitable consequences of not completing on the planned date (Kenyatta, et al., 2015).

2.9.5 Insolvency

A failure on the part of the employer to pay the contractor in an efficient and timely manner may affect the contractor's original financial plan. This could affect contractor's cash flow which in turn, might lead to contractor's insolvency due to unpredicted cash flow problems (Amoaka, 2011). The cascade system of payment starts from the client to main contractor to sub-contractor and so on down the chain (Carmichael & Tran, 2012). The insolvency of one party in the payment chain could cause severe impacts to parties down the contractual chain (Ansah, 2011). The insolvency of the main contractors pushes other parts of the project chain into insolvency in turn others within the chain are also faced with the prospects of losing their money (Lip & Euginie, 2006). The failure of payment from client to main contractor, the main contractor to the subcontractor and suppliers, where all other parties are affected, each to a various degree ranging from loss of income leads to a full-blown insolvency (Odeyinka & Kaka, 2005).

2.9.6 Abandonment of Project

Delayed payment and especially non-payment may cause abandonment of projects (Amoako, 2011; Ansah, 2011). This is due to no sources of money to pay for the labours, materials, plants and equipment involved in the project. The main contractor will not be able to cope with the problems and will normally take action to stop work until the employer paid them the payment due. Worse still, the contractor may go into liquidation due to the failure on his part to meet the claims substantiated by his bankers, subcontractors and suppliers. This will surely lead to the abandonment of project (Amoako, 2011).

2.9.7 Dispute Resolution

A failure of timely payment and non-payment could possibly lead to formal dispute resolution. The common mechanisms for dispute resolution in construction industry are presently by way of arbitration and litigation (Bob, 2005). On the other hand, arbitration is faster but it is expensive. In any case, both modes will still take a considerable length of time as the disputes will have to be determined and disposed in accordance with the law, which must amongst others, require affording the disputant natural justice in the presentation of their respective case (Ellis & Thomas, 2007).

Further, Ellis and Thomas (2007) described that critics have also lambasted the construction industry for its out-dated and inefficient payment practices resulting from an undesirable culmination of disputed and delay payments and the uncertainty on when payment is due. The construction payment blues have 'domino' effect on the payment chain of the construction project (Davis, langdon & search consultancy, 2003). Payment default can possibly lead to formal dispute resolution Bob (2005) reported that in order to recover payment due for over two years "a claimant was forced to commence litigation and this process is both costly and takes a long time". Deliberate payment abuse may not be laid only on the doorstep of the employer.

2.10 Summary

This chapter was looked into the topics: Nature of subcontractors, payment in construction industry, payment defaults, contractual provisions for better payment practices, causes of payment delay and challenges of payment delay and finally, summarize the findings of literature. Then, the causes and challenges of such issues have been identified and discussed. Accordingly; the objectives two and three were achieved to a certain extent based on the above literature findings. The next chapter describes research methodology of this study.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

Literature proves that researches should be designed properly to achieve the real targets. If research is to be systematic it should follow a series of steps called research process (Tan, 2002). The aim of this chapter is to give a methodical frame work of data collection, processing and analyzing.

3.2 Research Design

Developing a most appropriate research design is important as the final outcome of the research highly depends on this research design. At the most general level, research design means all the issues involved in planning and executing a research project, from identifying the research problem to data analysis. Punch (2005) mentioned that the research design is the intermediate connector between research question and data (Figure 3.1).

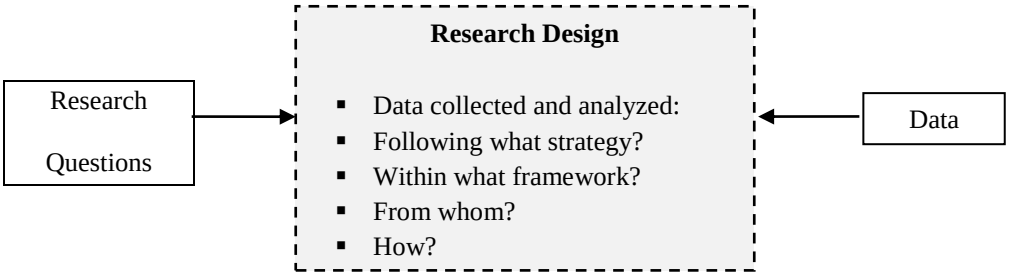


Figure 3.1: Research design

Source: Punch (2005)

3.3 Research Approach

According to Yin (1994), five different types of research approaches can be adapted to a research namely, experiment, survey, archival analysis, case study and history. Further, the research approaches are categorised under two main categories such as Qualitative and Quantitative. Qualitative researchers often study only a single setting or a small number of individuals or sites using theoretical or purposeful rather than probability (Maxwell, 2005). By following this approach, the researcher could be able to identify beliefs, understandings, opinions and views of people (Fellows and Liu, 2003). Quantitative research tends to relate post positivism which reflects a deterministic philosophy in which causes probably determine effects or outcomes (Creswell, 2003). Thus, the problems are studied by post positivists to seek and gather factual data and to study relationships between facts and how such facts and relationships accord with theories and the findings of any research executed previously (Kraemer, 2002).

The quantity method used to fulfill the research goal. Quantitative method used to determine and calculate the actual delay payment days to sub-contractors, causes of delay payment to sub-contractors and challenges faced by subcontractors in delay payment.

3.4. Methods of Data Collection

The data collection technique is different for different types of research design. There are predominantly two types of data primary data and secondary data. Primary data is one a researcher collects for a specific purpose of investigating the research problem at hand. Secondary data are ones that have not been collected for the immediate study at hand but for purposes other than the problem at hand. Secondary data offer cost and time economies to the researcher as they already exist in various forms in the company or in the market.

3.4.1. Questionnaire Survey

These are a highly effective method of data collection, in that they require less time to administer and are therefore less expensive, and permit data collection from a larger sample (Janes, 2001). This detailed questionnaire survey is the most important part of this data collection. Through the literature survey, the questionnaire is prepared in order to explore identify the delay payment and most important factors to cause of delay payment and most important challenges faced by subcontractors in delay payment. The improved version of the questionnaires was distributed among the selected group. Hand delivery will be used to deliver and collect the questionnaires to increase the rate of return. The questions are intended to be closed-ended questions, which are easier to code, store and analyze where there are set of number of responses given (Janes, 1999).

Two separate sample surveys (Survey-one and Survey-two) were carried out with the aid of pre-tested structured questionnaires. The questionnaires were constructed to include primarily comprehensive items of particular interest to payment delays of specialized sub- contractors (Survey one) and causes and challenges of payment delays to the specialized sub-contractors (Survey two).

3.4.2 Documentary Review

Documentary review is a method of data collection for archival research approach, which incorporates the historical data to support the arguments in a research (Bowen, 2009). Further, Bowen (2009) emphasized that the process of documentary research often involves some or all of conceptualizing, using and assessing documents. Therefore, documentary review was adopted as the secondary data collection technique to the current research. It is necessary to quantify time frames for certification of payment application and making payment to achieve the effectiveness of available provisions related to payment. Thus, the payment records of past projects which have experienced payment issues have been collected from contracting organizations.

3.4.3 Structure of the Questionnaire Used for Survey One and Two

The questionnaire for Survey -one & two consisted of respondent Information (4 Questions) and other section was divided into two (2) as Section A which focused on delay payment bills. It consisted of bill submission date, date of certification, payment received date and agreed contractual time period. Section A employed archival examining of the records of the companies. Section B focused on causes of late payment and challenges faced by sub-contractors in delay payment. Section B questions were formulated based on preliminary literature review. A scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used to identify the most important factors.

3.5 Types of Sampling

Sampling techniques are classified into two broad categories of probability samples or Non probability samples. Probability sampling is also known as 'random sampling' or 'chance sampling'. Under this sampling design, every item of the universe has an equal chance of inclusion in the sample. Random sampling ensures the law of statistical regularity which states that if on an average the sample chosen is a random one, the sample will have the same composition and characteristics as the universe. This is the reason why random sampling is considered as the best technique of selecting a representative sample. In this research was used probability sampling.

3.5.1. Questionnaire Sampling and Response Rate

In survey one had been done to determine the specialized sub-contractors payment practices in Sri Lanka construction industry. The population included the sub-contractors in the various types of work fields like as water proofing work, plumbing work, aluminum work, ceiling work, random Rubble work, timber work, metal work and vinyl flooring. 30 questioners were issued 24 replies were received which represents a response rate of around 80%.

In survey one, the data required to calculate the actual delay days was collected from 24 respondents' specialized sub-contractors interim payment application collected and the total number of interim payment application used to extract information was 151. The information was recorded by the researcher personally. Information collected were the date of interim payment application submission, date of interim payment application approval, date of payment receipt and agreed terms of contract allocated time to process the bills. Selection of specialized sub-contractors bills to calculate the delay payment days was very important in order to get the most realistic value at the end of the research.

In survey-two data was collected through questionnaires posted through mail service to the respondents Managing directors, engineers, accountants and quantity surveyors in as small scale specialist sub-contractors. The duly completed questionnaires were returned by most of the respondents. Before sending the questionnaires, the respondents were personally met with by the researcher and familiarized them with the data collection process. In Survey -two, data required to analyze the causes of delay payment and challenges faced by specialist sub -contractors in delay payment. 75 questioners were issued 60 replies were received which represents a response rate of around 80%. Most important causes and challenges were identified through this research.

3.6. Data Analysis Techniques

The collected information's were analyzed and calculates the delayed payments days for small scale specialized subcontractors. Percentage frequency distribution was used to analyze the delay payment days. The collected questionnaires were analyzed and relative importance index was used to analyze the causes of delay payment, challenges of delay payment to specialized subcontractors.

3.6.1. Analysis of Percentage of Data Occurrences

Percentage frequency distribution is a method that specifies the percentage for the grouping data point. It was useful to express the relative frequency of the data. The

data were illustrated in many forms such as table, pie charts and bar charts. The process by dividing the number of observations within each data point or grouping of data points by the total number of observations. The sum of the percentage should be 100%. The formula employed for this analysis is given in equation 3.2.

$$\textbf{Percentage} = \frac{\textbf{Number of observations}}{\textbf{Total number of observations}} \times \textbf{100}$$

Equation 3.1: Percentage frequency distribution formula

3.6.2. Analysis of Relative Influence Index (RII)

Relative influence index is intended to use with the aim of identifying the most significant causes of sub-contractors delay payment and challenges faced by sub-contractors in delay payment by ranking the causes and challenges according to their relative importance. The point scale was adopted and transformed to relative influence indices (RII) as shown in the formula below (Sambasivana and Soon, 2006).

$$RII = \frac{\sum(Wn)}{NxA}$$

Equation 3.2: RII

Where,

W - Rating of each Factor given by respondent

n - Frequency of Responses

N - Total number of responses

A - Highest Weight

3.6.3. Survey One: Specialized Subcontractors Payment Delay

Percentage frequency distribution is a method that specifies the percentage for the grouping data point. It is useful to express the relative frequency of the data. The data illustrated in many forms such as table, pie charts and bar charts. The process involved dividing the number of observations within each data point or grouping of data points by the total number of observations. The information collected and questionnaires were analyzed.

The payment delay components were calculated as follows**:**

1. Delay period: Delay consisted of duration to certify interim payment application plus duration of interim application of payment days minus agreed payment terms. (duration of certify the interim application + duration of interim application approved days – agreed contractual terms) / (Total Duration – Agreed contractual terms).
2. Duration of interim application approval: Interim application approval date –Interim application submission date
3. Duration of making payment: Interim application payment date- Interim application certified date.

Each and every interim application analyzed according to the above methods and the average payment delays were calculated.

3.6.4. Survey Two: Identify Important Causes and Challenges due to Delayed Payment

The method of data analysis used percentage frequency distribution and relative important index (RII) method and scale rating. Percentage frequency distribution is a method that specifies the percentage for the grouping data point. It is useful to express the relative frequency of the data. The process involved dividing the number of observations within each data point or grouping of data points by the total number of observations. Information gathered from the questionnaire was analyzed using

Relative Importance Index method that represents 0.2 to 1.0 for each question, 1.0 reflects to 100% strongly agree with all respondents and 0.2 reflects to 100% strongly disagree.

3.7 Summary

This chapter is concerned with two questionnaire surveys. Survey one was focused on delay payment periods and survey two focused on causes of delay payment and the delay payment challenges to the specialized sub-contractors. In Survey one, data analyses were performed on information collected by documentary review using questionnaires of the trade of work interim application of specialized small scale sub-contractors' and determined the different payment periods. In Survey two, information gathered through the structured questionnaire was analyzed and determined the causes of delay payment and delay payment challenges to the specialized subcontractors. Findings were also discussed to give better reflections on the proposed study. The aim of this chapter is to give a methodical frame work of data collection, processing and analyzing.

CHAPTER FOUR

4.0 ANALYSES AND RESEARCH FINDINGS

4.1 Introduction

This chapter is concerned with two sections. Survey one is concerned with delay payment periods and survey two is concerned with causes of delay payment and the delay payment challenges to the sub-contractors. In survey one, statistical analyses were performed on data collected from specialized small scale sub-contractors, interim payment application analysis during the documentary survey and determined the different payment periods. In survey two, information gathered through the structured questionnaire was analyzed to determine the causes of delay payment and delay payment challenges to the specialized subcontractors. Findings were also discussed to give better reflections on the proposed study.

4.2 Survey One – Project Characteristics and Interim Payment Applications

In survey -one (Supports Specific Objective-i), a survey had been carried out to determine the small scale specialized sub-contractors payment delays in Sri Lanka construction industry. The respondents were drawn from different trade of specialized subcontractors work. Specialized subcontractors were conducted and questionnaires were issued to 30 group specialized subcontractors but it's difficult to collect the interim payment application so personally involved the field surveyor and collect the data only 24 group specialized subcontractors and data collected from eight trades of specialized subcontractors such as water proofing, plumbing, aluminum work, ceiling, rubble work, timber work, metal work and vinyl flooring. According to this data 151 specialized subcontractors' interim payment application were analyzed. Table 4.1 shows trade of specialized subcontractors that were captured in the questionnaire survey. The number of project in each category is shown together with the total number of interim payment application for each category as expressed.

Table 4.1: Trade of Specialized Subcontractors

Trade of work	No of interim payment application respondent group	No of interim payment application
Water proofing	5	27
Plumbing	5	49
Aluminum	2	10
Ceiling	4	19
Random Rubble	1	5
Timber	4	30
Metal	1	5
Vinyl flooring	2	6
Total	**24**	**151**

Specialized subcontractors were selected from the institute for construction industry development authority (CIDA) registered contracting organizations under Grade SP-C 4 to grade SP-C 5, either from the field of building construction works. 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.

Registration and grading was 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. Sp-c 4 financial limits are 10 million $\geq$ X > 02 million and Sp-c 5 is less than two million. Identify the specialized subcontractors, who conducted building project in Colombo district, they sign contract agreement and the contract sum amount less than two million.

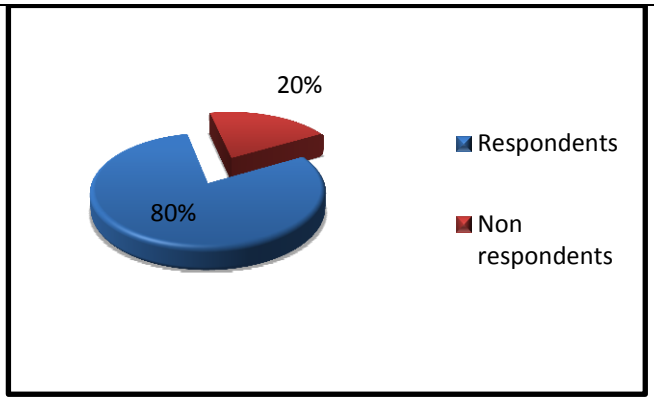
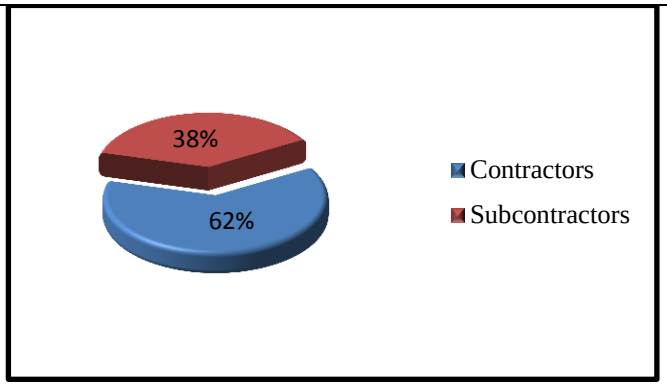
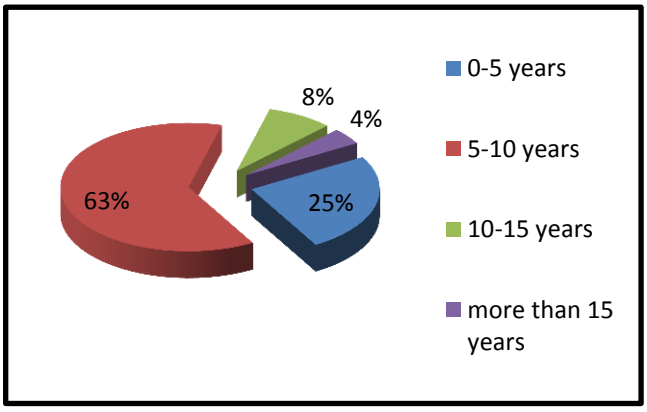
4.2.1 Participants Profile

Total of 30 sub-contractors selected to issue the questionnaire only 24 responded and submitted their interim payment application for analysis Table 4.2. Some questionnaires were not successfully collected due to various issues, such as the poor documentation, not interest to provide the data.

The respondents were categorized according to the type of organization as shown in Table 4.2. The data collected from direct subcontractor respondents group is 9 and balance 15 interim payment applications information collected from main contractors. Main contractors continuously maintain the subcontractors' interim payment document who works with their projects. The sample consisted of 62 % of respondents from contractor organizations and 38% from sub-contractor organizations.

Table 4.2 shows construction industry service experience that 25 % of the small scale specialized subcontractors have been active in the industry for less than five years. Followed by five to ten years services experience 63% of specialized subcontractors while 8% of specialized subcontractors have ten to fifteen years service experience and 4% of respondents above fifteen years experience. Consequently, experience gathered over these years would be useful and relevant indentifying service experience of sub contractors. According to this analyzed most of the subcontractors have 5-10 years working experiences.

Table 4.2 Demographic profile of participants – Survey One

Demographic Information	Percentage
Questionnaire Distribution Respondents - 30 Non Respondents- 24	
Respondents Type Contractor – 09 Sub contractor - 15	
Construction Industry Services Experiences 0-5 Years – 6 5-10 Years- 15 10-15 Years- 2 More than 15 years- 1	

4.2.2 Payment Delay and Duration

When describing the issue of late payments, the difference between two related concepts need to be taken into account, payment delay and payment duration. Figure 4.1 shows average payment delay and average payment duration in 24 respondents.

Delay is obtained as the difference between duration and the agreed contractual terms. Payment duration thus reflects total number of days obtain to the payment such as interim payment application submitted date to payment released date. Total payment progress days consist payment duration such as contractual terms days plus payment delay days. Delay is calculated over contractual terms and it is understood as the absolute delay in days in relation to the agreed payment terms. Duration indicator is defined as contractual terms plus delay; the two indicators can be expected to be correlated.

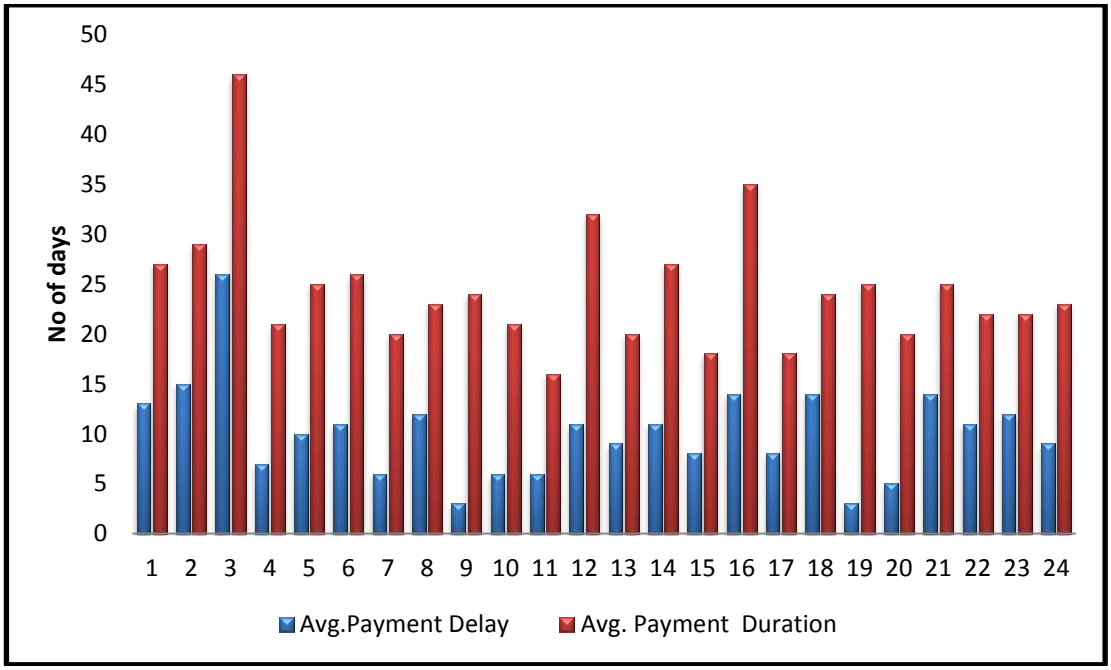


Figure 4.1: Payment Delay and Duration

4.2.3 Agreed Contractual Payment Terms to Specialized Subcontractors

Many sub-contractors in Sri Lanka, especially those at the lower tiers in a multi-layered sub-contracting chain, do not enter into formal subcontracts with the main or upper-tier contractors. The contract may only be partly written, it may engage uncertain arrangement like 'back to- back' without specific definition being given, it may even be made wholly orally. According to the data collection only 24 contractual agreements collected from specialized subcontractors. Figure 4.2 shows the summary of agreed contractual payment terms in subcontractors. About 33% of the agreements is point out 6-10 days of the payment term followed by 46% has consider 11-15 days, 4% of the agreement state 16-20days balance 17% consist 21-25 days of the payment term. Average contractual payments terms days are 15.

In Sri Lanka most of the specialized subcontractors who do not sign contracts with the main contractors stated that they relied on trust and verbal agreements. The reasons advanced for the lack of formal contracts include the small size of the jobs and short duration of works which was assumed to render contracts unnecessary, preferring to base their relationship on trust, lack of formal company registration documents on the part of the subcontractor, the small size of the jobs and short duration of works to render contracts unnecessary, preferring to base their relationship on trust.

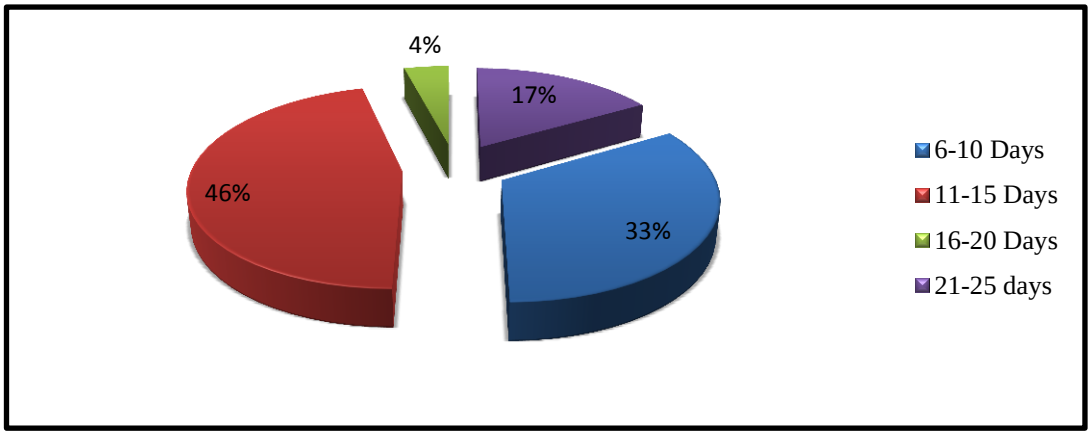


Figure 4.2: Contractual Payment Terms

4.2.4 Delayed Payment Period to Specialized Subcontractors

Subcontractors' interim payment application collected according to the contract amount less than two million and the grade of specialized subcontractors were SP-C 4 and SP-C 5. In this analyze 151 number of interim payment application evaluated. According to this 24 respondents of interim payment application , trade of works such as Water proofing work 5 respondents and number of interim payment applications 27 , Plumbing work 5 respondents and number of interim payment applications 49 , Aluminum work 2 respondents and number of Interim payment applications 10, Ceiling work 4 respondents and number of interim payment applications 19 , Random Rubble work 1 respondent and number of interim payment applications 5, Timber work 4 respondents and number of payment applications 30, Metal work 1 respondent and number of payment applications 5,Vinyl flooring 2 respondents and number of payment applications 6.

Figure 4.3 shows the period to delay payment from the paymaster. About 63% of the sub-contractors have late payment of about 1 to 2 weeks; followed by 29% of them about less than 1 week and 8 % of them was 2 to 3 weeks. According this analyze average period of delay payment is 11 days.

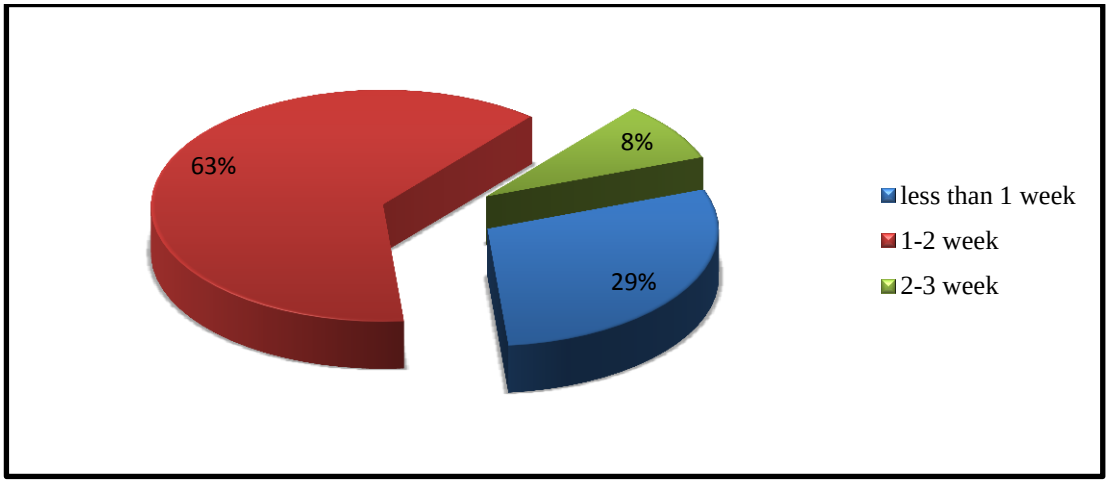


Figure 4.3: Period of Delayed Payment

4.2.5 Duration of Certified Interim Payment Application

According to the data, 24 respondents consist eight trades of specialized subcontractors such as Water proofing, Plumbing, Aluminum work, Ceiling, Rubble work, Timber work, Metal work and Vinyl flooring. According to this data 151 specialized subcontractors' interim payment applications were analyses. Figure 4.4 shows about 29% of the interim payment application state certify duration in the range of two to three weeks, followed by 71% which certify duration within one to two weeks. According to this analysis average duration of certify the payments is 14 days.

After sub contractors submit the interim payment application the site quantity surveyor check the interim payment application and submit to project manager after project manager approved that sent to head office quantity survivor or monitoring division after the approval of that interim payment application transfer to project coordinator or managing director. So many parties involved to check the interim payment application so it's take time to interim valuation of payment.

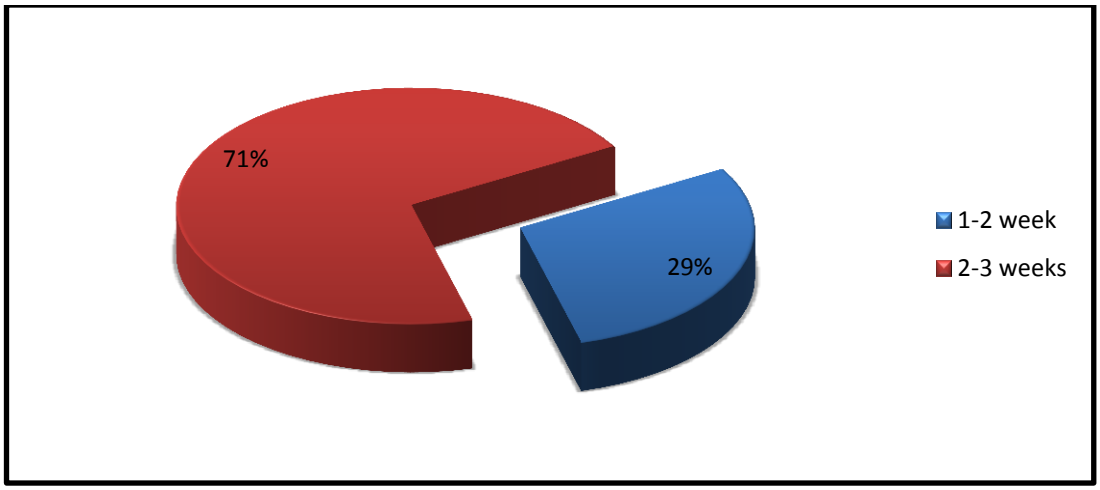


Figure 4.4: Duration of Certified Interim Payment Application

4.2.6 Duration of Making Payments after Certified Interim Payment Application

Figure 4.5 shows about 12% of the payment application got paid in one week followed by 67% of the certified interim payment application got paid within one to two weeks, 17% of payment application got paid in two to three weeks and balance 4% got paid in three to four weeks. According to this analysis, average duration of making payment after certify interim payment application is 12 days.

After certify the interim payment application its transfer to accounts section or financial division. They consider about their cash flow and clear this bill amount to cash or check in particular dates. Reasons for delay in payment such as Main contractor's ineffective utilization of funds, Scarcity of capital, contractors' need money to roll, Poor cash flow because of lack of proper process implementation. So it's take time to subcontractors' interim valuation of payment.

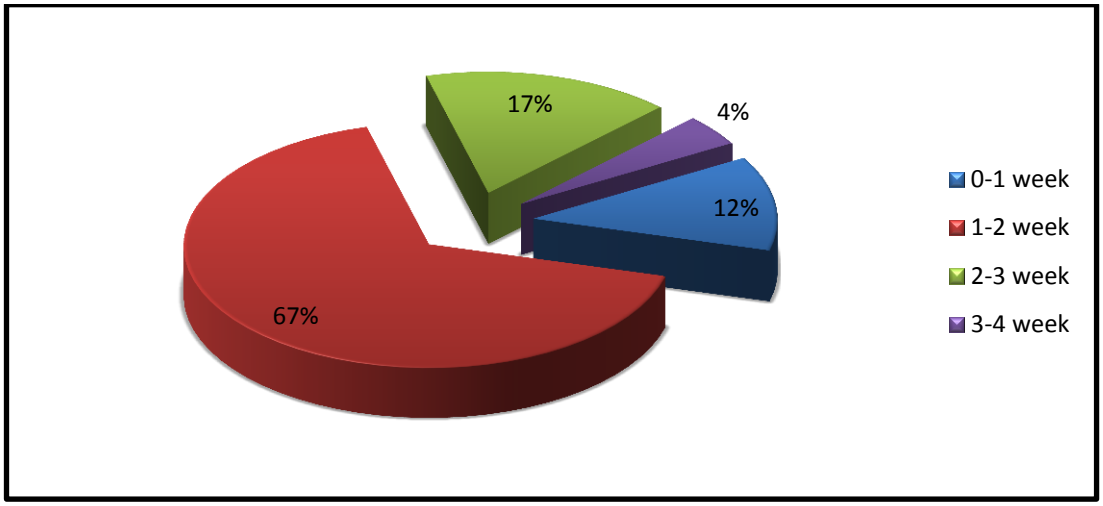


Figure 4.5: Duration for Making Payments after Certification

4.3 Survey Two – Causes and Challenges in Delayed Payment

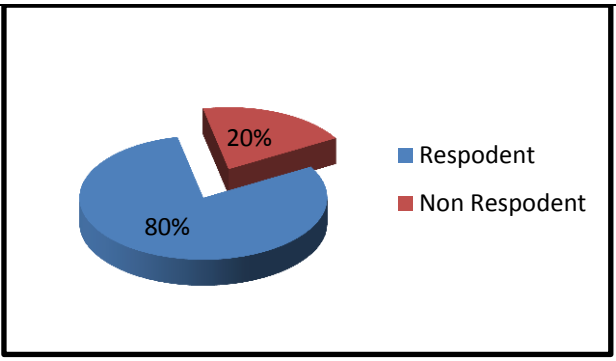
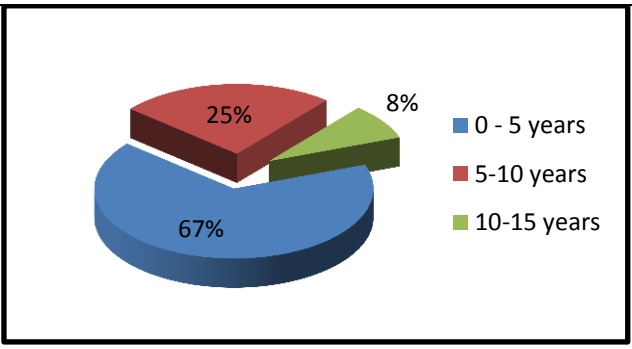
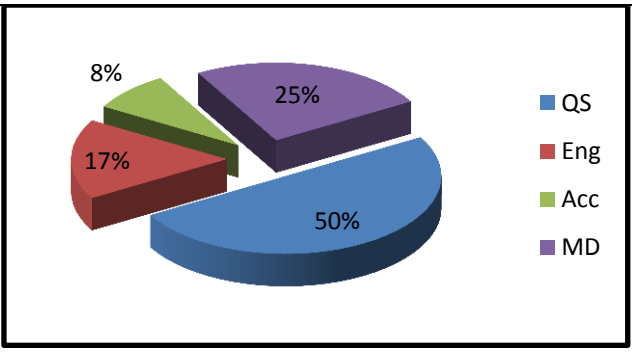
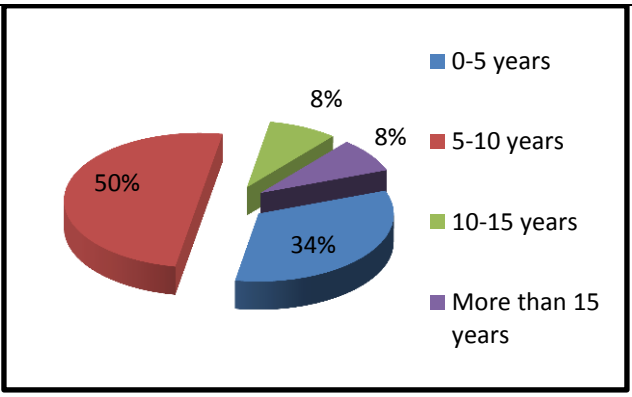
The views of participants were collected from the specialist subcontractors delay payment under Sri Lankan context. The views were explained and analyzed with respect to causes of delay payment and challenges to specialized subcontractors' delay payment. Also, an empirical analysis was performed with the participants' views on the influence of causes to payment delays and challenges to subcontractors, individually irrespective of their rank based on the 1-5 scale.

4.3.1. Profile of Participants

Table 4.3 shows demographic profiles of participants. The participants subject to mail surveying were Contractors and specialist subcontractors. Only the specialist sub-contractors from sub-contractor companies responded to the survey. About 80 % of the sub-contractors were responsive and 20 % contractors were not responsive to the survey. With respect to the construction industry service experience, about 67 % of the sub-contractors have been active in the industry for less than five years, 25 % of them active for five to ten years while 8 % active for ten to fifteen years and no respondents had more than fifteen years.

The professionals of contractor organizations as Quantity Surveyors, Engineers, Managing Directors and Accountants were the respondents who provided the information to the questionnaire survey. The majority of the respondents 50% were Quantity Surveyors. This was followed by 25% Managing Directors, 17% Engineers, and 8 % Accountants. Moreover, the respondents' characteristics in terms of their years of working experience in the industry were also recorded. Accordingly, the working experience of about 50 % of the respondents was 5-10 years, 34% was 0-5 years, 8 % was 10-15 years and 8 % was more than 15 years. It is evident from the results that the service experience of the contracting companies and the working experience of the professionals were adequate to provide valid information to the survey and hence the sampling of participants for the survey was done appropriately.

Table 4.3: Demographic Profile of Participants – Survey Two

Demographic Information	Percentage
Questionnaire Distribution Respondent - 60 Non respondent - 15	
Construction Industry Service Experiences 0-5 Years - 40 5-10 Years - 15 10 – 15 years - 5	
Respondents' Position Quantity surveyor - 30 Engineer - 10 Accountant - 5 Managing director - 15	
Respondents' Working Experience 0-5 years - 20 5-10 years - 30 10-15 years - 5 More than 15 years - 5	

4.3.2 Causes of Delayed Payment

The research participants are required to indicate the causes of delayed payments for small scale specialized subcontractors in Sri Lankan construction industry. Table 4.4 shows causes of late payment in Sri Lanka specialized subcontractors. Most of the respondents agreed contracting practices is the most important factor to the late payment (RII= 0.83), Followed by Lack of security of payment (RII=0.74), delay in certification (RII=0.683), Employers poor financial management (RII=0.666), Local culture (RII=0.636), Conflict among parties involved (RII = 0.616), Technical Problems (RII=0.61), Employer's withholding payment (RII=0.576), Weak management practices (RII= 0.533), Lack of proper communication (RII=0.446).

Table 4.4: Causes of delayed payment

Causes	RII	Rank
Contracting practices	0.83	1
Lack of security of payment	0.74	2
Delay in certification	0.683	3
Employer's poor financial management	0.666	4
Local culture	0.636	5
Conflict among parties involved	0.616	6
Technical problems	0.61	7
Employer's withholding payment	0.576	8
Weak management practices	0.533	9
Lack of proper communication	0.446	10

According to the empirical findings, contracting practices is the key factor contributing to payment delays to small scale specialized contractors. As per the analysis 50% of respondents indicate contracting practices was significantly higher affected. Another 30% were of the opinion that contracting practices are highly effective. 8.3 % of participants indicate that contracting practices was medially and

low affected. Only a small percentage 3.3% respondents were indicate contracting practices are not affected.

The second important cause is Lack of security of payment as observed 43.3% of respondents indicate Lack of security of payment was higher affected. Another 25% were of the opinion that Lack of security of payment is significantly highly effective. 16.7 % of participants indicate that Lack of security of payment was medially affected. 8.3% respondents were indicating Lack of security of payment was not affected and 6.7% participants stated low effective.

Third important factor is delay in certificate According to the study observed 28.3 % of respondents indicate Delay in certificate was higher affected. Another 26.7% were of the opinion that is significantly highly effective. 16.7 % of participants indicate that delay in certificate was medially affected. 16.7% respondents were indicating law effected and 11.7% participants stated not affected.

The fourth significant cause for payment delays is Employer's poor financial management. 30% of participants indicate Employer's poor financial management was medially affected. Another 28.3% of the opinion that is significantly highly effective. 16.7 % of participants indicate that highly affected. 15.0% respondents were indicating Employer's poor financial management was not effected and 10% participants stated low affected.

The fifth cause of payment delay is Local culture 25% of respondents indicate highly affected. Another 23.3% of the participant responded significantly high. 20 % of participants point out law affected.16.7% of participant specify local culture was not affected and 15% stated medially affected.

According to empirical findings 30% of respondents indicate conflict among parties involved was medially affected. Another 20% were of the opinion that contracting practices are low effective. 18.3 % of participants indicate that high and significantly high affected. Only 13.3% respondents were indicated not affected. As per the analysis 41.7% of respondents indicate Technical problem was medially affected.

Another 18.3% were of the opinion that contracting practices are highly effective. 13.3 % of participants indicate that Technical problem was significantly high, low and not affected.

Accordingly employers withholding payment 41.7% of respondents' state medially affected and 16.7% indicate high and not affected. 15% indicate low affected and 10% state significantly high affected. The next repercussion of payment delay is Weak management practices. 33.3% of respondents state medially and low affected. 13.3% indicated not affected and highly affected and 6.7% mention significantly high affected.

Final cause of payment delay was lack of proper communication.33.3% point out Not affected,30% responded medially affected 25% consider low affected ,8.3% indicate highly affected and 3.3% state significantly high affected.

4.3.3 Challenges due to Delayed Payment

Table 4.5 shows challenges faced by specialized subcontractors in delay payment. According to the analyze important challenges ranks are cash flow challenges (RII=0.85), delay in completion of project (RII=0.77), Insolvency (RII=0.74), Financial resource challenges (RII=0.7), Market challenges (RII=0.68), Abandonment of project (RII=0.65), dispute resolution (RII=0.31).

Table 4.5: Challenges due to delayed payment

Challenges	RII	Rank
Cash flow challenges	0.85	1
Delay in completion of project	0.77	2
Insolvency	0.74	3
Financial resource challenges	0.7	4
Market challenges	0.68	5
Abandonment of project	0.65	6
Dispute resolution	0.31	7

According to the findings, cash flow challenges are the key factor contributing to small scale specialized contractors. As per the analysis 58.3% of respondents indicate cash flow challenges were significantly higher affected. Another 16.7% were of the opinion that cash flow challenges are highly and medially effective. 8.3 % of participants indicate that cash flow challenges were low affected. No respondents were indicate contracting practices are not affected it were 0%.

The second rank challenge is Delay in completion of project. According to this analysis 36.7% of respondents indicate delay in completion of project were significantly high affected to small scale specialized subcontractors. Another 33.3 % stats high affected. 16.7% of participant mention medially affected. 8.3% of participants point out delay in completion of project was low affected and 5% consist not affected.

The third rank of challenge is Insolvency. As observed 36.7% indicate Insolvency were significantly high affected constantly 33.3% state high effected ,16.7% medium affected and 8.3% state insolvency were affect low and small percentage 5% mention not affected.

The fourth is financial resources challenges. As per the analysis 36.7% of respondents indicate highly affected. 28.3% of respondents point out financial resources challenges was medially affected.18.3% indicate significantly high, 10% indicate low affect and 6.7% indicate not affected.

The fifth most challenge is identify as market challenges by 50% of research participant as medially affected.26.7% of participants point out market challenges were high affected. Another 13.3% indicate significantly high affected. 8.3% of respondents' stats low affected and small percentage 1.7% mention not affected. According to this analysis abandonment of project by 55% identify medium affect, 25% stats high affect, 8.3% respondents point out significantly high and low effect and 3.3% indicate not affect.

The final challenge was identify dispute resolution. 58.3% of participant indicates dispute resolution is not affected. 30% stats low affected, 8.3% indicate medium and high affected and no participant indicate significantly high so it were 0%.

4.4 Summary

This chapter addresses the principal findings of the study, from the analyzed research findings. Surveys one identifies the delay payment days, duration of certify interim payment application and duration of making payment after certify the interim payment application. Secondly, it explained the causes of payment delays and then, challenges of delay payment. This chapter further discussed the nature of subcontractors' payment in Sri Lankan construction industry. Discussed the outcomes from the documentary review and questioners conducted with the selected participants from small scale specialized sub contractors. The next chapter integrated conclusions and recommendations.

CHAPTER FIVE

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

This dissertation work was set out to assess the specialized sub-contractors late payment practices in Sri Lanka construction industry as payment delays impair the efficiency of construction Projects resulting in not achieving the desired Project targets. Using structured questionnaire survey method, specialized subcontractors of construction firms in Sri Lanka were sampled and relevant information was collected. Through this process, it was facilitated possible to ascertain the level of awareness and the causes and challenges of late payment to specialized sub-contractors. Also, information collected from interim bills supported to determine the delay time period.

5.2. Objective One – Payment Delays of Specialized Subcontractors

According to the analysis, most of the contractual agreements (46%) stated that contractual payment terms are 11 to 15 days and average contractual payments are made in 15 days. According to this analysis about 63 % reported actual payment delay of one to two weeks and an average of 11 days of payment delays compared to the agreed terms. This indicates that many specialized sub- contractors have experienced with late payment problems in the Sri Lanka construction industry.

Overall, the payment delays are cumulative effect of the longer period taken to certify the interim payment application following submission and longer period taken to make the payment for certified interim payment application compared to agreed term of making payments by the main contractor. Interim payment applications get delayed at each and every point in the payment chain. The cumulative delays result in payment delays experienced by the sub-contractors. Most of the subcontractors can bear these delay days because they don't take any action against the delay

payment. Because there is usually a mutual relationship between subcontractors and their main contractors that normally extend beyond one project and is based on mutual trust and past working experience between the two parties and to have good working relationships with the main contractors for future projects.

This is due to the fact that, the interim payment application submitted by the sub-contractors to the site quantity surveyor for checking and submitting to project manager's approval and forwarding to head office quantity surveyor or monitoring division for final the approval and transferring to project coordinator or managing director. As the interim payment applications have to pass through several hands/ formalities in the chain, it takes time to certify the interim payment application. According to the analysis (71%) consented for a certifying time period between one to two weeks and average duration for certifying interim payment application to 14 days.

Duly certified interim payment applications are transferred to the accounts / financial division. Depending on the cash flow, interim payment applications are settled through cash or check on particular dates. Contractor's ineffective utilization of funds, scarcity of capital to finance the project for instance, contractors' need money to roll, poor cash flow due to lack of proper implementation process result in payment delays. The analysis revealed that about 67% stated duration of making payment after certify interim payment application one to two weeks and average duration of making payment after certify interim payment application is 12 days.

For the success of any construction industry in Sri Lanka, it is pertinent to make work interim payments on schedule and this will lead to achieve the project targets. This process will, no doubt, benefit the sub contractors, contractor, engineer, employer as well as the society at large. Delayed payments will always increase the risks and challenges to the specilised sub-contractors.

5.3 Objective Two - Causes of Payment Delays of Specialized Subcontractors

The top five causes of delay payment in the descending order of importance are contracting practices (RII=0.83), lack of security of payment (RII=0.74), delay in certification (RII=0.683), employers poor financial management (RII=0.666) and local culture (RII=0.636).

In Sri Lanka, most of the specialized sub-contractors revealed that there is a sub-contract informal agreement instead of a proper sub-contract document to make formal agreement. The contractual relations between the main contractor and the sub-contractor are often governed on an ad hoc basis or by using less sophisticated documentation. The failure to sign a formal contract is generally disadvantageous to the sub-contractor as it normally results in a one-sided relationship given the dependence of the sub-contractor on the main contractor for work. Specifically, the main contractors and sub-contractors identified payment practices as the main source of conflict between the parties, with the pay-when-paid clause. In such circumstances, it is usually those at the bottom of the supply chain bear the greatest risk. The reasons attributed to this are the lack of formal contracts and no proper contract agreement form for sub-contract work established by CIDA.

5.4 Objective Three – Challenges due to Delayed Payment

According to the analyzes top 5 challenges faced by specialized sub-contractors in delay payments in the descending order of importance are cash flow (RII=0.85), delay in completion of project (RII=0.77), insolvency (RII=0.74), financial resource (RII=0.7) and market challenges (RII=0.68). An increased sense of professionalism in construction industry could overcome some of the problems related to late and non-payment issues.

The operations of specialized sub-contractors to diligently progress with the works on site were dependent on the regular flow of cash through progress payment certificates. And since this arrangement was disrupted, the affected sub-contractors consequently sank into cash flow difficulties. It also does appear that contractors are highly dependent on regular progress payments to enable them to meet the project

expenditure that accrues during performance. Delay payments can give rise to tighter financial conditions, leading to increased administrative and financial costs as external financing may be necessary in order to manage cash flows. Hence, late payments can give rise to insolvency and ultimately bankruptcy.

The minimum cash requirement for a sub-contractor to complete the construction project within the construction period, sub-contractors must have enough working capital to cushion the effects of delay in payment of certificates, which they require for payment of wages, purchase of materials, hiring of plants etc. during the gap between valuation of work and actual payment. This means that sub-contractors actively participate in financing construction asserted that many indigenous sub-contractors under-estimate the level of working capital they need for construction resources and this accounts for poor project performance and bankruptcies. The sub-contractor is therefore, forced to look for external credit to fund his working capital requirement. Because he has to pay interest on the credit, his level of profit drops, and if he cannot obtain the credit, the company will likely go bankrupt. Many construction small scale sub-contractors have suffered cash flow challenges, delay in completion of project financial ruin, and bankruptcy because of delays in payment.

5.5 Recommendations

Considering the findings of the research, following suggestions are recommended as implications to theory and to be practiced within the construction industry

- Professional bodies and government agencies should study and amend the existing standard forms of contract to provide protection and, promote balance allocation of risk and fair contract to all related parties. Perhaps, an increased sense of professionalism in construction industry could overcome some of the problems related to delay payment issues. The development of principle of modern construction contract proper form of contract for subcontract work will be established by CIDA.

- Subcontractors are recommended to be smart in choosing paymaster, be careful in accessing risk, be eligible in making payment term, carry out cost control internally, be educated on the importance of cash flow management

- The subcontract document must contain the payment terms and provisions for delay payments. Prepare a written contract document for the head contractor, specifying what will be supplied, when the work will be done, and when and how payment is to be made and any related documentation.

- Subcontractors are recommended not to accept subcontracts from financially weak contractors who can't pay for the subcontractors on time.

- Security of Payment Regime remains in proposal; the government which is the main employer needs to make necessary steps in order to pass the Construction Contract Act which is being submitted for the approval.

- A fundamental change in the mindset towards timely payment as part of the industry's corporate culture is necessary.

5.6 Further Research

The research suggests the followings to be considered in further research,

- Domestic Subcontractors payment culture in Sri Lankan construction industry.
- Dispute resolution methods involvement to subcontractors' late payment practices in Sri Lanka construction industry.

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APPENDIX

A QUESTIONNAIRE SURVEY

Dear Sir / Madam,

I am Ajanthini Linganathan a construction law and dispute resolution post graduate of Department of Building Economics University of Moratuwa. As a part of my post graduate degree, I am required to undertake a research and produce a dissertation at the end of the course.

Dissertation Topic: A study on specialized subcontractors` payment practices in Sri Lanka.

The questionnaire intends to obtain information on completed projects of your organization. This research intends to collect views of specialized subcontractors who have entered in project less than two million exposed to payment issues within the industry. I have identified you/your organization as a potential participant who could provide me valuable information to this research. I strongly believe that you would support to my research.

Please, tick (√) appropriate cage and fill in the blanks if you select other

1. Please indicate type of your organization.

Main Contractor - ☐ Sub- contractor ☐

2. Please indicate the number of years your company has been in business.

0-5 years ☐ 5-10 years ☐

10-15 years ☐ More than 15 years ☐

3. Please indicate your profession.

Managing Director ☐ Accountant ☐

Quantity Surveyor ☐ Engineer ☐

4. Please indicate the years of experience in the industry

0-5 Years ☐ 5- 10 Years ☐

10-15 Years ☐ More than 15 years ☐

Section A

5. Provide me with the following project information in accordance with the project which experienced in payment delay situations.

Type of work: …….. Contract Price:……

Items	Bill No 1	Bill No 2	Bill No 3	Bill No 4	Bill No 5	Bill No 6
Date of submission						
Date of certification						
Date of payment received						
Allocated time to process the bill						

I would like to thank you for the information given and time you have dedicated to this research.

Section B

Degree of influence of parameters could be indicated as follows,

Significantly high (5)

High (4)

Medium (3)

Low (2)

Not affect (1)

6. Please rank the factors to the causes of payment delay to specialized subcontractors.

Causes	Not affect	Low	Medium	High	Significantly high
Paymaster's Poor Financial Management					
Paymaster's Withholding of Payment					
Conflict among parties involved					
Lack of security of payment					
Delay in certification					
Contracting Practices					
Technical Problems					
Weak management practices					
Lack of proper communication					
Local culture					

7. Please indicate how important the following challenges contributing to specialized subcontractors in delay payment.

Challenges	**Not affect**	**Low**	**Medium**	**High**	**Significantly high**
Cash flow challenges					
Financial resource challenges					
Market issues					
Delay in completion of project					
Insolvency					
Abandonment of project					
Dispute resolution					