

Exploring Feasible Solutions to Payment Problems in the Construction Industry in New Zealand

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LIST OF ABBREVIATIONS

- ACT - Australian Capital Territory
- ANOVA - Analysis of Variance
- AUTEC - University of Technology Ethics Committee
- BDT - Building Disputes Tribunal
- CCA - Construction Contracts Act 2002
- CIRC - Construction Industry Review Committee
- CTS - Construction Trade Services
- DBH - Department of Building and Housing
- FIDIC - Internationale Des Ingeneieurs-Conseils
- FTEs – Full Time Equivalents
- GC - General Construction
- GDP - Gross Domestic Product
- IRD - Inland Revenue Department
- JCT – Joint Contracts Tribunal
- KMO - Kaiser-Meyer-Olkin (KMO)
- LAMP - Labour and material payment bond
- LTA - Land Transfer Act
- NBSC - National Bureau of Statistics of China
- NEC - New Engineering Contract
- NSW - New South Wales
- NT - Northern Territory
- NZCF – New Zealand Contractors Federation
- NZIA - New Zealand Institute of Architects
- NZICE - New Zealand Institution of Civil Engineers
- NZIOB - New Zealand Institute of Building

NZIQS - New Zealand Institute of Quantity Surveyors

NZPA - New Zealand Press Association

NZS – New Zealand Standard

NZSTCF - New Zealand Specialist Trade Contractors' Federation

OECD - Organisation for Economic Co-operation and Development

PAF - Principal Axial Factoring

PCA - Principal Components Analysis

PD - Property Development

PIS - Participant Information Sheet

PMINZ - Project Management Institute New Zealand

PPSR -Personal Property Securities Register

PWC - PricewaterhouseCoopers

Qld – Queensland

RIBA - Royal Institute of British Architects

SA - South Australia

SDI - Subcontractor Default Insurance

SEC - Specialist Engineering Contractors

SMEs - Subject Matter Experts

SOP - Security of Payment

SPSS - Statistical Package for the Social Sciences

SSL - Secure Sockets Layer

UK - United Kingdom

URL - Uniform Resource Locator

US - United States

Vic – Victoria

LIST OF PUBLICATIONS

Journals

1. Ramachandra, T., Rotimi, J.O. & Hyde, K., An analysis of causes of payment delays and losses in the construction industry, *Journal of Construction Engineering and Management* (Submitted for re-review).
2. Ramachandra, T. & Rotimi, J. O. (2012) Liquidation and its effect on construction trade creditors in New Zealand, *Journal of Financial Management of Property and Construction*, 17 (2), 166-175.
3. Ramachandra, T. & Rotimi, J. O. (2011). The Nature of Payment Problems in the New Zealand Construction Industry. *Australasian Journal of Construction Economics and Building*, 11(2), 22-33.

Conferences (Peer-reviewed)

- 1) Ramachandra, T. & Rotimi, J.O. (2012, 24-26 September). Construction payment delays and losses: Perceptions of New Zealand. Presented at the annual conference 2012 on Faces and facets of project management Project Management Institute New Zealand (PMINZ), Wellington New Zealand.
- 2) Ramachandra, T. & Rotimi, J. (2011, 21-26 June). Legal and contractual provisions: Implications on constructors' solvency. Presented at the International Conference of the Modern Methods and Advances in Structural Engineering and Construction, Zurich, Switzerland.
- 3) Ramachandra, T. & Rotimi, J. O. B. (2010, 3-5 December). *Construction liquidation and payment losses: A review of New Zealand construction industry*. Presented at the International Conference on Construction and Real Estate Management Brisbane Australia.
- 4) Ramachandra, T. & Rotimi, J.O. (2010, 18-19 June) Review of methods for mitigating payment risks in construction: The case of New Zealand, Presented at International Research Conference on Sustainability in Built Environment, Colombo Sri Lanka.
- 5) Choi, D., Abeysekera, V. & Ramachandra, T. (2010, 10-13 May). Security of final account payments: The case of New Zealand. In P. Barrett, D. Amaratunga, R. Haigh, K. Keraminiyage, & C. Pathirage (Chair), *Routledge*. Presented at the CIB World Congress 2010, Salford Quays, United Kingdom.

Symposiums

- 1) Ramachandra, T. (2012, 28 August) Securing payments in the New Zealand construction industry, 6th Annual postgraduate symposium, AUT University, New Zealand.
- 2) Ramachandra, T. (2011, 2 September) Prevalence of payment problems in the New Zealand construction industry: An analysis of construction payment disputes, 5th Annual postgraduate symposium, AUT University, New Zealand.

ATTESTATION OF AUTHORSHIP

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

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DEDICATION

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

ETHICAL APPROVAL

The ethics application for this research project was approved by the Auckland University of Technology Ethics Committee, AUTEK Reference number 11/163.

ABSTRACT

As in any commercial activity, cash flow is vital for the survival of construction businesses. Construction activities take a long time, the products are expensive and the fact that payments are usually made for work already done, makes cash flow and financial status highly dependent on timely payments from the principals. Cash flow constraints of contractors not only result in business failures but also create flow-on effects in the supply chain. In recognition of these effects, most countries including New Zealand have established payment-specific construction industry legislation to ensure a steady flow of cash to project participants. However, payment problems persist within culture and practices, suggesting that industry characteristics may make it difficult to mitigate the problems. It is in this context, that this research investigates payment problems in the New Zealand construction industry with the main focus on exploring feasible solutions to secure payments to construction parties.

This research has adopted a sequential mixed-method design consisting of three approaches; preliminary document analyses of liquidators' reports, and payment disputes heard in the High Court; analysis of a questionnaire survey; and interviews with construction industry practitioners. The data collected through preliminary investigations and an online questionnaire administered to consultants, contractors and subcontractors based in New Zealand was validated and extended using semi-structured interviews with subject matter experts (SMEs). Data analysis techniques employed include: descriptive, inferential statistics and thematic analysis.

The findings of the study confirm that payment problems are still prevalent though not as widespread and significant as was the situation before the introduction of the Construction Contracts Act (CCA). The prevalence of payment problems is mainly due to failure to comply with the requirements of the CCA, lack of knowledge and understanding of the Act, and financial strength of industry players. The study found that other main causes were cash flow difficulties due to delays and non-payments experienced on other projects, disputes over payment claims and responses, inadequate fund sourcing and management, the easy exit of players from the industry with little/no liability to creditors, and the general payment culture of the industry. The research revealed that the cost consequences of construction insolvencies are significant and very often there is no security for payment losses due to insolvencies. The research finds that

the most appropriate forms of securities include: escrow/trust accounts, principal payment bonds, direct payments/tripartite agreements and retention bonds. Amongst these, the use of escrow accounts seems the most appropriate/feasible protection mechanism for held funds (e.g. retention monies). Subcontractors and lower tier parties in the construction supply chain are more impacted by payment difficulties and very often are unable to secure payment from the upper tiers. The cost of a financial security and constructors not being able to influence the upper tiers are found to be two major practical obstacles for obtaining security for payment in New Zealand. The research therefore recommends among others, adjustments to provisions within the CCA and other regulatory documents, changes to registration and pre-qualification of project owners and participants, changes to project administration processes, and general attitudinal changes within the New Zealand construction industry.

CHAPTER ONE

Introduction

1.0 Background to the Study

Undoubtedly, payment is an essential part of any economic transaction as it is the best incentive for getting any work done. Supardi, Adnan, and Mohammad (2011) contend that payment is the lifeblood of the construction industry. The performance of the various parties linked to a construction activity is dependent upon an uninterrupted monetary flow through the activity. Regularity of money flow is significant in the construction industry because its activities take a long time, the products are expensive and also because payment is usually made for work already done (Ameer-Ali, 2006). The significance of payment, and the problems associated with it in the construction industry are widely acknowledged (Banwell, 1964; Jin, 2010; Latham, 1994; Pettigrew, 2005; Ye & Abdul-Rahman, 2010). Payment problems occur in both developing and developed countries and irrespective of the size of the construction industry.

Hughes, Hillebrandt, and Murdoch (1998) suggest that payment problems in the construction industry manifest themselves in three ways: deliberate defaults (deferment or delay) by payers, arbitrary devaluation of claims/invoices, and non-payment. Hughes et al (1998) further clarified that delayed and non-payment risk is primarily either due to a 'cannot', or 'would not' pay attitude, or both, of payers. It has been suggested that payments on construction projects are often deliberately delayed because upper tier parties use them as a strategy to fund that or other projects (Odeyinka, Kaka, & Morledge, 2003; Tran & Carmichael, 2012). Thus delayed payment seems to be a feature of the construction industry culture of most countries (Johnston, 1999).

Researchers suggest that both delays and non-payments due to the deliberate and/or unintentional actions of construction parties have diverse effects on construction parties and the industry in many countries. Odeyinka and Kaka (2008) and Sin (2006) argue that delays in approving contractors' invoices/claims and settling payments, and release of retention monies, impact constructors' cash flows negatively. Odeyinka and Kaka (2005) and Euginie (2006) both suggest that failure to make payments within a

stipulated time frame could lead to contractors incurring additional financing and transaction costs eventually putting parties further down the chain at risk of insolvency. From a project management perspective, Assaf, Bubshait, Atiyah and Al-Shahri (2001) indicate that delayed payments increase the overhead costs of construction companies. Kadir, Lee, Jaafar, Sapuan and Ali (2005) suggest that payment delays also cause stoppages to material delivery which in turn impacts on labour productivity in the construction industry. Consequently the success of construction projects and ultimately the survival of the industry is affected (Cheng, Soo, Kumaraswamy, & Jin, 2009; Meng, 2002).

In Kuwait, Kartam and Kartam (2001) found that delayed payment is the second highest operational risk after financial failure that causes project delays. Also Chan and Suen (2005), Kennedy (2006) and Yates (2003) are of the opinion that undoubtedly, irregular payment is one of the major causes of disputes within the industry. These authors explain that failure to comply with payment provisions, valuation of interim payments, final payments, and management of variation claims, cause disputes between project owners and constructors on construction projects.

There is little doubt that the effects of financial inappropriateness on construction projects affect the productivity of the industry either directly or indirectly. For example Durdyev and Mbachu (2011) conclude that delayed payment poses significant internal constraints to onsite labour productivity in the New Zealand construction industry. On a general note, Cheng, Soo, Kumaraswamy, and Jin (2009) are of the opinion that prompt payment in the industry would encourage contractors and subcontractors to deliver better quality services for the successful completion of projects. Timely and precise payment could develop trust and collaboration between parties which could increase construction clients' value for their investment (Office of Government Commerce, 2007). It is therefore essential that the issues of payment default within the industry are dealt with as a matter of significance.

1.1 Justification for the Study

The widespread nature of payment problems in the construction industry has driven most countries, including New Zealand, to enact payment specific legislation for their industry. Since the introduction of the first Housing Grants Construction and

Regeneration Act in the UK in 1996, similar legislation has evolved in other countries, the latest being the Construction Industry Payment and Adjudication Act 2012 in Malaysia. It is worth noting that Malaysia is the first developing country that has introduced its security of payment legislation with the view of achieving its vision of being one of the best construction industries in the world in its quest to become a fully developed nation by 2020 (Ameer-Ali, 2006; Azizan Supardi & Adnan, 2011). Ameer-Ali (2006) and Azizan, Supardi and Adnan (2011) indicate that the resolution of payment issues is significant to achieving these visions. In New Zealand the CCA was promulgated in April 2003 following the liquidation of some high profile construction companies because of indebtedness (Bayley & Kennedy-Grant, 2003; Degerholm, 2003). The CCA, in general, is designed to ensure prompt payment to parties to a construction contract by entitling them to receive progress payments (s.16-22) and to pursue disputed progress payments by referring them to a rapid adjudication process (s.25).

However, payment problems seem to be widespread within the New Zealand construction industry and there are suggestions that the problem persists because of inadequacies in the solutions offered in the CCA or that the character of the industry itself promotes sharp practices. For example, Gibson (2009-a) refers to a typical hotel project, where \$1.7 million was deferred by a developer even though the project contractor had agreed to rectify all identified defects. The dispute was resolved through an adjudication process which ruled in favour of the contractor for the full amount in dispute. In another instance, an interim payment of \$265,000 was delayed to a building contractor resulting in delays to the project's completion (Gibson, 2004).

Further there were instances observed where the CCA was inadequate to cater to payment problems prevailing in the New Zealand industry. For example, a developer was liquidated following a tax claim of \$7million and the liquidator of the company indicated that there were insufficient funds available to distribute among unsecured creditors but the preferential creditor, Inland revenue department (IRD) was settled with the company's assets (Gibson, 2008b). During similar time period another construction company went into liquidation with an estimated unsecured debt of \$1.8million to nearly 200 creditors (Gibson, 2008a). Another construction company was owed \$900,000 (excluding costs) and it filed an application to liquidate the developer owing it money. Judgement was granted to pay the construction company (NZPA, 2009). However, it is to be noted that these examples concern the liquidation of developers and

construction companies owing unsecured creditors who are often left unpaid at the completion of liquidation proceedings. The CCA fails to address unsecured creditors' concern in this regard. Furthermore, a recent survey indicates that contractors continue to be affected by non-payment by project owners in New Zealand (Chilli Marketing, 2010). The study merely investigates the occurrences of non-payment to head contractors by their principals, and the actions taken by those head contractors to remedy the payment issues. Further, the study considered only the perspective views of head contractors. The market study therefore has a limited focus on the payment problems within the New Zealand construction industry.

Commenting on the legal remedies provided by security of payment legislation in other countries, Ndekugri and Russell (2005) argue that adjudication determinations made under the United Kingdom (UK) Act are an interim solution, subject to further review by a judgment in arbitration, litigation and agreement. This could leave respondents at risk, as they may not be able to recover an adjudicated amount, if the final decision is reversed and the claimant becomes insolvent by the time the decision is arrived at. Thus the extent to which an adjudicator's decision becomes effectively the final decision is a concern with the UK Act (Kennedy, 2006).

The applicability of different security of payment legislation to lower tier construction participants is also in question. Brand and Uher (2008) explain that in Australia there exists low level of knowledge and understanding of the provisions within the New South Wales (NSW) Act by smaller sized contractors and subcontractors. On a similar note, a survey conducted to identify the level of awareness and understanding of the CCA provisions in New Zealand indicates there is limited use of such provisions because knowledge and understanding of the CCA, particularly among subcontractors, is low (Chilli Marketing, 2007). About 45% (out of 207) survey participants in the Chilli Marketing study of 2007 had never used the CCA provisions to recover money owed to them. However 40% (out of 275) subcontractors have used the provisions of right to claim and respond to payment claims and a small percentage (8%) of subcontractors have used the adjudication provisions within the CCA.

Further flaws and imperfections of the CCA are currently being addressed with the review of the Act (DBH, 2010). It should be noted that although the CCA is similar in context to other legislation which are mostly referred to as 'Security of Payment Legislation', these provisions do not guarantee parties to construction contracts will be

paid. The CCA provides for claimants to refer payment disputes to adjudication (s.25), and to obtain approval for issuing a charging order (s.29), but currently the time limit (15 working days) given for parties to oppose the enforcement of an adjudication determination does not seem to have achieved its intended purpose. These and other imperfections of the CCA are outlined in the Department of Building and Housing (DBH) discussion document (2010). However, this on-going review of the CCA by the DBH does not seem to propose any security measures for payment.

Apart from legal and procedural issues, payment problems are exacerbated by business insolvencies common to construction companies. For example a prominent luxury development company in the UK went into liquidation, owing €3.8 million to its suppliers and contractors (Reilly, 2008). In another instance, a collapsed construction company in Australia, owed more than AU\$17million to numerous creditors, of which only one secured creditor has been paid (Barry, 2010). The company's unsecured creditors which were mostly subcontractors were not paid at all. Similarly, Suhaini (2005) and Danuri, et al (2006) indicate that about 16,000 contractors under category G1 in Malaysia were bankrupted because several upper tier contractors failed to honour payment claims, even though the project owner (the government) had paid the upper tier contractors in full.

In New Zealand, in 2008, the collapse of a prominent commercial construction firm left the suppliers and subcontractors of the company unpaid, with NZ\$2.4 million owed to them (Not a cent for builder's creditors: Big claims and few cases, 2008). Slade (2008) reports that a property developer in New Zealand was declared bankrupt and owed at least NZ\$6 million to creditors, including the design consultants. Slade also states that in the same year another developer went in to liquidation owing \$290,000 to the Inland Revenue Department, and NZ\$400,000 to unsecured creditors. In another report (Gibson, 2009-b), a construction company went into voluntary liquidation with 55 claims against it while owing over \$6.5 million. Further evidence of payment problems in New Zealand was described in a 2010 survey, where about 20% (out of 342) construction project participants have experienced non-payment on their projects due to bankruptcy and liquidation/receivership of their project owners (Chilli Marketing, 2010).

Worse still, financial problems experienced by the lower tier in the construction business are compounded by their inability to secure proper compensation for their

losses. Donnelly (2009) explains that contractors are seldom paid on a pro rata basis for losses incurred due to a project owner's liquidation. For example, the Marlborough Express (2008) reports that a building company that went into voluntary liquidation, was only able to pay 20 cents for each dollar it owed to its 19 unsecured creditors. Gibson (2009-b) suggests that in many instances where umbrella companies had gone bust, creditors did not expect to receive big payouts.

The foregoing indicates that payment problems persist within the New Zealand construction industry, despite the CCA is in place. The reviews further justify that the provisions within the CCA have not effectively tackled the problems existing within the industry. A review of previous studies shows that solutions available to mitigate them vary across countries due to nature of the problem, the culture and structure of the industry, and other characteristics. Hughes et al (1998) suggest that the UK construction industry, pioneer in promoting the construction payment legislation does not seem to use contractual/administrative measures such as bonds, advance payments directly to the supplier, or into a trust accounts, or guarantees from parent companies. In a similar vein, Ameer-Ali (2006) contends that promulgating security of payment legislation could better mitigate payment default by construction industry upper tiers in Malaysia than the use of mandatory trust funds or bond systems. Having reviewed legislative and administrative measures in other jurisdictions, Cheng et al (2009) are of the opinion that regulatory measures related to security of payment and trust account seem to remedy payment issues on construction projects in Hong Kong. Conversely, Wu, Kumaraswamy and Soo (2008) explain that although several regulative measures are in place in China, payment issues continue to persist due to failure to implement those measures. These distinct views regarding mitigating payment problems lead to the current research to ask the question: what solution(s) would remedy payment problems in the context of the New Zealand construction industry? This research therefore investigates payment issues in New Zealand construction industry with the main focus of exploring feasible solutions.

1.2 Research Questions

Given the significance for the study, the current research addresses the following research questions.

- 1) What is the nature and extent of payment problems in the New Zealand construction industry? This would provide an understanding of the magnitude of payment problems in the construction industry. In terms of nature, the question answers the types of payment risks, construction parties impacted by the payment risks types, and types of payments causing issues in the construction industry. The question also addresses the extent of payment problems in terms of number of projects affected, value of payment delays and losses, and the duration of payment delays construction parties experienced in the New Zealand construction industry.
- 2) Are construction insolvencies prevalent and how could payment problems associated with insolvencies be mitigated? Literature review and anecdotal evidence indicate that construction insolvencies of upper tier construction parties result in payment losses and delays to other construction parties. This would provide another dimension to nature of payment problems within the construction industry.
- 3) What are the causes of payment problems that are prevalent in the construction industry? Causes of payment problems vary from country to country depending on the payment culture being practiced, culture of the industry, political set up etc. Thus the New Zealand economy being small with few large clients and contractors, the causes of payment problems could be of a different in order to other countries. The research therefore aims to answer the causes specific to the New Zealand context.
- 4) Are provisions available within the CCA 2002 effective to remedy payment problems experienced by construction parties? In New Zealand the CCA was enforced after several high profile companies went into liquidation and leaving subcontractors and suppliers unpaid. The research therefore investigates the effectiveness of provisions within the CCA.
- 5) What forms of securities could secure payments to construction parties? What are the practical impediments to getting security for payment on construction projects in the New Zealand construction industry? The widespread nature of payment problems has driven countries to implement various legislative and administrative measures to remedy the payment problems. However, solutions seem to differ across countries. Further, according to previous research the use of security measures seems to be limited, despite security measures available in the market. This research therefore explores the feasible solution(s) and the practical obstacles in implementing the solutions in the New Zealand construction industry.

1.3 Aim and Objectives of the Research

The main focus of this research is to explore feasible solutions that could secure payments to construction parties on construction projects. An emphasis is placed on the impact of payment problems due to construction insolvencies so as to explore protection schemes against the risks of insolvency. The following outlines the objectives addressed in the current study to achieve this set aim.

- 1) To investigate the extent and nature of payment problems in the New Zealand construction industry.
- 2) To investigate the prevalence of construction insolvencies and payment problems associated within the industry.
- 3) To investigate the causes of payment problems in the industry.
- 4) To evaluate the effectiveness of the legislative payment provisions available within the CCA 2002.
- 5) To explore feasible solutions that could secure payments to parties on construction projects in New Zealand. This includes identifying the extent of current use of security for payment, and the practical impediments in procuring security for payment, in the construction industry.

To fulfill the aim and objectives of the study, the following methodology has been adopted.

1.4 An Overview of the Research Methodology

Figure 1.1 depicts the methodology map adopted for this research. As shown on the map the research essentially involves four stages: problem identification, data collection and analysis, validation and synthesis of research findings, and conclusions and recommendations. The following explains each stage of the research process briefly.

The first stage of the study involved a systematic literature review to understand the subject of the research problem and to identify knowledge gaps. The review includes types of payments, the prevalence causes and effects of payment problems, construction liquidations and the need for security for payment, etc. Building on these reviews, the study delves further into a review of the issues around the subject area and solutions in

place to mitigate payment problems, especially payment provisions in standard forms of contracts and security of payment Acts. Based on the review the research questions, aim and objectives are established.

The second stage of the research process involves data collection and analysis. The research design for this study adopts a mixed-method approach as per the philosophical position of the current research (detailed in section 4.2.2). A common way to approach mixed-method research is through triangulation. This study employs methodological triangulation where it uses document analysis and questionnaire survey to collect both quantitative data and qualitative data. The document analysis was employed in preliminary investigations into payment dispute cases filed in the High Court and liquidators' reports of construction companies. An online questionnaire survey was administered as the main data collection tool in line with the research objectives set out in section 1.3. The data collected through both documents analysis and questionnaire surveys were analysed using descriptive and inferential statistics.

The third stage of the methodology map explains the validation and synthesis of the research findings. The research findings obtained from preliminary investigations and the questionnaire survey were validated using SMEs. The study used semi-structured interviews to gather SMEs' views on the research findings. Following the validation exercise, the collated output of the three approaches has been synthesized with reference to the relevant literature.

The last stage of the research process involves drawing out conclusions and recommendations based on syntheses of the research findings.

1.5 Scope of the Study

The focus of this research study is limited to payment issues in the New Zealand construction industry from the perspective of head contractors and subcontractors. Payment issues under the study considered in two folds: payment delays and payment losses. By payment delays the study refers to a situation where payment to a head contractor/subcontractor was not made on time, as per the timelines agreed between the project parties. Similarly payment losses are considered as a situation where payment to a head contractor/subcontractor was not paid (fully or partially) due to insolvency or bad debts write-off. Literature review and anecdotal evidence suggest that payments

have been a source of disputes in the construction industry. Further liquidation of construction companies seems to be another cause of payment issues to construction parties. Thus the preliminary investigation within the study focused on two key documents which provide information on payment issues due to the above two causes. The two key documents investigated are liquidators' reports and High Court proceedings. The research paradigm under which the current study is positioned is the pragmatism paradigm, according to the philosophical assumptions underpinning the study. This allowed the use of a mixed-method approach with quantitative and qualitative data collection techniques.

1.6 Outline of the Thesis

Chapter One provides an overview of the thesis. It begins with a background to the research study and follows with the justification for the current research study. The next section of the chapter presents the research questions, followed by the aim and objectives of the research study. The chapter further outlines the overview of the research methodology adopted for the study. This is followed by scope and limitations of the study and the outlines of the thesis in the last two sections.

Chapter Two provides the review of literature around the subject area. The chapter presents the key issues related to payment problems such as payment arrangements, types of payment problems, the current status of payment problems around the world, and the causes and effects of payment delays and losses in the subsequent sections of the chapter.

Chapter Three presents review of the regulative and non-regulative measures available in the construction industry around the world that deal with payment problems. It discusses the solutions in place to deal with payment problems in three main sections, for contractual, legislative, and administrative solutions.

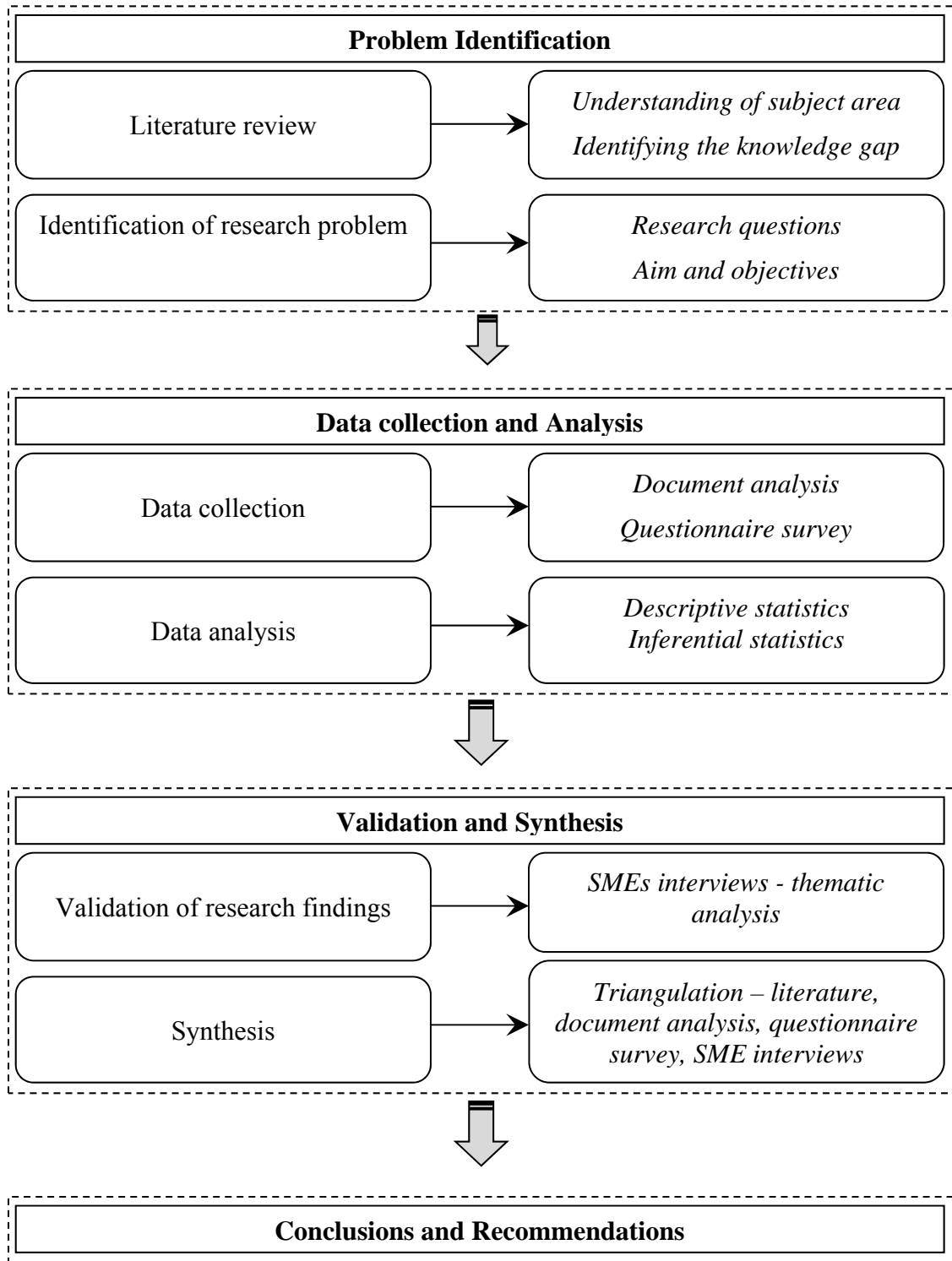


Figure 1.1: Research approach used for the study

Chapter Four describes the research methodology adopted for this research study. It begins with providing an understanding of research methodology and goes on to explain the knowledge claim made by the researcher, and the rationale behind the claim. The chapter then describes research strategies and methods used for data collection and analyses. Finally the chapter provides the claim for the credibility of research findings and the ethical principles followed in the current research.

Chapter Five presents the analyses and results of preliminary investigations into documents of construction payment dispute cases filed in the High Court, and liquidators' reports of construction companies that went into liquidation. The chapter contains two main sections for each of the above document analyses.

Chapter Six presents the analyses and results of the questionnaire survey in line with the research objectives explained in section 1.3. The survey results are therefore presented in five main sections identified as per the research objectives.

Chapter Seven presents the SME's views on the research findings of preliminary investigations and questionnaire survey. SMEs views are presented in six different themes as per the research objectives.

Chapter Eight presents a synthesis and discussion of the research findings by collating the outputs of the previous investigations presented in the above three chapters. The synthesis and discussion are presented in five main sections identified as per the research objectives.

Chapter Nine concludes the research by collating findings and relating them to the research questions. Based on this, the chapter provides a list of recommendations to improve the situation regarding payment problems in the industry by incorporating feasible remedies suggested by this research study.

CHAPTER TWO

Review of Payment Problems and Related Issues

2.0 Introduction

This chapter presents a review of fundamental issues related to payment problems in the construction industry. The review is presented in six sub-themes under the main theme of the chapter. The first section gives an understanding of the significance of the construction industry globally as well as in the New Zealand economic context. A review of payment arrangements and payment risks experienced by construction parties follows in the next section. Section three provides a review of payment problems from a global as well as a New Zealand perspective. The next section presents the causes of payment problems and followed by the effects of the same in section five. Finally the chapter provides a summary of key features of the review.

2.1 Significance of Construction Sector in the New Zealand Economy

Construction in any country is a complex and fragmented sector of the economy, and involves a broad range of stakeholders and has wide ranging linkages with other areas of activity (Bon, 2000; Hillebrandt, 2000; Pietroforte & Bon, 1995; Pietroforte, Bon, & Gregori, 2000; Rameezdeen & Ramachandra, 2008). Therefore the effects of changes in the construction industry on the economy occur at all levels and in virtually all aspects of life. The industry is well known for the significant role it plays in any economy (Lewis, 2004; Ofori, 1990). The New Zealand construction industry also plays an important role in its economy similar to the construction industry of many countries. The PricewaterhouseCoopers (PwC) (2011) has recognized its significance in terms of its economic contribution. The following sections will briefly describe the significance of the New Zealand construction sector.

2.1.1 Construction Investment

The New Zealand construction industry is categorized into two main sectors: general construction and construction trade services, each contributing 45% and 55% to the total output of the sector respectively (Allan, Yin, & Scheepbouwer, 2008). This is further broken down into eight sub-industries providing a range of activities: residential building construction, non-residential building construction, heavy and civil engineering construction, land development and site preparation services, building structure services, installation trade services, building completion services, and other construction services. These sectors jointly make the industry dominant among all industries in terms of investment (Gross Fixed Capital Formation), employment and other economic contributors. For example the industry records the first place for its investment by contributing nearly 45% of the total investment in the economy (see Figure 2.1). This value of capital investment by construction makes the industry vital to the economic development of the country. The total capital investment induces economic development. According to PwC this value is low compared to other OECD countries investment which represents 7-13% of gross domestic product (GDP).

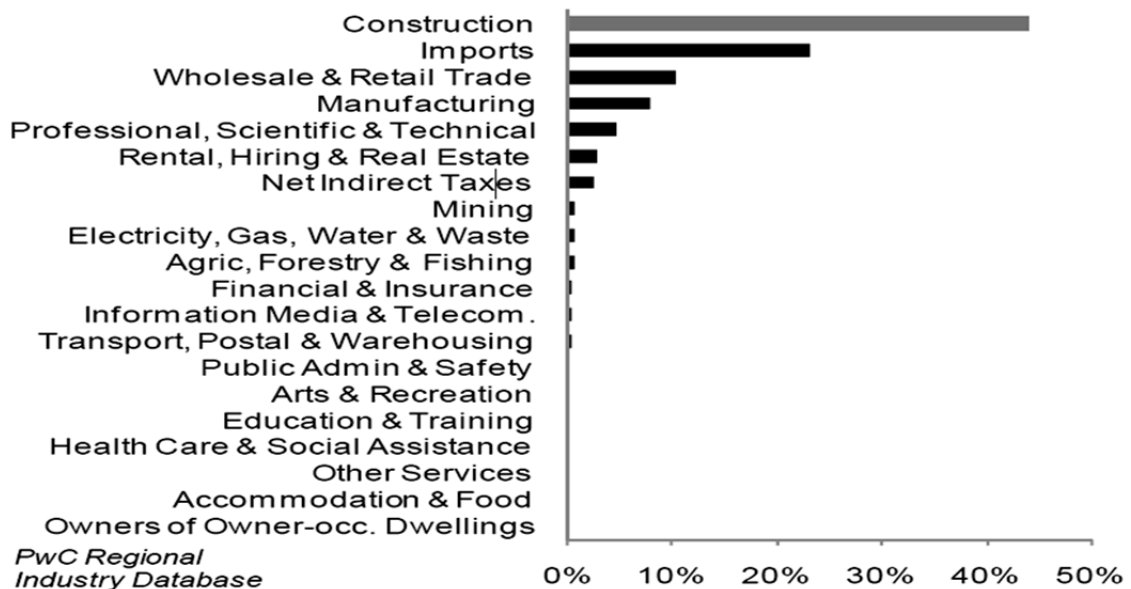


Figure 2.1: Investment by industries in the New Zealand economy by 2011 (PricewaterhouseCoopers, 2011)

2.1.2 Construction Companies and Employees

Another measure of the industry’s impact on the national economy is its number of businesses and employment. Figure 2.2 gives a breakdown of the number of enterprises by industry. The figure shows that the New Zealand construction industry is the third largest among industries with 49,610 enterprises.

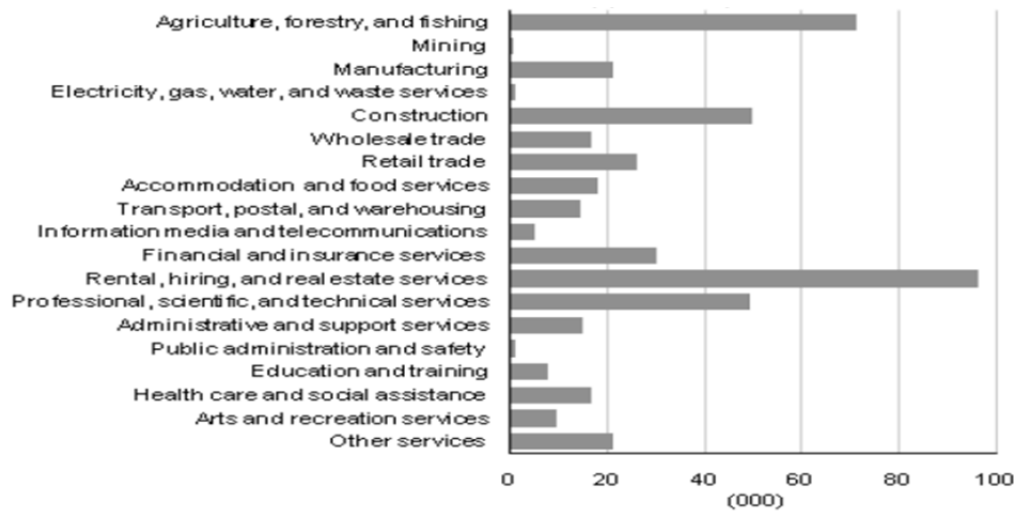


Figure 2.2: Number of enterprises by industry in the New Zealand economy by 2011 (Statistics New Zealand, 2011a)

On the other hand Figure 2.3 represents the distribution of those construction firms according to employee size (Statistics New Zealand, 2011a). The majority (92%) of construction firms have five or fewer employees, while only 0.4% have 50 or more employees. This indicates that construction projects are performed by organizations with a small number of employees. In terms of employment the construction industry is the fifth largest sector with 157,000 full-time equivalents (FTEs), accounting for 8% of total employment. Another 42,000 FTEs are employed in construction-related services.

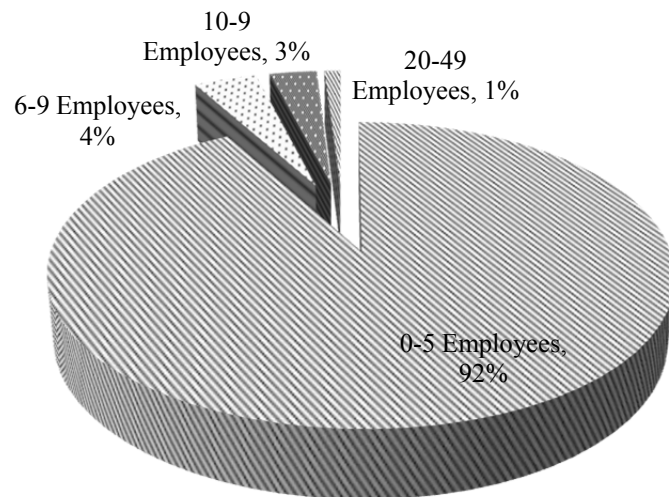


Figure 2.3: Distribution of number of firms in the New Zealand construction sector by 2011 (Statistics New Zealand, 2011a).

2.1.3 Value of Output and Multiplier Effect

The significance of the industry can be further demonstrated by reviewing its share of the total value of goods and services produced in the economy. Not only making a significant contribution of around 5% to GDP, the New Zealand building and construction industry has a strong multiplier effect on other activities within the economy. It is estimated that \$1 worth investment in construction stimulates economic activities by \$3 (PricewaterhouseCoopers, 2011). This represents the second highest effect by sector in the economy. It is estimated that this multiplier effect together with productivity improvement of 1% would result in a \$300 million increase GDP in the New Zealand economy. Further, the effect of the sector on the local economy is reflected on its import dependency. Compared to other heavy investment sectors in the New Zealand economy, construction is less dependent on imports. This means that \$1 invested in construction will influence the local economy more than if a \$1 was invested in other heavy investment industries.

The value of building consents issued per year gives an indication of the future prospects of the construction industry. Table 2.1 shows the value of total authorizations issued over the last five years. Though the value has decreased over the years, this is expected to rise in coming years with the Christchurch rebuild, earthquake-

strengthening in other centers and remedial work on leaky buildings commence. This will mark the largest construction-led boom in the history of New Zealand (PricewaterhouseCoopers, 2011).

Table 2.1: Value of total building authorizations issued

	2007	2008	2009	2010	2011	2012
Total authorisation issued (\$millions)	11,678	12,600	10,867	10,095	9,557	9,177
Growth rate	-	7.9	-13.8	-7.1	-5.3	-4.0

The forgoing discussion gives an indication of the importance of the construction sector in the New Zealand economy. Having recognized the significance of the construction industry in the national economic context it is vital to deliver defect-, dispute-, and conflict-free products and services to the industry. In this sense, payment issues are one of the concerns which need to be addressed. Payment is the key for the success and survival of parties and the industry. Based on the survey of payment performance in Britain, Johnston (1999) commented that “the construction industry, in particular, is prone to late-payment culture”. Similarly Kennedy (2005) reported that “payment, not unexpectedly has always been the main subject of disputes”. On the other hand payment in any industry is a strong incentive for participants to complete the work on time and get paid timely. Precise and timely payment helps to develop trust and collaborative working, and thereby achieve value for money for construction clients (Office of Government Commerce, 2007). This would improve the economic performance of the country. In this sense, the next section reviews the payment arrangements and payment risks associated with it.

2.2 Payment Arrangements and Payment Problems

This section gives a brief outcome of different types of payment and their arrangements that exist within the construction industry. The types of issues that could be associated with each type of payment arrangement are described to give a context to the payment problem within the construction industry.

Payment is the core of any economic transaction without which any entity cannot succeed in business. Unlike in some other industries, payment is a major concern in the construction industry due to the construction process taking long time, the expensive

nature of the product, and payment being made upon the completion of the product (Ameer-Ali, 2006). Payment is considered the life-blood of the industry (Supardi et al., 2011). Obviously a healthy and consistent disbursement of money determines the performance of a contractor or a subcontractor (Amoako, 2011; Mohd-Nazir, 2006).

2.2.1 Types of Payment

Usually in the construction industry the payment for the work done is made in installments (Murdoch & Hughes, 2000). Payment in installments during the contract is referred to interim or progress payments while the last installment is called the final payment. Kenley (2003) define progress payments as periodic cash flows from clients to contractors on construction projects. According to him, the reasons for such payments are for the contractor to recover money for work as they progress and thereby avoid the burden of the contractor funding the project, and to restrict these payments to set periods (usually one month) and thereby reduce the administration work required by all parties. Halpin and Woodhead (1998) are of the opinion that often there is a time lag between the time the contractor incurs the expenses and get paid for them. On a similar note, Odeyinka and Kaka (2005) comment that contractors not getting paid within the stipulated time drive them to seek additional funding.

It is common practice in construction that the payer, typically clients or upper tier contractors, withholds a certain percentage (not more than 10%) from progress payments up to a limit of 3-5% of the contract sum. This is called retention, which is withheld until the completion of projects in order to secure full performance of a contractor's obligation. The New Zealand standard form of contract (NZS3910:2003) provides a sliding regime where the effective rate of retention reduces with the size of the project (Vasantha Abeysekera, Raina, & Neitzert, 2009). With the sliding regime, clients retain 10% on the first NZ\$200,000 and 5% on the next NZ\$800,000 and a further 1.75% of the remainder up to a maximum of NZ\$200,000 of the contract value. Retention monies are normally viewed as a security for the cost of rectifying any defective work. In New Zealand, the sliding scale of retention provides significant cash flow benefits to contractors (Degerholm, 2001). Similarly, contractors withhold 10% of subcontractors' contract price, which seems to be higher than their profit margin.

Payment for unfixed materials and goods onsite and off-site is another type of payment which could be defaulted on construction projects. Onsite payment is generally included with progress payments while payment for off-site materials and components, which forms a substantial part of contractors' payments, is not paid until they are delivered on site (Motawa & Kaka, 2009). On a similar note Kenley (2003) claimed that payment (cash outflows) to subcontractors and suppliers, and direct costs are different to that of cash inflows from clients, as they follow separate contracts and agreements between contractor, subcontractor and suppliers. Similarly, the payment for off-site materials is not allowed in New Zealand standard forms of contract. Apart from those payments there are other types of payment such as for variation and time extension claims, etc. However, these payments are part of either progress or final payments.

From another perspective, researchers classify the contract payments into periodic, stage, milestone, and advance payments depending on the timing of payment (Amoako, 2011; Mohd-Nazir, 2006; Pettigrew, 2005).

- a) ***Periodic payment:*** This refers to another form of interim payment where the payment is based on an interim valuation of work
- b) ***Stage/Phase payment:*** This refers to a situation where the payment is released upon the completion of agreed stages/phases of the work.
- c) ***Advance payment:*** This refers to a situation where a sum of money is being paid to the contractor upfront before the work is executed.
- d) ***Payment after completion/Milestone payment:*** This refers to a situation where the party claims the payment in completion of all the activities scheduled to be performed for a milestone.

2.2.2 Types of Payment Problems

Table 2.2 presents the common types of payments discussed above and the parties at risk due to default of the other parties to the construction contract. As given in the table, generally lower tiers are at the risk of upper tiers' default. Unlike with other payments, the risk associated with advance payment could be other way around where the principal /upper tier affected, if the lower tier defaults. However, often in practice clients are secured their advance payment with an advance payment bond from clients.

The table shows that payment defaults are possible with any type of payments, progress payment, final payment, and retention monies from client to contractor and contractor to subcontractor, and the payment from head contractor to materials supplier.

Table 2.2: Types of payment risks (Source: Abeysekera and Wedawatta 2008)

No	Relationship	Parties at risk	Defaulting party	Payment risk
1	Principal-Head contractor	Head Contractor	Principal/ Funding Institution	Interim/final payment Retention monies Payment for materials (on or off site, or on order)
		Principal	Head contractor	Advance payment
2	Head contractor-Subcontractor	Subcontractor	Head contractor	Interim/final payment Retention monies
		Head contractor	Subcontractor	Overpayment
3	Head contractor – Supplier	Supplier	Head contractor	Materials on credit
		Head contractor	Supplier	Non-supply of materials

As per the common law requirement, parties to a construction contract have the right to be paid for the work or services provided (Pettigrew, 2005). The law refers to construction contracts as ‘entire contracts’ where the performance completion of one party is a prerequisite for the other to fulfill his or her obligations towards the former (Pettigrew, 2005). Contractors are therefore to be paid upon the fulfillment of their contractual obligations. The same goes for subcontractors and sub-subcontractors and so on down the chain. However, in reality any party who supplies goods and services in the construction industry is likely to be under risk of late payment, under payment, and non-payment for several reasons (Hughes et al., 1998).

On the above note, Abeysekera (2002) explains that issues in respect of payment lie in two areas: the time lag between spending money and receiving payments, and retaining money from progress payments. Later it was suggested that payment risks are in two forms: payment delays and losses (Abeysekera & Wedawatta, 2008). Further, Ameer-Ali (2004) expressed an extensive view on payment issues and said it covers the following range of issues: failure to pay, refusal to pay, setting off from sums certified or due, allegations of under and over certification and failure to certify, delayed payment, and associated problems of getting paid even with certificates in hand including significant delays in enforcing rights to payment. However, it could be argued that this range of issues are different forms and can be reduced to two major areas of

payment risk: delays or late payment, and losses or non-payment. This late and non-payment (either partial or full) are referred to as ‘security of payment’ within the construction industry in some countries (Stenning and Associates, 2006). Stenning and Associates (2006) explain that following forms of payment problems in experienced by construction parties in Australia.

- a) Late payment where the time taken to make payment is beyond the contracted payment period is due to the usual practice of late payment of invoices.
- b) Partial payment of an invoice where payment is withheld for any reason; or
- c) Non-payment of a building professional for any part of the contracted building works by end customers, developers or head contractors.

Having reviewed the issues, this study considers payment delays as a situation where payment to a head contractor/subcontractor was not made on time, as per the timelines agreed between the project parties. Payment losses refer to a situation where payment to a head contractor/subcontractor was not paid fully or partially due to insolvency or bad debts write-off. The next section discusses the payment problems experienced by construction parties globally and in the New Zealand context.

2.3 Review of Payment Problems

This section presents the review of studies on payment problems worldwide and in the New Zealand context. These studies provide confirmation that payment problems exist in the industry.

2.3.1 Payment Problems – International Perspective

Construction payment problems have caused significant concerns by the industry for many decades as recognized by studies in the United Kingdom and other countries since 1964. Banwell noted in his report that

“The operation of the payment system is not always smooth. Payments to main contractor by the clients are often slow and uneven, with consequential delays in payments to suppliers and subcontractors. This has an adverse effect on the efficiency and stability of the whole industry. What is needed is an agreed

procedure to ensure that payments are made regularly and promptly (Banwell, 1964)”

Subsequently, Latham commented in his report entitled ‘*Trust and Money*’ that

“Contractors worry that they will not be properly paid by clients, either because the employer will fail financially, or because the certified monthly payments will not properly reflect what they believe to be the true value of the work carried out” (Latham, 1993).

In 1994, Latham in his report entitled ‘*Constructing the Team*’ stated that

“The cascade system of payment in the industry - normally client to main contractor, main contractor to subcontractor and so on down the chain – makes the exposure of different parts of the process to the insolvency of participant particularly? serious”(Latham, 1994).

As a result of this, the Housing Grants, Construction and Regeneration Act 1996 (UK Act) was promulgated. Empirical evidence shows that problems are continuing.

Hughes et al. (1998) claimed that payment defaults are in three different forms: under-payment, late payment and non-payment, and due to the main causes of a can’t pay and won’t pay attitude of payers. According to Johnston (1999), payments due to subcontractors and suppliers took an average of 53 days to be settled from the receipt of invoices. In a worse situation in the UK it took 120 days for contractors on a hospital project to get their claims settled (Abdul-Rahman, Munaaim, Danuri, & Berawi, 2008; Barbara, 1996). In another situation, according to Hailstone (Abdul-Rahman et al., 2008; Hailstone, 2002), construction companies in the UK took on average 94 days to settle payments to suppliers. The Specialist Engineering Contractors’ (SEC) group, being the umbrella representative body in the construction industry in the UK claimed that the delayed payments amounted to £3.25 billion each year (Fortescue, 2004). SEC further reported that 57% of sub-contractors experience payment delays or abuse in the majority of UK government construction projects. Consequent upon these payment problems several construction firms in the UK have gone into liquidation. One of them left owing £36m to 20 subcontractors and suppliers in Scotland, and some of these have ceased trading with a consequent loss of jobs.

In Australia the building and construction industry realized a similar situation that participants are not getting the actual entitled amount for the work done on time (Australian Procurement and Construction Council Inc, 1996). According to the Royal

Commission into Productivity, monies lost due to late payment were 0.34% of turnover, and losses from payment defaults were 2.50% of turnover in the building industry in NSW. Undoubtedly, impacts on small individual subcontractors are significantly larger, though they are smaller in terms of the industry (Australian Procurement and Construction Council Inc, 1996). Interestingly, 50% of phoenix companies are operating in the construction industry which in turn shows the significant death of construction companies in Australia. In view of this, following the enactment of the UK Act, NSW promulgated the Building and Construction Industry Security of Payments Act 1999 to remedy payment issues by way of introducing a payment process and a speedy dispute resolution mechanism. Following the NSW Act, to date all other states of Australia have enacted their Security of Payment Act. The latest Act of Building and Construction Industry (Security of Payment) Act 2009 for the Australian Capital Territory and South Australia commenced operation in 2011. The enforcement of Acts presumes that payment problems are prevalent in Australia.

On a similar note, the prevalence of payment issues is revealed by the solutions in place in some states of the United States of America and Canada. In 1791 the United States and Canada introduced the Mechanics' lien through the Miller (or Little Miller) Act to protect contractors, subcontractors and suppliers against payment risks. However, subsequently the use of lien was considered as a draconian measure and has been replaced by payment bonds (Cheng et al., 2009). The use of payment bond has been introduced to provide protection for subcontractors and suppliers in public projects in the United States and Canada. Nevertheless, contractors seem to experience cash flow and financial difficulties which caused withholding of payments to subcontractors and material suppliers, and business failures amongst contractors (Touran, Atgun, & Bhurisith, 2004). In order to protect subcontractors, the Department of Transportation has introduced Prompt Payment Regulations in 1999. These regulations enabled subcontractors to be paid within a given period of time of contractors receiving a payment from the client. The regulations further require contractors to release subcontractors' retention monies within a given time frame from the completion of all work, irrespective of whether contractors released their retentions or not. However these regulations were subsequently revised in 2001 because of dissatisfaction of general contractors about the release of retention to subcontractors, prior to release by client. Obviously subcontractors' retention monies are perceived as a profit for general

contractors and therefore these regulations seem to affect contractors (Touran et al., 2004).

The Hong Kong construction industry is another which has been exposed to payment problems. Cheng et al (2009) are of the opinion that contractors and subcontractors experience default payment on their projects. According to them, a typical interim payment is settled at least two months after work has been completed. Hence contractors seek for advance funding by way of overdrafts, trade credits or other interim means. Cheng et al (2009) suggest that multi-layer subcontracting is used as a project financing mechanism by contractors. Towards improving payment practices in the construction industry, the Construction Industry Review Committee (CIRC) suggests that the Hong Kong needs better remedies to mitigate payment problems to contractors and subcontractors on their projects (Cheng et al., 2009).

Payment default is not a problem in developed countries only, it has affected developing countries as well. Malaysia is an example where late and non-payment is chronic within the construction industry (Ameer-Ali, 2006). According to Abdul-Rahman et al (2008), a survey of late and non-payment issues in the industry has shown that nearly 52% of 162 contractors experienced late payments in both government and private by funded projects. In addition, consultants also claimed late and non-payment of their professional fees. According to researchers (Ameer-Ali, 2006; Danuri et al., 2006), resolving payment issues have received significant concern in Malaysia in achieving its vision to be ‘among the best construction industries in the world’. This goal is set to be one of the milestones to achieve the country’s vision of being a fully developed nation by 2020. This necessity together with the outcomes of studies into payment issues have urged the country to propose its Construction Industry Payment and Adjudication Act 2012 which is being gazetted recently (Ameer-Ali, 2006; Azizan Supardi & Adnan, 2011; Supardi et al., 2011).

According to Wu, Kumaraswamy, and Soo (2011), payment problems have placed heavy burden on the Chinese construction industry. The National Bureau of Statistics of China (NBSC) reported that the amount of unpaid arrears was about RMB30.4 billion in 2003 which was 59% of the profit margin of the whole construction industry for the year. Statistics of the NBSC further revealed that the cumulative payment arrears for the period from 1998 to 2003 were about RMB367 billion. This represents nearly 16% of the total production of the construction industry for 2003. It is therefore recognized that

delays of due payments and eventual losses are affecting the development of the industry and it is even to impacted the society at large.

In reporting further, Wu et al (2011) observed that the deliberate payment default practice is peculiar to the Chinese construction industry, and even worse is that government clients are significantly defaulting. Nearly 50% of 367 billion payment arrears for 2003 were due to for deliberate default and not-paying. Further, 37% of deliberate default arrears were generated through projects in which the government is directly or indirectly involved. This is recognized as a clear distinction to developed countries where deliberate defaults are common with private clients.

Another interesting point noted about the Chinese construction industry was that problems to large contractors are significant unlike in developed countries (Wu et al., 2011). The due amount for special, first and second tier contractors were about 80% of total due in the industry in 2003.

2.3.2 Payment Problems - New Zealand Perspective

Unlike other countries, New Zealand lags behind for statistical data or extensive local academic research that reflects the payment situation in the construction industry. However recent market research and newspaper reporting indicate the existence of payment problems in the industry. In addition, the purpose of enforcement of payment related legislation is another source of evidence to regarding payment situations.

From the legislative point of view, the CCA2002 was promulgated following the business failure of many large construction companies due to non-payments by developers (Bayley & Kennedy-Grant, 2003; Degerholm, 2003). The collapse of large construction companies left a large number of subcontractors and suppliers unpaid. According to Gibson (2001), five building sites were closed down following the failure of one building firm owing at least 50 subcontractors and suppliers \$1million. Further, the liquidation of these large construction companies placed the funding organizations at risk. In another instance, 20-25 subcontractors were delayed payment of nearly \$1.5million due to the stoppage of a large development project following the voluntary liquidation of a construction company (Gibson, 2000). Bayley (2007) reported that nearly 13 construction related companies became insolvent and caused a reduction of

total construction output by NZ\$315million for the year 2001-2002. This amount was nearly 7.2% of the construction industry turnover for the said year.

Prior to the CCA, the Wages Protection and Contractors Liens Act 1939 provided protection to head contractors and subcontractors (Law Commission, 1999). The Act provided protection for contractors and subcontractors if owners or head contractors went insolvent. Notwithstanding that fact that the Act provided this protection it was repealed in 1987 as it was complex and cumbersome in nature and there was no consensus about the how to reform it (Economic Darwinism calls for intervention, 2000; Law Commission, 1999). This left subcontractors unprotected from not getting paid on time monies due to them from contractors. The contractual provisions of pay-if and when-paid affected the subcontractors' cash flows. Subcontractors had neither security or never be able to implement any conditional provision on his employees. Degerholm (2001) stated that security for payments disappeared with the repeal of the Liens Act. Kenley (2002) suggested that payment problems were deliberate where head contractors withheld subcontractors' payment and used it for their business purposes. According to Kenley, contractors perceive that the money paid by the developer is the contractor's money and is therefore their profit. This perception contributed to payment risks. On a similar note, Degerholm (2001) expressed the view that "it has been long enough now, subcontractors have been a source of interest-free, unsecured capital to builders and developers", since the repeal of the Liens Act in 1987. Essentially, the problem got worse with the failure of many high profile construction companies leaving many subcontractors and suppliers unpaid. This prompted the introduction of the CCA 2002.

The CCA was passed with the aim of improving cash flows and protecting subcontractors by making pay-if and when-paid unlawful. However, after the introduction of the Act there were instances where payments were delayed, disputed and eventually ended with non-payment or resolved unsuccessfully. For example Gibson (2004) reported that an interim payment of \$265,000 was delayed to a building contractor in an apartment development project. The developer refused to pay the contractor due to incomplete work and delays. Eventually the contractor received a High court judgment in his favour. Similarly, in another instance, one of the leading construction companies referred to adjudication for non-payment of a final amount of \$1.7million by a commercial developer (Gibson, 2009-a). The dispute was resolved through an adjudication process which ruled in favour of the contractor for the full

amount in dispute and issue of a charging order (Gibson, 2009-a). The company received a personal guarantee from the developer for the said payment and registered the charging order.

Notwithstanding that the Act is in place, there have been observed instances where it is incapable of remedying payment situations, delays and losses experienced by contractors and subcontractors due to insolvencies of developers and construction companies. For example, a developer was liquidated following a tax claim of \$7million and the liquidator of the company indicated that there were insufficient funds available to distribute among unsecured creditors but the preferential creditor, Inland revenue department (IRD) will be settled with company's assets (Gibson, 2008b). During similar time period another construction company went into liquidation with estimated unsecured debts of \$1.8million to nearly 200 creditors (Gibson, 2008a). Another construction company was owed \$900,000 (excluding costs) and filed an application to liquidate the developer, and judgment was granted (NZPA, 2009). However, it is to be noted that these examples concern the liquidation of developers and construction companies owing to unsecured creditors which include constructors and suppliers.

From another perspective, an independent research organization, Chilli Marketing (2010) conducted a survey among contractors in the New Zealand construction industry to investigate the extent of non-payment issues experienced by contractors over the past five years. The majority, 61% survey participants, reported that payment was not received at the end of the projects. In similar research 78% of participants claimed that they experienced non-payment in a few instances while another 18% reported that their exposure was to a wider extent, in 6-20 instances for the period considered. In terms of cost of non-payment a majority of contractors (66%) claimed that the total monetary value of non-payments was less than NZ\$50,000. In commenting about the last known non-payment, 50% stated it was less than \$10k and another 20% indicated the non-payment value was \$11-30k. As far as security of payment is considered, research revealed that 65% of contractors didn't have any form of security while 16% reported that they had no idea if there was a form of security. This indicates the existence of payment problems in the New Zealand construction industry.

2.4 Causes of Payment Delays and Losses

Understanding the causes of payment problems would enable implement action of effective measures to remedy payment problems. In this sense, this section reports the causes identified through relevant international literature.

Hughes et al (1998) stated that payment risks are primarily due to two reasons: can't pay and won't pay of payer. However, it could be further extended as to the reasons why the can't and won't pay situation prevails in the industry. Following this, Pettigrew (2005) has suggested that there are four main reasons for the existence of payment problems in the industry:

- (a) Complication and fragmentation of the construction process
- (b) Highly competitive market conditions
- (c) Hierarchical structure of the contractual framework
- (d) Changes in economic conditions, and the cyclical pattern of the construction market's performance

Undoubtedly, the construction process is complex and fragmented. It involves many different commercial parties operating in a supply chain with a differing range of contractual responsibilities where the payment risks are passed throughout the supply chain (Pettigrew, 2005). This is illustrated by the pyramid structure of payment as shown in Figure 2.4. Pettigrew (2005) explains that the hierarchical and multi-tiered structure of contractual framework makes the industry particularly susceptible to poor payment practices. Furthermore the existence of unequal commercial bargaining power among large and small companies lower tiers' unwillingness to take action against the upper tiers are another reasons for payment default to contractors and subcontractors. The construction industry generally operates on a cascade system of payment where clients make payment to head contractor and the head contractor to subcontractors and others down the chain. Pettigrew (2005) is of the opinion that this payment culture contributes to the payment problem in the industry.

On a similar view, Euginie (2006) and Sin (2006) are of the view that standard forms of contract for the main contract often fail to stipulate payment provisions for domestic subcontractors and suppliers. This leaves them with no protection against the risk of financial inappropriateness of upper tiers. Further Pettigrew (2005) and Sin (2006)

comment that payment problems are prevalent because of the absence of legislative control over the length of time that organizations can take to pay their suppliers and subcontractors, notwithstanding contractual provisions.

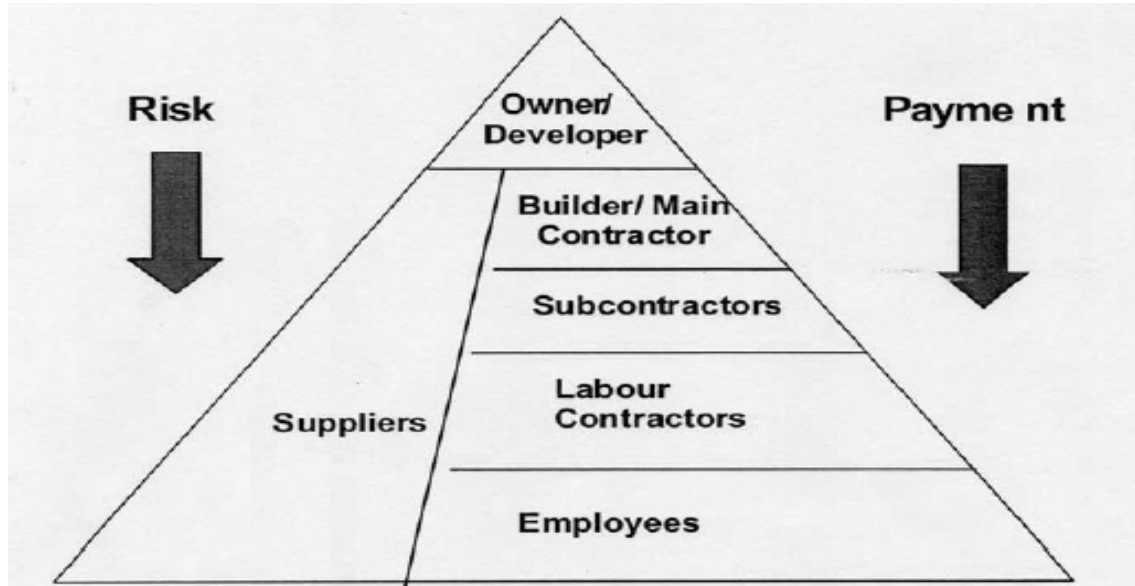


Figure 2.4: The chain payment in the construction industry (Source: Bayley, 2006)

The construction industry typically consists of large numbers of small and medium sized enterprises and a small number of dominant companies. Further, the market has poor entry barriers which allow low capitalized companies to enter with a heavy reliance on credit (Hughes et al., 1998). Poor entry barriers and limited capital support cause cash flow difficulties which encourage clients and contractors to delay their payment to lower tiers. Hughes et al (1998) stated that the UK construction industry allows individuals or contracting organizations without any formal qualifications to enter the market. This enables new contracting organizations to establish themselves quickly and to gain access to work with very little trading history.

The construction industry is characterized by its cyclical in nature, and is very sensitive to changes in economic performance. The industry is always the first to experience a recession and the last to recover from it (Wu et al., 2008). The cyclical nature places construction companies into liquidation during recessions which in turn leaves parties at risk of not being paid. Even during a recovery stage the highly competitive nature of the

industry leads to a loss of profits causing financial difficulties resulting in insolvency (Hughes et al., 1998).

Apart from these traditional views, research suggested that causes for payment problems have other dimensions. From Singapore an experience Euginie (2006) suggested that increasingly high quality expectations of construction clients or customers have urged developers to stipulate longer defect liability periods and hold higher retentions on contractors. This eventually affects contractors, as for most of them retentions are profit and capital for the next development which gets tied up until the defects liability period is completed.

Euginie (2006) noted that slow processing of variations and final accounts, and difficulties in reaching settlement, further contribute to payment problems. He added that most of the time poor documentation and unavailability of written or incomplete information are offered as excuses to bring the accounts to an end. According to Euginie (2005), delays in finalizing variations and accounts are not in the interest of many in terms of time and expense.

On a similar view of Euginie (2006), from Chinese experience Wu et al (2008) based on the State Council (2003) claimed that the reasons for payment problems suggested by Pettigrew (2005) do not seem to be directly applicable to China. Payment problems in the Chinese construction industry are different to other countries. Wu et al (2008) suggested the five main reasons for experiencing payment problems in China are due to:

- (a) Deficiencies in the credit system and the legal system
- (b) Imbalance of the construction market
- (c) Unfair market behaviour
- (d) Looseness in enforcing regulations
- (e) Local government initiating projects without sufficient funding arrangements

(a) **Deficiencies in the credit and legal systems:** Unlike in developed countries, there is no credit “stain” or “trace” system available, even if the employer didn’t make the payment without a lawful proper reason (Wu et al., 2008). Wu et al argued that with the credit mortgage system the contractor of an on-going residential or commercial development can mortgage the property in different banks at the same time. Further,

the absence of proper supervision of the finance for the construction project allows the developer to use the money for his own purposes or on any other projects.

According to Wu et al (2008) China has enacted legislation such as a construction law, a contract law, and bidding and tendering law in order to provide statutory rights to claim payment, restrict multi-layer subletting and a statutory grading system to reduce undue competition in tendering. However, legislative provisions seem to be effective only if and when implemented.

- (b) **Imbalance of the construction market:** Due to the characteristics mentioned above, the industry allows in less capitalized individuals and companies, so that the imbalance of market forces is persistent within it. This creates excessive demand and competition for tenders in most countries, but is worse in China. The undue competition squeezes out profits from contractors and results in an eventual cash flow tension, thus putting subcontractors at risk of late or non-payment.
- (c) **Unfair market behaviour:** The unbalanced market situation, or in other words the buyer dominated market, places unfair conditions on contracts. For example the contracts include conditional payment provisions, despite the legislative measures that make them unlawful. Further payment terms are often amended in favour of customers. According to Wu et al there is no direct legal provision available in China which prevents the practice of pay-when and if-paid provisions.
- (d) **Looseness in implementing regulations:** Wu et al (2008) observed that though legislative, regulative and administrative provisions are in place, the extent of implementation of those provisions is doubtful and questionable.
- (e) **Local government initiating projects without sufficient funding arrangement:** Unlike in other countries the payment problems in China originates from public/quasi-public projects. The primary reason suggested was that projects are initiated without proper funding arrangements (Wu et al., 2008). The Chinese construction industry is noteworthy for government officers proposing and executing massive construction projects without securing sufficient funding for their own personal career development.

Similarly recent research (Abdul-Rahman et al., 2008; Danuri et al., 2006) among contractors regarding late and non-payment issues in the Malaysian construction

industry concluded that there are five frequent causes of late and non-payment in the industry. It is identified that similar causes are responsible for both late and non-payments. However, the frequency of those causes seems to differ between late and non-payments. Table 2.3 shows the causes in descending order of frequency. Abdul-Rahman et al (2008) stated that in the Malaysian construction industry late certification of claim being delayed, despite an appropriate claim being served. Thus it is suggested that if there was adjudication provision in place, the claimant could recover their money quickly. In terms of the payer’s financial management, poor financial management results in insufficient operating funds which lead to late or even non-payment (Abdul-Rahman et al., 2008). Abdul-Rahman et al commented that the culture of the Malaysian construction industry is prone to payment problems where the payments are delayed longer, and is similar to the UK industry prior to the introduction of its payment legislation.

Table 2.3: Causes of late and no payments (Source: Abdul-Rahman et al., 2008)

No.	Late payments	Non-payments
1	Delay in certification	Clients’ poor financial management
2	Clients’ poor financial management	Clients’ failure to implement good governance in business
3	Local culture/attitude	Delay in certification
4	Clients’ failure to implement good governance in business	Use of ‘pay-if-when-paid’ clauses in contract
5	Underpayment of certified amount by clients	Local culture/attitude

According to Abdul-Rahman et al (2008) there are also other less frequent causes which are responsible for payment problems in the Malaysian construction industry. These causes are use of pay-when-paid clauses, disagreement on the valuation of work done, deliberate withholding by client, budget deficit for the year, poor communication and conflict between parties, delay in submitting contractor’s payment claim, and a lack of understanding of contracts.

Following Danuri et al (2006) and Abdul-Rahman et al (2008), Ye and Abdul-Rahman (2010) investigated the underlying causes of late payment with the aim of finding effective solutions to remedy the payment problems in the Malaysian construction industry. Different to previous researchers, Ye and Abdul-Rahman found 40 causes inclusive of previous findings (of Danuri et al, 2006) and clustered them under 10 major

groups. According to their findings, the top ten underlying causes with their respective major groups and ranks are presented in Table 2.4.

Table 2.4: Causes of late payments (Ye and Abdul-Rahman, 2010)

No.	Major causes	Sub-causes	Rank
1	Client's poor financial management	Cash flow problems because of deficiencies in client's management capacity	1
		Client's ineffective utilization of funds	2
		Scarcity of capital to finance the project: Client's need to keep money rolling?	3
		Poor cash flow because of lack of proper process implementation	5
		Financial failure due to bankruptcy or winding up of paymaster's other business activities	10
2	Insufficient financial resources	Client's failure to generate income from bank when sales of houses do not reach the targeted amount	4
		Shortage allocation of funds from sources of funding when contract sum increased due to variation orders	9
		Client's loan from bank not in place to pay the contractors	9
3	Client's withholding of payment	Delay in releasing of retention monies to contractor	5
		Client's deliberate delays for their own financial advantage	7
4	Local culture/attitude	Contractors will accept late payment from clients as they are always at the mercy of clients	7
		Clients assume contractors will finance the project in advance in the event of late payment from them	7
5	Financial instability	market Inflation	8
6	Delay certification/poor documentation	in Delay in evaluation and certification of interim and final payment	5
7	Consultant surveyor	quantity Slow processing and delay in finalizing of variations and final accounts	6

As far as the New Zealand construction industry is considered, as mentioned previously in section 1.3, there is no extensive research that investigates payment issues within the industry. The single recent research (Chilli Marketing, 2010) that was carried out identified that the following are some of the causes responsible for non-payments to contractors in the industry. Twenty percent (of 342) participants in the survey of non-payment to contractors claimed that bankruptcy and liquidation/receivership were the causes for non-payment. Another equal percentage of 13% expressed that others were paid first and client's dissatisfaction of the work were responsible for payment losses.

2.5 Effects of Payment Problems

Payment problems have caused significant concerns within the construction industry for four decades. Undoubtedly, recognition of the problem was born out of its effects. For example in 1964 Banwell recognized payment problems and reported that

“.....Payments to main contractor by the clients are often slow and uneven, with consequential delays in payments to suppliers and subcontractors. This has an adverse effect on the efficiency and stability of the whole industry.....(Banwell, 1964)”

Similarly Latham (1994) stated that

“The cascade system of payment in the industrymakes the exposure of different parts of the process to the insolvency of participants particularly.”

Given the nature of the industry, which operates on a low profit margin, with no fixed assets and low capital, but with high cash flows and high return on capital, undoubtedly late and non-payment could have profound effects on participants and on the industry. The following sections therefore report the literature review on the diverse effects of payment default.

2.5.1 Cash Flow Problems

Most contractors in the industry are less capitalized and heavily rely on cash flow from projects to pay their subcontractors and suppliers. Thus any disruption in the flow can affect the rest of the chain (Ye & Abdul-Rahman, 2010). Cash in is mainly received from progress payments, stage payments, release of retention and final account settlement. Issues with the payment process such as delays in settling claims and making payments by clients and delay in release of retention monies therefore have a critical impact on cash flow (Lowe, 1987; Odeyinka & Kaka, 2005; Odeyinka et al., 2008). All these authors further insisted that 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 (Cheng et al., 2009). Further, the cash flow difficulty of contractors is reflected in payments to subcontractors and others down the chain. This could cause the crippling effect of insolvency in the lower tiers (Euginie, 2006; Latham,

1994). In a similar view, Harris, McCaffer, and Edum-Fotwe (2006) reported that inadequate attention to cash flow forecasting is the cause for companies to fail.

2.5.2 Construction Disputes

Payment problems are a major cause of disputes within the industry (Colin, Lanford, & Kennedy, 1996; Kennedy, 2005). Table 2.5 gives the causes of disputes and the types of payment in construction projects based on previous research cited in Cheung and Yiu, (2006) and Watts and Scrivener (1993). According to the table, disputes over payments due to variations have been prevalent from 1994 to 2006. In terms of types of payment in disputes, the research of Cheung and Yiu (2006), Sheridan (2003) and Kumaraswamy (1997) show that the following are some of the payment types which were commonly disputed. This provides an understanding of what types of payment contribute to payment problems.

- a) Variations claims by contractors
- b) Delays of interim payments from clients
- c) Non-payment to subcontractor by main contractor
- d) Valuation of final account
- e) Failure to comply with payment provisions
- f) Arguments on prolongation costs claimed by sub-contractor, valuation of contracted work, and acceleration costs

On a similar note, Abidin (2007) examined payment disputes within the Malaysian construction industry and reported that payment related disputes span across twenty causes. The most frequent causes are:

- a) Non-payment for certified sums
- b) Delay in progress payments
- c) Misleading payment procedure according to privity/terms of contract
- d) Argument about the amount to be paid
- e) Unpaid for further payment because of debt settlements are most responsible causes of disputes.

Table 2.5: Sources of payment causing disputes

No.	Payment as a cause of disputes	Source	Remarks
1	Client fails to pay for variations claims, argument on the valuation of contracted work, delays interim payment from client, non-payment to subcontractor by main contractor, argument on the prolongation costs claimed by sub-contractor, late release of retention monies to main contractor, and argument on acceleration costs.	(Cheung & Yiu, 2006; Kumaraswamy, 1997)	Survey on construction projects in Hong Kong.
2	Valuation of final account, valuation of variation and failure to comply with payment provisions.	(Sheridan, 2003)	Based on disputes settled by adjudication.
3	Payment and variations are two out of 12 main causes of disputes	(Chan & Suen, 2005; Kumaraswamy & Yogeswaren, 1997; Yates, 2003)	Other causes: Contractual matters, extension of time, quality of technical specifications, availability of information, administration and management, unrealistic client expectations, people involved, risk allocation, project scope definition, and poor communication
4	72% (of 233 disputes) are responsible for payment, delay, defect/quality and professional negligence.	(Brooker, 2002)	Disputes resolved by mediation in UK.
5	Payment is one out of 6 main causes of disputes	(Colin et al., 1996)	Other causes: performance, delay, negligence, quality and administration.
6	Payments and final certificate & final payments are two out of 6 categories of disputes consisting of 59 categories of disputes. 26 % of total disputes are payment related.	(Watts & Scrivener, 1993)	Cases filed in Supreme Courts in New South Wales and Victoria - Australia

Interestingly, the review of literature in this respect gave an insight that an analysis of construction disputes could establish the status of payment problems in the New Zealand construction industry. In this sense, this study analyzed around 40 payment related disputes referred to adjudication and subsequently filed in the High Court from 2008 to 2010. Disputes were payment related and between principal, head contractors and sub-contractors. The results provide evidence that payment delays and losses are one of the causes of disputes and are prevalent within the New Zealand construction industry. According to analysis disputes relating to progress and final payments account

for 80% of cases analyzed (Ramachandra & Rotimi, 2011). The study found that in court decisions, only 40% of cases are successful so that the claimants recovered all the money in dispute, while the remaining cases are either partially successful or unsuccessful. Disputes mainly emanated from provisions in legal and contractual instruments such as those outlined in the CCA and other standard conditions of contracts in New Zealand. Therefore as well as providing protection from delays and losses, some of the procedural requirements in these documents may become sources of disputes that could also cause delays and losses to parties in disputes. Further analyses of construction disputes are provided in chapter 5.

2.5.3 Construction Insolvencies

Payment delays and losses can drive construction companies to the worst outcomes of insolvency and liquidation. For example Latham (1994) and Eugenie (2006) suggested that the industry operates under the cascade system of payment which causes the crippling consequence of insolvency ‘domino effect’. The insolvency of main contractors pushes other parts of the chain into insolvency. A similar opinion was expressed by the Australian Procurement and Construction Council Inc (Australian Procurement and Construction Council Inc, 1996) that payment problems are severe when participants higher in the contractual chain become insolvent, as the obligations down the chain increases.

There is ample evidence that insolvency in the construction industry is not novelty (prevalent since the 1970s) and the frequency of construction insolvency is relatively higher than other industries (Ashworth & Hogg, 2007; Davis, 1991; Langford, Iyagba, & Komba, 1993). For example, the construction industry represents 12% of all business failures in the United States (US) because of cash flow problems (Touran et al., 2004). According to Statistics New Zealand (2011a) insolvencies in the construction industry have been between 10-12% of all industries in the last decade. In Australia, the highest total number of insolvencies occur in the construction industry (24%) followed by 22% and 10% in personal and business services and the retail industry respectively (Hammond, 2010). Hammond further stated that insolvency is more prevalent amongst small businesses than their larger counterparts. He found that 77% of businesses, with less than 20 employees are usually affected.

Worse still, the construction industry's contribution to insolvency statistics is not proportional to its positive contribution to gross domestic product (Davis, 1991). It could be argued that the direct relationship between the industry and the national economy makes it volatile and vulnerable to general economic conditions. The inherent characteristics of the construction industry, especially few barrier to entry and ease of winding up a business, plus and the payment culture of work first and get paid later place the industry at high risk. This exposes the industry to financial risks like insolvencies and general business failure.

The highly fragmented nature (large number of small firms) of the construction industry exposes it small firms to higher than normal levels of competition. The operational activities of these smaller firms are dependent on overdraft facilities and trade credits which require a steady flow of income to be able to manage activities effectively. Davis (1991) believes that poor financial control and the inability to manage cash leads to cash flow crisis which may eventually lead to liquidation.

Payment delays by upper tier construction parties could place the lower tiers in financial difficulties which could cause the consequential effects of project delay, deferment or abandonment. Latham (1994) contended that the lower tiers ultimately incur financial losses due to non-payment of their invoices. Therefore when one party experiences insolvency, a domino or knock-on effect is created down the project chain. Davies (2009) stated that requests for advance or early payments and withholding of payments on the grounds of dispute are further evidence of financial difficulties. Further, persistent project cost and time overruns (Hughes et al., 1998) and falling demands for construction services (Langford et al., 1993) indicate the lower tiers' financial situation.

Another dimension to financial problems experienced by the lower tiers in construction businesses is their inability to secure proper compensation for their losses. Seldom are contractors are paid on a pro rata basis for losses incurred in the event of the project owner's liquidation (Donnelly, 2009). For example, it was reported in the Marlborough Express (2008) that a building company that went into voluntary liquidation, was only able to pay 20 cents for each dollar it owed its 19 unsecured creditors. Another construction company pulled its workers off the site after a dispute with its contractor. The company was placed into liquidation a month later and reported that it has been experiencing cash flow difficulties (Cowlshaw, 2010). According to the liquidator,

most of its debts (out of \$4.2 million) are owed to unsecured creditors and it is expected to distribute only 20 cents in the dollar.

From another perspective a major building company in New Zealand went into voluntary liquidation. The company tried to terminate its subcontracts unilaterally but failed, and in this case its subcontractors were paid out in full (NZPA, 2008). Full payment to trade creditors is a rarity because in other instances where umbrella companies have gone bust, creditors do not expect to have big payouts (Gibson, 2009). Gibson explains that frequently voluntary liquidations are the result of unethical behavior by company directors, which affects the livelihoods of many subcontractors in New Zealand. In another situation a construction company was building State houses and others went into voluntary liquidation (Gibson, 2009). In the case of State houses, the project owner negotiated with the liquidator to take over the possession of the development and finished it with the existing subcontractors. The payment to subcontractors was agreed to be made by the client because the client didn't experience a loss due to the liquidation of the construction company. However, according to the liquidator the construction company owed \$6.5 Million over 55 claims (Gibson, 2009-b).

Childs (2009) suggests that liquidation of contractors not only leaves subcontractors and suppliers unpaid but also gives contractors less time to spend on projects as time needed to deal with financial troubles. They are distracting and can lead to major disputes between parties in the future of any construction project. Liquidations have effects on individuals and companies beyond contractors and subcontractors. For example the liquidator of a development company which was bankrupted following the order of consultants for non-payment of due amount, reported that the developer owed \$5million to a finance company and another \$110,000 to consultants, in addition to the amount owed to other unsecured creditors (Slade, 2008). Similarly a construction company along with 25 associated companies went into voluntary administration and caused massive losses to unsecured creditors (\$17 million) and financiers (\$100 million) (Barry, 2010). According to a company director it is likely that one of the secured creditors will be paid out but unlikely unsecured creditors will be paid anything. On this note, the liquidator stated that liquidations are significant partly because of creditors (Gibson, 2009-b). Most of the time there is no money in the company and assets are worth less. In addition, most finance companies which failed reported that it is unlikely for them to receive any proceeds after settling the cost of winding-up a company

(Taylor, 2009). Insolvencies cause damage beyond the obvious and quantifiable cost to business owners, creditors and employees of a company (Mason & Harris, 1979). For example as a result of the strategic influence that the construction industry has on any economy, its failures in the industry affect the national economy too.

The effects of insolvencies in the construction industry have led to the development of innovative financial protection mechanisms to curb its impacts on affected parties. It is suggested that financial protection mechanisms could involve ascertaining, the covenant strength of a client prior to commencement of projects. If the covenant strength is unsatisfactory, a contractor could request the client to provide some sort of security in the form of bonds and guarantees or advance payment into an escrow account (Davies, 2009). The magnitude of the security procured is dependent on a good assessment of the possible business failure risk by the contractor. Dikmen, Birgonul, Ozorhon, & Sapci (2010) suggested that company (client organization) specific and external variables along with the knowledge and experience of experts provide the best model to diagnose business failure risks. The further effects of insolvencies also led to the introduction of security of payment legislation in the construction industry (Kenley, 2003). For example, the Construction Contracts Act (CCA) came into force in New Zealand following the liquidation of large companies due to non-payment by developers. However, it seems the Act doesn't provide any security against insolvency losses.

The above review reveals that notwithstanding some of the solutions suggested, insolvencies and losses continue to pervade the construction industry. On this note the current study examines construction insolvencies and related payment problems as part of its objectives. A preliminary investigation was carried out based on construction insolvency statistics and liquidators' reports for construction companies that went into liquidation. Figure 2.5 depicts the number of business deaths¹ in industries for New Zealand as at February 2011, based on Statistics New Zealand data. The figure shows that construction is the third largest industry with business deaths, after rental, hiring & real estate and professional, scientific, and technical service companies. The industry lost nearly 6,300 companies within the year 2011.

Figure 2.6 on the other hand displays the number of business deaths within the construction industry. The figure shows an increase from nearly 5,600 deaths in 2001 to

¹*Business birth and death rates counted for a given period is considered as it occurred at some stage between March and to the end of February.*

around 6,300 in 2011. For the period 2001 to 2011, the average birth rate was 11.4% while death rate was 12.4%. This reveals that on the average construction experienced a net loss of 1.0% of businesses on an annual basis, corresponding to about 1150 job losses and \$300 million lost in national revenue. The construction industry comprises nearly 50,000 enterprises, providing employment to over 114,000 (Statistics New Zealand, 2011a).

The trend of insolvencies revealed that construction insolvencies are significant and prevalent. Further it is noted in liquidator’s reports that the administrative costs associated with bankruptcy and liquidation are a burden to companies as the first claim to be settled is the liquidators’ fee as per the ("Companies Act 1993,") New Zealand. Liquidator’s report that their work is not profitable because often there is nobody they can collect from, and money and assets of failed businesses are often insufficient? (Taylor, 2009). As mentioned previously, losses to other parties, and unsecured creditors are significant. The preliminary investigation therefore involved further analyses of reasons for liquidation, the amount owed to unsecured creditors (often construction parties), and time taken to settle payment after completion of the liquidation process. Details of the study findings are provided in chapter 5.

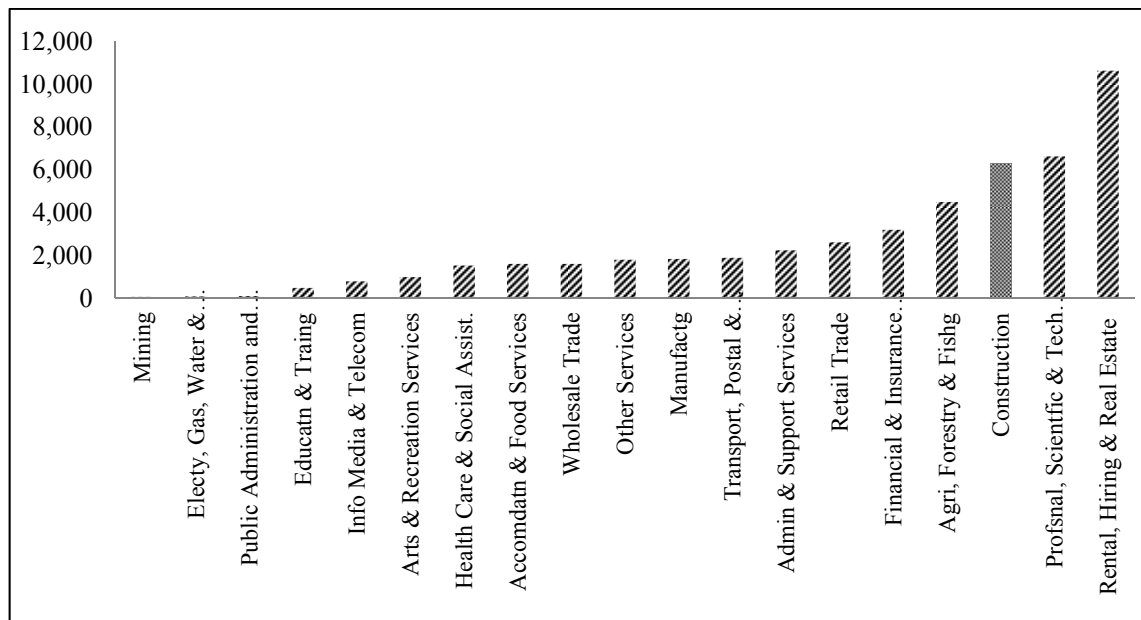


Figure 2.5: Business deaths by industries (Statistics New Zealand, 2011a)

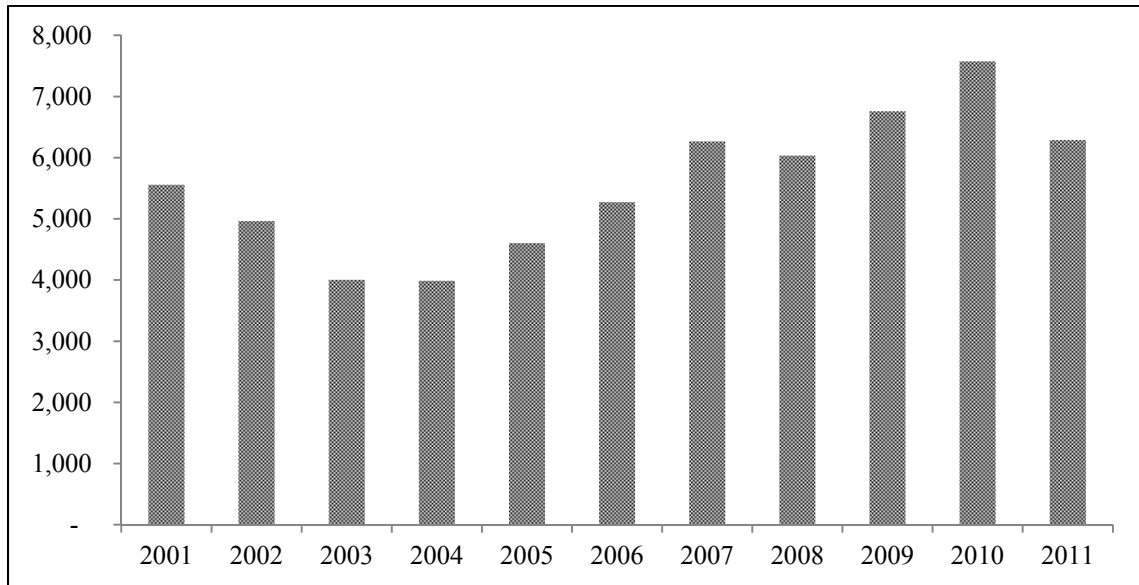


Figure 2.6: Business deaths in the construction industry (Statistics New Zealand, 2011a)

2.5.4 Construction Delays

In general, contractors have no right to suspend work for non-payment under common law principles. However, most standard forms of contract in New Zealand provide for contractors to suspend the work as a remedy for delayed payment. If the delayed payment is prolonged, the contractor can terminate the contract. This suspension and termination could increase the contract's duration, causing project delays. Further, general arguments and approvals over variations and payment claims could slow down work as payment is a core requirement for some participants. This section therefore reviews studies of construction projects delays to understand the influence of payment default causing construction delays on projects. Table 2.6 provides a summary of studies undertaken on construction delays in different countries over several decades. According to Table 2.6, payment has been one of the major causes of time delays and cost overrun in building and highway construction projects in several countries. Table 2.6 shows that the payment difficulties are responsible for project delays not only in building projects but in groundwater construction, and highway projects. Additionally both public and private projects are delayed due to payment problems. It is often stated that payment delays in public projects are due to bureaucracy. Studies reviewed indicate that the following are the frequent payment related issues which cause delays.

- a) Delays in payments to contractor for completed work
- b) Clients' and contractors' financial difficulties
- c) Clients' cash flow difficulties
- d) Delays in honouring certificates
- e) Delays in release of mobilization advance payments

2.5.5 Construction Productivity

Undoubtedly, payment default could affect directly or indirectly to productivity of the industry. Productivity in the industry is defined as a measure of how efficiently inputs are being used in the economy to produce outputs (Statistics New Zealand, 2011b). It is commonly measured as the ratio of a volume of output to input. In this sense, there are views expressed that effects of payment default could affect the efficiency and development of the whole industry (Banwell, 1964; Wu et al., 2008). SEC (Specialist Engineering Contractors group, 2005) suggested that “unfair payment practices undermine the principle of integrated team working and the ability and motivation of specialist suppliers to invest in innovation and capacity”. Failure to ensure the timely and fair payments for works done or materials supplied lead to likely delay, disputes, substandard works Cheng et al (2009). This result in cost overrun and time overrun which impact the productivity.

Euginie (2006) and Cheng et al (2009) explain that non-payment of contracting parties could lead to additional financing and transaction costs. A contracting party who is owed money would have to re-arrange its financial activities (at a cost) to accommodate an underpaid or unpaid account. In the similar vein, Assaf et al (2001) stated that delayed payment increases the company overhead costs for large contractors in Saudi Arabia. However, a prudent contractor would incorporate a risk factor, if payment default is anticipated. This inadvertently means an increase in construction cost which the client has to bear. Ye & Rahman (2010) and Wong & Hui (2006) explain that tender price is inflated if clients reputed for late payment. Increased costs affect the productivity of the industry negatively.

Table 2.6: Types of payment problems causing construction delays

No	Types of payment problems	Country	Source	Remarks
1	Mobilization Advance payment is issued in parts over a period of time was delayed. Contractor's payment was withheld due to substandard work.	India	(Iyer, Chaphalkar, & Joshi, 2008)	Study into disputes over time delay and extension in construction contracts.
2	Financing and payment for completed works is one of top out of 16 factors. Recommendations: Ensuring adequate finance before commencement of project in order for the proper to be made for contractors; need for economic analysis and workable financial plans to be prepared before contracts awarded; private sector to participate in financing public sector projects; and credit-facility arrangement, and alternative procurement methods (BOOT).	Nigeria	(Mansfield, Ugwu, & Doran, 1994)	Survey on causes of delay and cost overruns in public highway and building projects according to public clients, consultants and contractors.
3	Contractors' financial difficulties and clients' cash flow are the top two among 44 factors.	Nigeria	(Aibinu & Odeyinka, 2006; Dlakwa & Culpin, 1990; Odeyinka & Yusif, 1997; Okpala & Aniekwu, 1988)	Building projects.
4	Delays in settling claims and making payments to contractor and cash flow and financial difficulties by the contractor are the top most causes out of 60 potential causes.	Saudi Arabia and Libya	(Al-Khall & Al-Ghafly, 1999; Assaf, Al-Khalil, & Al-Hazmi, 1995; Tumi, Omran, & Pakir, 2009)	Survey among owners, consultants and contractors on factors contributing to delays in public utility projects.
5	Financial problems: delayed payments, inadequate client's finance, and economic problems are client related top most factors. Financial difficulties, and economic problems of clients and financial problems of contractors are top 2 factors among 31 factors.	Malaysia	(Alaghbari, Kadir, & Salim, 2007; Sambasivan & Soon, 2007);	Survey on building construction projects revealed 31 factors into four major categories: contractor, client, consultant and external factors.
6	Finance and payments for completed work is one of the top among client related factors for both consultants and contractors. All together 28 factors were identified under 8 groups: client, contractor, consultant, material, labour equipment, contract, contractual relationships, and external factors.	Jordan	(Odeh & Battaineh, 2002)	Survey among consultants and contractors on important causes of delays in construction projects with traditional contract.
7	Monthly payment difficulties from agencies are top most cause of project delays and cost overruns among 26 causes. The reason for the delay in payment for completed work is bureaucracy in government departments. The customer of ground projects is government and financed through domestic savings or foreign funding.	Ghana	(Frimpong, Oluwoye, & Crawford, 2003)	Survey among owners, consultants and contractors on factors contributing to project delays and cost overruns in groundwater construction projects.
8	Delay in honoring certificates is the top most cause among 32 causes classified under 9 groups: material, manpower, equipment, financing, environmental, changes, government action, contractual action, contractual relations and scheduling & controlling techniques.	Ghana	(Fugar & Agyakwah-Baah, 2010)	Survey among owners, consultants and contractors on factors contributing to delays in building construction projects.
9	Financing by contractor during construction and delays in contractor's payment by owner are the top 2 causes among 32 causes grouped into four according to responsibility of: client, contractor, consultant, and common.	Egypt	(Abd El-Razek, Bassioni, & Mobarak, 2008)	Survey among owners, consultants and contractors on causes of delays in construction projects.

Several research studies (Frimpong, Oluwoye, & Crawford, 2003; Abd El-Razek, Bassioni, & Mobarak, 2008; Aibinu & Odeyinka, 2006) discussed in section 1.5.4 confirmed that delay in payment for completed work, clients' and contractors' financial capacity, and cash flow difficulties have hampered the project performance in terms of cost and time. As, late and non-payment causes slowdown of work, suspension and termination of project. This impacts the project delivery which in turn affects the productivity of the industry.

Similarly the two way relationship between payment default and liquidation could impact the productivity negatively. Payment default and cash flow difficulties of upper tiers place lower tiers into eventual liquidation and inversely insolvencies leave parties down the chain being delayed payment or unpaid. Construction insolvencies are significant than other industries (Degerholm, 2001; Hughes et al, 1998; Hammond, 2010).

Several studies (Brooker, 2002; Sheridan, 2003; Chan & Suen, 2005) claimed that payment claims, payment schedules, variations, and defective work etc., have been the causes of disputes. Disputes around payment affect the performance of the project as additional time and cost involved in settling disputes.

Kadir et al (2005) expressed that the stoppage of material delivery to site due to non-payment to suppliers and late issuance of progress payments to main contractors by clients contributed significantly to poor labour productivity. This view is further shared by Durdyev and Mbachu (2011) as they opine that onsite labour productivity is significantly impacted by payment defaults in the construction industry. Payment problems may account to a large or small extent to the poor productivity of the New Zealand construction firms. The Constructing Excellence New Zealand (2008) presents data to show that New Zealand ranks at the bottom four in productivity among OECD countries. It is therefore vital that the industry addresses the dire effects of payment delays if it is to achieve its vision of increasing construction productivity by twenty percent in 2020.

2.6 Summary

The chapter has presented the key issues around payment problems in the construction industry. Construction sector indicators show that the sector plays a vital role in the

local economy. If anything impacts the industry negatively, it affects the economy in the same way. This could provide a path way to consider improving the performance of the industry. In this sense, mitigation of payment problems could play a role because the payment is core of any economic activity and provide strength for the survival of the industry.

Literature reviewed indicate that payment problems associated with clients' and contractors' lack of capital base, improper funding arrangements, poor financial management, and insolvencies seem to be prevalent in countries including New Zealand, even though the payment specific legislation is in place. Effects of payment problems diverse from cash flow and financial difficulties to participants at project level to low productivity, tarnishing the image of the industry at national level. The review of problems suggest that the prevalence of the problems could be because of absence or ineffectiveness of proper remedies or participants' deliberate actions of deferring and withholding payments.

On this note, the next chapter presents the review of payment mitigation measures available around the world as a prior step to address the problem.

CHAPTER THREE

Review of Remedies to Payment Problems

3.0 Introduction

This chapter reviews remedies adopted in different countries to mitigate payment problems. This follows on from the previous chapter that reviews payment problems and acknowledges that in many countries payment problems are still prevalent. Thus it is essential to examine how several countries have responded to the problem and what solutions and protective measures that they have developed, before attempting to find devising mechanisms.

The chapter reviews the solutions under three major categories: contractual, legislative, and other administrative solutions. These solutions are viewed in the local as well as international context. Under the first categorisation two sub-headings are provided to review the contractual rights available within the widely used standard forms of contracts in New Zealand in relation to claiming payment and the remedies in case of non-receipt of payments. On a similar view, the second categorisation provides the legislative provisions available within the Construction Contracts Act in New Zealand, Security of Payment (SOP) legislation in the other countries, and other legislation. The provisions available under each category of legislation are again addressed under two sections as payment related and remedies related to non-payments. The third categorisation explains administrative solutions available locally and globally to remedy non-payments. Finally the chapter provides a summary of solutions reviewed.

3.1 Contractual, Legislative and Administrative Provisions

In the previous chapter it was clear that payment problems have been on the increase, for example in the UK, when it was first reported in the 1960s, and subsequently in other developed countries such as Australia, New Zealand, and Singapore. Developing countries such as Malaysia, China, India, Nigeria, Ghana, and Saudi Arabia are also not immune to payment default. As a result, many forms of securities and solutions have

been developed to mitigate the problem. The developed solutions differ from country to country and they range from statutory, contractual, to administrative measures. Traditionally most of these measures have been used to protect the owners' risks against contractors' and subcontractors' default. However the recent downturn in national economies together with other associated problems like cash flow difficulties, financial losses, and disputes between construction parties, etc. have changed the situation for clients, hence contractors and subcontractors require protection from project owners, should the owners' default. Broadly, lower tier parties need remedies against the risk of upper tiers' payment default. On this note, the following sub-sections review the contractual, legislative, and administrative solutions available in different countries.

3.2 Contractual Provisions in the Standard Forms of Contract

The following sub-headings explain the contractual payment rights and remedies available within the mostly used standard forms of contract in New Zealand.

3.2.1 Contractual Rights to Claim Payments

Having a clear contract, preferably a written contract, provides parties with an understanding of the contractual rights available to them and their roles and responsibilities. The contract offers provisions regarding construction matters for parties to ensure the smooth flow of the contract. When disputes arise contract conditions are used to solve the disputes. It is therefore important for parties to a contract to understand the provisions within the contract, so they can use the provisions to remedy any problems.

Different standard forms of contract are used in different countries and localities. The New Zealand construction industry uses a range of forms of contract prepared by Standards New Zealand, such as NZS3910:2003 and NZS3915:2005. Others issued by different industry institutions for use by their own members include: the Residential Building Contract – RBC 1, developed by the Master Builders' Federation and NZIA SCC1:2000; NZIA SW1:2000; and NBC-SW2:1999, developed by the New Zealand Institute of Architects. Amongst these contract conditions, the NZS3910:2003

conditions of contract is well established, tested and widely used for most building and civil engineering construction works in New Zealand (Zuo, Wilkinson, Masurier, & Zon, 2006). The NZS3915:2005 is a variation of the NZS3910:2003 and is used where there is no engineer or intermediate person to act on behalf of a client. Both standards are claimed to be suitable for many different projects, from simple to complex construction.

Besides the local standard forms of contract, the New Zealand construction industry uses international standards such as Federation Internationale Des Ingeneieurs-Conseils (FIDIC – red book) and New Engineering Contract (NEC) for international projects. Though NEC was designed for use in administering civil engineering and construction contracts, the use of NEC in the New Zealand construction industry seems insignificant (Wilkinson & Farhi, 2008). The use of NEC requires improvements in project management and procurement practices. It is further argued that the NEC presents similar provisions of NZS3910 in a different way. Abernethy (2010) claimed that NZS3910 has clear provisions and is well understood by participants in the industry after frequent amendments. Further the NZS3910 promotes an open book policy where it allows open negotiation for valuing variations in case of disagreement. The open book policy would provide the contractor a fairly reasonable cost. Unlike other forms of contract, the NZS3910 is readily available to accommodate the provisions and procedures of the CCA2002 in New Zealand.

The most commonly used standard forms of contract consist of provisions regarding payments and non-payments. These provisions stipulate the procedure and time frame for claiming payments, responding to payment claims and responding in case of non-payment. The provisions would therefore enable parties to deal with payments efficiently. However in reality parties fail to adhere to stipulated timeframes for submitting payment procedures, often due to deliberate delays of payment for their own benefit, inefficiencies in the internal system of the company, and the usual business practice of delaying payment etc. Non-adherence results in disputes over payment claims and responses which eventually lead to payments being delayed or not paid. The important payment provisions in the widely used forms of contract in the New Zealand construction industry are summarised in Table 3.1. It is observed from the table that all forms of contract except those for the subcontract works executed by Registered Master Builders (SC1- RMB) provide different timeframes for progress and final payment claims. This distinction is essentially due to the scope of the payment claim. Often the

final payment claim consists of variations, extra work and other time extension claims which need more time to assess and approve than an interim claim. Among the forms of contract, NZS 3915: 2005 requires payment to contractors to be made within a relatively short time, 10 days from the claim being served for progress payments, and 22 days for final payment settlements (Standards New Zealand, 2005). Another distinct feature with the New Zealand standard forms of contract is that regarding both progress and final payments, contracts provide a provisional payment schedule period which benefits both clients and contractors as it provides an intermediate stage for both to do any necessary amendments regarding claims and responses.

On a similar note, the FIDIC also provides a separate time frame for progress and final claim. However the time frame allowed by the FIDIC is extremely long: the payment for progress claim is made within 56 days of an engineer receiving the statement, while the final payment is made within 56 days of an employer receiving the payment certificate. The SC1-RMB provides payment provisions specific to subcontractors. The SC1-RMB requires the main contractor to make payments to subcontractors within 22 days from the receipt of payment claims. However, it does not distinguish the time frame between progress and final claim settlements.

Apart from progress and final claims, these forms of contract stipulate the time frame for release of retention monies (clause 12.3). The NZS3910 and NZS3915 require the principal to retain a certain percentage of the amount payable to the contractor and release them in three stages:

- i) First part - any amount in excess of defects liability retention is paid with the first progress claim after the issuance of a certificate of practical completion.
- ii) Second part - the amount of defects liability retention minus the engineer's assessment of the value of the work remaining to be completed as per defects liability; paid with the first or subsequent progress claim after the end of the of defects liability period and
- iii) Any remaining defects liability retention amount is paid 10 days after the issuance of the defects liability certificate.

Alternatively, the standard forms allow contractors to provide a retention bond in lieu of retention along with other bonds that may be required by the contract. In such cases the bond will be released only after the issuance of a defects liability certificate.

The SC1-RMB stipulates that the part of the retention which is the amount excess of defects liability retention to be released to subcontractors upon the first payment is received by the main contractor after the issue of the certificate of practical completion. In the second part, the defects liability retention becomes due once the main contractor receives the first payment after the issue of a defects liability certificate. This is evidence that the payment to lower tier parties is reliant upon the client's disbursement of funds to the main contractor, although the CCA has abolished the 'pay-if and when-paid' provisions.

3.2.2 Contractual Rights in Case of Non-Payments

The NZS3910 (clause 12.7) entitles the contractor to interest compounding monthly on the scheduled amounts from the due date of payment, if there is any delay in issuing a payment schedule for any or part of the payment claim which later becomes the payment schedule. The contractor is further entitled to interest compounding monthly for any unreasonably deducted amount from the payment claim which is later payable by the principal, or found to be payable upon the adjudication determination.

Table 3.1: Summary of payment provisions in the standard forms of contract

No	Title	Payment Claim	Payment Response	Payment	Remedies for non-payments
1	NZS3910: 2003 (Progress Payment)	If not specified in the contract, payment claim is submitted for work carried out in less than a month.	Provisional Progress Payment Schedule (PPPS) within 7 working days of claim. PPS is given within 12 working days of payment claim.	Within 17 working days of payment claim being served.	If the PPPS or PPS is not given within the specified time, the contractor is entitled for the claimed amount. Interest is to be paid for any unreasonable delay in issuing a payment schedule or for the part of the payment claim payable later. If the amount due is not paid by due date; unreasonable delay in issuing payment schedule/certificate; contractor notifies and if it not remedied within 5 days of notice, the principal is in default. If the default is not remedied within 10 days of notice, contractor can suspend the work and subsequently terminate the contract.
-	NZS3910: 2003 (Final Payment)	Within 2 months after the expiry of the defects liability period or any other time specified.	Provisional Final Payment Schedule (PFPS) is given as soon as practicable after the receipt of the final payment claim and the issue of defects liability certificate. FPS is given within 15 working days of issue of Engineer's certificate to principal.	Within 25 working days of final payment claim being made.	Same as above.
2	NZS3915: 2005 (Progress Payment)	Same as NZS3910: 2003.	PPPS is issued within 5 working days of payment claim being served. PPS is given within 10 days of claim being served.	Within 10 working days of claim being served. In case of disagreement, the undisputed amount is made within 15 working days of claim being received. If no PPPS or PPS, within 17 working days of claim being received.	Same as above.
	NZS3915: 2005 (Final Payment)	Same as NZS3910: 2003. If no claim from contractor, principal issues the final payment	PFPS is issued within 10 working days of final payment claim being served and the issue of a defects liability certificate. PPS is given within	Within 22 working days of final claim being served. In case of disagreement, the undisputed amount is made within 32 working days of claim being	Same as above.

		schedule.	10 days of claim being served.	received. If no PFPS or FPS, within 34 working days of claim being received.	
3	SC1 RMB	-	Payment schedule is given within 22 working days of payment claim.	Progress and final payment is to be made within 22 working days of receipt of payment claim.	-
4	RMBF Residential Building Contract - RBC1	-	-	-	If the owner fails to pay the amount in full by due date under the building contracts, registered master builder can notify the client and the remedy must be rectified within 5 working days, and the builder can cancel the building contract or suspend carrying out of the work.
5	FIDIC (Progress Payment)	First progress report by the end of the first calendar month from the commencement and subsequently within 7 days after last day of the period to which it relates.	Interim payment certificate is issued within 28 days of receiving the statement by engineer.	Payment is made within 56 days of engineers receiving the statement. In case of bank loan or credit (from which the payment to contractor is made) is suspended, the payment is made within 14 days after the statement is made.	Suspension of work within 21 days' notice, if the engineer fails to certify the interim payment certificate or the employer fails to produce the financial arrangements made to ensure the timely payment. If no evidence for financial arrangement is received within 42 days of suspension notice; or engineer fails to issue the payment certificate within 56 days after receiving statement; or payment is not made within 42 days after the due date for payment, the contractor can terminate the contract.
6	FIDIC (Final Payment)	Draft final statement shall be submitted within 56 days after receiving the performance certificate (defects liability certificate).	Final payment certificate is issued within 28 days after receiving the final statement provided by contractor and discharged.	Final payment is made within 56 days after the employer receives the payment certificate.	

If the principal fails to pay the amount due under the payment schedule or obstructs the issue of any payment schedule to the contractor, the NZS3910 (clause 14.3) treats this as a default of principal. The NZS3910 also considers as a principal default if the engineer fails to issue a progress payment schedule within the time specified. If the principal defaults, the contractor can suspend the work and subsequently if the default is not remedied within the specified time, the contractor can terminate the contract. This termination entitles the contractor for the payment of work done up to the termination date, other compensation and damages that the contractor is entitled by the law to recover. This is the part of the NZS3910 that is very rarely used because contractors may fear the loss of future clientele, if they decide to terminate contracts on the basis of deferred payments.

The NZS3910 and NZS3915 require the contractor to notify the principal within a specified time, if there is any dispute on the scheduled amount. Otherwise the contractor is entitled to be paid the scheduled amount. In a case of the principal failing to issue the proposed payment schedule within the specific time frame, the contractor is entitled to be paid the amount claimed.

Besides the above provisions, clause 3 of NZS3910 allows the contractor to obtain a principal bond at the time of the tender or other offer as a security against payment default by the principal. This could be referred to as a payment/insolvency bond. The NZS3910 provides that such a bond should be in the form specified by the contractor for the amount stated in the special conditions. If the principal bond is not executed and delivered to the contractor within the required time, the contractor can notify the engineer and if the principal's default is not remedied within the specified time, the contractor can suspend work and subsequently terminate the contract. If the bond is executed properly, the principal and his surety are released upon the receipt of payment in accordance with final payment schedule. In the event of dispute on the final payment schedule, the release of a bond is dependent upon payment in accordance with the arbitrator's award.

3.3 Legislative Provisions – Construction Contract Act (CCA)

According to the Law Commission (1999), the Wages Protection and Contractors' Liens Act 1939 in New Zealand gave protection to main contractors, subcontractors and workmen by way of provision for placing a lien over the estate or interest of the owner in the land. This protection became obsolete with the repeal of the 1939 Act in 1989 and since then contractors and subcontractors have been unsecured. The liquidation of large construction companies due to non-payment of clients, particularly developers, caused delays in payment to a substantial number of subcontractors and suppliers on large development projects. This spurred the passing of the CCA 2002 by the New Zealand parliament (Bayley & Kennedy-Grant, 2003; Degerholm, 2003). As per s.3, the Act aims to achieve the following:

- a) Facilitate regular and timely payments between the parties to a construction contract.
- b) Provide for the speedy resolution of disputes arising under a construction contract.
- c) Provide remedies for the recovery of payments under a construction contract.

In achieving the above, the CCA provides provisions in relation to payments and remedies in case of non-payments under three main Parts of the Act: Parts 2, 3, and 4 (Kahraman, Cebeci, & Ulukan, 2003). The following sub-sections describe those provisions. These provisions are applicable to construction contracts in the written or oral form or partly written and partly oral (s.9). Although the Act applies to all construction contracts, it has exclusion within its provisions to residential contracts.

3.3.1 Payment Rights under the CCA

Primarily s.13 of the Act makes conditional payment provisions, pay-if-paid and when-paid unlawful, and not enforceable in any civil proceedings. This prevents contractors withholding payment to subcontractors on the basis of not having been paid by the client/project owner. This clause could also protect contractors as they may be in a better position to understand the client's financial status and thereby procure the necessary security required in the event of a potential insolvency of the client.

In relation to progress payments, the Act provides default provisions which are effective in the absence of contractual provisions. S.16 of the Act provides a party who agreed to carry out the work the right to claim the progress payment by serving a payment claim on the payer. As per s.20 the payee needs to provide the payer a progress claim in writing indicating the claimed amount, due date for payment, and other relevant details as agreed between parties. S.18 specifies the default time period of 20 working days from the date of payment claim is served as the payment due date. This requires the payer to respond to the claim by providing a payment schedule stipulated under s.21. The Act requires the payment schedule to be in writing, indicating the scheduled amount with the reasons for differences between the claimed and scheduled amount, if there are differences.

3.3.2 Rights under the CCA in Case of Non-Payments

Under s.22 the payer becomes liable to pay the claimed amount, if he fails to provide a payment schedule within the time required by the construction contract or within 20 working days from when the claim is served. S.23 entitles the payee to receive the claimed amount as a debt due from the payer in any court. In addition, the Act stipulates the payee must serve the notice of intention to suspend carrying out the work under the construction contract (s.23). Further, in the event of any non-payment of a scheduled amount, similar remedies to the above are available where the payee could recover the scheduled amount as a debt due in any court, and serve notice of intention to suspend carrying out the work under the construction contract (s.24).

Apart from these, s.25 of the Act provides an effective remedy, by referring a dispute to adjudication. Under the Act any party to a construction contract has the right to refer a dispute to adjudication, even though the dispute is the subject to proceedings between the same parties in a court or a tribunal (s.26). However a dispute may not be referred to adjudication without the consent of the parties if they have agreed to refer it to arbitration.

According to s.36, the claimant can refer the dispute to adjudication within 5 working days following the receipt of the adjudicator's notice of acceptance. Within 5 days of receiving the adjudication claim, s.37 requires the respondent to serve on the adjudicator a written response to the adjudication claim. As per s.46, the adjudicator needs to

determine the dispute within 20 working days, or 30 working days as may be required by the adjudicator or any further time period that the parties to adjudication may agree on, following the respondent's notice of adjudication claim. If an adjudicator determines that a party to the adjudication is liable, then s.48 requires the adjudicator to specify the amount and the date of payment to be made. Following the determination of an adjudicator, the respondent can apply to The District court under s.52 for a review of the adjudicator's determination and the adjudicator's approval for the issue of a charging order. The review of the adjudication determination is not the final determination unless the District Court decides so (s.55). As per s.60 an adjudicator's determination to pay the amount due under the contract is binding on the parties and is enforceable in the courts as a debt due or by entry as a judgment, until or unless the dispute is finally determined by arbitration or by court proceedings, or resolved by agreement or mediation after the dispute is determined by the adjudicator.

Adjudication is recognized as the most commonly used, cost effective and speedy dispute resolution mechanism within the New Zealand construction industry (BDT, 2012). Based on the statistics collected by the BDT (2009) to date in relation to adjudications, it states that 50% of adjudications are completed within 20 working days from the receipt of adjudication response, while 8% of disputes are completed within 15 working days. BDT (2009) further reports that only one adjudication has taken more than 30 days. According to BDT (2009), on average the cost of adjudication is 12% of the amount claimed.

S.29 allows a party to seek the approval for issuing a charging order against a site owned by the respondent (project owner) as a remedy for non-payment. The approval for issuing a charging order needs to be obtained through the adjudication process as per the Act. A charging order is a vital tool available under the Act which prevents a party from dealing with or disposing of property until all of the debts against the property are paid in full (BDT, 2012). According to BDT (2009), 30% of the claimants out of the adjudications referred to the BDT to date have sought approval for the issue of a charging order over the site owned by the respondent. The success rate of such applications is reported as 74% of those that sought approval (BDT, 2009).

As aforementioned under this section, s.72 of the Act entitles the party to suspend the work upon failure to pay the claimed amount (s.23), or scheduled amount (s.24), or failure to comply with an adjudicator's determination (s.59) within 5 working days

following the notice of intention to suspend. In this regard, Taylor (2009) claims that the suspension provision of the Act is very effective and straightforward, as it enables the contractor to be free from liabilities of losses caused to the employer due to suspension by the contractor. The provision further benefits the contractor with a time extension for the suspension period and protects the contractor from termination. Traditionally contractors who want to suspend work rely on the terms of contract which often leaves them to incur the damages caused by the suspension. However, with this suspension right the contractor needs to be careful. If the contractor proceeds with a suspension based on non-compliance with the payment claim, the damages to the client have to be borne by the contractor.

3.3.3 Performance Review of the CCA

This section reviews some of the studies carried out on the CCA in New Zealand. Bayley (2007) claims that the number of disputes referred to adjudication has increased by over 260 cases by 2006 since the enactment of the CCA. Subsequently, Chilli Marketing (2007) found that in New Zealand the CCA has decreased the number of debtors and improved cash flows. In a survey among 275 subcontractors, 98% agreed that the number of debtors had been reduced, and 65% agreed that cash flows had improved (Chilli Marketing, 2007). In relation to the use of CCA provisions by subcontractors, the research shows that a relatively small percentage, 8%, used the adjudication provision of the Act, while 40% and 27% of construction parties used the right to serve the payment claim and the payment schedule, respectively. Chilli Marketing (2007) further reports that lower tiers have little knowledge, understanding or awareness of the CCA. Twenty three percent of subcontractors researched identified that CCA provisions are difficult to understand and implement, while another 21% reported that the provisions are time consuming (Chilli Marketing, 2007).

In addition to the above the BDT (2010) believes, based on the increasing demand by industry participants seeking information and guidance on the application of the Act, that there exist issues around the CCA in its respect to interpretation, and the rights and obligations required by it. The BDT (2010) further suggests that although in general the Act works well in relation to the purposes set out under the s.3, it is likely to have flaws and imperfections as in any other new legislation. On a similar note, the Department of Building and Housing (DBH) (2012) has also claimed it is imperative and timely to

review whether the Act is effective in achieving its purposes and to make possible amendments to make it more effective. According to DBH (2012), the main purpose of the review is to improve the effectiveness of the adjudication provision available within the Act. Further, the review and subsequent amendments are essential for any changes being implemented in proposed reforms of the Building Act (DBH, 2012). In this regard, the DBH sought the public's views in relation to issues with the Act and its proposed amendments. Based on the preliminary review carried out within the current study, the researcher submitted a memo for consideration by the DBH and a copy is given in the Appendix 2. The memo addressed the three main issues of liquidation of payment losses, legislative protection for retention monies, and adjudication provisions for possible amendments to the Act.

Although the DBH (2012) has identified several issues for review and revision, this section explains key issues and proposals relevant to the current study. Even though a discussion document was prepared by the DBH (2010), information in the document does not make as much reference to the changes needed in terms of payment improvement measures as those contained in the DBH (2012) website. A substantial part of the following discussions are extracts from the website.

- i) Currently the application and scope of the Act to different kinds of contracts and disputes are identified as limited in relation to default progress payments, enforcement options for adjudication orders, and rights to suspend work and obtaining charging orders over a site. Default payment provisions as to how progress payments are requested and made are not available in residential contracts. Further although residential contracts can be referred to adjudication the enforcement of any adjudication determination is difficult as residential contract disputes mostly arise out of rights and obligations which are not enforceable under the Act. The Act limits the party to a residential contract from using the right to suspend the work and obtaining charging orders over the site as a remedy for unreasonable non-payment.
- ii) Currently the adjudication process allows a party to a contract to have an adjudication determination enforced in the District Court, if the other party does not comply. The court process is time consuming, and it may also be frustrating as parties that have already gone through adjudication then have to wait for a court hearing. The longer time taken for enforcement of determination affects contractors

as they are unable to make prompt payments to their subcontractors and suppliers. Options available to speed up the enforcement process are limited as the process is governed by the District Court Rules 2009.

- iii) Currently the Act provides 15 days for the defendant to oppose an application for the enforcement of an adjudication determination as a judgment. This allows the defendant to object to the application only on limited grounds.
- iv) Consumers, mostly in residential contracts, and small-business contractors find it difficult to respond to payment claims and are unfamiliar with using the adjudication process to resolve disputes. Contesting the adjudication determination is another challenge for consumers and small contractors.
- v) Security of payment is another concern under the review. Although the Act provides a range of remedies for non-payments, it is believed by some stakeholders that contractors need to be ensured they get paid.

In response to the issues identified by the DBH, the following recommendations are put forward with a view to improving the effectiveness of the adjudication provision of the Act.

- i) The review of the CCA recommends to remove the distinction between residential and commercial contracts and to widen the definition of construction work so that people with disputes under design, engineering and quantity surveying contracts could also use the adjudication process. It is expected that these amendments to adjudication provisions enable to understand the kinds of building disputes that can be resolved using the adjudication process.
- ii) In the case of enforcement, it is proposed that the Act needs to make determinations about disputes over rights and obligations to be enforced, and it is further proposed that the time for a defendant to oppose an application to have a determination entered as a judgement needs to be reduced to five days. It is suggested five days would provide the defendant sufficient time to be advised on the application for objection. This would further reduce the timeframe for the claimant to get enforcement and thereby outstanding payment would be recovered earlier.
- iii) The Act needs to clarify how respondents may seek a time extension for preparing a response to a claim and further, clarify how determinations can be appealed, contested or re-heard. This would enhance the understanding of consumers and

contractors about their rights and obligations, and how the adjudication process works.

- iv) With regards to have a mandatory use of security of payment measures, or require parties to actively consider the need for using security of payment measures at the commencement of the project, the DBH (2012) recommends that the legislative intervention to mandate security of payment measures are not appropriate as they are available in the market. DBH (2012) further suggests that parties to a contract should be able to decide on the security measures.

Although the Act has identified certain issues and proposed solutions, there still remains room for improvements. As the memo explains, retention monies are a significant component in contributing to cash flow difficulties (Odeyinka & Kaka, 2005). Further, Latham (1994) and Hughes et al (1998) are of the opinion that retention monies are often at the risk insolvency of upper tiers. The literature reviewed in section 2.5.3 indicates that effects on payment to construction parties due to insolvencies are significant in New Zealand (Gibson, 2008a; NZPA, 2008). In this regard, the review of the Act has not paid any attention to these payment issues. This aspect of payment problems seems not to have addressed by the current review of the CCA.

3.4 Security of Payment (SOP) Legislation

There is little doubt that the widespread nature of payment problems has caused the development of construction payment specific legislation for different jurisdictions. Since the introduction of the first Housing Grants Construction and Regeneration Act in the UK, similar legislation has evolved in other countries. The latest has been the Construction Industry Payment and Adjudication Act 2012 in Malaysia. The CCA in New Zealand was implemented after the Housing Grants Construction and Regeneration Act 1996 in the UK, and the Building Industry Security of Payments Act 1999 in New South Wales in Australia.

These examples SOP legislation are widely expected to tackle the late payment culture in the construction industry, thus reducing the frequency of such payments (Brand & Uher, 2008). Perigo (2010) claims that the Security of Payment Act is an effective instrument to improve payment practices within the industry as it provides an adjudication provision which is binding upon parties and enforceable as a court

judgment. He further explains that the requirement under the Act to indicate that “the claim is made under the Act” makes the Act more practical. However, there seem to be aspects of these various pieces legislation that could be improved upon. For example the adjudication provisions of the Acts are an interim solution and are usually subject to further review by a judgment in arbitration, litigation and agreement. This leaves respondents at potential risk as they may not be able to recover the adjudicated amount paid to claimants. Respondents may experience the final judgment in their favour but become insolvent by the time the decision has arrived (Chan, 2006; Ndekugri & Russell, 2005; Uher & Brand, 2005). However, this is arguable as the respondent is required to pay the adjudicated amount to the court or give a security pending the final decision. In any case, this would not help to improve the contractor’s cash flow. The extent to which an adjudicator’s decision becomes effectively the final decision was also questioned by Kennedy (2006). Further, the nature of adjudication provisions of “pay now argue later”, makes the dispute resolution process similar to traditional approaches such as arbitration and litigation.

The general consensus is that the applicability of SOP legislation to lower tier construction parties are low. Brand and Uher (2004, 2008) explain that there is little knowledge among contractors and subcontractors in respect of the provisions within the SOP legislation that could facilitate improve payment practices. Contractors and subcontractors do not seem to be taking full benefit from this legislation that was specifically designed for them. Malaysia is yet to enforce its Construction Industry Payment and Adjudication (CIPA) Act, pending the introduction of guidelines and the education of subcontractors on benefits of the proposed Act (Supardi et al., 2011). The tight timeframes stipulated in the Acts are another downside to their practicability. The Building and Construction Industry Security of Payment Bill 2009 in South Australia expects that extremely short timeframes for the submission of payment claims, payment schedules and adjudications will make the Act impracticable in complex situations (Winter & Slattery, n.d). However it is to be noted that these timeframes stipulated within the Acts are default timeframes and parties have the liberty to agree on reasonable timeframes which suit both parties to any contract.

Having reviewed the above, the following sub-sections review the provisions available in some of the SOP Acts enacted to date. Table 3.2 and 3.3 provide a summary of information obtained from some of the pioneer legislation that has been implemented in different countries. The purpose, payment response details, disputes resolution process

and other special features of the respective Acts are summarized in Table 3.2 and 3.3. Most of the legislation, in general, was aimed to ensure smooth cash flows down the construction chain. In fulfilling the purpose of the Acts, and improving cash flows, they provide two main regimes: statutory payment rights and rights in cases of non-payment. These two regimes are described in the following sub-sections. Although the purpose of the enactments is more or less similar, the titles of the SOP legislation seem to differ across countries. The UK Act, the oldest in the family of SOP legislation, is referred to as the Housing Grants, Construction and Regeneration Act; while the second oldest, from NSW in Australia, is referred to as the Security of Payment Act. Bayley (2007) claims that the SOP Act in NSW does not provide security over payment, it merely reduces payment delays. Bayley (2007) further claims that the related legislation in New Zealand, the CCA, avoids the cumbersome description of the same Act in the UK and corrects the inaccuracy of the title of the NSW Act. The New Zealand Act may have been named the CCA to cater for future developments. On the other hand, the Acts in Singapore; Victoria (Vic); South Australia (SA); the Australian Capital Territory (ACT) and Tasmania, all follow the NSW Act, and were enacted as security of payment Acts. However unlike the other Acts, the Queensland (Qld) Act: Building and Construction Industry Payment Act, is correctly titled to reflect its provisions The Western Australia (WA) Act has the same title as that of New Zealand while the Northern Territory (NT) Act merges its construction contracts with security of payments provisions. It is called Construction Contracts (Security of Payments) Act 2004.

3.4.1 Payment Rights in Some SOP Acts around the World

The different Acts reviewed in the previous section (except the UK Act) prohibited conditional payment provisions (pay-when and if-paid) and made them unenforceable in any civil proceedings. This ensures a smooth flow of payment between parties and deprives the upper tiers from withholding payments to the lower tiers. The UK Act (s.113) restricts the effectiveness of the conditional payment provisions to only when there is insolvency in the payment chain. Similarly the CCA in New Zealand excludes this provision as an insolvency protection mechanism. The removal of conditional payment provisions requires contractors to be conscious about the financial status of the client while undertaking a project.

The Acts in general entitle parties who carry out construction work, or supply related goods and services under construction contracts, to claim payment. They provide default time periods for payment if no contractual provisions are available. By default the time period stipulated for payment in the Acts includes progress, final and any one-off payments. The default time period for payment response varies in Australia from a minimum of 10 business days in NSW, Vic, and SA to a maximum of 20 business days in WA and the NT. Amongst them Qld distinguishes the time to payment for contractors from trade and subcontractors as 25 and 15 business days respectively. Different to other legislation, the UK Act (s.110) requires the payer to issue a money due notice to the payee within 5 days after the due date agreed between parties. In addition, the UK Act prohibits withholding payments after the due date without any notice to payees. The Act (s.111) requires the payer to serve an effective notice of withholding payment within 7 days prior to the final date of payment, if it is intended to withhold or refuse payment. Unlike other Acts, the Singapore Act (s.12.5) provides respondents a 7 days grace period (as a dispute settlement period) after the allowed response time. Teo (2008) claims that the additional time could provide the respondent with an opportunity to amend the payment response, or issue a response if it has not been issued earlier, and thereby increase the early settlement of disputes. The Singapore Act further limits progress claims to be made by a party to a written construction contract only. Having such a written contract could benefit parties in the event of a dispute. Furthermore, the security of payment legislation in WA and NT (s.11 - schedule 1 – division 9) provide a special feature whereby the Act requires the principal to hold the retention monies on trust until it is paid to the contractor upon the completion of obligations under the contract.

3.4.2 Rights in case of Disputes and Non-Payments within SOP Acts

All the Acts reviewed within the previous section provide rights for disputes arising out of a construction contract to be referred to adjudication in cases of non-payment. The procedure for adjudication differs slightly across countries. The UK and NZ Acts allow payment and non-payment disputes under contracts to be referred to adjudication while others allow only payment related disputes to be referred to adjudication (Bayley, 2007). However, this provision is not expected to greatly affect timely adjudication decisions.

Table 3.2: Summary of payment provisions available within the SOP legislation

No	Act	Purpose of the Act	Payment response	Sources
1	Housing Grants, Construction and Regeneration Act 1996 (UK Act).	Improving payment practices.	Money due notice is given to payee within 5 days after the due date. A “notice of intention to withhold/refuse payment” is given within 7 days prior to the final date for payment.	("Housing Grants, Construction and Regeneration Act 1996 "); Teo, 2008; Kennedy, 2006.
2	Building and Construction Industry Security of Payment (BCISOP) Act 1999 (New South Wales Act - Amendment 2002).	Reduce or eliminate payment delay.	Payment schedule is the response for the payment claim and the payment must be made within 10 business days (BD) after the progress claim is made.	Uher and Brand, 2005; ("Building and Construction Industry Security of Payment Act 1999," ; Perigo, 2010).
3	Construction Contracts Act (CCA) 2002 (NZ)	Facilitate regular and timely payment, speedy dispute resolution, and provide remedies for non-payment.	Same as above but the payment schedule and the payment are made within 20 working days of payment claim being served.	("Construction Contracts Act 2002.,")
4	BCISOP Act 2004 (Singapore Act).	Expediting payment and improving cash flow.	Payment becomes due for taxable claimant within 14 days after the tax invoice is submitted to respondent. Otherwise within 14 days of payment response is required. The payment for supply contract is due and payable immediately after 30 days from the time the claim is made.	("Building and Construction Industry Payments Act 2004," ; Teo, 2008)
5	BCISOP Amendment Act 2006 (Victoria Australia -Vic).	Entitlements to progress payments.	Same as NSW.	("Building and Construction Industry Security of Payment (Amendment) Act 2006,")
6	Building and Construction Industry Payments (BCIP) Act 2004 (Queensland Australia - Qld).	Same as above.	Payment is made for head contractor, trade and subcontractor within 25 BDs and 15 BDs from the time claim is made, respectively. Otherwise the provision is void and the contractor will be entitled to payment within 10 BDs from the claim served.	("Building and Construction Industry Payments Act 2004,")
7	CCA 2004 (Western Australia - WA).	Ensure the money flows in the contractual chain by ensuring	Payment is made 28 days from receipt of the progress claim. If a party wants to reject or dispute the whole or part of the claim, the notice of dispute must be given	Evans, 2005;("The Construction Contracts Act 2004 ")

		timely payment.	within 14 days.	
8	Construction Contracts (Security of Payments) Act 2009 (Northern Territory - NT)	Same as NZ Act.	Same as above.	("Construction Contracts (Security of Payments) Act ")
9	BCISOP Bill 2009 (Southern Australia - SA)	Address the security of payment problem.	Same as NSW.	Winter and Slattery (n.d) and Darley (2008);("Building and Construction Industry (Security of Payment) Act 2009,")
10	Tasmanian Security of Payment Act 2009.	Reform payment behaviour in the industry.	For building practitioners, payment becomes due 10 BD after the claim is made and is extended to 20 BD for residential building owners.	("Building and Construction Industry Security of Payment Act 2009,")
11	Building and Construction Industry (Security of Payment) Act 2009 (Australian Capital Territory - ACT).	Entitlement to receive and ability to recover progress payment	Same as NSW	("Building and Construction Industry (Security of Payment) Act 2009,")

Another important and basic feature in respect to adjudication provisions is simply that a party can refer disputes to adjudication. The UK (s.108.1), NZ (s.25.1) and WA (s.25) Acts allow either party to a contract to commence an adjudication procedure, while in other Acts the claimant only is entitled to do so (Bayley, 2007). This is further restricted in the Singapore Act (s.13.2) where the only claimant to a written contract is entitled to commence the adjudication process. This would suggest that restricting the right to the claimant only could well serve the purposes of the Act rather than letting either party to refer. In general, the purpose of these Acts is to improve cash flows by referring disputes to adjudication and getting them resolved as quickly as possible. According to the SOP Act (s.17) in NSW, the claimant could refer to adjudication in the instances below. However, these instances seem to be similar to other Acts reviewed within this section.

- i) If the respondent fails to provide a payment schedule to the claimant, or
- ii) The respondent fails to pay the whole or any part of the scheduled amount to the claimant by its due date or
- iii) The scheduled amount indicated in the payment schedule is less than the claimed amount indicated in the payment claim, or
- iv) The respondent fails to pay the whole or any part of the claimed amount by the due date for its payment

In relation to time taken for adjudication determination, in general, Acts reviewed within this section require an adjudication determination to be made within 10-20 working days from the receipt of an adjudication response (Table 3.3). The NSW (s.21), Qld (s.25), Vic (s.22), NT (s.33), and SA (s.21) Acts provide 10 working days while the UK and NZ Acts take 20 days to determine. The Acts of Singapore (s.17) and WA (s.27) offer 14 working days. However the determination period for adjudication in those Acts reviewed is extendable upon the consent of the parties and the adjudicator. The time for completion of an adjudication procedure further depends upon the time allowed for the review of the adjudication determination and the outcome of the review. For example according to the Singapore Act (s.18) the respondent could lodge a review application if the adjudicated amount exceeds the relevant response amount by the prescribed amount or more, within 7 days after being served the adjudication determination. This is followed by another maximum period of 14 days from the commencement of the adjudication review, or within such longer period as requested by

the review adjudicator or the panel of review adjudicators, to receive the outcome of the review application. However s.18.3 of the same Act states the respondent is not allowed to lodge an application to review the determination unless the adjudication amount is paid to the claimant as per the date determined by the adjudicator or within 7 days after the adjudication notice is served on the respondent.

In terms of remedy for non-payment, the Acts reviewed within this section generally provide parties who carry out construction work under the construction contract the right to suspend work in the event of non-payment. For example s.27 of the SOP Act of NSW permits the claimant to suspend construction work following at least 2 working days notice of intention to do so. According to the same Act, the claimant can suspend the work in the following instances:

- i) The respondent fails to pay the whole or any part of the claimed amount on or before the due date for the progress payment to which the payment claim relates (s.15).
- ii) The respondent fails to pay the whole or any part of the scheduled amount to the claimant on or before the due date for the progress payment to which the payment claim relates (s.16).
- iii) The respondent fails to pay the whole or any part of the adjudicated amount to the claimant as per the adjudicator's determination (s.24).

Apart from referring to adjudication and to serve the notice of suspension of work, the SOP Acts provide parties the right to exercise a lien over any unfixed plant or materials supplied in case of non-payment for unfixed plant and materials supplied by the claimant in relation to the construction work. S.25 of the Singapore Act provides the claimant the right to place a lien over goods supplied by the claimant to the respondent under the contract. The claimant can exercise the lien if he has served a notice on the respondent regarding the intention to place the lien in the event the respondent fails to pay the whole or any part of the adjudicated amount to a claimant, as per the adjudication determination. Further the claimant's right to exercise a lien is valid even if the goods supplied are owned by the claimant or the respondent. Unlike other Acts reviewed under this section, the CCA (s.49) in New Zealand requires the claimant to seek approval for issuing a charging order over the construction site owned by the respondent. This is a distinct feature of the CCA of New Zealand over the other Acts.

In addition to the above remedial measures, interest on overdue payments is another remedy available under some of the Acts reviewed under this section. S.8 (of schedule 1 division 6) of the CCA of WA provides the implied provision that the claimant is liable for interest on overdue payments from the date the payment becomes due to the date by which the amount payable is paid.

Table 3.3: Summary of remedies and special features available within the SOP legislation

No	Act	Dispute right (Adjudication)	Special Features	Sources
1	Housing Grants, Construction and Regeneration Act 1996 (UK Act).	Either party has the right to refer a dispute to adjudication (AD). AD decision is made within 20 working days of the referral, extendable if parties agree.	Applies to written contracts only. Payment and non-payment disputes referred to AD. Act requires all contracts must contain fair payment regimes and an AD procedure.	("Housing Grants, Construction and Regeneration Act 1996 "); Teo, 2008; Kennedy, 2006.
2	Building and Construction Industry Security of Payment (BCISOP) Act 1999 (New South Wales Act - Amendment 2002).	Claimant only can refer case to adjudication. AD decision is made within 10 BDs. Payment of AD amount must be paid within 5 BDs of determination.	Disputes related to progress payments only referred to adjudication. Contract provisions cannot override the Act.	Uher and Brand, 2005; ("Building and Construction Industry Security of Payment Act 1999," ; Perigo, 2010).
3	Construction Contracts Act (CCA) 2002 (NZ)	Same as UK Act.	The Act is effective even if any provision in the contract is contrary to it.	("Construction Contracts Act 2002.,")
4	BCISOP Act 2004 (Singapore Act).	Claimant to written construction contract can refer to AD and decision is reached within 14 days from commencement. Review of AD determination is possible within 7 days after service of AD determination, permitted only when the adjudicated amount exceeds the amount set out in the payment response by a prescribed amount.	Applies to all written contracts and takes effect on payment when the contractual regime is silent. 7 days of grace period is given after due date as dispute settlement period.	("Building and Construction Industry Payments Act 2004," ; Teo, 2008)
5	BCISOP Amendment Act 2006 (Victoria Australia -VA).	Same as NSW.	Same as NSW.	("Building and Construction Industry Security of Payment (Amendment) Act 2006,")
6	Building and Construction Industry Payments (BCIP) Act 2004 (Queensland Australia - Qld).	Same as NSW	Same as NSW.	("Building and Construction Industry Payments Act 2004,")
7	CCA 2004 (Western Australia - WA).	Either party to the payment dispute can lodge an application within 28 days after the dispute arises. Determination is made within 14 days of the service of the response to the application.	Prohibits the payment term in contracts to be changed from making payment more than 50 days after the payment claim is made to within 50 days after the claim is made. Requires retention money to be held in trust.	Philip J Evans, 2005; ("The Construction Contracts Act 2004 ")
8	Construction Contracts (Security of Payments) Act 2009 (Northern Territory - NT)	Same as above but decision is reached within 10 days of serving the response to application.	Requires retention money to be held in trust.	("Construction Contracts (Security of Payments) Act ")
9	BCISOP Bill 2009 (Southern Australia - SA)	AD is lodged 10 BDs after serving payment schedule. Decision is reached within 10 BDs after acceptance to make adjudication or further time agreed to by parties. Once the adjudication is made, the respondent has 5 BDs to make payment or such later	Timeframes for submitting payment claims, payment schedules and adjudications are extremely short.	Winter and Slattery (n.d) and Hon John Darley (2008); ("Building and Construction Industry (Security of Payment) Act 2009,")

date as the adjudicator determines.			
10	Tasmanian Security of Payment Act 2009.	AD application is made by claimant 10 BDs after receiving a payment schedule and 20 BDs if the respondent lodges a payment schedule and does not pay. The payment is to be made within 5 BDs after the adjudicator’s decision.	The right to suspension under the Act is forfeited if AD application is not lodged within the stipulated time. ("Building and Construction Industry Security of Payment Act 2009,")
11	Building and Construction Industry (Security of Payment) Act 2009 (Australian Capital Territory - ACT).	Application to adjudication is notified to respondent within 20 BDs following the due date for payment and the decision is reached within 10 days BDs after the adjudicator receives the response from respondent.	("Building and Construction Industry (Security of Payment) Act 2009,")

3.4.3 Other Payment Related Legislation

Besides security of payment legislation, some countries have other legislation and regulations to deal with payment problems in their construction industries. Table 3.4 provides a summary of payment related provisions available within legislation other than security of payment legislation. As explained in the Table 3.4, China has promulgated several pieces of legislation, such as the Construction Law (1997), Contract Law (1999), and Bidding and Tendering Law (1999), which provide rights to claim payments, restrict multilayer subletting and statutory grading systems, to reduce undue competition during project tendering (Wu et al., 2008).

According to Wu et al (2008) and Meng (2002), the Contract Law allows the contractor to apply to the People's Court for the auction of the project if the client failed to respond to a payment claim within a reasonable time. The proceeds from the auction could cover clients' default in terms of timely payment and non-payment. Meng (2002) therefore explains that this legal mortgage provides contractors a strong backing to prevent unscrupulous owners from defaulting on payment. However, the auction is not permitted for government projects such as schools, hospital buildings, etc. Wu et al (2008) further noted that contractors seldom choose the option of auction due to its expensive nature and unguaranteed benefits.

The Chinese Construction Law is another piece of legislation which requires construction clients to submit their funding arrangements for the proposed project to government authorities before the commencement of the project (Wu et al 2008). This is a pre-requisite for obtaining a construction license. The Construction Law together with the tender and bidding Law place restrictions on subcontracting work. In order to reduce extra costs and improve efficiency by reducing unnecessary subcontracting, the Law stipulates that the substantial part of the work needs to be done by the main contractor and only the remaining less important parts of the work can be let to subcontractors. The Law further limits subcontracting work to first layer subcontractors only. On this note Wu et al (2008) argued that these limitations are not practical and do not help reduce the payment problems other than by distorting market forces as it is a recognised practice in the industry to subcontract the substantial part of any project.

Wu et al (2008) recognized that the Chinese construction industry experiences payment problems, despite these regulations being in place, due to a failure to implement these regulations effectively and because of loopholes in the system. According to Wu et al (2008), the absence of construction payment specific legislation is also one of the causes of continuing payment problems in China. From another point of view, in recognition of the seriousness and extent of payment problems that have hampered the development of the construction sector in China, Heong (2006) suggested that contractors need to be given payment security by project owners.

The US State of Kansas enacted legislation called the “Fairness in Private Construction Contract Act” in July 2005 to address problems associated with slow payment, non-payment and out-of state litigation in construction projects. Unlike the UK, Australia, New Zealand and Singapore, Kansas’s legal provisions incorporate a contingent payment clause (American Subcontractors Association, 2005). The payment specific legislation in the above countries except the UK has abolished contingent payment clauses. The contingent payment clauses in the Kansas Act have no effect on the right of a contractor or subcontractor to file a mechanic’s lien or payment bond claim. The Kansas Act ensures parties in construction contracts are paid in a timely manner. It requires the construction owner to pay first-tier contractors within 30 days of the receipt of a payment claim. The first-tier contractor must pay their subcontractors, and subcontractors must pay their sub-subcontractors within seven business days of receiving payment from their upper tiers. The Kansas Act further provides contractors and subcontractors the right to suspend work with seven days prior notice, if undisputed payments are delayed more than 14 days. The Act also provides the right to file a mechanic’s lien or payment bond as a compulsory requirement in construction contracts. The right to file a mechanic’s lien or payment bond claim can never be waived by a construction contract (American Subcontractors Association, 2005).

The Miller Act (and its derivative, called The Little Miller Act) is a piece of federal legislation in the US. The Miller Act requires a general contractor who undertakes federal projects of contract value of more than US\$100,000 to furnish a mandatory payment bond for the protection of all persons supplying labour and material. The Act protects first level subcontractors and suppliers but beyond that is considered too remote and a party cannot assert a claim against the Miller Act payment bond that is posted by the main contractor. The bond ensures the payment for labour and materials provided for the contract and hence it is called a labour and material payment bond (LAMP)

within the Act. The main contractor's payment bond amount shall be equal to the total amount payable by the terms of the contract unless the client stipulates a different amount. The Act also requires that the amount of the payment bond shall not be less than the amount of the performance bond. In contrast to public projects, the Mechanics Lien legislation allows unpaid contractors, subcontractors and suppliers of private construction projects to place a lien on the property as a mechanism to recover payment from their clients and contractors (Cheng et al., 2009; Loulakis & Santiago, 1999). On this note, Clough and Sears (1994) cited in Motawa and Kaka (2009) and Latham (1994) suggest that mechanics liens could be set up to provide protection against any insolvency of clients and main contractors. This gives the contractor a security interest in the construction project. As suggested a mechanics' lien could be set up to protect and compensate the project participants who have invested in the project against a client or main contractor going out of business and/or not fulfilling their payment commitments (Clough and Sears (1994) and Latham (1994) cited in (Motawa & Kaka, 2009). However, Cheng et al (2009) argue that the exercise of such a lien is a draconian measure and needs to be considered as a last resort due to its complexity in enforcement and expensiveness for lower tier parties even on the part of the project owner this measure could place a relatively significant burden.

The Department of Transportation in the US introduced prompt payment regulations in 1999 (Touran et al., 2004). The regulations require contractors in public funded projects to pay their subcontractors within a given time frame from the receipt of payment from the client. According to regulations, retention monies need to be returned to subcontractors within a given time frame irrespective of whether the general contractor's payments are released or not. Touran et al (2004) reported that these provisions affect the contractors' profit margin, reducing it. However, the regulations were revised subsequently in 2001 due to the dissatisfaction expressed by general contractors about the release of retention monies to subcontractors prior to the release of their retentions by clients. Obviously subcontractors' retention monies are perceived as profit for general contractors and therefore these regulations affect contractors (Touran et al., 2004).

Table 3.4: Summary of payment related provisions available within legislation other than SOP

No.	Type of Legislation	Payment related provisions	Country	Source
1	Construction Law 1997, Contract Law 1999, and Bidding and Tendering Law 1999 Contract Law Construction Law Construction Law, tender and bidding law	Provide rights to claim payments, restrict multilayer subletting and statutory grading systems, to reduce undue competition during project tendering. Allows the auction of the project if the client failed to respond to a payment claim within a reasonable time. The auction is not permitted for government projects. Contractors seldom choose the option of auction due to its expensive nature and unguaranteed benefits. Requires construction clients to submit their funding arrangements for the proposed project to government authorities before the commencement of the project. Restrict the subcontracting work, substantial part of the work needs to be done by the main contractor. These limitations seem to be impractical, tend to distort the market forces.	China	Wu et al (2008), Meng (2002)
2	Fairness in Private Construction Contract Act	Incorporate a contingent payment clause which has no effect on the right of a contractor or subcontractor to file a mechanic's lien or payment bond claim. Requires the construction owner to pay first-tier contractors within 30 days of the receipt of a payment claim, first-tier contractor pay their subcontractors and subcontractors pay their sub-subcontractors within seven business days of receiving payment from their upper tiers. Provides the right to file a mechanic's lien or payment bond as a compulsory requirement in construction contracts.	US State of Kansas	American Subcontractors Association, 2005
3	Miller Act	Requires a general contractor who undertakes federal projects of contract value of more than US\$100,000 to furnish a mandatory payment bond for the protection of all persons supplying labour and material. Protects first level subcontractors and suppliers but beyond that is considered too remote and a party cannot assert a claim against the Miller Act payment bond that is posted by the main contractor.	US	Cheng et al. (2009)
4	Mechanics Lien legislation	Allows unpaid contractors, subcontractors and suppliers of private construction projects to place a lien on the property as a mechanism to recover payment from their clients and contractors. This could be set up to provide protection against any insolvency of clients and main contractors. Draconian measure and needs to be considered as a last resort due to its complexity in enforcement and expensiveness for lower tier parties even on the part of the project owner this measure could place a relatively significant burden.	US	Cheng et al. (2009)
5	Prompt payment regulations in 1999	Require contractors in public funded projects to pay their subcontractors within a given time frame from the receipt of payment from the client. Retention monies to be returned to subcontractors within a given time frame irrespective of whether the general contractor's payments are released or not.	US	Touran et al (2004)

3.5 Administrative Measures

The following administrative measures are in place to deal with payment problems, in the construction industry in several countries including New Zealand. These measures are usually included under provisions within the conditions of contracts that deal with payment problems. For example, s.3.2 of the NZS3910:2003 provides contractors and subcontractors with the ability to obtain a principal bond that could guarantee payment.

3.5.1 Escrow/Trust Accounts

Escrow arrangements are common in commercial transactions whereby parties make an arrangement that the money is deposited by the guarantor with an independent third party with instructions that it will be delivered to the party who offered the service upon the fulfillment of obligations under the contract (Byrne, 1993). According to studies, the use of an escrow/trust account to hold money, particularly retention monies, seems to be an accepted form of security within the construction industry. For example, Latham (1994) and Hughes, Hillebrant, and Murdoch (1998) recommended that as a protection against a client's insolvency, the construction money could be secured using a trust fund where the money can be released progressively in line with the progress of the work. However, it doesn't seem to be feasible, as generally clients depend on approved funding which may come progressively to the project. Drawing out the entire sum of money and holding it in trust could cause an additional financial burden to clients.

However Cheng et al (2009) suggest that some of the standard forms of contract in Hong Kong require the client to hold retention monies in trust and similar arrangement is arranged down the chain to protect subcontractors' retentions. On a similar note, Klein and Greenwood (1995) claimed that the JCT main contracts and the JCT form of nominated sub-contract provide a clause where a separate fund is set up to protect retention monies against the client's insolvency. Having a separate fund could help against a claim by the receiver or liquidator of the client in the event of the client's receivership or liquidation. However holding money in trust doesn't provide protection in cases of a client's insolvency unless it is held separately in an identifiable fund (Hughes et al., 1998). Klein and Greenwood (1995) also suggest that retentions need to be placed in a secure trust fund, despite this creating a pressure on a client's cash flow.

Hughes et al (1998) claimed that holding the money in trust acts as a powerful means to bring the subcontractor back to the site and getting any defective work done.

On the foregoing note, Chilli Marketing (2010) shows that a small percentage of construction parties (3% out of 66) have used the escrow/trust account as a form of security in the New Zealand construction industry. However, the study fails to provide any further details on the process and situations where the escrow was used. The review reveals that there are two different types of escrow service available in the construction market in New Zealand. The following sub-sections explain the basic features of those two systems.

a) BuildSafe security scheme

The BuildSafe security scheme is a concept similar to maintaining an escrow or trust account which is also in practice in other countries. This is a relatively new system, introduced in the late 2009 by the Building Disputes Tribunal in New Zealand. BuildSafe is an independent external third party which protects parties involved in housing construction and renovation work (BuildSafe Security of Payment Scheme, 2010). It is particularly designed to secure payments to construction parties. The scheme protects project owners from losing money through over-invoicing by contractors; defective work delivery or in the event of a contractor's liquidation. On the other hand, BuildSafe protects contractors from non-payment and delayed payment of their invoices, (especially final payments) by their clients. The scheme is designed to work along the supply chain and provide protection to subcontractors or specialist trade contractors and suppliers against an upper tier's non-payment risk.

The scheme holds a deposit amount (called security) which is calculated to be roughly equivalent to any final payment due under the contract. BuildSafe holds the security amount in trust until the contractor fully performs his obligations under the contract. In the event of contractor defaulting on their obligations, the money held is returned to the project owner. Further, the owner is protected by not having to pay the contractor a deposit at the start of the project because there is little or no work in place. Contractors are protected by knowing that the security amount is available to meet any payment claim in respect of which the project owner may default. To safeguard all parties, all payments into and out of the trust account are subject to the scrutiny and approval of an independent custodian, Perpetual Trust. BuildSafe provides fair and formal conditions

of contract that operate by default and a fair payment regime that operates notwithstanding any other agreement the parties to a contract may have made.

b) Safekiwi escrow account

SafeKiwi escrow service is another independent private trustee set up at a similar period as BuildSafe to provide financial protection not only to construction clients, contractors, subcontractors and suppliers but also to participants of other industries in New Zealand. With this escrow system the money is held independent of parties to a contract, in a public trust maintained by a private bank in New Zealand. Unlike Buildsafe, the SafeKiwi escrow is an online system where the transactions can be created and viewed by any of the parties to the contract at any time. This provides transparency. The Safekiwi claims that it is an easy and cost effective solution to secure payments to parties (Safekiwi Escrow Service, 2012). The SafeKiwi escrow system guarantees payment to any party to contract in a new house building or renovation work upon establishing entitlement to the money. The builder gets payment certainty and commitment while the clients know that their money is safe until the agreed contract terms for their home are met.

3.5.2 Bonds and Guarantees

Bonds and guarantees are one of the most common forms of security used in the construction industry. Davis (1991) stated the two purposes that bonds and guarantees serve in the industry: financial protection against insolvency, and proof of the financial strength of the party producing the bond or guarantee. Bonds are a mechanism whereby a third party called a bondsman (or a surety) that is either a bank or an insurance company, ensures the financial obligations of the party in cases of default by another party to a contract (Davis, 1991; Ndekugri, 1999). A bond is usually issued in return for a premium paid to the bondsman. A bond is classified as unconditional or conditional (Ndekugri, 1999). The former is simply an undertaking to pay money on demand by the promisee or on a certain event, while the latter is conditional upon fulfillment. If the condition is fulfilled, the undertaking is void.

In practice, conditional bonds are referred to as guarantees (Ndekugri, 1999). By guarantees a guarantor promises a party that the third party will perform the contract, if he/she defaults. The guarantor will meet the debt caused by the defaulting party up to a

maximum agreed price. Obtaining a bank guarantee requires the party who is required to produce it to deposit the cash equivalents to the bond value. Sampson (2008) therefore states that this way of providing security freezes the money available in the account and cannot be utilized for any other purposes. In addition, there is a cost associated with the guarantee. Sampson (2008) claims that bonds from a surety company are therefore seen as economical and their administration procedures are simple and quick to process. A bond can be obtained within 48 hours or even less depending on the reputation and the relationship of the debtor with the surety company. Meng (2002) expressed a similar view that both bonds and guarantees are a risk-transfer mechanism by which the risk of a debtor's default is transferred to a bondsman or guarantor. The issuance of bonds and guarantees involves an assessment of the debtor's financial status, technical experience, management capability, and performance record by the surety/bondsman prior to issuing the bond (Meng, 2002). Further, getting a bond or guarantee is a challenging and additional burden to a less reputable and less creditworthy party. In this context, if a party to a contract is unwilling and unable to get a security, it indicates a potential risk of non-payment. Obtaining a security in the form of either a bond or a guarantee would therefore ensure the fulfillment of payment obligations.

Conventionally, bonds and guarantees are used in the construction industry to guarantee the performance obligations of parties, especially by contractors and subcontractors. According to Davis (1991), these bonds are classified mainly into payment and performance bonds. Payment bonds are used for the following purposes:

- i) Security of advance payment
- ii) Security for progress and final payments made on account
- iii) Security for payment of retention money if it is to be released early or never withheld, and payment for liquidated damages and unpaid claims of suppliers of materials, labour and equipment.

Performance bonds generally cover damages to employers in case a successful tenderer withdraws the tender, and to ensure the performance of the entire work by the contractor. Bonds are further classified based on their purposes as bid security (tender/bid/proposal bonds), performance bonds, advance bonds retention bonds, payment bonds for labour and materials, etc. (Davis, 1991). Most of these bonds except tender bonds are required to be obtained during mobilization. However whether or not

construction starts immediately, the premiums for bonds are payable in advance. In certain large contracts if the premium is large, the contractor is allowed to pay the premium once the contractor receives the first payment from the owner. It is important to note that the non-payment of premiums does not release the surety from its obligations to the owner (Russell, 2000).

The following sub-sections describe different types of bonds that could be used against payment default risk.

a) ***Payment bond***

As aforementioned a payment bond is used as a security for different types of payment. It seems fair for contractors and subcontractors to get a payment bond from the upper tiers. As discussed in chapter two, there is ample evidence to suggest that payment delays and losses are frequent among contractors and subcontractors and are mainly due to a client's cash flow and financial difficulties, and insolvency (Abdul-Rahman et al., 2008; Odeyinka & Kaka, 2005; Ye & Abdul-Rahman, 2010). Undoubtedly, these problems are primarily attributable to the nature of the industry: it consists of a large number of small and medium-sized companies with a relatively low capital base; heavily reliant on bank financing; the hierarchical structure of the industry's contractual frame work; cyclical nature; and a collect early and pay late culture (Davies, 2009; Pettigrew, 2005). Given the nature of the industry, it is imperative that the payment bond be an effective remedy to guarantee payment to contractors and others down the chain. A payment bond could work as a reciprocal arrangement to a traditional performance bond whereby if the client defaults on a progress or final payments to a contractor, due to insolvency or other deliberate reasons, a surety could settle the sum due up to a maximum agreed amount. In addition, Davis (1991) suggests that the issue of progress or stage payment bonds requires the contractor to provide interim certificates with a schedule of rates instead of monthly valuations. In terms of the value of a bond, Cheng et al (2009) and Sampson (2008) suggest it could be equivalent to that of any performance bond that the contractor is required to provide to the employer. It could be varied within a range of 10-15% of the contract price.

Primarily the Miller Act in the US has introduced the payment bond to protect subcontractors and suppliers engaged in all federal government projects exceeding a contract value of US\$100,000 (Miller Act). Subsequently private owners started using the payment bond as a preferred form of security than the more complex and expensive

form of Mechanics Lien to secure payment to contractors, subcontractors and suppliers (Cheng et al., 2009).

China is another example that uses payment bonds as a security to ensure payments from top tiers (Cheng et al., 2009). The construction guarantee system in China requires real estate development clients where the contract value exceeds RMB 10 million to furnish a payment bond when entering into contracts. The value of the bond is set to be the same as the performance bond, that is, 10-15% of the contract price. On this note, following the positive effects of the payment bond on payment problems in China, Cheng et al (2009) recognize that the payment for contractors and subcontractors in Hong Kong could be guaranteed using the payment bond rather than the draconian measure of a lien. The reciprocal way of payment bond to principal bond ensures the feasibility of the payment bond provision from the implementation point of view (Cheng et al., 2009).

In the same vein, in Malaysia one of the standard forms of contract provides an optional clause which permits a contractor to obtain a payment bond of 5% of the contract sum from clients if required (Lau & Tang, 2007). Similarly the New Zealand standard conditions of contract, NZS3910: 2003 and NZS3915: 2005 provide the contractor an opportunity to obtain a payment bond as a security for the principal's payment obligations under the contract (s.3.2 NZS3910:2003). The special conditions stipulate the amount of the bond which needs to be furnished at the time of acceptance of the tender or any other time agreed by parties. In the event of a principal failing to provide a bond within a given time period, an engineer can suspend the work upon the request of the contractor. If the bond is not executed within 20 working days of suspension, it is considered to be a principal's default. Conversely, if the bond is furnished, the principal and his surety are released from the bond within 5 working days following the settlement of final payments to the contractor. Despite provisions available in some standard forms of contract, the use of bonds seems to be limited in practice. For example Chilli Marketing (2010) shows that just 14% (of 66 respondents) have used a principal payment bond as a security against non-payment from clients in the New Zealand construction industry. Similarly, Davis (1991) noted that the use of payment bonds is unpopular in the domestic construction market in the UK, even though UK contractors working overseas require a payment bond from employers.

b) Labour and material payment bond (LMPB)

The LMPB is another form of payment bond which is required from contractors to protect the owner against unpaid claims of subcontractors, material suppliers, workers etc. (Bennett, 2003). As aforementioned under section 3.4.3, in the US according to the Miller Act it is mandatory for contractors undertaking federal government projects where the contract value is more than US\$100,000 to furnish an LMPB for the protection of subcontractors and suppliers. If the contractor fails to any pay outstanding charges incurred in connection with the project, the surety will pay those debts. This ensures the owner is protected from paying subcontractors and suppliers' claims. In addition, subcontractors and suppliers are assured that they will be paid by the contractor they have worked for.

c) Advance payment bond/guarantee

Particularly in developing countries construction clients require a security called an advance payment guarantee or advance payment bond for any advance payment given to the contractor for mobilization, purchase of plant and equipment, and other overhead costs. Gading (1998) and Marzuki (1988) (cited in Hussin & Omran, 2009) argued that the contractor needs to be given advance payment to ease their financial difficulties at the commencement of a project and to improve their cash flow. On this note Abeysekera (2002) also suggested that contractors and subcontractors could be an paid advance payment which would improve their cash flow. Further, the advance payment could help a smaller size or new contracting company to be competitive with mature contracting firms (Hussin & Omran, 2009). Besides these, the International Labour Office (1987) recommended that the measures of providing a mobilization advance along with a reduction of retention money and prompt for work done would improve contractors' business environment in developing countries cited in Adams (1997). According to Hussin and Omran (2009), the amount of advance payment is usually 10-20% of the contract price and this is secured by an on demand bank guarantee which is payable on demand. The guarantee contains a recovery clause whereby the amount is deducted from the progress claim but when it comes to payment default or insolvency security, the guarantee can be released once the contractor's final account is settled.

On a different scenario where consulting engineers are facing difficulties in getting their consultancy fees, the FIDIC recommended that the advance payment guarantee is the most preferred form of security over bonds and guarantees, retention funds, and earnest money deposit to be used in consultancy agreements between consulting engineers and

clients (FIDIC, n.d). The reason for this is that they guarantee the repayment of funds advanced by the client, whereas all other forms of security increase the cost to the client without any improvement in services.

Given the improvement an advance payment could contribute to contracting businesses, this could be considered as one of the means of mitigating payment problems within the New Zealand construction industry. In this view, based on interviews with construction clients, contractors and project managers Gurton (2009) concluded that an advance payment system could work within The New Zealand construction business environment.

d) Retention bond

Retention bonds are another form of payment bond which are used as an alternative to the traditional practice of holding money back from contractors' and subcontractors' bills. On the client's side, retention monies provide protection in the event of a contractor's default by providing money to get another contractor; and on the contractor's side it is incentive for them to return and attend to minor defects (Hughes, Hillebrandt, & Murdoch, 2000). Lal (2009) points out that deliberate delays in the release of retention monies in order to maintain clients' cash flow have become an increasingly common problem. He further noted that a delay in issuance of certificates of Making Good Defects is another mechanism to delay the release of retention monies. Lal (2009) further contends that the release of retention in main contracts creates an unfair situation to subcontractors as their money is usually being held up until the release of by the main contractors. However this unfairness leaves subcontractors at the mercy of others as they are not able to influence completion and/or the expiry of the defects liability period (Lal, 2009).

In this view, the use of retention bonds as an alternative to cash retentions could remedy unfairness to contractors and subcontractors. This enables contractors and subcontractors to claim the full amount for the work they have done. Latham (1994) proposed that the purpose of retention monies, usually to remedy defects, could still be covered with retention bonds. Sub-trades contractors in UK claimed that the introduction of retention bonds reduced costs as it frees up the significant amount of money which would otherwise have been held back by contractors (Latham, 1994). Subsequently, Klein and Greenwood (1995) also suggested that retention monies could be replaced with retention bonds where the value of such bonds could be set up to

progressively reduce in line with the completion of work. Further, like the trust fund, the retention bond could also ensure the security of retention money in the case of a client's insolvency. The use of retention bonds could enable the early return of retention monies or the complete exclusion of money being retained from progress payments. This could further relieve the contractor from the administrative burden of collecting retention monies.

e) Owner's performance guarantee

The owner's performance guarantee is another form of security, after bonds and guarantees within the family of bonds and guarantees (Davis, 1991). Meng (2002) expressed that guarantees from parent companies of construction contractors are accepted under the standard forms of contract such as NEC and FIDIC. Hughes et al (1998) claim that guarantees from the purchaser's parent company are considered as one of the forms of security against a client's insolvency risk in the UK building industry. However, Cheng et al (2009) argue that a parent company guarantee from a "phantom" employer is not an effective security measure unless it is appropriately worded to ensure the required level of protection. Further, the parent company guarantee is only worthwhile, if it is as effective as a payment bond in terms of implementation and level of security. This evidences that unlike performance guarantees, owner's payment guarantees seem to be unpopular in the construction industry. However, Meng (2002) claims that the parent company guarantees are seen to be very useful in China, and as a result it has an important place in the Chinese conditions of contract for construction (1999).

3.5.3 Direct Payment Agreements

Traditionally a direct payment agreement is a form of security which aims to protect subcontractors and suppliers from payment defaults of contractors in various countries (Davis 1991). For example, Supardi et al (2011) explain that standard forms of contract in Malaysia allow direct payment to subcontractors by the employer, if the contractor has failed to pay. On the similar note, Clough and Sears (cited in Motawa & Kaka, 2009) suggest that the direct payment method enables prompt payment to subcontractors and suppliers which would encourage them to provide better service at lower prices as well as early completion. The direct payment to suppliers is one of the preferred options in the case of insolvency (Latham, 1994; Hughes et al, 1998). Davis

(1991) suggests that the following circumstances could be the best for subcontractors to request a direct payment from the employer.

- i) Contractors experience cash flow difficulties: In this situation the contractor's payment can be directly made to its bank rather than parties down the chain. This would reduce contractors' borrowing from banks
- ii) Deliberately longer payment delays by contractors to maintain their cash flow.
- iii) Contractor has gone into liquidation and lost the right to make payments.
- iv) Situations where the main contract is terminated and dues to subcontractors are settled directly.

Contractors delaying payments to subcontractors could affect the latter's working capital which in turn would cause suspension of work by them and consequently affecting the project's progress. Additionally direct payment arrangements could help employers to re-possess materials and preserve subcontractors. However this way of making direct payment does not release the employer from paying to contractors unless the contract specifies a special direct payment clause. Direct payment clauses provide dual rights: to pay directly and to set off the amount paid against money due to the contract. However the employer needs to be careful with a direct payment clause. Some standards, for example Royal Institute of British Architects (RIBA) standard form provide the provision that the payment to subcontractors and suppliers is payable by the employer or contractor (Davis, 1991). This prevents the employer from making direct payments to subcontractors, if he has made a total payment (inclusive of subcontractors) to the contractor and subsequently the contractor has gone into liquidation before settling dues to subcontractors.

Converse to these traditional views, Gibson (2009-b) claims that the direct payment arrangement in New Zealand is exercised at the top level of the chain where builders are guaranteed their money from a secured source which is usually a bank rather than a developer. It seems that this scheme has increasing patronage in New Zealand. Gibson (2009-b, p. 3) states that "Given the number of developers that have gone under if contractors were operating in the old manner where banks pay the developer and developer pays the builder, it would have potentially pulled building companies under and caused subcontractors a lot of cash flow issues".

3.5.4 Prequalification of Construction Parties

The registration and prequalification of construction parties could be used as a measure of financial protection. Ling and Lim (2007) suggest that one of the best ways to mitigate delay and non-payment, and financial failure risks is to conduct pre-qualifications and thereby assess financial capacity and work only with parties that have a sound financial capacity. Traditionally, construction clients pre-qualify the contractors for their technical and financial capacity prior to participating in the bidding process. This helps clients to avoid working with incompetent, insufficiently financed, and inexperienced contractors. On the part of the contractor, it works as a form of external auditing of a contractor's ability (Soñmez, Holt, Yang, & Graham, 2002). If the contractors are pre-qualified by the client, it ensures payment to subcontractors. However if there is a system in place to use the traditional concept of prequalification reciprocally on clients to assess their financial capacity, this would help to ensure payment to contractors which in turn ensures subcontractors get paid. Pettigrew (2005) claimed that the construction industry characteristics of no restrictions on setting up a business, such as no formal qualifications or financial requirements for individuals, or for contracting organizations to enter the industry, are attributable to payment problems in the industry. Thus regulatory requirement, to have pre-assessment on construction parties entering the industry could improve payment default by clients, particularly developers.

3.5.5 Payment Default Insurance

An insurance cover is an agreement under which the insurer agrees to assume financial responsibility for a loss or liability covered by the policy (Bennett, 2003). Usually standard forms of contract require contractors to arrange certain types of insurance. For example NZS3910 in New Zealand requires the contractor to insure contract works, materials, and construction machinery. In addition, the contractor needs to provide insurance coverage against third party liability risks. With this the contractor could seek an insurance cover against the owner's payment default or insolvency risk, if the client or contractor fails to provide any security. Default insurance could work as an alternative to bonding. Generally an insurance company protects the contractor from any losses and claims brought against the contractor that is covered by the policy. As a return for the protection, the insurance company is paid a premium. The contractor can

set up the policy with the insurance company so as to cover the losses incurred on the value of the work done.

Bausman (2009) claims that the Zurich Insurance Company is the only company which offers subcontractor default insurance (SDI), a catastrophic insurance cover against the risks of subcontractors' and suppliers' defaults. According to Bausman (2009), SDI is a two party agreement between the contractor and insurer which provides the coverage. Bausman (2009) states that the SDI is a cost effective mechanism and gives contractors wider coverage against the following direct and indirect costs incurred in remedying subcontractors' defaults.

- i) Direct costs: costs incurred in fulfilling the contractual obligations regarding performance or payment, correction of non-conforming work, cost of attorneys and consultant fees incurred to remedy the defaults or in the defence of any dispute with a defaulted subcontractor
- ii) Indirect costs: delay damages, acceleration costs and extended overheads.

According to contractors in the US the SDI is preferred over subcontractor surety bonds due to possible cost savings, provides contractor control in managing subcontractors' default, expanded coverage limits and provides a direct relationship with the insurer (Bausman 2009). It is therefore believed that as a reciprocal concept to the SDI, contractors and subcontractors could insure against the risk of payment default by clients and contractors respectively, if it is economically viable and the insurance market is willing to supply such cover.

3.5.6 Use of Caveats

The use of caveats is another form of measure that construction parties could use to protect against a non-payment risk from owners. A caveat is a notice lodged in a court or other appropriate office to prevent certain action being taken (<http://www.justice.govt.nz>). For example if a caveat is lodged against a piece of land, that land cannot be sold or bought until the caveat is removed. The Land Transfer Act 1952 in New Zealand allows a person claiming an interest in a piece of land to lodge a caveat against its legal title. A caveat freezes the register until the caveat lapses, is withdrawn, or is removed by court order (New Zealand Government, 2011). The registering of a caveat notice against a title alerts any party that a claim is being made

and sought. This protects the interest in the land by preventing the registered proprietor from disposing of it or dealing with it in a way that would affect the caveator's rights and interests.

3.5.7 Charging Order

A charging order is a legal concept similar to a caveat. It is generally used, according to conveyancing practitioners, as a means of preventing a piece of land from being sold until all dues over it are settled (*A charge against the land*, 2010).

The CCA in New Zealand provides the right to seek approval to issue a charging order in respect of a construction site owed by the respondent (CCA 2003, s.29). The claimant can seek the approval for a charging order in adjudication. Upon the judgment or order for the payment, the claimant can apply to the District Court or High Court for a charging order (New Zealand Government, 2011). Following the court order the charging order is registered under the Land Transfer Act (LTA) 1952. This charging order prevents construction owners from registration of any conveyance, transfer, assignment or disposition of the property. Under the District Court rule, a charging order is removed by the operation of s.105 of the LTA if the empowering mortgage has priority. However it is noted that the procedure for registering and removing a charging order seems to differ according to differing rules at different levels of court (New Zealand Government, 2011).

3.5.8 Bankruptcy Notice and Liquidation Proceedings

In construction contracts filing a bankruptcy notice and liquidation proceedings can be used to recover payment from construction clients and contractors. The bankruptcy refers to a situation where an individual is unable to pay his/her debts, while liquidation refers to a situation where a company is unable to pay its debts (Govett Quilliam, 2011). According to the Companies Act 1993, both bankruptcy and liquidation proceedings can be made by the debtor voluntarily or by the creditors involuntarily upon a court order being granted. Thus in the construction industry as evidenced in chapter 2, both voluntary and involuntary bankruptcies and liquidations are experienced. However construction contractors, subcontractors and suppliers are unsecured creditors. Unless they have obtained a security in the form of lien's rights, payment bond rights, or a trust

fund, there will be no funds available for distribution (*Bankruptcy Primer for Creditors* n.d).

3.6 Summary

As an extension to the previous chapter, this chapter has reviewed the solutions available to remedy payment problems. These remedies are reviewed within contractual, legal and administrative contexts. In terms of contractual provisions the chapter has mainly focused on provisions available within the standard forms of contract used in the New Zealand construction industry. Within the legislative context, the chapter has reviewed the provisions of the CCA New Zealand in comparisons with provisions in similar legislation in other countries. Although the chapter has reviewed the administrative solutions as a separate theme, from the implementation perspective those measures come within contractual provisions.

The review suggests that contractual and legislative provisions are effective remedies to ensure that party to a contract will be paid, if clients and contractors are willing and able to pay. Although the need for securing payment was addressed in the current review of the CCA, it does not seem to recommend any solution to the problem. The DBH is of the opinion that security measures are available in the market which parties could be able to use it. Contrary to the DBH's proposal, the review of this study shows that although administrative solutions of escrow/trust account, bonds and guarantees are available in the market, payment problems are still prevalent as evidence in section 2.3.2. This could be most likely due to practical impediments in using the security measures available or the inappropriateness of existing remedies. This research study therefore explores possible solutions to payment problems by seeking practitioners' views.

The next chapter explains the research methodology used in the investigation of the problems identified through the review of literature related to payment problems and solutions to the problem in this chapter and previous chapter.

CHAPTER FOUR

Research Methodology

4.0 Introduction

This chapter explains the entire research process adopted for this study. Key elements of the research process are described under seven main sections: research paradigms, research approaches, research strategies, data collection methods, analysis techniques, credibility of research findings, and ethical principles followed in this investigation. Most importantly each section begins with an overview of each element of the research process, followed by the selected approach for the current research study with its rationale for the selection. Essentially the chapter presents the researcher's understanding and position in relation to each of the key elements.

Firstly, the chapter begins by giving an overview of the research methodology and its importance to understanding. Then it goes on to explain the key elements of the research methodology in the subsequent sections of the chapter. The second section explains the importance of understanding the research philosophy, philosophical positions adopted by researchers in general, and then goes on to state the philosophical position of the current research. The next two sections outline research approaches and strategies used in general and the most suitable approach and strategy for this study respectively. The chapter then discusses data collection and analysis techniques which were used in the current study. The last section of the chapter explains the measures used to claim the validity and reliability of the research findings and ethical issues considered in the current study. Finally a summary is given indicating the key issues discussed in the chapter.

4.1 Understanding Research Methodology

Easterby-Smith, Thorpe and Lowe (2002) define research methodology as the use of a combination of techniques to enquire into a specific situation. From a broader perspective researchers (Creswell, 1998; Dainty, 2008; Payne & Payne, 2004) explain

that the concept of research methodology is comprised of methods, the technical practices used to identify research questions, collect and analyse data and present findings, and the sets of conceptual and philosophical assumptions that justify the use of particular methods. On a similar note, using the concept of research Onions, Saunders, Lewis, and Thronhill (2007) suggest that research methodology includes layers of philosophy, approaches, strategies, method choices, time horizons, data collection and analysis techniques, and procedures. These views indicate that essentially the term research methodology encompasses three key elements: the knowledge claims made by the researcher, strategies of inquiry that inform procedures, and methods of data collection and analysis used (Creswell, 2003). The knowledge claims made by it research refers to research philosophies and paradigms used in undertaking it. In other words it provides the way the researcher views the social world, the nature of knowledge, and the development of that knowledge according to underlying philosophical assumptions. The second element refers to research approaches and strategies adopted, while the third element refers to research design or methods used for data collection and analyses. Subsequent parts of this chapter are organized to explain what position this research study claims in relation to these key elements.

4.2 Research Paradigms and Philosophical Positions

Amaratunga, Baldry, Sarshar, and Newton (2002) see research as an undertaking that involves systematic and methodical investigations with a view to increasing knowledge. Research also involves the development of knowledge in a particular field of study (Saunders et al., 2007). Sekaran (2003) explains that good research reflects qualities that are systematic, organized, critical, analytical, and has the ability to communicate findings effectively. With this view Gray (2009) suggests that development of scientific knowledge requires an understanding of theoretical perspectives to view the real world. Harriss (1998) further reinforces this and argues that science has a theoretical background without which it is simply not science. According to Harriss (1998), a research without theory is analogous to a boat without an oar on the sea. A theoretical basis guides the researcher throughout the research process. Further, Gray (2009) claims that the existence of differences between theoretical perspectives influences the role of the researcher and research methods to be adopted for a study. On a similar note, Guba and Lincoln (1994) and Saunders et al (2007) suggest that the choice of paradigm to

adopt affects the way in which data is collected and analysed and the nature of the knowledge produced. The consistency between the aim of a research study, the research questions, the chosen methods, and the personal philosophy/beliefs of the researcher is the essential underpinning and rational for any research project (Denzin & Lincoln, 1994; Proctor, 1998).

Given the essential nature of understanding the theoretical perspectives, Ofori (1994) states that research in the construction management discipline ignores and lacks behind the use of theoretical frameworks. In a similar vein, Betts and Lansley (1993) claim that construction management research is inward-looking, self-referential, and lacking in guidance from, and contribution to, theories. With this view, determining the appropriate philosophical position for research is one of the essential steps for researchers in construction management.

Theoretical perspectives are referred to as research paradigms which represent the researcher's philosophical position in relation to underlying assumptions of ontological, epistemological, axiological, rhetorical and methodological stances of the study (Creswell, 1998). With this view, Saunders et al (2007) claim that any research philosophy could be examined using the main philosophical stances of ontology, epistemology and axiology. The following paragraph explains the important philosophical assumptions that govern any research study.

Researchers (Creswell, 2007; Saunders et al., 2007; Tan, 2002) define the term 'ontology' as the nature of knowledge –what actually exists? There are two views that exist in respect to the nature of knowledge: objectivism and subjectivism. Objectivism represents the position of social entities which are external to social actors, while subjectivism asserts that social actors are part of the social phenomena which is derived by the actions of those social actors. Creswell (2007) and Tan (2002) both explain that epistemology is concerned with how the researcher knows the reality – do you really know what you think you know? In other words it refers to what constitutes acceptable knowledge. According to Saunders et al (2007), the term axiology deals with the values that the researcher places on the research.

4.2.1 Research Paradigms in General

Based on the existence of differences in relation to the above philosophical assumptions, research paradigms are classified into two main traditions: positivism and interpretivism (Gray, 2009; Silverman, 1998). It is noted that according to some of researchers (Easterby-Smith, 1991; Gray, 2009; Solem, 2003) the interpretivism paradigm is sometimes referred to as the phenomenological paradigm. This is then further divided into critical theory and constructivism. However other researchers claim that positivists and interpretivists are at the extreme spectrum of paradigms and in between there are other emerging philosophies such as pragmatism (Saunders et al., 2007) and post-positivism (Crossan, 2003).

Mainstream construction management research is characterized by its position at the intersection of two opposing sciences: natural science and social science (Love, Holt, & Heng, 2002). In general, natural science researchers adopt a positivist approach while social science follows an interpretivist research approach. The subject matters of social sciences are different to those of natural sciences and therefore need a different approach to empirical work. In this sense there is little doubt that construction management researchers could use an integrated approach to study their phenomena. Lee (1991) suggests that although positivists and interpretivists hold different opposing views about the social world, these approaches could be combined to provide different views of the same phenomena. Further, Creswell (1994) argues that pragmatists believe there is no true division between positivist and interpretivist approaches, and that both paradigms can be used simultaneously to provide an understanding of social phenomena.

The following sub-sections briefly explain these generally adopted paradigms in scientific inquiries in relation to their philosophical assumptions. These sections are followed by a description of the paradigm adopted for this study which the thesis is based on.

4.2.1.1 Positivism Paradigm

Regarding the ontological position positivists, Saunders et al (2007) points out that often positivists comply with the natural scientists' view which believes that reality is external and objective. On a similar view point, Smith (1998) argues that things can be

studied as hard facts and the relationship between these facts can be established as scientific laws. For positivists, such laws have the status of truth and social objects can be studied in much the same way as natural objects. Crossan (2003) suggests that all real knowledge is derived from human observation of objective reality. In terms of the epistemological position, positivists hold the view that the knowledge gained is independent of the researcher. This further explains the situation of ontological position of positivists that the data collected is value free (no value is added, or objective). Therefore the positivist approach allows little room for alteration of collected data and minimizes bias (Crossan, 2003) In relation to the methodological stance, Crossan (2003) argues that positivists adopt a clear quantitative approach to investigate social phenomena. However, Grant and Giddings (2002) suggest that there could be a possibility to adopt qualitative approaches, despite quantitative approaches being predominant.

4.2.1.2 Interpretivism Paradigm

Contrary to the positivists' view point, interpretivists believe that reality is constructed by the persons involved (Fellows & Liu, 2003), and is derived from observations and perceptions of individuals. The perception of an individual towards a subject differs from one to another. Creswell (2007) therefore explains that interpretivist researchers view seek understanding in the world in multiple realities where subjective meanings are obtained socially and historically. Therefore, the ontological belief of interpretivists is that there are multiple realities existing. This could therefore result in biased views of the subject studied. This further indicates that the epistemological position of the interpretive paradigm is that only knowledge created is not independent of the researcher, and hence is called value laden. In relation to the methodological view, an interpretivist is more likely to adopt a qualitative approach which enables an extensive discussion with a group of participants in order to determine the reality of the enquiry (Guba & Lincoln, 1994).

4.2.1.3 Pragmatism Paradigm

Pragmatism is another, relatively new philosophical tradition which links theory and practice (Denzin & Lincoln, 2000). Mackenzie and Knipe (2006) argue that pragmatism does not belong to either the postivist or interpretivist philosophical position. As the

term implies, pragmatists claim that knowledge arises out of actions, situations and consequences rather than antecedent conditions (Creswell, 2009; Pansiri, 2005). According to researchers (Pansiri, 2005; Yefimov, 2003) pragmatism relies on the view that knowledge and social reality are based on beliefs and habits which are socially constructed by the process of institutionalization, legitimation and socialization. That is, knowledge and social reality are historical and therefore truth cannot be determined once and for all. With respect to the axiological point, pragmatist researchers recognize the importance of values in conducting research and interpreting results, and suggest that reality is external and needs to accept external reality and choose explanations that best produce desired outcomes. From the methodological point of view pragmatists believe that reality can be achieved as closely as possible by using mixed methods of research (Rallis & Rossman, 2003; Tashakkori & Teddlie, 1998, 2003).

Having outlined the commonly used research paradigms, the following section presents the research paradigm that has been adopted for this current research study.

4.2.2 Research Paradigm Specific to this Research

As observed, different paradigms have different beliefs, values and concepts. These different paradigms therefore view the social world differently based on the philosophical assumptions regarding the nature of knowledge and the development of that knowledge. Therefore it is not worth debating whether a particular paradigm is better than another. What is essential is to find the best paradigm which provides the basis for the current study in terms of its philosophical assumptions which are the epistemological, ontological, and methodological viewpoints.

This research aimed at examining payment problems within the construction industry with a view to determining feasible remedies to the problems. From these a number of research questions were developed, which included: what is the extent and nature of payment problems prevalent in the New Zealand construction industry?; are construction insolvencies significant within the construction industry?; what are the main causes for payment problems?; are the provisions available within the CCA effective to remedy those payment problems?; and what solutions that could be used to secure payment to construction parties?. The research questions were formulated based on preliminary literature reviews and document analyses that suggested that this

research is not directed by any prior theory or experience through observation or measurements of objective reality. This indicates that the researcher is not in line with the philosophical stance of positivists. The nature of the research questions was influenced by the perception of individuals who have experienced payment problems of one form or another while executing construction projects. The individual participant's views about the reality of the research problem could be different and hence multiple realities exist. These features of the research therefore suggested that the current study could take the philosophical position of either pragmatists or interpretivists.

Further, interpretivists believe that abstract measures such as mental construct (the extent of the payment problem), could not be quantified. However, as part of its objectives the current study aims at finding the extent of payment problems and this requires quantification. For pragmatists mental constructs are tangible and accuracy can be reached through multiple approaches allowing the use of both quantitative and qualitative approaches elucidate out reality as closely as possible. Therefore, for the current inquiry, pragmatism becomes the most appropriate paradigm compared to interpretivism.

In terms of the epistemological position, positivists argue that reality needs to be measured through objective measures. However in the current study, the way that potential variables are selected and the methods employed to measure abstract concepts could not secure perfect objectivity as in laboratory experiments. On the other hand interpretivists argue that reality can be measured through subjective measures. However the current study is in favour of ideal objectivists in certain aspects, which is the epistemological position of pragmatism.

From a methodological view point, in the selection of paradigms, which is the prime concern of researchers, pragmatism has received recognition for entertaining the use of mixed-method research and hence both quantitative and qualitative approaches could be employed (Tashakkori & Teddlie, 1998, 2003). This research aims to answer the research questions using both quantitative and qualitative data collection and analysis techniques. For example this research study collects participants' views in relation to the extent of payment problems where it involves quantifications in terms of the variables used. On the other hand the research answers the questions of what causes payment problems, what measures could remedy the payment problems and what practical impediments are there in implementing security measures for payment

problems. In addition, this research study had already employed documents analysis as part of a research strategy to obtain a prior understanding of the prevalence of payment problems within the New Zealand construction industry. Therefore the selected paradigm provides an opportunity for a synthesis of document analyses findings with findings of primary data, by encouraging multiple approaches the research discipline. The research therefore uses a mixed-methods approach in investigating the research problem. Thus the methodological position along with ontological and epistemological points confirms that the knowledge claim for this study aligns with a pragmatist view.

Having identified the philosophical stance pertaining to this research study, the next stage of the research process involved the selection of a research approach that could be used for the current research study.

4.3 Research Approaches

The second key element of research methodology is research approaches. An understanding of research approaches is as important as research philosophies. Easterby-Smith et al (2002) suggest that research approaches enable researchers to decide on the research design to be used in terms of types of data to be collected, sources of data, and the techniques to be used to collect and analyse data. Research approaches guide researchers towards the selection of an appropriate research strategy for their studies. Research approaches are classified into qualitative, quantitative and combined qualitative and quantitative approaches (Tashakkori & Teddlie, 2003; Williams, 2007). This classification is mainly influenced by the forms of data required, the data collection and analysis techniques used, the degree of flexibility required within the research design, the analytical objectives, and the type of research questions they pose (Mack, Woodsong, Macqueen, Guest, & Namey, 2005). On this note, the following sub-sections explain these different approaches used in scientific inquiries and the particular approach used for this research study. However, these approaches are again discussed under research the methods section of the chapter in the context of data collection and analysis techniques.

4.3.1 Research Approaches Used in General

Amaratunga et al (2002) explain that the quantitative approach is objective and focuses on measuring phenomena. In a similar vein, Fellows and Liu (2003) and Leedy and Ormrod (2005) both subsequently point out that the quantitative approach collects factual data to establish, validate, or confirm relationships, and thereby contributes, to the development of theories. Thus quantitative research employs a clear deductive approach. From the perspective of research strategies, Creswell (2003) suggests that quantitative study employs research strategies such as experiments and surveys, and collects data using predetermined instruments that yield statistical data. The statistical data obtained is used to measure reality objectively (Creswell, 2003). This approach treats the researcher and the research as independent entities. Hence, the quantitative approach adopts the philosophical position of positivists (Creswell, 2003).

Unlike in quantitative study where the researcher stands outside of the phenomena being investigated, the qualitative researcher is part of the research process. The qualitative approach seeks to gain insights from individuals and to understand social phenomena from the viewpoints of participants (Fellows & Liu, 2003). This is therefore subjective in nature (Amaratunga et al., 2002) and coincides with the philosophical assumptions of interpretivists. From the perspective of research strategies, researchers (Creswell, 2007; Leedy & Ormrod, 2005) suggest that the qualitative study approach uses research strategies such as case studies, grounded theory, ethnography, content analysis, and phenomenological data. Similarly, Mack et al (2005) state that qualitative research involves formulating and building new theories using highly flexible ways of collecting people's perceptions in the form of in-depth interviews, focus groups, and participant observation. Thus in contrast to quantitative study, qualitative research tends to employ an inductive approach. Mack et al (2005) further explain the clear differences between quantitative and qualitative approaches as outlined in Table 4.1.

Although there are distinct differences between quantitative and qualitative studies in terms of research designs and methodologies, the relevance of considering a combined approach (mixed-methods approach) is stressed by several researchers (Bryman, 2006). Creswell (2003) and Johnson and Onwuegbuzie (2004) explain that the mixed-methods approach to research provides an opportunity for the researcher to collect and analyse data from both quantitative and qualitative research approaches in a single study. This combined approach enables the research to gain the advantages inherent in both

approaches while eliminating or reducing their disadvantages (Bryman, 2006; Fellows & Liu, 2003; Yin, 2003). As mentioned in section 4.2.1.3, pragmatists stress the use of mixed-methods from a philosophical point (Tashakkori & Teddlie, 1998, 2003).

Table 4.1: Major differences between quantitative and qualitative research

Characteristics	Quantitative	Qualitative
General framework	<ul style="list-style-type: none"> Seeks to confirm hypotheses regarding phenomena Instruments use more rigid style of eliciting and categorizing responses to questions Uses highly structured methods such as questionnaires, surveys, and structured observation 	<ul style="list-style-type: none"> Explores phenomena More flexible, iterative style of eliciting and categorizing responses to questions Semi-structured methods such as in-depth interviews, focus groups, and participant observations.
Analytical objectives	<ul style="list-style-type: none"> To quantify variations To predict causal relationships To describe characteristics of populations 	<ul style="list-style-type: none"> To describe variations To describe and explain relationships To describe individual experience To describe group norms
Question format	Close-ended	Open-ended
Data format	Numerical (obtained by assigning numerical values to responses)	Textual (obtained from audiotapes, videotapes, and field notes)
Flexibility in study design	<ul style="list-style-type: none"> Study design is stable from beginning to end Participants’ responses do not influence or determine how and which questions researchers ask next Study design is subject to statistical assumptions and conditions 	<ul style="list-style-type: none"> Some aspects of study are flexible (for example, the addition, exclusion, or wording of particular interview questions) Participants’ responses affect how and which questions researchers ask next Study design is iterative; that is, data collection and research questions are adjusted according to what is learned

(Source: Mack et al., 2005)

4.3.2 Research Approach Specific to this Research

Given the benefits and flexibility of using a combined approach, the current research study employs a mixed-method approach in investigating the research questions. Primarily as explained under section 4.2.2, this research study complies with the philosophical assumptions of pragmatists which allow the use of the combined approach of qualitative and quantitative methods and enjoy the benefits of each approach. Further, in relation to features described in Table 4.1, the current study mainly employs a

structured way to collect data as the nature of the research subject allows. For example the literature review and preliminary investigation provides evidence that suggest payment problems are prevalent in the construction industry. In addition, the current study seeks experts' opinions to validate the research findings where it employs semi-structured methods. Where the analytical objectives are concerned, the current study aims to describe the characteristics of the population using the statistical analysis performed on the sample. For example the study finds the significant factors causing payment problems using hypothesis testing for the population. This enables inferences to be made about the population. On the other hand, the study confirms the cause and effect relationships between payment problems using subject matter experts' views. This evidences that the current study uses a combined approach in terms of analytical objectives. The current study investigates in order to answer the research questions of to what is the nature and extent payment problems that are prevalent in the industry, what causes these problems, what measures are there that could remedy these problems, and what practical impediments are there preventing secure payments to construction parties? This involves the use of both open and close-ended questions offering both numerical and textual data. Finally, the study offers a certain degree of flexibility in respect to its design. Initially the research uses a highly structured form of data collection (i.e. questionnaires with a standard set of questions) but towards the end the research uses semi-structured interviews with experts where the questions are modified slightly according to previous responses. Further, the purpose of the experts' interviews is to validate and extend the findings.

Therefore the philosophical assumptions along with the nature of the research questions, the data required, and the benefits of using a mixed methods approach validate using a mixed method approach to the current research study. A further rationale for using a mixed-method approach to the current study is given under the research methods section 4.5.3 of this chapter.

However it is worth noting that unlike previous researches in the subject area, the current research adopts a mixed-methods approach within the pragmatism view point. Previous studies have used either quantitative or qualitative approach to examine payment issues. The use of pure qualitative or quantitative approach indicates that the previous researchers in the subject area have positioned their research either positivist or interpretivist view points respectively. For example Danuri et al (2006), Abdul-Rahman et al (2008) and Ye and Abdul-Rahman (2010) have used a quantitative approach to

investigate payment issues in the Malaysian construction industry. On a similar view, Wu et al (2011) used national statistical data to explore the status of payment problems within Chinese construction industry. In New Zealand a similar approach used questionnaire survey administered among constructors to determine the prevalence of non-payments to head contractors by principals (Chilli Marketing, 2010). The use of quantitative approach confirms that these studies were viewed from the perspective of positivists.

From a different perspective, the review of solutions available in other countries and discussion between members of Construction Industry Review Committee suggest the workable solutions to payment issues in the Hong Kong construction industry (Cheng et al. 2009). This indicates that the researcher has adopted an interpretivist approach in investigating the research phenomena in concern.

4.4 Research Strategies

The selection of suitable research strategies for a study is guided by many factors such as research questions and objectives, the research philosophy adopted, and the amount of time and other resources available for data collection (Saunders et al., 2007). Accordingly Saunders et al (2007) classify research strategies as experiment, survey, case study, action research, grounded theory, ethnography, and archival research. However, Yin (2003) groups these strategies into five: experiment, survey, archival analysis, history and case study according to the types of research question, the extent of control research has over behavioural events, and the degree of focus on contemporary events. Table 4.2 provides a list of different strategies with the corresponding parameters which facilitates the selection of a research strategy for any research study. The following gives brief explanations of the commonly used research strategies in scientific inquiries.

Table 4.2: Research strategies and the relevant situations of its application

Strategy	Form of research question	Requires control over behavioural events	Focuses on contemporary events?
Survey	Who, what, where, how many, how much?	No	Yes
Archival analysis	Who, what, where, how many, how much?	No	Yes/No
Others			
a) Experiment	How, why?	Yes	Yes
b) Case study	How, why?	No	Yes
c) Action	How, why?	Yes	Yes
d) Grounded theory	How, why?	No	Yes/No
e) History	How, why?	No	No
f) Ethnography	How, why?	Yes/No	Yes

(Adapted: Yin, 2003; Saunders et al., 2007)

4.4.1 Research Strategies Used in General

4.4.1.1 Survey Research

According to both Yin (2003) and Saunders et al (2007), a survey strategy is employed with exploratory and descriptive research where the research questions take the form of ‘who’, ‘what’, ‘where’, ‘how much’, and ‘how many’. Saunders et al. (2007) suggest that a survey approach enables a large amount data to be collected from a large population relatively cheaply. The survey design is advantaged for its opportunity to collect both quantitative and qualitative data using the techniques of questionnaires, structured observations, and structured interviews (Saunders et al., 2007). On the other hand, Saunders et al (2007) and Blaxter, Hughes, and Tight (2001) explain that the survey design has the following drawbacks: Limitations with data collection as it commonly uses questionnaires for data collection where it could contain a limited number of questions; and difficulties in achieving the truthfulness and accuracy of data collected.

4.4.1.2 Archival Research

Saunders et al (2007) and Yin (2003) are of the opinion that an archival strategy can be used with exploratory, descriptive and explanatory research to answer ‘who’, ‘what’, ‘where’, ‘how much’, and ‘how many’ types of research question. The use of archival strategy involves collection data from administrative records and documents including recent and historical (Tan, 2002). The use of archival data may be constrained by the availability and access to data, and the precise nature of the data. Further, inevitably the data collected from these sources are secondary data as they were collected for different purposes (Saunders et al., 2007).

4.4.1.3 Other Research Strategies

This section outlines the other research strategies used in scientific inquiries.

An experimental strategy is mostly found in natural sciences where there is a need to study the causal relationship between different variables under investigation (Baker, 2001; Saunders et al., 2007). Saunders et al (2007) claim that experiments are suitable for exploratory and explanatory research where the research aims to answer questions of ‘how’ and ‘why’

A case study is another kind of research strategy where the researcher explores an event or an activity or one or more individuals in depth (Creswell, 2003). Therefore Saunders et al (2007) suggest that the case study approach is suitable in situations where a rich understanding of the research context and process is required. According to Yin (2003), the concern in a case study research strategy is to answer ‘how’ and ‘why’ type research questions. Data collection techniques employed in a case study strategy include interviews, participant observations, archival documents or records, and audio visual materials (Williams, 2007). Yin (2003) classifies case study strategies into single cases v. multiple cases; and holistic cases v embedded cases. A holistic case study refers to a situation where an investigation involves an organization as a whole, while a study about sub-units of the organization are referred to as an embedded case study. Multiple case studies are preferred because it is possible to generalize their findings.

Saunders et al (2007) explain that action research is another strategy which is concerned with the following: research-in-action, the involvement of practitioners in research, the

iterative nature of the research process, and implications beyond the immediate project. Action research places greater emphasis on research-in-action than research-about-action. According to Saunders et al (2007), action research consists of a spiral process which involves fact finding and analysis which leads to action planning and action taking; then the actions taken are evaluated and applied to future projects. In an academic sense, action research contributes to theory development.

Creswell (2003) explains that grounded theory is used where the researcher attempts to derive a general, abstract theory of a process, action, or interaction which is grounded in the views of the participants in a study. It is an inductive approach which collects data to develop a theory (Saunders et al., 2007). Here the theory is formed using the data collected through a series of observations. The name ‘grounded theory’ is claimed as the theory is grounded on data.

According to Leedy and Ormrod (2001), ethnography deals with studying an entire group which shares a common culture. Ethnography requires the researcher to immerse himself or herself within the natural setting over a prolonged period of time in order to collect observational data (Creswell, 2003). Thus ethnography adopts an inductive approach to study the social world. The research process therefore needs to be flexible in order to incorporate changes developed through observations. Use of ethnography is best suited to gain insights and to understand a particular context from the viewpoints of the participants involved in the context.

Yin (2003) defines history as a research strategy where the researcher aims to answer the research question of “how?” and “why?” by exploring historical events.

4.4.2 Research Strategies Specific to this Research

Having outlined the research strategies employed in general, this research study asserts that the survey design strategy is the most appropriate strategy for this study. This research study addresses research questions examining the extent and nature of payment problems in the New Zealand construction industry, identifying the significance of construction insolvencies and payment effects, assessing the effectiveness of payment provisions, identifying factors causing these problems, and seeking solutions that could mitigate these problems. These questions are primarily in the nature of “what, how many and how much”, as explained by Yin (2003). Further, the nature of the research

problem, payment delays and losses, has ramifications for the whole of the industry. To obtain perceptions of the population there was a need to select a representative sample. Thus using a single or multiple cases to investigate the research questions concerned are not appropriate or feasible. Survey methods are recognized as highly efficient where a large sample selected from a pre-determined population is involved (Kelley, Clark, Brown, & Sitzia, 2003). Survey methods are relatively inexpensive and the time effort required seemed consistent with the constraints of the current study. Data collected through surveys is treated statistically to draw inferences about the wider population.

Prior to the administration of the survey instrument, this research study employed archival analysis as a preliminary step to examine the records of companies that have experienced payment problems. Liquidation details contained in liquidation reports and disputes in the High Court of New Zealand were examined, in order to gain some understanding of the prevalence, and the extent and consequences of payment problems within the New Zealand construction industry. This evidenced that payment problems are prevalent in the construction industry. The research aimed to investigate the issues further to elucidate the nature and extent of payment problems, what causes are responsible for payment problems, and how these could be remedied. Thus the current research approach is more descriptive and exploratory. This further strengthened the survey approach to the current study as Denscombe (1998) suggests surveys are used with descriptive research to gather information on certain phenomena typically at a single point in time.

As far as other research strategies are concerned, this research study does not need any control by the researcher as in laboratory experiments. Therefore the experiment strategy is inappropriate for this study. Similarly this research is unfavorable to any features of action research, ethnography, grounded theory or history. The study does not require the researcher's active participation in the research process through direct observation, or study of the behavior of a particular cultural group, or the collection of historical events. This argument convinced the researcher to select a survey strategy to investigate the research questions.

4.5 Research Methods

Crotty (1998) defines research methods as the techniques or procedures employed to collect and analyse data in any research study. The term “research methods” is used interchangeably with “data collection and analysis techniques”. Research methods are traditionally classified into quantitative and qualitative based on the data collection instruments used, data analysis procedures and forms of data produced (Saunders et al., 2007). However, due to inherent influx of techniques associated with each of the above methods, the concept of mixed-methods later emerged. Thus, depending on the nature of the research questions, a researcher could employ either quantitative or qualitative or both (mixed-methods) in answering the research questions. The following sub-headings explain these methods briefly, after which the research methods used in the current study are explained.

4.5.1 Quantitative and Qualitative Methods

As previously explained, research methods are generally classified as quantitative and qualitative (Creswell, 2003; Mack et al., 2005; Williams, 2007). According to Mack et al (2005) and Williams (2007) both quantitative methods refer to any data collection technique (usually questionnaire) or data analyses procedure (such as graphs or statistics) that generate numerical data, while qualitative methods use a data collection technique (such as an interview) or data analysis procedure (such as categorizing data) that generate textural or non-numeric data. Mack et al (2005) further claim that flexibility in data collection marks another difference between quantitative and qualitative methods. Quantitative methods in general are fairly inflexible; all participants are given a similar set of questions with given choices in the same order (usually questionnaires with close-ended questions). This inflexibility restricts participants from expressing views beyond those given choices (Mack et al., 2005). Further, this requires the researcher to have a clear understanding of questions, the best way to word questions and the range of possible responses. However, this inflexibility allows the researcher to do meaningful comparisons of responses across participants.

In contrast to quantitative methods, qualitative methods offer greater flexibility in terms of spontaneity and adaptation of the interaction between the researcher and participants (Mack et al., 2005). Generally qualitative methods use open-ended questions which can

be modified slightly according to participants. Further, open-ended questions provide freedom for participants to respond in the way they wish (Mack et al., 2005). Generally, qualitative methods seem less formal, which enables the researcher to acquire more elaborative and detailed responses from participants, depending on the context.

4.5.2 Mixed-methods

As explained previously the use of the mixed-methods approach is typically in situations enabling the researcher to use both quantitative and qualitative data collection and analysis techniques within a single research study (Creswell, 2003; Johnson & Onwuegbuzie, 2004). Using just a single method is often criticized for its limitation in terms of data collection. For example Oppermann and McKercher (2000) explain that interviews or questionnaire surveys with closed questions provide only limited responses to given questions (Oppermann & McKercher, 2000). Also, both limit the contribution of respondents in terms of their insights and ideas. On the other hand, the use of more than one method to measure the same phenomena compensates for the weaknesses of individual methods by counter balancing with the strengths of other methods (Amaratunga et al., 2002). It is therefore possible to obtain corroborating evidence from using a variety of methods in order to achieve validity (Amaratunga et al., 2002). Further, proponents of mixed methods argue that blending research methods enables diverse data collection. Thus mixed-methods provide a way to achieve this through a triangulation of methods.

Denzin (1978) defines triangulation as “the combination of methodologies in the study of the same phenomenon” (Jick, 1979). There are four different kinds of triangulation in research data triangulation, investigator triangulation, theory triangulation and methodological triangulation (Jick, 1979; Pansiri, 2005) These triangulation types are briefly described in the following paragraph. Data triangulation refers to the collection of data through several sampling strategies. This enables data collection of different people at different times and social situations. Investigator triangulation is another type of triangulation which represents more than one researcher involved in data collection and interpretation, while theoretical triangulation refers to using more than one theoretical position in interpreting data. Finally methodological triangulation represents the situation where more than one method is used to collect data.

Denzin (1978) claims that amongst the triangulation types, methodological triangulation most closely complies with the term triangulation. According to Denzin (1978), methodological triangulation is further classified into within-method and between (or across) methods triangulation. Within-method refers to the use of multiple techniques within a given method to investigate a research problem, while between methods represent the use of contrasting methods. Between methods triangulation is sometimes considered as the combined use of quantitative and qualitative research to find how closely they arrive at convergent findings (Jick, 1979). In addition, Jick (1979) claims that between methods triangulation is the most popular form of triangulation which enables cross validation between methods and thereby enhances the validity of the research findings.

Researchers (Creswell, 2005; Tashakkori & Teddlie, 1998) explain that mixed-methods data collection takes place either concurrently or sequentially. The concurrent form of data collection refers to collection of both quantitative and qualitative data at the same time while sequential data collection requires that one form of data is collected and analyzed prior to a second data collection (Creswell, 2005). In case the of the concurrent form of data collection, the two forms of data collected may be independent of each other, while with the sequential the two forms of data are interrelated. Table 4.3 shows that there are nine different approaches to design mixed-methods. The concurrent form of design involves three stages where a single study could employ both quantitative and qualitative methods of data collection and analysis with equal status simultaneously. Alternatively quantitative and qualitative techniques can be used concurrently with either one of those methods as the dominant method. In a similar vein, there are another six ways a multi-method design could be used in any research study. However, Johnson and Onwuegbuzie (2004) argue that this could be further extended to develop a design with more stages. For example a single study could employ both qualitative and quantitative methods in three stages (qual→ QUAN →qual) with either the qualitative or quantitative method as the dominant data collection method.

Table 4.3: Mixed-method design matrix

Time Order Decision				
Paradigm Emphasis Decision		Concurrent	Sequential	
	Equal Status	QUAL + QUAN	QUAL → QUAN	QUAN → QUAL
			QUAL → quan	qual → QUAN
	Dominant Status	QUAL + quan	QUAL → quan	qual → QUAN
			QUAL → quan	qual → QUAN
		QUAN + qual	qual → QUAN	quan → QUAL
QUAN → qual			QUAN → qual	

Source: Pansiri, 2005 and Johnson and Onwuegbuzie, 2004)

4.5.3 Research Methods Specific to this Study

Given the benefits of mixed-methods, the nature of the research questions, and the data required to collect, the current study used a mixed-methods study approach. This is further in line with the research’s philosophical position and the research strategy adopted for the current study.

As highlighted in Table 4.3, the current research study adopted a sequential data collection and analysis approach. This involved three phases. The first phase employed documents analysis as a preliminary step which offered mainly quantitative data. Although the findings of documents analysis provided an indication about the extent and nature of payment problems in the construction industry, they were limited in relation to the objectives of the current study. For example, the analyses of the current study analysed documents of construction dispute cases filed in the High Court and Liquidator’s reports for construction companies. This only enabled the extent and nature of payment problems from the perspective of construction disputes and liquidations, to be found. However, payment problems could be outside these limitations. Therefore the second phase of the study involved an extensive questionnaire survey to answer the research questions. The questionnaire yielded both quantitative and qualitative data as it had both close and open-ended questions.

The final phase of the data collection involved corroboration of findings from the previous data collection techniques and validation using subject matter experts (SMEs). SMEs exercise involved semi-structured interviews which provided qualitative data. This required the researcher to organise the interviews under identified themes based on

the previous findings of the study, validate and further extend the knowledge. This sequential mixed-methods adopted in the current study overcame the limitations arising in each stage of data collection and finally validate the findings using SMEs. The following sub-headings explain the particular data collection techniques employed in the current research and how they have been employed in this study.

4.5.3.1 Data Collection Techniques

Literature suggests that a variety of data collection techniques are available (Mack et al., 2005; Saunders et al., 2007; Williams, 2007). Depending on the type of data collected, either numeric or textual, they are classified as quantitative and qualitative data collection tools. The data collection techniques include questionnaires, interviews (individuals/groups/focus groups), observations of targeted events (participatory/non-participatory), and document analysis or other textual and graphical data analysis. The following sub-sections describe the data collection techniques used for this study.

i) Document analysis

Document analysis is a tool used with an archival research strategy where the research study focuses on contemporary or historical events (Saunders et al., 2007; Yin, 2003). This is a non-reactive technique where the information given in the document is free from possible distortion by the researcher (Corbetta, 2003). Similarly Denscombe (1998) claims that document analysis is a cost-effective data collection technique, despite its limitation in terms of access and accuracy of data (Saunders et al., 2007).

The review of literature suggests that contractors and subcontractors in the New Zealand construction industry experience payment problems in the form of delays and losses. Therefore the preliminary step of this current research involved the investigation of documents: Liquidator's reports and dispute cases filed in the High Court. The Liquidator's reports and payment dispute cases were obtained from the respective websites of the Building Disputes Tribunal (<http://www.buildingdisputestribunal.co.nz/>) and the insolvency service provider in New Zealand, McDonald Vague (<http://www.mvp.co.nz/>). These reports provided information the year of incorporation of a company, times of liquidation commencement and completion, and the causes and payment effects of liquidations. Similarly, the information extracted from High Court proceedings include: time periods of cases filed and judgments given, parties and the

monetary value of disputes, types of payment in dispute, and judgments given. These two documents offered qualitative and quantitative data, and were analysed using appropriate qualitative and quantitative techniques. The techniques used are explained under the data analysis techniques.

The findings of document analyses were used to strengthen the research questions and to answer one of the research objectives partially, that is the nature and extent of payment problems in the New Zealand construction industry. However, the findings from documents analysis were further extended and confirmed with the survey findings in the next phase of the study. The following sections explains the techniques used in the survey.

ii) Questionnaire

Questionnaires are one of the most commonly used data collection techniques within survey research. Saunders et al (2007) suggest that a questionnaire is best suited to a situation where most of the questions are standardized and the researcher is confident that the questions will be interpreted in the same way by all respondents. Further they state the questionnaire is the best tool to be used in descriptive research where the researcher has some understanding of the subject of research prior to data collection, and extending further to draw conclusions from the data collected. On that note, within this current research study the review of literature and preliminary document analyses undertaken provided an understanding of the subject of the research problem. Further, the nature of the research questions, and data needed could also influence the selection of a questionnaire survey for a research study. Given the context where a questionnaire is used together with research questions and the nature of the data needed, the current study employed a questionnaire survey to answer the research questions. The following sub-sections provide explanations on questionnaire development, administration, sampling used for the questionnaire survey, and strategies used to improve the response rate.

Questionnaire development

The questionnaire for this research study was designed by considering both respondents and the research. In relation to the research questions, they were prepared in line with the data needed to answer the research questions and the required analysis techniques. In preparing questions attention was paid to the literature review and previous similar

studies. For example Chilli Marketing (2010) administered a survey among contractors and subcontractors in the New Zealand construction industry to find out non-payment issues to contractors. The objective of the study was to gain an understanding of the existence of non-payment to contractors, cost effects and the causes of payment problems. Although Chilli Marketing's (2010) study had some similar objectives to the current research study, its findings are limited. The current study is distinguished from Chilli Marketing (2010) in terms of its scope and depth. There were many revisions made to the prepared questionnaire after several discussions with the research supervisor and other professional colleagues who are knowledgeable in the subject area. The questionnaire consists of three main sections that addressed the following: demographic information of participants, experience of payment delays and losses, and the effects of insolvency payment. The questionnaire was designed to have a combination of open and close-ended questions. Appendix 1(E) and Appendix 1(F) provide two different questionnaires designed for consultants and constructors. These questionnaires are mainly distinguished based on the way the questions were worded.

Open-ended questions made it easier for respondents to answer the questions without having to spend too much time. In addition, some open-ended questions were included to gather respondents' insights with regards to certain important issues. Each closed-ended question also provided an option of "other" which respondents could use to make comments if they deviated from the list of given choices.

Closed-ended questions included the following types: list, categorical and rating questions. To determine the profile of participants they were given a list of choices from which to select appropriate answers. Conversely, categorical questions were used to collect data about the nature and extent of payment problems in the New Zealand construction industry. These questions had five response categories (very often, often, sometimes, rarely and never). Rating questions were used to get participants' opinions on the importance of factors causing payment problems and the effectiveness of some solutions that could mitigate payment problems. In order to determine the participants' degree of agreement/disagreement in relation to the importance of factors causing payment problems and effectiveness of solutions to mitigate payment problems, a five-point Likertscale was employed. Although scales with three, seven and nine-point levels are used, a five-point scale is normally preferred (Moser & Kalton, 1985; Saunders et al., 2007). This enables participants to spread their views across reasonably limited (5-point) response categories than having to select from a much more limited (3-point) or

unreasonably large number (9-point) of response categories. A 5-point Likert scale ranging from ‘Not at all Important = 1’ to ‘Extremely Important = 5’ was employed to measure the importance of the causes of payment problems. Similarly in order to measure the effectiveness of solutions, a Likertscale of 1-5 representing ‘Not at all effective = 1’ to ‘Extremely Effective = 5’ was used in the study.

Questionnaire administration

According to Saunders et al (2007), questionnaires are classified into several types based on the way they are administered. Figure 4.2 shows the types of questionnaire used in a survey research. As identified in the literature, payment problems cut across the whole of the industry. Thus the expected sample is dispersed across a large geographic area. This means it was impossible to meet individual participants face to face to carry out structured interviews or have them interviewed over the phone. An interviewer-administered questionnaire was therefore eliminated. As shown in Figure 4.2, this study used a self-administered internet questionnaire. The decision to use an internet-administered questionnaire was made after considering the theoretical and practical aspects of administering the survey.

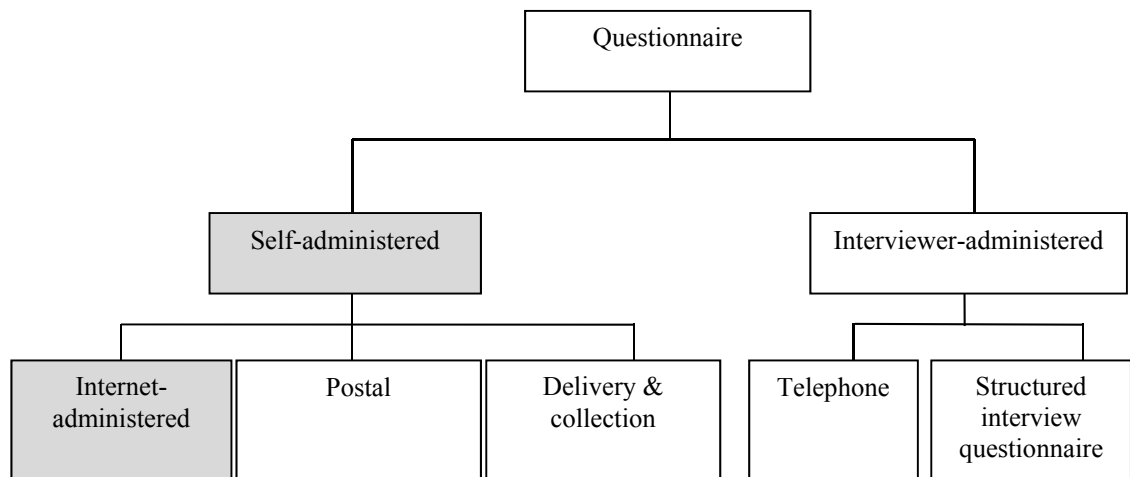


Figure 4.1: Types of questionnaires (Source: Saunders et al., 2007)

From a theoretical point of view, Saunders et al (2007) suggest that the choice of questionnaire is influenced by the following key factors:

- i) Characteristics of the respondents from whom the data is to be collected

- ii) Importance of reaching targeted respondents
- iii) Likely possibility of respondents' answers being contaminated or distorted
- iv) Required sample size for the analysis
- v) Number and types of questions

Table 4.3 shows the differences of these attributes across different types of self-administered questionnaires. According to the important attributes indicated in the table, internet-administered questionnaire was considered to be most favourable for this study. Saunders et al (2007) claim that internet-administered questions, particularly those administered in conjunction with an email ensure the intended respondent answers the questions which in turn ensures the reliability of responses collected over other methods (postal and delivery and collection method). In terms of the characteristics of the respondents from whom the data is to be collected, this study established that prior contact with trade associations and professional institutes was most effective as survey participants could be reached through their trade associations and professional institutes electronically. This confirmed that participants were able to use an internet-administered questionnaire.

The contamination of respondents' answers is another issue that could affect the reliability of data (Saunders et al., 2007). The contamination or distortion of answers appears to be comparatively low with internet administered questionnaires. Further, in terms of the number of questions to be used, an internet based survey offers more benefits than other methods. What matters in an internet survey is the number of screens, not the number of questions. The opportunity to have more questions within each screen or each section of the questionnaire also encouraged the use of an internet based questionnaire for this survey. The questionnaires for the current study were designed with three screens consisting of 32 questions altogether.

Although Saunders et al (2007) suggest that an internet administered questionnaire generally offers a low response rate compared to postal and delivery methods, the current study chose the internet based survey due to other benefits of cost and time saving in data collecting and entering. Moreover, data collection using electronic media offers the opportunity to import the data directly into statistical software and perform required statistical analyses.

Table 4.4: Main attributes of questionnaires (adapted from Saunders et al., 2007)

Attribute	Internet and Internet Mediated	Postal	Delivery and Collection
Population’s characteristics for which suitable	Computer-literate individual who can be contacted by email internet or intranet	Literate individuals who can be contacted by post, selected by name, household, organization etc.	
Confidence that right person has responded	High if using email	Low	Low but can be checked at collection
Likelihood of contamination or distortion of respondent’s answer	Low	May be contaminated by consultation with others	
Size or Sample	Large, can be geographically dispersed		Dependent on number of field workers
Likely response rate	Variable 30% reasonable within organizations/via intranet, 11% or lower using internet	Variable, 30% reasonable	Moderately high, 30-50% reasonable
Feasible length of questionnaire	Conflicting advice; however, fewer ‘screens’ probably better.	6-8 A4 pages	6-8 A4 pages
Suitable types of question	Closed questions but not too complex, complicated sequencing fine if using IT, must be of interest to respondent	Closed questions but not too complex, simple sequencing only, must be of interest to respondent	
Time taken to complete collection	2-6 weeks from distribution (dependent on number of follow-ups)	4-8 weeks from posting (dependent on number of follow-ups)	Dependent on sample size, number of field workers, etc.
Data input	Usually automated	Closed questions can be designed so that responses may be entered using optical mark readers after questionnaire has been returned	

From a practical perspective, the questionnaire was administered among consultants, contractors and subcontractors operating within the New Zealand construction industry. Additionally, architects, engineers, project managers, and quantity surveyors were also targeted to participate in the survey. Prior to administering the questionnaire, and in order to reach research participants, initial contact was made with construction trade and professional associations in New Zealand. The Associations contacted included: New Zealand Contractors Federation (NZCF), New Zealand Specialist Trade Contractors' Federation (NZSTCF), New Zealand Institute of Building (NZIOB), DBH, New Zealand Institute of Architects (NZIA), New Zealand Institution of Civil Engineers (NZICE), Project Management Institute New Zealand (PMINZ), and New Zealand Institute of Quantity Surveyors (NZIQS). Access to contact details of members of these associations was not possible due to privacy reasons. Some of the organizations (NZCF, NZIQS, and PMINZ) suggested sending out the questionnaire electronically to their members along with their monthly e-newsletters while the rest of the organizations did

not support the research anyway to participate in the research. The NZIA provided its members' directory. Besides these organizations, the researcher was able to collect contact details of participants through the New Zealand Yellow Pages and other personal contacts. This enabled the researcher to contact them directly through email.

The early contacts with trade associations and professional institutes suggested that getting a response for this kind of survey within the New Zealand construction industry is a real challenge and is generally very poor irrespective of the type of questionnaire survey employed. It was therefore necessary to do a postal-administered or delivery and collection-administered questionnaire as they could yield a better response rate than an internet administered survey. However, these two modes of administration were not considered as a feasible option, given the constraints of the expected sample from a geographically dispersed area, and the time and financial implications for data collection and data entry. The online tool used to administer the survey was "SurveyMonkey" (<http://www.surveymonkey.com>). Survey Monkey has facilities for designing questionnaires, collecting responses and importing data collected into statistical packages for analysis.

Strategies used to improve the response rate

Baruch & Holtom (2008) argue that the response rate is an important factor in assessing the value of any research findings. Biemer & Lyberg (2003) also suggest that it is the most widely compared statistic for judging the quality of surveys. Survey results with a large non-response rate could be misleading and only representative of those who replied (Kelley et al., 2003). Despite this, it is not unusual for surveys to have low response rate. Achieving a reasonable response rate is one of the challenges that all researchers are commonly confronted within survey research. However, Saunders et al (2007) suggest that a properly designed questionnaire could reduce difficulties regarding response rates to a large extent. Therefore given the importance and constraints in achieving a reasonable response rate, the current study considered the following steps from designing the questionnaire to the completion of data collection.

Designing of questionnaire: The questionnaire was designed with a minimum number of three sections; participants' profile, questions regarding payment delays and losses, and insolvency related payment delays and losses. In addition, within each section, the questions were arranged in a logical order and without any pre-requisites to ensure a smooth flow of questions which enabled respondents to understand each section's

purpose. The sequential order motivated the respondents to answer questions as possible. Questions were written in simple and plain English to ensure there were easily understandable, had no ambiguities, and consumed less time to comprehend. This was achieved through consecutive discussions with the research supervisor and other colleagues in academia and industry. The revised questionnaire was pilot tested among the same group of people to identify any technical difficulties in accessing and answering the questions, completing and collecting responses from the survey, and time taken to complete the survey, etc. Finally, before sending it to targeted participants it was given to a proof reader who is a non-subject matter expert to ensure the questionnaire was free of spelling mistakes, grammatical errors, and use of misleading words.

Invitation to participate and the participant information sheet: three separate survey links (for head contractors, subcontractors and consultants) were sent out to participants with an invitation note explaining the research, access guidelines for responding to the survey, and the time expected to complete the survey. In addition, a participant information sheet (PIS) was attached as the front page of the online survey. A copy of the PIS is given in Appendix 1(D). The PIS provided participants with comprehensive information about the research topic, the purposes and uses of the research output, benefits to participants, time taken to complete the survey, instructions for completing the survey, and the researcher's contact details.

Time allowed to complete the survey and follow-up reminders: The study followed the guidelines suggested for data collection in internet based questionnaires. Saunders et al (2007) suggest that 2-6 weeks is reasonable depending on the number of follow-ups. Accordingly the survey links were originally sent out on 3rd October 2011 with the intended closing date of 15th November. It was planned to send out 2 follow-up reminders in two weeks and the final reminder 2 days prior to closing the survey. However, it was observed through the online system that participants started to respond to the survey by 24th October 2011. This was due to the time taken for survey links to reach participants from the trade and professional associations through their e-newsletters. The survey was therefore kept open for additional 4 weeks till 16th December 2011. Following the start of the survey on 24th October participants were sent two gentle reminders on 15th November and 6th December 2011 through their associations and institutes. Finally the last request was sent on 13th December 2011.

Apart from the above, the survey links were directly emailed to 185 members of NZIA and other 127 research participants identified through personal contacts and Yellow Pages on 11th October 2011. Although it was initially decided to close the survey by 18th November, it was kept open till 16th December 2011 considering the response rate and the immediate response received from participants. Further it was noted that the number of responses increased significantly following the reminder. Two gentle reminders were sent out on 25th October and 15th November 2011. Finally participants were reminded about closing the survey on 13th December 2011.

Another important consideration was given in sending out the survey links initially and follow-up reminders. The second day of the week was chosen to send out the survey links initially as well as follow-up reminders in order to ensure that participants were not too busy to attend the survey. The following were some of the responses received immediately after the survey links and reminders were sent out. Therefore, it was expected that these could have an impact on the response rate.

- i) Some emails bounced due to incorrect addresses, despite being obtained from the latest available directory (NZIA).
- ii) A number of targeted respondents indicated that they were out of the office for their vacation.
- iii) Some respondents stated that they were no longer in the industry, had changed their field or did not have exposure to the research problem being investigated. Some of them directed and referred to persons dealing with the subject area.
- iv) Some completed the survey by the time of receiving the first reminder. Thus they responded that they had already completed it.
- v) Did not have time to complete the survey.
- vi) Some of them indicated that they were self-employed and had no experience regarding the problem being investigated.

Questionnaire sampling and response rate

As discussed previously the sample for the study was mainly drawn from the sampling frame which was the members of trade associations and professional institutes. The questionnaire was administered to the participants directly by the researcher. There was no sampling method used for sending the survey link to participants through trade associations and professional institutes. However, the selection of participants from the

NZIA was done using a simple random sampling of 600 registered architects practicing in New Zealand. Out of this population a sample of 185 architects were drawn by selecting 185 random numbers using a simple random sample. The sample of 185 was obtained using the Cochran (1977) formulas for continuous data (Bartlett, Kotrlik, & Higgins, 2001). The Cochran (1977) formulas for continuous data are given below.

This sample was determined under the conditions of t-value = 1.96 for the alpha level of .05; estimate of standard deviation in the population (s) = 1.25; and acceptable margin of error (d) = .03. The standard deviation in the population was calculated using the number of point on the scale and the number of standard deviations. This questionnaire primarily used 5-point scale. Thus the standard deviation was calculated using $s = 5$ (number of points on the scale)/ 4 (number of standard deviations). This gives the value for standard deviation $s = 1.25$.

Equation 4.1: Minimum sample size (n)

$$n = (t^2 \times s^2)/d^2$$

$$n = \frac{1.96^2 \times 1.25^2}{5 \times 0.3^2} = 267$$

Equation 4.2: Adjusted sample size (N)

$$N = n/1 + \left(\frac{n}{\text{population}}\right)$$

$$N = 267/ (1+267/600) = 185$$

Table 4.4 presents a breakdown of the survey links distributed and responses received for each category of research participants. The organisations were sent out three different links to represent three major industry groups (head contractors, subcontractors and consultants). Overall, 117 responses were received from the 989 sent out. The overall response rate was calculated as a percentage of the total number of participants to whom the survey link was sent out. This gives an overall response rate of 12% for this research. As literature and anecdotally evidenced, it was expected that the response rate would be low. For example Saunders et al (2007) state generally 11% is a reasonable rate for an internet administered survey. Although the overall response rate was low, the survey offered a sufficient sample for the statistical analysis required in

this study. The statistical analysis was performed between groups of participants and the total sample as a group. Further, prior to merging sub-groups (head contractors, subcontractors and consultants), an appropriate statistical test (independent samples t-test) was performed to compare the mean differences between individual groups.

Table 4.5: The distribution of the survey and responses

No.	Medium of distribution	No. of questionnaire distributed	No. of participants attended	No. of usable questionnaires	Response rate (%)
1	NZCF	250	25	15	6
2	NZIQS	350	57	17	5
3	PMINZ	77	59	19	25
4	Direct administration to NZIA members	185	77	32	17
5	Direct administration to selected participants	127	73	34	27
Total		989	293	117	12%

However, it could be arguable that there are systematic differences between responders and non-responders which could invalidate the research findings. Fowler (1988) and Grady and Wallston (1988) argue that the research findings could be valid even for questionnaires with relatively low response rates, if there are no systematic differences between responders and non-responders. Fowler (1988) further clarifies that the non-response bias is the most important factor in assessing the effect of a response rate on the validity of research findings. It is therefore widely recommended that the researcher needs to investigate the non-response bias in order to ensure the validity of research findings (Gehlbach, 1993; Parashos, Morgan, & Messer, 2005).

Armstrong and Overton (1977) suggest that the non-response bias could be tested using the independent samples t-test. The current study tested the non-response bias by dividing the total number of responses (293/117) into 3 groups and ran the independent samples t-test between the first one third of the responses and the last one third. The results of the independent samples t-test is given in the Appendix 3(A). Although there were differences found for a few questions, overall there were no differences between responders and non-responders.

Interviews

Interviews are used to collect in-depth information about a social phenomenon of concern (Saunders et al., 2007). On a similar note, Mack et al (2005) suggest that in-depth interviews are an effective method for collecting people's personal feelings, opinions, and experiences. Further interviews are suitable for addressing sensitive issues that people may be reluctant to discuss in a group forum (Mack et al., 2005). For research purposes, interviews are classified as structured, semi-structured, and unstructured. The following paragraph gives a brief description of each of the interview types and after which it explains the type of interview used in this research study.

Saunders et al (2007) state that structured interviews are used in descriptive studies where the researcher uses a highly standardized and predetermined set of questions to identify the general pattern. Structured interviews are used to collect quantifiable data and referred to as quantitative research interviews. On the other hand, unstructured interviews, described as in-depth interviews are used for exploratory studies where they provide the researcher with depth information about a phenomenon. This is not guided by any prior questions of the researcher. Unstructured interviews are therefore called non-directive and informant interviews, as the interview is guided by the interviewee's perceptions. According to Saunders et al (2007) and Dawson (2002) both semi-structured interviews are non-standardized and qualitative interviews where the researcher aims to probe more about certain issues. This gives the researcher flexibility to cover certain themes and questions, and to incorporate and change questions according to the interview.

As Wass and Well (1994) suggested, it is not uncommon to use interviews, presumably semi-structured or in-depth to validate questionnaire findings. In a similar vein, King (1994) also recommends that an interview is the best method where the researcher has carried out a quantitative study and is seeking for qualitative data to validate and clarify the findings. On that note, this study employed semi-structured interviews to validate and extend the findings of the questionnaire survey and preliminary document analyses. Semi-structured interviews were conducted using subject matter experts (SMEs). This provided the flexibility to modify the questions according to differences in respondents while still covering the same areas of data collection. The interviews had a set of standard open-ended questions prepared, based on the survey findings. In addition, the interviews included some closed and probing questions. The list of indicative questions

used for semi-structured interviews with different groups of SMEs are given in Appendix 1(G-I). Participants for interviews were drawn using the following criteria: experts in the subject of inquiry, high standing in the industry, and sampling technique.

Guest, Bunce and Johnson (2006) suggest that the number of interviewees for an interview is selected using purposive sampling and is often directed by data saturation. According to them, data saturation is achieved by interviewing the first 12 interviewees. The purpose of interviews in this study was to validate the research findings obtained through previous approaches used in the study. Thus the number of participants for interviews was guided by the expertise required to validate the findings rather than saturation in the findings. The expertise of construction dispute resolution, the Construction Contracts Act, construction contracts, construction liquidation, and construction specialized services: trust/escrow service, bonds and guarantees and insurance, were focused on in the selection of participants for the interview. Accordingly 21 personnel from different organizations were engaged in the semi-structured interviews. All interviews except three were face-face with participants. Three of the participants were interviewed over Skype. On average interviews took 45 minutes to an hour. The profile of the participants consisted of key personnel from construction clients, contractor and subcontractor organizations, representatives of construction trade associations and professional institutes, dispute resolution experts, and construction specialist service providers. Detail profile information of the participants employed is given in chapter eight. The interviews were tape-recorded with the consent of the participants to get an accurate account of the conversations, and transcribed using express scribe transcription software.

4.6 Data Analysis

As mentioned previously the research adopted a sequential mixed-methods approach where both quantitative and qualitative data were collected and analysed sequentially. Data collection techniques used in the current study include: document analysis, questionnaires, and semi-structured interviews. These techniques offered both qualitative and quantitative data. The following sub-sections describe the quantitative and qualitative data analysis techniques used in the current study.

4.6.1 Quantitative Data Analysis Techniques Specific to this Study

Quantitative data analysis often involves the use of descriptive statistics and inferential statistics (Fink, 2009). Tan (2002) defines descriptive statistics as measures used to describe or summarise data, while inferential statistics are used to make inferences about a population using a representative sample drawn from it. Descriptive statistics offer central tendency measures of mean, median and mode, and variability measures of range and standard deviation. Inferential statistics include the outcome of statistical tests used for reduction of data, and hypothesis testing to relate the findings to the population (Fink, 2009). The current study used descriptive and inferential statistics tests to analyse the questionnaire responses. In carrying out the statistical tests, the statistical software of SPSS version 18.0 was used. The SPSS is one of the most widely used statistical software programmes for statistical analysis in social science research. The current study chose to use SPSS as it offers statistical solutions to all kinds of analysis, descriptive statistics, bivariate statistics (means, t-test, ANOVA), and factor analysis, which the current study intended to perform. The following sub-sections explain the descriptive and inferential statistics performed in the current study.

4.6.1.1 Descriptive Statistics

As explained previously, descriptive statistics range from central tendency to variability measures. The current study used the most common descriptive statistics of mean and standard deviation, along with frequency distribution, to analyse the responses to categorical as well as rating questions in the questionnaire. Further, the preliminary data collected from documents of construction payment dispute cases and liquidator's reports were analysed using frequencies and graphs. The descriptive statistics for the analysis performed are given in chapters five and six.

4.6.1.2 Inferential Statistics

As the name implies these statistics involve making inferential statements about the population using a representative sample. Under inferential statistics, the current study used two tests: compare means using t-tests and factor analysis. These techniques are described in the next two sub-sections.

Compare means using t-tests

The study used t-tests of independent samples t-test, paired samples t-test, and one way ANOVA to test the statistical differences in mean values of different groups of respondents. The survey collected responses regarding payment delays and losses from different groups of participants, main practitioner groups and their professional affiliations.

An independent samples t-test was performed to find the statistical differences in the mean value of two groups of participants (contractors and consultants). This involved testing the following hypothesis (Gaur & Gaur, 2006). The accept/reject decision in testing hypothesis involves a probability value which is usually considered to be 95% confident that the decision made is right. In other words, there is only 5% chance that the decision is wrong that populations are different. Therefore usually a p-value of less than .05 is considered in rejecting the null hypothesis.

$H_0: \mu_1 = \mu_2$; there is no statistically significant difference between the two groups on the dependent variable where μ_1 and μ_2 are means of two groups.

$H_1: \mu_1 \neq \mu_2$; there is a statistically significant difference between the two groups on the dependent variable.

Similarly the paired samples t-test was performed to find whether the mean values of payment delays and losses are statistically different from one another (Gaur & Gaur, 2006). The paired samples t-test involved testing the hypothesis below. The p-value of less than .05 is considered in rejecting the null-hypothesis that the mean values are equal.

$H_0: m_d = 0$; the mean difference (m_d) between paired observations is zero

$H_1: m_d \neq 0$; the mean difference between paired observations is not zero

ANOVA is used to find the mean differences between two or more groups. The current study employed ANOVA to find the differences among major operational groups of participants (contractors, subcontractors, and consultants) and professional groups (architects, project managers, quantity surveyors, and engineers) in relation to causes of

payment problems and different solutions that could mitigate those problems. Performing ANOVA involved testing the following hypothesis. As with independent and paired samples t-test, ANOVA used the confidence interval of 95% to reject the null hypothesis.

$H_0: \mu_1 = \mu_2 = \dots \mu_k$; all population means are equal.

An alternative hypothesis is that at least one of the means is different.

However, unlike the above tests, ANOVA requires an additional step to be performed, if there are differences between groups. Rejection of the null hypothesis tells us that all population means are not equal, and does not show which group means are different from which others. Therefore a ‘Post-Hoc’ is performed to find the different group(s). This study employed the commonly used test of Tukey-B’s ‘Post-Hoc’.

A further detailed description of the context in which these tests were used in the current study is given in chapter six.

Factor analysis

Factor analysis is another inferential set of statistics used in this study. Factor analysis is used in the current study to identify the most dominant factors causing payment delays and losses in the construction industry. Malhotra, Hall, Shaw, & Oppenheim (2002) suggest that factor analysis, is generally used to capture a limited number of salient variables from a large set of correlated variables. This is an interdependence technique which helps to examine the interdependent relationships between variables (Gaur & Gaur, 2006; Malhotra et al., 2002). Performing a factor analysis requires the following five main steps to be fulfilled.

i) Problem formulation

Problem formulation involves the selection of variables to be included in the factor analysis. Under the current study the factor analysis was performed to find the salient factors causing payment problems. The importance of individual causes was identified using a 5-point scale. Malhotra, et al. (2002) suggest that the application of factor analysis requires the type of data to be either interval or ratio scale data. Although there are arguments for and against the data type to which the Likert scale belongs, this study considered the Likert scale as interval data according to anecdotal evidence (subject

matter expert - statistical). For example Jacoby and Matell (1971) argue that Likert scale is an interval scale where it is widely used to measure attitude and image. On the other hand, Hodge and Gillespie (2003) point out that treating the Likert scale as either interval or ratio is not clear.

Apart from the above, the use of factor analysis needs an adequate sample size to be used. Generally, the accepted sample size is to be at least four or five times as many observations as there are variables (Gaur & Gaur, 2006). Altogether 113 responses were obtained for this question which consisted of 28 factors causing payment delays and losses.

Furthermore, factor analysis involves testing of the null hypothesis that variables are uncorrelated in the population. This is done using Bartlett's test of sphericity. A large value of the test statistic favours the rejection of null hypothesis. If the null hypothesis can be rejected then the use of factor analysis for the situation is appropriate.

Similarly Kaiser-Meyer-Olkin (KMO) statistic is a measure that provides an indication of sampling adequacy. Small values of the KMO statistic indicate that the correlations between pairs of variables cannot be explained by other variables and thus factor analysis may not be appropriate. The KMO statistic (>0.50) is large and allows factor analysis (Gaur & Gaur, 2006; Malhotra et al., 2002).

ii) Factor extraction method

Gaur and Gaur (2006) suggest that there are two approaches commonly used to extract the underlying factors for the analysis: Principal components analysis (PCA) and principal axial factoring (PAF). According to Gaur and Gaur (2006), both generate similar results in most cases and differences only appear on the mathematical nature of the analysis. PCA, in general, is the preferred method if the purpose is simply to reduce the number of variables, while PAF is preferable for a situation where the research is designed based upon a theoretical consideration. The current study has used the PCA method in extracting the most appropriate factors causing payment delays and losses.

iii) Determining the number of factors

A small number of factors need to be extracted to summarize the information contained in the original variables. There are two different approaches available to select a few variables: Eigen value and screen plot (Gaur & Gaur, 2006). For this study the number of variables to be considered for the factor analysis was selected based on eigen values.

The variables with eigen value greater than 1.0 were retained. Gaur and Gaur (2006) suggest that an eigen value of less than one explains less variance than a single variable and hence should not be considered as a meaningful factor.

iv) Rotation of factors

The output of factor analysis is represented by a factor matrix (component matrix). The coefficients and factor loadings represent correlations between the factors and variables. A coefficient with a large absolute value indicates that the factor and the variable are closely related. This coefficient of the factor matrix is used to interpret the factors. In order to ensure the reliability and internal consistency between items (in the factor analysis) which make up the factors, Cronbach's alpha reliability coefficient was used. Cronbach's alpha reliability coefficient value of above .70 is considered as a reasonable test of scale reliability (Gaur & Gaur, 2006).

This study followed the aforementioned steps and performed the factor analysis in finding the most inter correlated variables and thereby finding a small number of variables which cause payment delays. The results of the factor analysis are given in chapter six.

4.6.2 Qualitative Data Analysis Techniques Specific to this Study

In literature, qualitative data is analysed using thematic analysis, discourse analysis and content analysis. Amongst these methods, thematic analysis, which enables data to be analysed under themes, is considered highly qualitative compared to content and discourse analysis. Further, thematic analysis is widely used and forms the basis for other methods of qualitative analysis (Braun & Clarke, 2006). Thematic analysis is recognized in literature for its flexibility over discourse and content analysis as it does not fall into any extreme epistemological position (Braun & Clarke, 2006). Hence in accordance with pragmatism, the epistemological position adopted in the current study, thematic analysis was chosen for the analysis of textual data. The section below describes how thematic analysis is used in this study.

4.6.2.1 Thematic Analysis

This research study collected qualitative data through open-ended questions in the questionnaire and semi-structured interviews with SMEs. Semi-structured interviews were organised under themes identified based on the questionnaire findings, in line with research questions. Further, responses to open-ended questions were also incorporated under the themes identified in the SMEs interviews. Under each theme, the views of different participant groups were presented separately in order to compare and contrast their views regarding the themes. Themes identified and the views of respective participants are given in chapter seven.

4.7 Credibility of Research Findings

Good quality research needs to ensure that its findings are valid. According to Fellows and Liu (2003), successful research depends on the validity and applicability of its findings and conclusions. Traditionally, quantitative researchers measure the quality of research using the constructs of validity and reliability (Fellows & Liu, 2003). However, Saunders et al (2007) claim that the credibility of research findings is assessed using the constructs of validity, reliability and generalisability. The following sub-sections briefly explain these constructs and how they are achieved in the current study.

4.7.1 Credibility of Research Findings in General

4.7.1.1 Validity

According to Amaratunga et al (2002), a measurement instrument is valid if it measures what it intends to measure. Therefore the validity of research findings depends on two issues: the accuracy of the instrument and whether the instrument measures what it seeks to measure. De Vaus (1991) argues that the validity of a measuring instrument depends on how we have defined the concept it is designed to measure. Yin (1994) and Gill and Johnson (1991) indicated that the measure of validity has two dimensions, classified as internal and external. Internal validity ensures that the researcher investigates what he claims to be investigating. External validity refers to generalisation

where the research findings can be used beyond the immediate research sample or setting in which it took place.

4.7.1.2 Reliability

Saunders et al (2007) explain that reliability deals with the consistency of research findings offered by data collection methods and techniques used. It measures the extent to which a test or procedure produces similar results under constant conditions on all occasions (Yin, 1994). Amaratunga et al (2002) define that reliability is essentially repeatability. A measurement procedure is said to be highly reliable if it produces the same results in the same circumstances time after time, even when employed by different people. In other words reliability ensures that the findings are unbiased and free from errors. Saunders et al (2007) claims that reliability can be assessed thorough the following three approaches.

- i) **Test re-test:** This involves testing the correlation of questionnaire responses at two different time periods under similar conditions. Often it is recommended to use this method with other methods as it is not practically possible to get respondents to answer a similar set of questions a second time.
- ii) **Internal consistency:** This refers to correlating the responses to questions with each other in a questionnaire. This therefore measures the consistency of answers across either all questions or sub groups of questions of the questionnaire. Studies have mostly used Cronbach's alpha in finding reliability through internal consistency.
- iii) **Alternative form:** This ensures the reliability of questions by comparing the responses to an alternative form of the same question or group of questions.

4.7.2 Achievement of Credibility of the Current Research Findings

This research primarily employed a questionnaire to investigate the extent of payment problems in the construction industry and to find solutions to mitigate these problems. In relation to questionnaires internal validity refers to their ability to measure what they are intended to measure (Saunders et al., 2007). Internal validity of a questionnaire is considered in terms of content validity, criterion related validity, and construct validity. According to Saunders et al (2007), content validity deals with the extent to which the

questionnaire provides an adequate coverage of research questions. Saunders et al (2007) state criterion related validity is a part of the internal validity where it relates to the extent to which questions in the questionnaire predict the reality of the research questions or what they are intended to measure. Construct validity refers to how well the presence of constructs (i.e. attitude scales, aptitude scales) are measured by the questions in the questionnaire (Saunders et al., 2007).

In terms of the current research, content validity of the questionnaire was achieved by careful checking of its questions. The questionnaire was designed carefully to ensure the responses to questions answered the research questions. The questions were prepared according to the research objectives, after a thorough literature review. Questionnaire was designed in three sections and questions were set within each section in a logical order in line with the research questions. The questionnaire had several revisions after discussions with the research supervisor and academics knowledgeable within the subject area. Subsequently the questionnaire was pilot run among experts in the field to obtain their opinions on the questions. The feedback on pilot testing ensured that the data collected through the questionnaire answered the research questions. Criterion and content-validity were not considered in this research as they were not appropriate.

Saunders et al (2007) and Denscombe (1998) state that the use of multi-methods for investigating a given phenomenon ensures the validity of research findings. On that note, the current study used a preliminary investigation into documents related to payment issues and then these findings were extended with the questionnaire survey. The findings from both were triangulated and validated using SMEs.

In this research semi-structured interviews were carried out for the purpose of validation of the findings of the survey and secondary data analyses. In order to ensure the trustworthiness of interview responses the following steps were taken.

- a) Generally reliability in interviews is subject to standardization of questions and information provided by respondents. As this was a validation interview, indicative questions for the interview comprised a set of standardized questions and questions specific to the interviewees' expertise based on the survey findings. Further participants of a sufficient number (21) were drawn from persons in high standing in the industry, having a sound background in the subject of enquiry, representing the

construction trade, and from professional organizations (see Table 7.1 for participants' profiles in chapter seven).

- b) To improve the quality of the interview, participants were sent a participant information sheet at the time of invitation to participate. This confirmed that suitable participants were selected. In addition a brief description about the research was given to participants at the commencement of the interview. Further, the participants' personal profiles (profession, number of years of experience, field of specialization, professional involvement) were obtained.
- c) In order to prevent loss of data, the raw nature of the information given by interviewees and any mixing of data from different interviews, the interviews were transcribed as soon as possible after their completion.

In terms of reliability, the current study did not use the test-retest approach as the survey was anonymous in addition to difficulties in reaching the participants a second time. Moreover, the concept of using an alternative form of questions was also not possible as it would increase the length of the questionnaire unnecessarily. The current study therefore used the participants' profile information as a measure of reliability. Participant profile for the questionnaire survey consisted of the number of years of experience, number of projects undertaken and types of profession. As indicated in section 6.2, more than 60% of the participants have more than 25 years experience, and 85% have undertaken over 50 projects. Further, the composition of the profession indicates equal responses across different professions. This indicated unanimity in findings and thereby ensured the reliability of the findings.

Generalization of research findings was ensured through proper sample selection. The sample for the survey was designed to represent the population covering the whole of construction industry in New Zealand. Although the response rate was low (12%), it was adequate to perform statistical analyses and consisted of different professionals and operational groups. The statistical analysis performed between different groups of participants indicated that there were no significant differences in terms of findings. Further findings from the survey were validated using SMEs. SMEs were drawn from representatives of leading construction companies, construction trade and professional organizations, and experts from other subject areas: construction law, arbitration and adjudication, and liquidation.

4.8 Research Ethics

Adherence to ethical principles needs to be as much of a primary concern of the researcher as research objectives (Mack et al., 2005). Saunders et al (2007) defines ethics as the behaviour of a researcher towards research participants or people affected by the research. This includes moral principles and norms or standards of behaviour that guide moral choices about our behaviour and our relationships with others who participated in the research (Mack et al., 2005; Saunders et al., 2007). These ethical principles and guidelines differ according to organizations and institutions based on cultural and social contexts. This research study sought approval from the Auckland University of Technology Ethics Committee (AUTECH) prior to commencement of data collection. The copy of the ethics committee's approval (Reference number: 11/163) is attached in the Appendix 1(A). The following sub-sections briefly explain the way the key ethical issues were addressed in this research study.

AUTECH requires the researcher to follow the research protocols of the "Treaty of Waitangi" which involves three principles: partnership; participation; and protection. These principles of treaty of Waitangi (partnership, participation and protection) were considered in the research design. However, the research did not involve any Maori participants or any particular social or cultural groups.

(a) **Consent of participants:** The consent of participants is one of the primary concerns when undertaking the research. The participant's consent for the research study was sought using a consent form, a copy of it is given in the Appendix 1 (B). The consent to participate in the interview was sought from SMEs at the time of invitation by sending a participant information sheet and indicative questions for the interview. A signed copy of the consent form was obtained from interviewees at the time of interview. With the consent of participants, interviews were tape recorded. With the online survey, completion of the questionnaire survey was considered as indicating the participants' consent. Participants were informed by PIS. The PIS gave participants information about the nature of the research project, the purpose of the study, instructions and guidance on accessing and completing the questionnaire, and the time expected to complete the survey. All participants were made aware that their participation was voluntary and could be withdrawn at any stage without any negative consequences.

- (b) **Privacy and Confidentiality:** The research employed an online questionnaire survey as the primary data collection technique. The URL link to access the questionnaire was emailed to participants directly by the researcher as well as through their representative organizations. Once the survey was completed, all the data was collected and downloaded to the researcher's personal computer for the analytical purposes. The PDF version of the survey results was printed and kept confidential. The online survey tool used Survey Monkey, considers the security and privacy of data collected very seriously, and kept the data collected private and confidential. The system offers an enhanced secure sockets layer (SSL) encryption to the survey link. This protected the survey links and survey pages. The information obtained from interviews with SMEs was kept in strict confidentiality. The interviews were tape recorded and transcribed by the researcher, and the consent forms and transcripts were kept under lock and key. Personal information about SMEs is not revealed in the final thesis.
- (c) **Minimisation of risk:** The research involved no significant moral or physical risks except minor emotional risks to participants in recalling experiences on past projects. Furthermore, the participants' consent was sought by providing them with a participant information sheet and consent form. Participation was voluntary and participants were allowed to withdraw at any time. Information about access to the online system was fully explained in the participant information sheet.
- (c) **Limitation of Deception:** Participants were given the true nature of this research in terms of its purpose, benefits, and the use of the participants' information and responses given.

4.9 Summary

This chapter has presented the research methodology adopted for the current research study along with an overview of research methodology in general. The chapter explained the position of the current research in terms of research philosophy, and the research approaches and strategies adopted. Further, data collection and analysis techniques used for the current study, measures taken to ensure validity of the research findings, and ethical principles followed are also discussed.

The next chapter presents the results of the preliminary investigations carried out to understand the nature and extent of payment problems within the New Zealand construction industry.

CHAPTER FIVE

Data Analysis and Results – Preliminary Investigations

5.0 Introduction

This chapter presents the results of the preliminary investigation carried out to explore the extent and nature of payment problems in the New Zealand construction industry. The preliminary investigation involved analysis of two key documents. The first is liquidation information contained in Liquidators' reports. While the second document analysis covers information obtained from High Court proceedings. These two documents were considered for the preliminary investigation as they seem to be the origin of payment related issues in New Zealand. The document analyses are presented under two parts: analysis of Liquidators' reports and analysis of construction payment disputes.

The first part of the chapter provides the analysis of the Liquidators' reports mainly in relation to payment effects on unsecured creditors of construction companies, the status of amounts owed to trade creditors in the completion of liquidation proceedings, and reasons for liquidation of construction companies. The results of the construction payment disputes analysis are presented in the second part of the chapter under subsections covering parties in disputes, monetary value of disputes, nature of payments in disputes, status of payment in disputes, and strategies used to remedy payment delays and losses. Finally a summary is provided for the chapter.

5.1 Preliminary Investigation One: Analysis of Liquidators' Reports

This section presents the results of the preliminary investigation carried out into liquidation of construction companies. The primary source of information for this preliminary investigation was obtained from published Liquidators' reports available on the website of one of the insolvency and business recovery specialists (<http://www.mvp.co.nz/>) in New Zealand. The information obtained from the

Liquidators reports include: date of incorporation of companies, date of commencement and completion of liquidation, nature of the business, types of liquidation, amount owed to creditors and the reasons for liquidation. The following sections present the results of the analysis performed on each of these sets of information.

5.1.1 Profile of Liquidated Construction Companies

This section outlines the profiles of construction companies that went in to liquidation. Table 5.1 provides a summary of the profiles of information of companies that were liquidated. The reports provided information on liquidations of companies operating within three main sub-sectors of the New Zealand construction industry. Although a total of 81 companies were liquidated, the analysis considered 65 companies comprising 22 liquidated companies in the property development (PD) sub-sector, 27 in general construction (GC), and 16 in construction trade services (CTS). Sixteen companies were excluded from analysis due to incomplete information. Further analysis of the nature of business of these liquidated companies reveals that all property development companies considered were involved in property development while the general construction companies were engaged in construction of both residential and commercial buildings. In the case of construction trade services, the companies undertook a variety of trade services which included: Alterations and renovations, concrete laying and precast concrete construction, waterproofing, bricklaying, cladding and building services, designing and installation of air conditioning, excavation and earth moving business, drainage contractors, flooring, and painting and water blasting.

Under all three sub-sectors, majority of the companies were incorporated between 2000-2005. However, around 30% of companies in the property development sector and construction trade services had been established more recently. On the other hand an equal percentage of the companies in the above two categories were established before the year 2000 in the general construction category. Overall it can be seen that around 70% of companies in all three categories that went into liquidation were established within 9 years from 2000 - 2008. It therefore seems that the age of the companies did not significantly influence their liquidation.

In terms of liquidation commencement time, more than 50% of the companies in all three categories were liquidated during 2008 - 2009. Interestingly all companies in the

property development sector were liquidated after the year 2008, while about 60% of both general construction and construction trade service companies were liquidated after that same year.

The analysis of liquidation completion times shows that about 70% of the liquidation proceedings were completed during 2009 - 2010. Only a few companies in general construction (19%) and construction trade services (5%) had their liquidation proceedings completed in 2008. It should be noted that the liquidation completion time is a vital piece of information in deciding the status of payment; that is whether the payment is delayed or lost fully or partially to construction parties. The real status of availability of payment to creditors are realised only upon the completion of liquidation proceedings.

Table 5.1: Profile of construction companies liquidated

		Property Development (PD)		General Construction (GC)		Construction Trade Services (CTS)	
		Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
Company incorporation (Year)	Before 2000	3	11	11	32	4	20
	2000 - 2005	14	52	15	44	8	40
	2005 - 2008	9	33	4	12	6	30
	N/A	1	4	4	12	2	10
	Total	27	100	34	100	20	100
Liquidation commencement (Year)	Before 2008	-		14	41	7	35
	2008	11	41	9	26	6	30
	2009	15	56	9	26	6	30
	2010	1	4	2	6	1	5
	Total	27	100	34	100	20	100
Liquidation Completion (Year)	2008	-		6	19	1	5
	2009	10	37	11	35	9	45
	2010	12	44	10	32	6	30
	N/A	5	19	4	13	4	20
	Total	27	100	31	100	20	100
Types of liquidation	Voluntary	19	70	25	74	13	65
	Involuntary	7	26	7	21	7	35
	N/A	1	4	2	6	-	-
	Total	27	100	34	100	20	100

Another important feature of companies that went in to liquidation is the type of liquidation or in other words the nature of liquidation. According to the Companies Act 1993, when a company becomes insolvent it can be placed into liquidation by one of two ways: Upon the appointment of Liquidators by a special resolution of those shareholders entitled to vote and voting on the question, or a creditor, or upon a High

Court order following an application to the Court by a creditor of the company (<http://www.business.govt.nz/companies>). The former is known as a voluntary liquidation while the latter refers to an involuntary liquidation. The analysis of Liquidators' reports showed that most of the companies (about 70%) under all three categories went into voluntary liquidation. The primary purpose of this preliminary investigation was to find the extent of payment problems in the New Zealand construction industry from available sources prior to the survey among construction parties. In that sense, the analysis of Liquidators' reports focused on information provided in the reports in relation to losses to construction parties in liquidations, and the causes for company liquidations which are the key concerns in liquidations. A detailed analysis of these two key issues is explained in subsequent sections.

5.1.2 Payment Effects on Construction Companies

The payment effects on unsecured creditors due to liquidation of construction companies are identified based on the information provided in the Liquidators' reports by determining the amount owed to creditors. The analysis of the Liquidators' reports show that liquidation has effects on a variety of creditors. These creditors fall under three categories: secured, preferential and unsecured. According to the Companies Act 1993, secured creditors are paid out of the proceeds realised because they are generally saved by retention of title claims or secured interest over goods or equipment supplied. These personal securities over goods need to be registered under a Personal Property Securities Register (PPSR) to be effective. Therefore it is apparent that in liquidation unsecured creditors are more adversely affected than secured creditors. Unsecured creditors are further classified as trade creditors and other unsecured creditors. Construction parties are normally unsecured trade creditors of construction companies. Hence in finding the cost effects on construction parties due to liquidations, the amount owed to trade creditors shown on the Liquidators' reports was considered as this could be used as proxies to represent payment delays and losses to construction parties. The following sub-sections present the analysis of amounts owed to trade creditors in the liquidation of the three major categories (property development, general construction, and construction trade services) of companies identified previously.

5.1.2.1 Amount Owed to Trade Creditors in Liquidation of Property Development Companies

Figure 5.1 shows the distribution of amounts owed to trade creditors due to property development companies that have gone into liquidation. The analysis shows that more than 50% of the companies owed less than NZ\$10k to their trade creditors. Eighteen percent owed from NZ\$100k to NZ\$200k; 14% owed NZ\$10k-50k; 9% owed above NZ\$200k, while a small percentage (4%) owed between NZ\$50k to NZ\$100k.

Detailed analysis of the amount owed by companies falling below the NZ\$10k range shows that nearly 60% of the companies owed between NZ\$1k and NZ\$5. This is comparatively insignificant. Another 25% owed from NZ\$5k to NZ\$10k. It is observed that the amount owed to trade creditors is on average nearly 15% of the amount owed to all unsecured creditors.

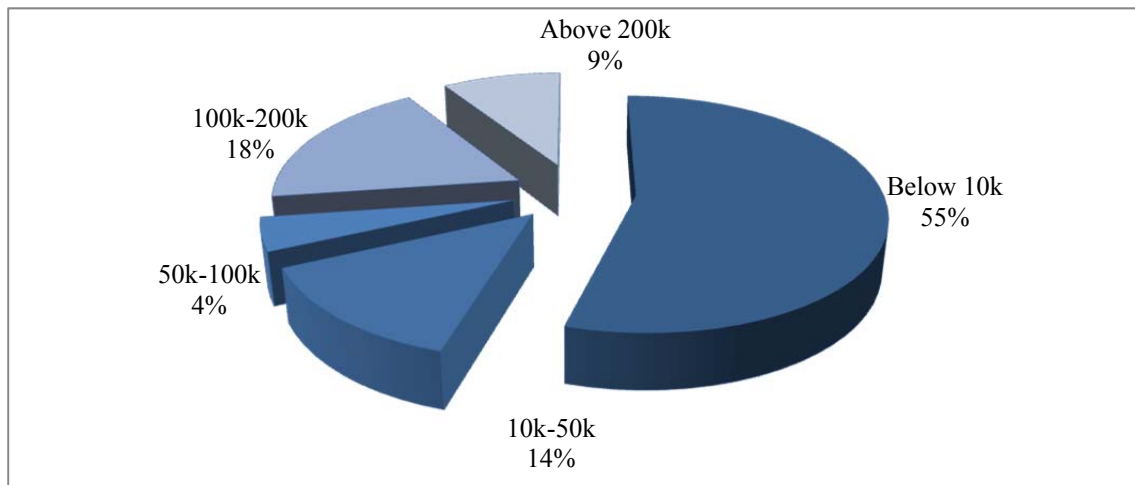


Figure 5.1: Distribution of amount owed to trade creditors by property developers

5.1.2.2 Amount Owed to Trade Creditors in Liquidation of General Construction Companies

Unlike with property development companies, the amount owed to trade creditors by general construction companies varies from below NZ\$100k to above NZ\$1,000k. This is depicted in Figure 5.2. About 37% owe between NZ\$100k to NZ\$500k; while 30% owed less than NZ\$100k. Nearly half of the percentage of the companies in the above two ranges owed between NZ\$500k and NZ\$1,000k and above NZ\$1,000 respectively. The analysis shows that on average the amount owed to trade creditors were 78% of total amount owed to unsecured creditors. This is an indication of the significance of the

effect that the liquidation of companies in general construction have on the parties down the contractual chain.

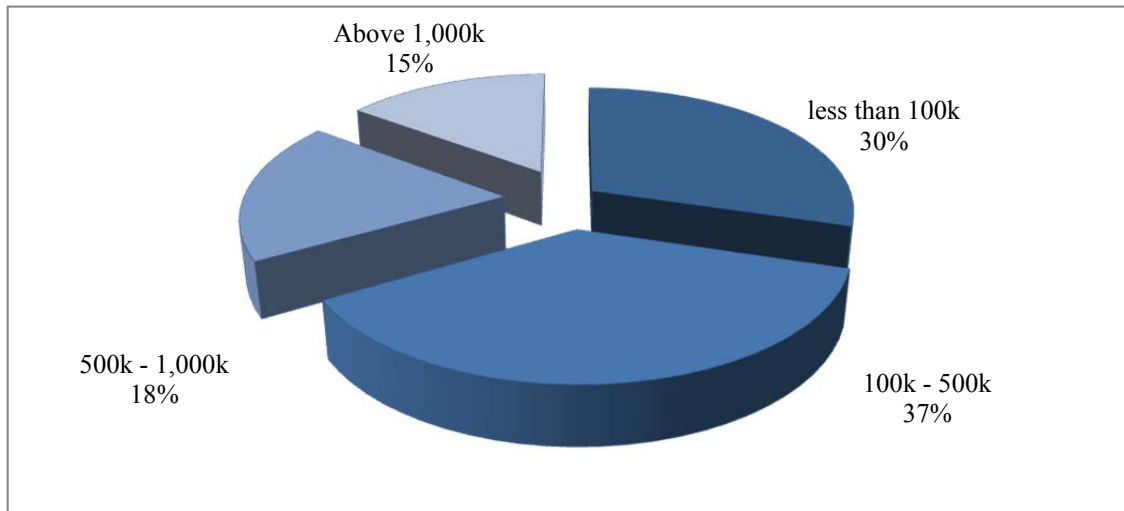


Figure 5.2: Distribution of amount owed to trade creditors by general construction companies

5.1.2.3 Amount Owed to Trade Creditors in Liquidation of Construction Trade Services

Figure 5.3 shows a breakdown of the amounts owed to trade creditors by companies in construction trade services. In this case the largest percentage, 56%, owed less than NZ\$100, while 25% of companies owed between NZ\$100k to NZ\$200k, and the remaining 19% owed above NZ\$200k. A further analysis of the 56% that owed below NZ\$100k shows that 67% of them owed between \$50k and NZ\$100k. It is noted that on average, the amount owed to trade creditors was 66% of the amount owed to total unsecured creditors. This is significant, although lower when compared to companies in general construction above.

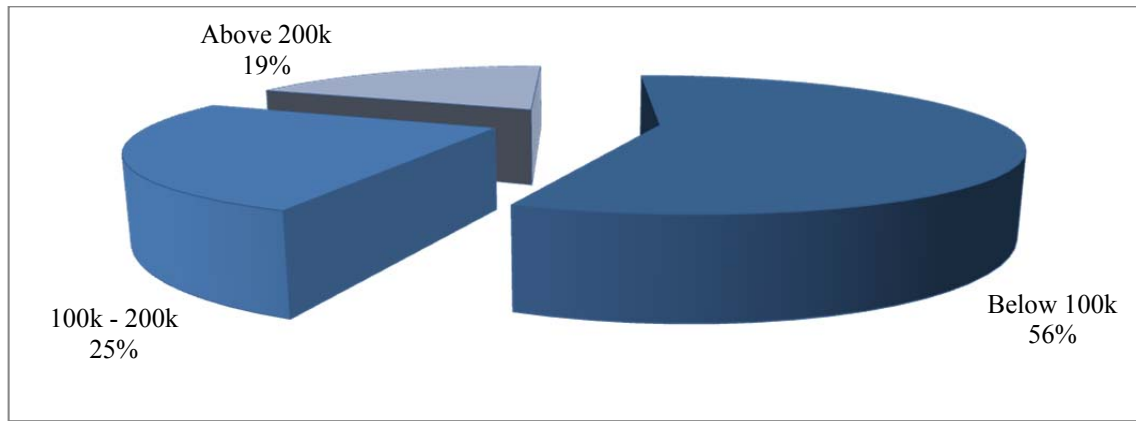


Figure 5.3: Distribution of amount owed to trade creditors by construction trade services

5.1.2.4 Amount Owed to Trade Creditors by All Companies

This section presents the cost effects on creditors by the combination of all the sub-categories. Figure 5.4 summarises the losses experienced by trade creditors of property developers, general construction and construction trade services companies. The amounts owed to creditors vary from below NZ\$50k to above NZ\$200k. A significant percentage (nearly 70%) of property developers owed below NZ\$50k while above 50% of general construction companies owed above \$200k. Creditors to construction trade services companies were mostly owed between NZ\$50k and NZ\$100k. The figure shows that financial losses to creditors of liquidated general construction companies were more significant than those of construction trade services and property developers.

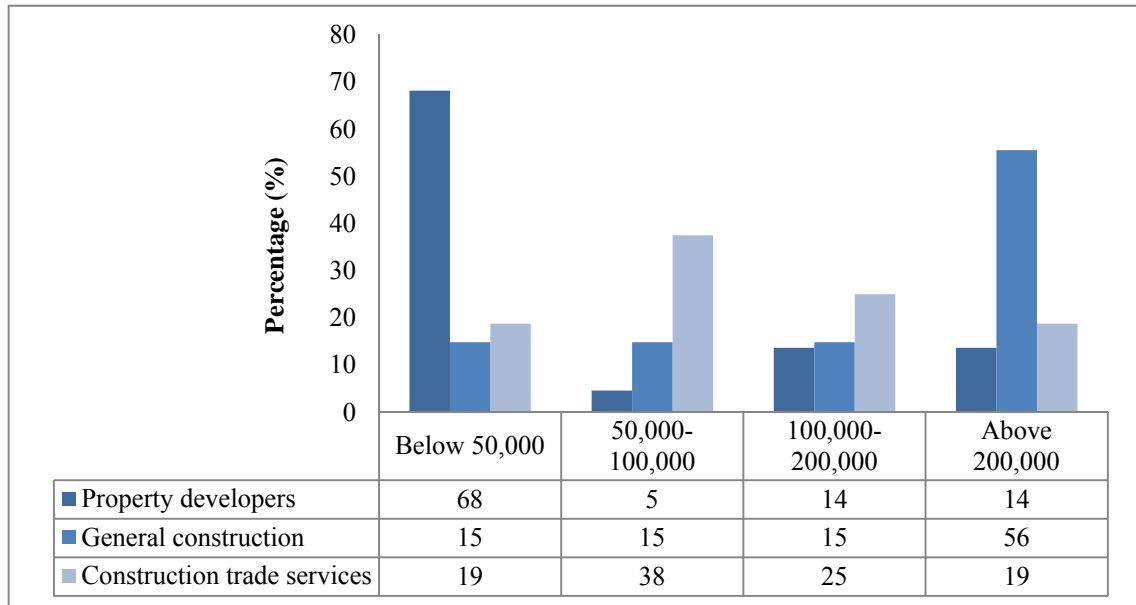


Figure 5.4: Amount owed to trade creditors by companies under different sub-sectors

Although the analysis shows the distribution of cost effects to creditors of companies that went into liquidation, the actual effects are realised only upon the completion of liquidation proceedings. At the end of liquidation proceedings Liquidators determine the amounts to be distributed across creditors. The actual status of the cost effects whether it is full or partial loss, delays access to proceeds during the time taken to complete the liquidation proceedings. On this note, the next section presents the analysis of status of payments to creditors based on these two variables: the proceeds available within the company, and the time taken for liquidation proceedings to complete.

5.1.3 Status of payment to Creditors after Liquidation Proceedings

The Liquidators’ final reports indicate the status of payment to unsecured creditors as either no funds or pro-rated amount is available. Table 5.2 provides a summary on the status of payment to trade creditors based on the information collected from final reports of Liquidators for companies under the main three categories considered in this study. The analysis shows that among the liquidated property development companies, only one company (5%) partially paid (11.89 cents per dollar) its creditors; while a large percentage (77%; 17 out of 22) had no funds available to pay their creditors. The remaining 18% had either no trade creditors or did not disclose the amount they owed

their trade creditors. The only company that managed to pay partially, paid its creditors 6 months after the liquidation process was completed. Evidently the time lag between the liquidation proceedings and final settlement is a compounding and unnecessary delay. Companies in the general construction category did not fare any better in honouring trade creditors after liquidation proceedings. A total of 27 companies that entered liquidation were unable to pay their trade creditors, even partially. One company in the construction trade services category paid its trade creditors fully; about 20% managed to pay a pro rata amount (20 cents per dollar); and 75% (12 out of 16) were unable to pay their creditors at all.

Table 5.2: Status of payment to trade creditors after liquidation process complete

Nature of business	Number of companies liquidated	Number of companies paid to unsecured creditors (%)	Status of payment to unsecured creditors
Property developers	22	5%	Partially paid
		77%	No payment at all
		18%	Failed to disclose the amount owed to trade creditors
General construction	27	100%	No payment at all
Construction trade services	16	6%	Fully paid
		19%	Partially paid
		75%	No payment at all

Although it can be observed that 5% of developers and about 25% of construction trade service companies partially or fully paid their creditors, the creditors had to wait until the liquidation proceedings were completed to receive any payment. Thus there was a delay in payment to creditors. And in order to determine the duration of the delay, the time taken to complete the liquidation proceedings was analysed. The time taken to complete liquidation proceedings was determined as the time difference between the commencement and completion of those proceedings. Figure 5.5 shows the distribution of time taken for these voluntary and involuntary liquidations.

In the majority of cases, liquidations both voluntary (53%), and involuntary (32%), took 12-24 months to complete. Twelve percent of voluntary and 27% of involuntary liquidations took longer than 24 months however. Thus most liquidations took over a year to complete. Voluntary and involuntary liquidations that took 6-12 months to complete were 24% and 27% respectively, while those that were completed is less than

6 months were 12% of the total of voluntary, and 14% of involuntary liquidations. However, detailed examination of information extracted from the Liquidators’ reports show that on average liquidation proceedings took 18 months to be completed. The time period for complete proceedings varied from a minimum 2 months to a maximum of 72 months over the 4-year period (before 2008 - 2010) investigated. Further examination of the reports shows that the time taken seemed to be shorter for property developers, perhaps because these were usually smaller companies, and the amounts in contention were comparatively lower. Liquidation proceedings took an average 11 months to be completed for property developers. The time taken for liquidation proceedings for construction trade services and general construction companies were longer, with an average of 19 and 25 months respectively.

The analysis of the reports indicate that voluntary liquidation proceedings took longer because of the investigations required into the company’s accounts and reports, the realisation of all assets owned by the liquidated company, and collection of monies from trade debtors and others. Out of 65 companies analysed, only a single company paid its creditors fully, while another 4 paid on a pro-rata basis. The creditors of the remaining companies received no payments at all from liquidation proceedings. The five companies which paid their creditors partly or fully took an average of 18 months after the commencement of the liquidation process do so. Thus there is clear evidence of payment losses and delays experienced by construction parties down the contractual chain due to insolvency of the upper tier parties in construction.

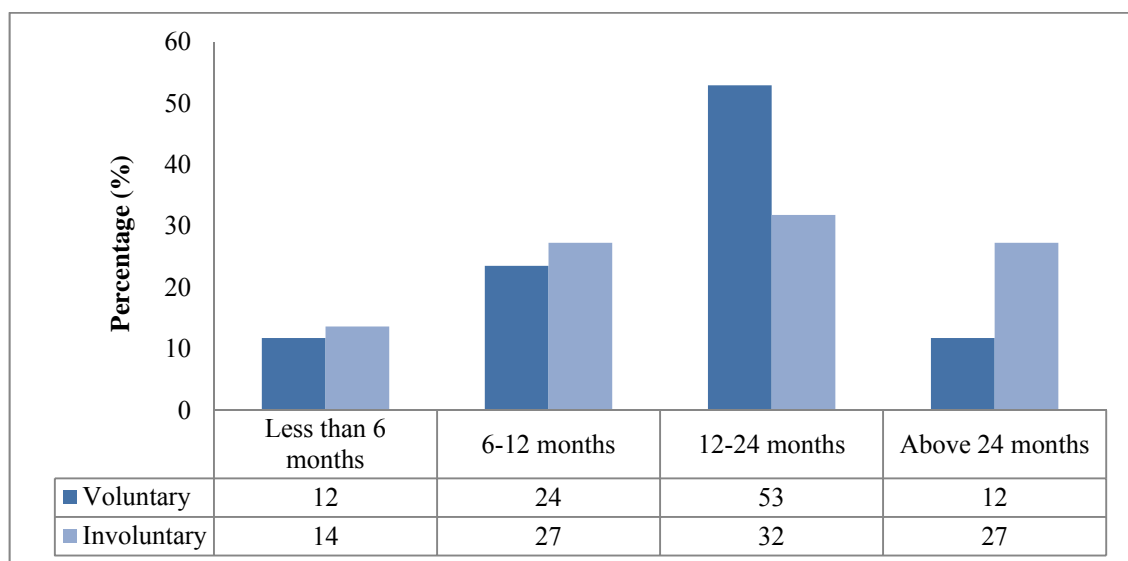


Figure 5.5: Time taken in voluntary and involuntary liquidation proceedings

5.1.4 Reasons for Liquidation of Construction Companies

Table 5.3 gives a summary of the reasons for liquidations extracted from the Liquidators' reports for 65 construction companies. The reasons are arranged according to their frequency rates. These were calculated based on the number of times a particular reason appeared in the Liquidators' reports. In other words, the frequency rates represent the number of times companies have experienced liquidation due to a particular reason. Companies were primarily liquidated voluntarily and involuntarily. The analysis of Liquidators' reports show that most of the companies, 20 out of 22 property developers, 24 out of 27 general construction and 13 out of 16 construction trade services, went into voluntary liquidation within the period examined. As shown in the table voluntary liquidation primarily resulted from cash flow difficulties and financial losses due to disputes between shareholders, creditors, etc. As with voluntary liquidations, some of the companies were involuntarily liquidated because of disputes over financial issues and disputes between creditors, dishonest conduct of directors, and receivership and liquidation of related companies.

It can be seen that the major reasons for liquidation amongst the three categories: property developers, general construction (GC) and construction trade (CT), were downturn in the construction market, financial losses, liquidation of related companies, and other reasons. Further examination into financial losses to companies revealed that non-payment, a drop in house prices and inability to collect money owed by debtors and other bad debts were the common reasons for liquidation in all categories. Though drop in house prices caused financial losses, this reason is closely linked to general economic downturn. Regarding other reasons, contract failures and cost overruns, no assets in the company, and director's personal health condition, were other common reasons for companies in all three categories to enter liquidation.

The analysis shows that cash flow difficulties and disputes and legal issues such as payment delays due to disputes, disputes over bad debts, disputes between directors, shareholders, and creditors, moderately account for liquidations in the construction industry. The reasons why cash flow difficulties result in liquidation are evenly spread amongst a number of factors such as high growth of companies in the short term, delay in progress payments, and lack of ability to secure contracts.

Finally, the general economic downturn and dishonest conduct of directors were the least contributing reasons for liquidation of construction companies. Generally it could be expected that business activities are influenced by conditions within the economic environment in which they operate. However, analysis of Liquidators' reports showed that only 4 companies out of 65 gave the economic downturn as the main reason for their failure. Further examination of the Liquidators' report led to the conclusion that the reasons such as downturn in the construction market, financial losses due to bad debts, absence of assets in the company, contract failures and cost overruns, and directors' personal health condition were common to all three categories.

5.1.5 Concluding Remarks

This section has presented the results of the analysis into Liquidators' reports for construction companies under three different sub-sectors. The analysis has focused on the key issues of payment effects on unsecured creditors, time taken to complete liquidation proceedings, and the reasons for liquidations. The analysis has shown the magnitude of payment effects due to insolvencies. In relation to the nature of payment effects, most of the companies examined caused losses to their creditors. The findings of the investigation indicate that insolvency payment effects are prevalent in the construction industry. The next section presents the status of payment problems in construction by analyzing payment disputes.

5.2 Preliminary Investigation Two: Analysis of Construction Payment Disputes

This section presents the results of an analysis performed on construction payment dispute cases filed in the High Court of New Zealand. As discussed under section 2.5.2 of chapter 2, it is widely recognised in the literature that payments have been a source of disputes in the construction industry. Thus it was decided that exploring construction payment disputes could indicate the degree of payment problems in the New Zealand construction industry. The information for this preliminary investigation was obtained from construction payment dispute cases listed on the Building Disputes Tribunal (BDT) website (<http://www.buildingdisputestribunal.co.nz/>).

Table 5.3: Reasons for liquidation of construction companies

Reasons	Voluntary	Involuntary	Frequency		
			Less	Moderate	Most
1. Financial losses					X
Non-payment on a couple of projects	✓				
Drop in house prices	✓	✓			
Bad debts and failure to receive funds from debtors	✓				
Loss of occupational safety and health claim	✓				
Loss of insurance coverage	✓				
2. Receivership and liquidation of companies					X
Security over assets and undertakings of the company		✓			
Company is in receivership	✓	✓			
Liquidation of parent & other companies	✓				
3. Cash flow difficulties				X	
Due to reduction in property sales		✓			
Short term growth in company causing capital shortfalls	✓				
Delay in progress payments by developers	✓				
Failure to secure contracts from client	✓				
Other – insufficient projected cash flow	✓				
4. Downturn in property/construction market	✓	✓		X	
5. Disputes				X	
Payment delay due to contracts disputes	✓				
Disputes over debts, between directors, shareholders, creditors, and councils	✓	✓			
Disputes over financial issues		✓			
6. Dishonest conduct of directors				X	
Unavailability of directors to contact		✓			
Absence for hearing		✓			
No response to liquidators		✓			
7. Economic downturn	✓		X		
8. Other reasons					X
Default in properties purchased	✓				
Contract failure, cost overruns	✓				
Default of mortgage and debts to IRD	✓				
Lack of supervision and financial control	✓				
Costing mistakes and design failure	✓				
Lack of knowledge and experience of directors	✓				
No assets in the company	✓				
Director’s personal health condition	✓	✓			

* Less = 4 occurrences; moderate = 5-9 occurrences; most = 10-14 occurrences

Cases filed in the High Court mainly provided information on the dates of hearings and judgments, the name of the High Court Registry where the dispute was filed, the background of cases, names of defendants and plaintiffs, and final judgments. The information required for analysis included: Parties in disputes, types of payment in dispute, amounts claimed, and the status of payments in final judgments. Analysis of this information is presented in the subsequent sections of this chapter.

5.2.1 Profile of the Payment Disputes Filed in High Court

This preliminary investigation was carried out in mid-2010. By then there were five cases listed on the BDT website with a final judgment given that year. The analyses of six cases gave interesting findings, and it was decided to continue the analysis for the four years prior to 2010. Accordingly, altogether 40 cases were identified as filed in the High Court those were related to construction payment disputes over the period 2008 - 2010. Table 5.4 provides a distribution of these 40 cases according to their final judgement and filed dates. The analysis shows that most of the cases (80%) were filed over the period of 2008-2009. Similarly, the distribution of final judgement time reveals that more than 80% of those cases were resolved during the same period. This shows that there is a relationship between the distribution of the final judgment date and the cases filed date. It is apparent that some of these cases were resolved within the same year they were filed while other cases took longer times. However, the actual time taken to resolve disputes cannot be obtained due to the limitations of information provided within the reports. The cases provided information on the actual date the judgment was given, but in the case of filed dates, the cases gave only an indication of the year in which the cases were filed, not the actual date.

Table 5.4: Status of payment to trade creditors after liquidation process complete

	Final Judgement Date		Filed Date	
	Frequency	Percentage (%)	Frequency	Percentage (%)
2010	6	15	1	3
2009	18	45	14	35
2008	16	40	18	45
2007	-	0	6	15
2006	-	0	1	3
Total	40	100	40	100

Apart from the final judgment and filed dates, the review of case backgrounds shows that these disputes were over building contracts both residential and commercial, civil engineering contracts for construction of earthworks and access roads, development contracts, demolition work, alterations and renovations. They also included trade services such as painting, structural steel and metal work contracts, and electrical services and products. A further review shows that about 50% (19 out of 40) cases were referred to adjudication initially and then filed in the District Court for enforcement and a review of adjudicator's determination. The remaining cases applied to the High Court to set aside the statutory demand issued and to enter a summary judgment, or appeals were to the High Court from the District Court. In respect to cases referred to the Construction Contracts Act (CCA), more than 50% (22 out of 40) of cases were related to payment claims and payment schedules prepared under the CCA.

5.2.2 Construction Parties in Disputes

Figure 5.6 shows the breakdown of cases in relation to parties in disputes. In almost 50% of the cases, principals filed against contractors while in almost another 40% of cases, contractors filed against principals. This indicates that the common phenomenon in payment disputes is to have the principals and contractors in contention. In contrast contractors and subcontractors disputed only in 8% of the cases examined. Similar to this, an equal percentage of the cases were between principals and the subcontractors.

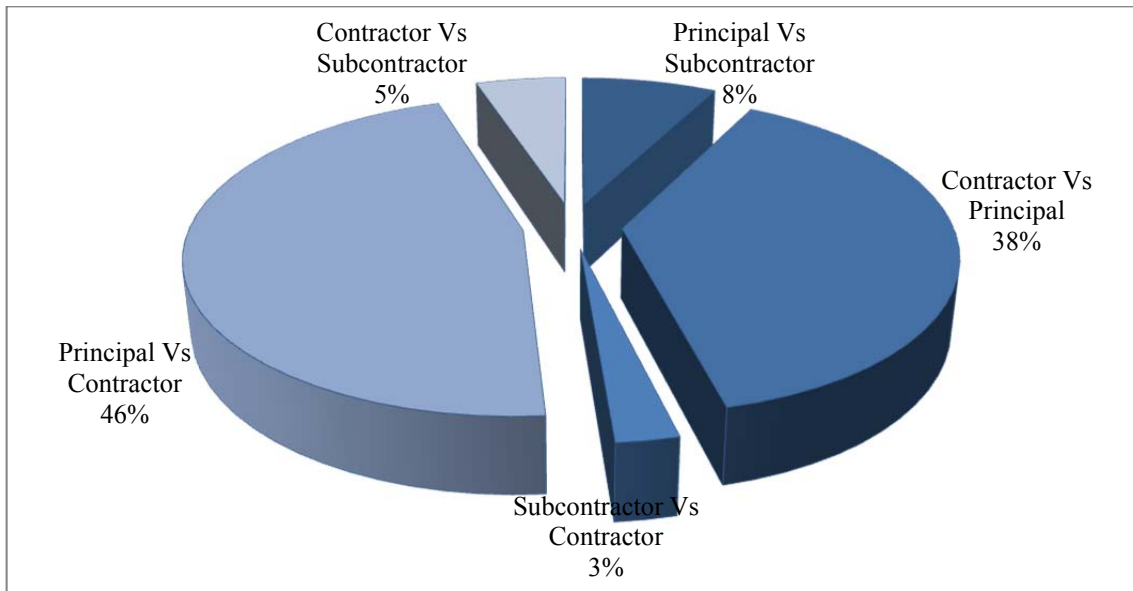


Figure 5.6: Distribution of construction parties in disputes

5.2.3 Monetary Value of Disputes

A breakdown showing the monetary value of disputes is depicted in Figure 5.7. It shows that in most cases (46%) the monetary value of claims were less than NZ\$100k. The second highest number of claims (40%) was between NZ\$100k and NZ\$500k. The amount claimed in 11% of the cases was above NZ\$1,000k while in 3% of the cases the claims were between NZ\$500k and NZ\$1,000k.

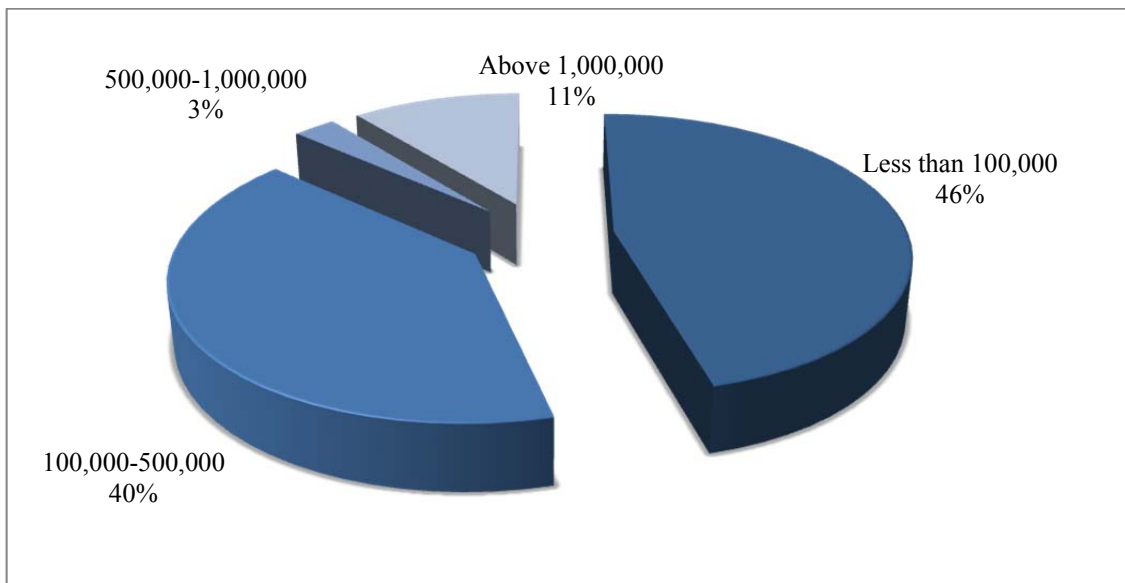


Figure 5.7: Distribution of amount claimed in disputes, in dollars (NZ\$)

5.2.4 Nature of Payment in Disputes

The root causes of payment disputes were extracted from the background information provided for the cases filed. A breakdown regarding the nature of payment in the disputes is given in Table 5.5. The last 7 digits of the case numbers have been removed for reasons of anonymity. It is apparent from the table that disputes arose over issues where claimants were refused progress, final and other payments (retention and costs incurred in costs proceedings) due to validity of progress claims, incomplete or defective work, and non-issuance of payment schedules. The disputes were filed in the High Court to enter a summary judgment, to enforce an adjudication determination and charging order, to review an adjudication determination, to set aside a statutory demand, and to appeal against a District Court judgment.

The results show that 28 out of 40 (70%) of the cases studied were related to progress payments, while 25% related to final payments. Only in one case out of 40 was the dispute over retention money, while in another the costs related to court proceedings were disputed. However, this was also originally due to a payment claim. Hence, it would seem that it was the progress and final payments that were more likely to be delayed or lost by construction participants in court cases. It is to be noted that although some of the claims are referred to as progress claims, they could mean final payments as well.

Table 5.5: Summary of Nature of Payments and Causes of Disputes

Case No	Nature of payment in dispute	Causes of disputes
CIV- 2010	Progress claim	Validity of claims and sums (two monthly claims for payment of \$33 million and \$61 million) of subcontractor (SC) disputed by the principal (P).
CIV-2008	Final claim	Payment to final invoice was declined by P as the SC failed to install an important bond beam. P applied to set aside the statutory demand issued by the SC.
CIV-2009	Payment claim	Payment claim issued by the contractor (C) was technically invalid. C applied for summary judgment procedures against P regarding payment claim.
CIV 2009	Final claim	Final claim was adjusted, claimed a sum of \$1,183,942. C rejected the claim and SC referred to adjudication. C applied to challenge the adjudicator's decision. Then SC referred to arbitration for the difference in sum awarded by arbitrator and court.
CIV-2009	Final claim	Contractor issued a statutory demand for the final payment.
CIV-2007	Final claim	C applied to set aside the statutory demand issued by SC for the final amount on providing electrical services and products.
CA145/2008	Progress claim	Appeal against High Court judgment dismissing the application to set aside statutory demand for non-payment of progress claim.

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CIV-2009	Payment claim	Developer (C) issued a payment claim due to variation of single storey into two storeys and no schedule was provided and amount disputed. Developer had lodged a caveat over the title of the land.
CIV-2009	Progress claim	C issued four payment claims but no payment schedule from P. District Court judgment was that P had no arguable defence and the C was to be paid. P appealed to High Court.
CIV 2009	Payment claim	P defaulted on some payments to C and C filed a summary judgement proceedings and the judgement was to pay C the full amount. P appealed to High Court.
CIV 2006	Payment claim	Adjudicator determined that P is liable to pay C and payment was not made. C applied to District Court for enforce adjudicator's determination. P appealed to High Court for judicial review of adjudicator's determination.
CIV-2008	Progress claim	Progress payment claim was sent to P and time for sending payment schedule lapsed. C proceeded to apply for summary judgement.
CIV 2009	Progress claim	Three progress payments claimed remained unpaid and adjudication determination was enforced in District Court and a charging order was placed on the property. C commenced bankruptcy proceedings and it was refused. P commenced her own claim and referred to adjudication and obtained a ruling, trying to enforce in High Court.
CIV-2009	Final claim	Disputes arose over construction of roof and other matters. Adjudicator determined P to pay the balance contract price (final payment) once defects were remedied. P sent payment schedule indicating C owes P.
CIV-2009	Retention	Dispute over payment of retention was referred to adjudication and before the award C went into liquidation. The liquidator applied to review the determination and this proceeding was to cancel the adjudication.
CIV-2008	Progress claim	Unpaid overdue invoice application by the C for summary judgment against the P seeking an amended sum of \$205,167.27 said to be owed under a construction contract. C sought payment for the two claims.
CIV-2009	Final claim	SC made the claim and was denied by the C. It was referred to adjudication and C sought to have the determination set aside.
CIV 2008	Final claim	Engineer issued payment schedule indicating that the C has to repay client. C didn't accept the final payment schedule. Matter referred to arbitration.
CIV 2009	Other payment	Summary judgement was entered in District Court for the payment claim of \$ 26,649.39 plus costs of \$5,000 with disbursements of interest. C appealed to set aside the costs of \$5,000 and required to be awarded actual and reasonable costs in the District Court proceedings.
CIV 2008	Progress claim	Outstanding progress claim amount was not made as P became insolvent when the finance company went into receivership. Adjudicator approved a charging order
CA83/2008	Final claim	Payment for the final claim was not paid and the C referred to adjudication. C applied to District Court to enforce adjudicator's determination as judgement.
CIV 2009	Payment claim	Payments to C were overdue. This was to be compensated with another agreement parties entered into. But the relationship between parties broke down and the C issued a statutory demand.
CIV 2009	Progress claim	Three progress claims were not met and statutory demand issued.
CA463/07/2008	Payment claim	Dispute due to failure to provide payment schedule was referred to adjudication and then to District Court for enforcement. Applicant appealing against the award of costs.
CIV-2008	Payment claim	Statutory demand made for payment in building contract by the contractor was set aside by consents and costs awarded in 2B basis. C sought to challenge the award (High Court).
CIV 2008	Payment claim	P sought to set aside the demand issued by the SC with a counter claim for liquidated damages.
CIV 2008	Progress claim	Contract was cancelled verbally as the work was not up to standard and defects were not rectified as agreed. C served the payment claim (\$99,984) and referred to adjudication. P chose to defend adjudication proceedings by counter claiming (\$138,602).

CIV-2008	Final claim	C issued an invoice for its final contract payment and as a response to that P issued the payment schedule having regard to various credits and a claim for liquidated damages. The contract made provision for C to register a caveat against the land for non-payment. P filed to remove the caveat.
CIV-2009	Progress claim	C served a payment claim but no payment schedule was provided. District Court denied the C's application for summary judgement with regards to payment claim served. C appealed to High Court.
CIV 2008	Payment claim	C sued the P for payment due under the payment claim made. P opposed the application for summary judgement. P now seeks costs.
CIV 2007	Payment claim	Payment for the work was refused by the P as the defects were not rectified. Dispute referred to adjudication by C seeking relief including payment of outstanding invoices. A charging order was issued over the property and the C filed in District Court for enforcement. P applied to High Court and obtained an interim order.
CIV 2008	Final claim	C served a final payment claim and the P didn't pay either in whole or part. Court ordered the P to pay the final invoice but this was a cross appeal by P against the original court decision.
CIV 2007	Payment claim	C claimed unpaid portion (\$18,771) of the invoice and P had a counter-claim (\$12,887) for recovery of payment. P applied to liquidate the C. C refused to pay after being served with a statutory demand.
CIV 2007	Payment claim	P was ordered to pay the C by an adjudicator which was not paid. She applied to set aside the bankruptcy notice with a counter-claim.
CIV 2008	Payment claim	Adjudicator made a determination in favour of C and gave permission to issue a charging order which was entered in the High Court. Claimant notified the court that only the District Court could enter a charging order.
CIV 2007	Payment claim	C claimed \$1.6 million and the adjudicator determined \$1 million. P commenced judicial review proceedings and an ex parte application for interim relief.
CIV-2008	Payment claim	C issued summary judgement proceedings due to non-payment. P seeks an adjournment. The application for adjournment was declined.
CIV 2008	Payment claim	Outstanding balance of payment claim remained unpaid. Client submitted her claim to the Disputes Tribunal. Contractor filed a civil claim in the District Court seeking payment of the balance due.
CIV 2007	Payment claim	Builder left the job as no payment was done for later invoices.
CIV 2008	Progress claim	C in this appeal was sued in their capacity as trustees for failure to pay a payment claim issued to them under the provisions of the Construction Contracts Act 2002.

5.2.5 Status of Payment in Disputes

Another summary prepared using the information extracted from cases filed is provided in Table 5.6. The table gives the case number, final judgement date, amount of claim disputed and the final judgement. As mentioned previously, the case number given for the cases indicates the year in which the cases were filed. However, the actual date for final judgement is given. This therefore restricts the comparison of the filed date and judgement date to determine the actual time taken to resolve the disputes in court proceedings. However, this comparison shows that 20 cases out of 40 (50%) were resolved within the same year in which the cases were filed. Thus the remaining 50% of cases took over 1 year to be resolved.

The status of payment as to whether it is being delayed or lost due to disputes was determined using the comparison of final judgements given with the amount in dispute shown in Table 5.6. In reporting the status of the payment, it is assumed that if the claimant is paid fully or partially, because it was referred to the High Court, the payment would have been delayed. Payment loss is assumed to have been experienced by a claimant when it loses the claim or was not paid by the defendant. The status of payment was classified as likely delay or loss if it was unresolved, pending further decision or determination. The comparison of amounts claimed and final judgements reveals that there were delays, losses and likely delay or loss of payment by construction parties. In order to get an understanding of the magnitude of payment delays and losses in court cases, this information is further summarised and given in Table 5.7.

Table 5.6: Summary of final judgement on disputes

Case No.	Judgement Date	Amount Claimed (NZ\$)	Final judgement
CIV 2010	Jan-10	33,000k & 61,000k	Decision referred back to adjudication. Court considered that the Act provided a process for adjudication which determines issues of jurisdiction in the first instance – Unresolved
CIV-2008	Feb-10	32,147k	Improper statutory demand - Loss to the subcontractor.
CIV-2009	Feb-10	Undisclosed	Technically invalid payment claim- Loss to the contractor.
CIV 2009	Feb-10	1,184k	Court awarded subcontractor \$327k - Delay and loss to subcontractor.
CIV-2009	Feb-10	442k	The claim was paid in full - Delay to the contractor.
CIV-2007	Feb-08	32,649k	Statutory demand set aside - Loss to the subcontractor.
CA/2008	Sep-08	190k	Unresolved.
CIV-2009	Feb-10	219k	Contractor had no caveatable interest in the land - Likely loss to contractor.
CIV-2009	Sep-09	37k	Payment claim was not valid - Loss to contractor.
CIV 2009	Oct-09	53k	Contractor was paid in full - Delay to contractor.
CIV 2006	Jul-09	282k	Bankruptcy notice accepted thus the contractor to be paid \$322k as per adjudicator's determination - Delay to contractor.
CIV-2008	Feb-09	511k	Contractor was successful partially and paid \$178k and lost \$332k - Delay and loss to contractor.
CIV 2009	Jul-09	22k	Both parties were successful - No dispute
CIV-2009	Oct-09	72k	Principal's statutory demand was set aside - Loss to principal.
CIV-2009	Nov-09	33k	Contractor was paid in full - Delay to contractor.
CIV-2008	Apr-09	205k	All five payment claims were valid thus contractor was awarded full amount - Delay to contractor

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CIV-2009	Oct-09	345,395k	Application to set aside the statutory demand was withdrawn, contractor required to pay subcontractor - Delay to subcontractor.
CIV 2008	Apr-09	110k	Application to stay liquidation proceedings were dismissed - Loss to principal.
CIV 2009	Apr-09	13k	Court awarded contractor \$13k plus the costs of preparing for and appearing at the summary judgment hearing related to payment claim of \$27k- Delay to contractor.
CIV 2008	May-09	97k	Appeal was dismissed - Loss to contractor.
CA/2008	Feb-09	1,324k	Bankruptcy application adjourned - Likely to be a loss to contractor.
CIV 2009	Jun-09	76k	Court awarded contractor \$57k - a delay and loss to contractor.
CIV 2009	Jun-09	466k	Statutory demand not set aside, contractor to be paid - Delay to contractor.
CA/2008	May-08	123k	Costs awarded to contractor in dispute due to non-issuance of payment schedule for \$123k defended - Delay to subcontractor.
CIV-2008	Oct-08	139k	Paid in full - Delay to contractor
CIV 2008	Jul-09	112k	Statutory demand for the payment was set aside by consent - Neither loss or delay to the contractor.
CIV 2008	Aug-09	766k	Statutory demand was set aside - Loss to subcontractor.
CIV-2008	Oct-08	28k	Caveat for non-payment removed and the amount held in trust account pending resolution - Delay to contractor.
CIV-2009	Aug-09	78k	Contractor's appeal against decision on summary judgement proceedings dismissed, adjudication is seen as a solution - Likely outcome was delay to contractor.
CIV 2008	Nov-08	2,000k	Time to serve payment schedule had not elapsed - Status of payment was not available.
CIV 2007	Jun-08	35k	Paid in full - Delay to contractor.
CIV 2008	Jun-08	109k	Paid in full - Delay to contractor.
CIV 2007	Feb-08	13k	Court ordered contractor to pay principal - Contractor lost the claim of \$19k and paid \$12k; delay to principal.
CIV 2007	Feb-08	157k	Contractor was paid in full but experienced a delay.
CIV 2008	Jun-08	280k	Contractor's application to enter the charging order dismissed as only District Court could enter a charging order - Likely loss and delay to contractor.
CIV 2007	Apr-08	1,000k	Principal's interim relief application declined, given 7 days to serve the claim and contractor to respond within 7 days - Likely delay to contractor.
CIV-2008	Sep-08	Undisclosed	Application for adjournment was declined and contractor to be paid - Delay to contractor.
CIV 2008	Dec-08	11k	Judicial review of Tribunal decision was dismissed, difficult to determine the party at fault; dispute remains unresolved - Likely delay or loss to contractor.
CIV 2007	Oct-08	246k	Contractor awarded partially \$79k and this was also pending further order - Delay and loss to contractor.
CIV 2008	Oct-08	28k	Application to set aside summary judgement was successful; principal as trustee not the legal entity entitled to payment - Loss to contractor.

Table 5.7 provides a summary of payment status in final judgements and indicates that, in 40% of the cases claimants were paid fully but experienced delays in being paid. In another 10% claimants were partially paid, experienced a delay in the process while also losing the amount that was not paid. It was observed that 25% of the claimants lost their cases for reasons traceable to their actions or inaction. For example some of the claimants failed to comply with contractual obligations, submitted invalid payment claims and statutory demands, and or provided inappropriate payment schedules. For the 25% of claimants who lost their cases, the amount lost was generally less than NZ\$100k.

A further 20% identified in the analysis were those companies that were likely to be delayed or to lose money, because these few cases were unresolved and referred back to adjudication. The remaining 5% shown in the table refer to cases in which both parties (claimant and defendant) came to an agreement and the disputes were consequently resolved. The above analysis provides an insight into construction payment delays and losses.

Table 5.7: Status of payment in disputes

Payment status	No of cases	%
Paid fully – Delay	16	40
Paid partially - Loss & delay	4	10
Loss	10	25
Likely loss or delay	8	20
Other	2	5
Total	40	100

5.2.6 Strategies Used to Remedy Payment Problems

In relation to strategies used to remedy payment problems, the analysis of the cases reveal that in a few cases, parties employed strategies such as placing of charging orders or caveat registration, bankruptcy and liquidation proceedings, issue of statutory demand, and summary judgement to remedy non-payment. The dispute records show that in 4 out of 40 cases claimants sought a charging order to mitigate non-payment by respondents and these were approved by the adjudicator. Subsequently a charging order was placed over the owners’ properties. Further, in one of the 40 cases the claimant (developer) lodged a caveat against the title of the land to recover payment due from the owner. In another situation a project owner applied to the Court for a removal of the caveat lodged by the contractor over his land.

Finally the dispute records show that in two cases (4%) the principal (project owner) submitted an application to set aside the bankruptcy notices issued to them. This was made after an order to pay their contractors. In a few other cases (3 out of 40), some claimants lodged liquidation proceedings to recover the amount claimed, which was subsequently appealed by the respondents to stay the liquidation proceedings. In both cases the applications were dismissed. Further, in 30% (12 out of 40) of cases contractors and subcontractors issued statutory demands while in three other cases (out of 40) contractors applied to the court for summary judgement to recover payments from principals and contractors.

5.2.7 Concluding Remarks

This section of the chapter presented the results of analyses of payment disputes mainly in relation to construction parties who entered legal proceedings, the amount of claims and types of payment that were disputed, and the final status of the payment in dispute. This analysis gives an indication of the extent and nature of payment problems in the New Zealand construction industry. As the analyses show, these are not minor and in some cases have added considerable costs as well as created substantial difficulties for the various parties involved. However, these findings are further compared and confirmed by the survey among industry participants in subsequent chapters.

5.3 Summary

The chapter has explored the situation of payment problems in the New Zealand construction industry from the perspectives of construction liquidations and construction payment disputes. Both analyses provide evidence that payment problems are prevalent in the New Zealand construction industry. However, these findings are limited by the depth of information available within the two documents analysed. Thus the research investigates further, payment problems by seeking opinions from the under construction community. This aspect is covered in the next chapter.

The results of the preliminary investigations described in this chapter are triangulated with survey findings and interviews in later chapters. This synthesis is presented in chapter 8.

CHAPTER SIX

Data Analysis and Results – Questionnaire Survey

6.0 Introduction

This chapter presents the results obtained from the questionnaire survey to construction practitioners. The results of the survey are presented under five sub-themes identified in line with the research objectives highlighted in chapter one. Firstly, the profile information of the survey participants is given. This is followed by the five sub-themes in the subsequent five sections which include: An analysis of the nature and extent of payment problems in the industry, The causes of payment delays and losses, the effectiveness of the payment and non-payment provisions in the standard forms of contracts and the Construction Contracts Act, the effectiveness of forms of security for payment and the extent of their use, and an analysis of the extent of insolvencies and related payment problems. Finally, the chapter presents a thematic analysis of the general comments made by participants, followed by a chapter summary.

6.1 Profile of the Survey Participants

The first part of the questionnaire addressed the research participants' demographic details. Survey participants were required to indicate demographic information of the sub-sector group they belong to, profession, nature of the business involved, number of years of experience, and number of projects undertaken. Table 6.1 provides a summary of the demographic information obtained from participants. It was observed that the responses obtained from them varied across the questions. This summary was prepared considering the average number of participants who responded to questions. The survey excluded clients due to practical difficulties in accessing and collecting responses from them, therefore consultants were considered as proxies for clients.

Table 6.1: Demographic profile of participants

Demographic information		Number	Percentage
Major groups	Subcontractors	41	
	Head contractors	13	
	Consultants	55	
Types of professions	Architects	29	
	Quantity surveyors	27	
	Project manager	17	
	Engineer	15	
	Others	22	
Nature of Business	Residential Building	18	
	Commercial Building	26	
	Construction Trade	25	
	Heavy Construction	7	
	Property Development	4	
	Others	28	
No of projects undertaken	Over 50	85	
	41 - 50	4	
	31 – 40	5	
	21 - 30	9	
	11 - 20	6	
	0 - 10	4	
Number of years of experience	More than 25	61	
	21 - 25	19	
	16 - 20	11	
	11 – 15	10	
	6 – 10	10	
	0 – 5	2	

On average 109 persons responded to the survey. A breakdown of the major groups of consultants, head contractors and subcontractors is indicated in Table 6.1 Responses from head contractors were significantly low compared to the other two groups. Therefore, the responses from head contractors and subcontractors were merged for the purpose of the analysis. An independent samples t-test for the equality of means for these two groups was performed prior to merging their responses. The t-test was performed at every section of the analyses, so that the merger could not distort them

In terms of professions, an equal percentage of participants (over 25%) are architects and quantity surveyors while 15% and 14% were project managers and engineers respectively. Another 20% was categorized as others which included professionals such as service engineers (electrical, fire, security, air-conditioning, geo-technical, etc.), project directors, project coordinators, contracts managers, etc.

The distribution of the nature of the business participants involved indicates that the majority of participants (25%) have engaged in other businesses which include consultancy services to all sectors of building development including residential, commercial, health, civil, infrastructure, fit-out and interiors, retail, and government (local and central), community building construction, civil works such as roading, utilities, bridges, etc., institutional building construction, specialist conservation architects, heating, ventilation and air conditioning/refrigeration, and industrial plants. Another 24% and 23% of research participants have been involved commercial building construction and construction trade services respectively. Seventeen percent of participants indicated that their business is residential building construction. The remaining small percentages of 7% and 3% were from heavy construction and property development businesses respectively.

Participants were also required to give an indication of the number of projects they had undertaken since the implementation of the CCA and the number of years' experience in the industry. Seventy five percent of participants have undertaken more than 50 projects since 2003. Distribution of the participants' experience in the industry shows that over 50% of them had more than 25years' experience while another 17% have worked 20-25 years in the industry. Participants with 16-20 years, 10-15 years and less than 10 years' experience came to 11%, 10% and 10% respectively. Only a 2% have worked less than 5 years. Overall, this profile information of research participants gives an indication that the research findings are reliable.

6.2 Nature and Extent of Payment Problems

The following sub-sections present an analysis of the nature and extent of payment problems. These were investigated using three different indicators: types of payment problems, parties experiencing payment problems and types of payment. Similarly, the extent of payment problems was assessed in terms of the total number of projects undertaken, the value of payment delays and losses, and the duration of payment delays. Under this section the responses for head contractors' experience in relation to payment delays and losses represents collective responses obtained from head contractors and consultants. Similarly, the responses to payment delays and losses to subcontractors were obtained from consultants and subcontractors. The first two sub-sections give an analysis of the questions relating to the nature of payment problems, while the remaining three sub-sections present an analysis of the extent of payment problems.

6.2.1 Nature of Payment Problems – Types of Payment Problems and Parties at Risk

This section presents an analysis of the nature of payment problems in terms of types of payment problems and parties that experience them. Participants were required to indicate the frequency of payment delays and losses experienced by head contractors and subcontractors. Although payment delays and losses are often considered as a single situation; in reality they represent two different situations, the latter is considered as a consequence of the former. Hence, this study considered payment delays and losses separately. Payment delays refer to a situation where a payment is not made to head contractors or subcontractors on time, as per the timelines agreed between the parties to the contract. Payment losses on the other hand, refer to situations where an expected payment was never received, and /or would be considered bad debt, written off, or lost partially/fully. Respondents were given the frequency scale of 1 (Very Often) to 5 (Never) to express the frequency of payment delays and losses experienced by head contractors and subcontractors.

As a first step, a paired samples t-test was run to determine whether the payment delays and losses are statistically different from one another. The differences were tested using the hypothesis below. In testing the hypothesis the confidence level of 95% was

considered to determine whether to accept or reject the null hypothesis. The p-value of less than .05 was considered for rejecting the null hypothesis.

$H_0: m_d = 0$; the mean difference (m_d) between paired observations is zero

$H_1: m_d \neq 0$; the mean difference between paired observations is not zero

Table 6.2 gives the results of paired samples statistics for head contractors and subcontractors regarding payment delays and losses. The sig (2-tailed) or p-value of less than .05 allows the rejection of null hypothesis that there are no differences in the mean values of payment delays and losses. This evidences that there are statistically significant differences between payment delays and losses. In other words, respondents have different views regarding the frequency of payment delays and losses. Thus, the analysis of them is considered separately.

Table 6.2: Paired samples t-test for equality of means for payment delays and losses

Parties	Types of payment problems	Std.			t	df	Sig. (2-tailed)
		Mean	N	Deviation			
Head Contractors	Payment delays	3.44	79	1.06	-4.460	78	0.000
	Payment losses	3.87	79	1.07			
Subcontractors	Payment delays	3.03	99	1.16	-4.031	98	0.000
	Payment losses	3.38	99	1.11			

Table 6.3 presents the frequency of payment delays and losses experienced by head contractors and subcontractors. The frequency of payment delays and losses shown indicates that payment delays are experienced more than losses by both head contractors and subcontractors. On average, head contractors experience payment delays between ‘sometimes and rarely’ while payment losses are experienced ‘rarely’. A similar situation is observed with subcontractors. On average, subcontractors experience payment delays ‘sometimes’ while payment losses are experienced between ‘sometimes and rarely’. This indicates the clear differences between payment delays and losses. That is payment delays are experienced more than payment losses.

The comparison of average for payment delays and losses further indicates that payment delays and losses happen more to subcontractors than head contractors. On average, payment delays to head contractors happen between ‘sometimes and rarely’ while payment delays to subcontractors ‘sometimes’ occur. Similarly, on average head

contractors experience payment losses ‘rarely’ while subcontractors experience them between ‘sometimes to rarely’.

The breakdown of frequencies shows that 40% of head contractors experience payment delays rarely. About another 30% experience them ‘sometimes’. In the case of subcontractors, 25% and 27% of participants indicates that payment delays to subcontractors ‘often’ and ‘sometimes’ happen respectively. However, another 28% of participants indicated that subcontractors experience payment delays ‘rarely’.

Considering payment losses, the results show that 38% of head contractors experience payment losses rarely while another 32% ‘never’ experience payment losses. Regarding subcontractors, 36% of participants indicated that payment losses to subcontractors ‘sometimes’ happen. Another 32% of participants indicate that subcontractors ‘rarely’ experience payment losses.

Table 6.3: Frequency of payment problems to head contractors and subcontractors

Frequency	Payment delays		Payment losses	
	Head contractor N = 79	Subcontractor N=99	Head contractor N= 79	Subcontractor N = 99
Very often	4%	11%	5%	8%
Often	13%	25%	4%	9%
Sometime	29%	27%	22%	36%
Rarely	40%	28%	38%	32%
Never	14%	9%	32%	16%
Mean	3.44	3.03	3.87	3.38
	between ‘sometimes’ - ‘rarely’	‘sometimes’	‘rarely’	between ‘sometimes’ - ‘rarely’

Besides the above analysis, an independent samples t-test was performed to determine whether different groups of participants (consultants, head contractors and subcontractors) have different views regarding payment delays and losses. As mentioned previously, to determine the differences in views the following hypothesis was tested. The significance level of 95% was considered for accepting or rejecting the null hypothesis.

$H_0: \mu_1 = \mu_2$; there is no statistically significant difference between the two groups on the dependent variable, where μ_1 and μ_2 are the means of the two groups.

$H_1: \mu_1 \neq \mu_2$; there is a statistically significant difference between the two groups on the dependent variable

Table 6.4 gives the results of the independent samples t-test for consultants, head contractors and subcontractors in respect of payment delays and losses. The table shows the results of four different perceptions:

- a) Consultants and head contractors on payment delays to head contractors
- b) Consultants and head contractors on payment losses to head contractors
- c) Consultants and subcontractors on payment delays to subcontractors
- d) Consultants and subcontractors on payment losses to subcontractors

The sig. (2-tailed) or p value of .045 which is less than .05 for payment delays to head contractors indicated the rejection of the null hypothesis. This indicates that there is a statistically significant difference between consultants and head contractors regarding payment delays to head contractors. Similarly, p-value of 0.002 for payment delays to subcontractors indicates that consultants and head contractors have different views about payment delays to subcontractors. This further signifies the following.

- a) Head contractors and consultants have different perceptions in respect of payment delays to head contractors. This is reflected in the mean value. Head contractors indicated that they experience payment delays 'sometimes' (mean = 3.00) while the mean value obtained from consultants (3.57) indicate that their collective views fall between 'sometimes' to 'rarely' category.
- b) Subcontractors and consultants seem to have different perceptions of payment delays experienced by subcontractors. The mean values of consultants and subcontractors represent these different perceptions. Consultants indicate that subcontractors experience payment delays 'sometimes' (3.28). Subcontractors indicate that they experience payment delays between 'often and sometimes' (2.60).

Considering payment loss, participants were unanimous. The p-values of .239 and .053 indicate that there are no statistically significant differences between participant groups regarding payment losses to head contractors and subcontractors.

Table 6.4: Independent samples t-test for consultants, contractors and subcontractors

		N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Payment delays – head contractors	Head contractors	15	3.00	0.84	-2.032	89	.045
	Consultants	76	3.57	1.03			
Payment losses – head contractors	Head contractors	10	3.50	0.70	-1.188	77	.239
	Consultants	69	3.92	1.10			
Payment delays – subcontractors	Subcontractors	46	2.60	1.02	-3.125	108	.002
	Consultants	64	3.28	1.17			
Payment losses – subcontractors	Subcontractors	43	3.13	0.94	-1.960	99	.053
	Consultants	58	3.56	1.19			

Following the t-tests, an analysis of variance (ANOVA) was performed to test whether different professionals have different perceptions regarding payment delays and losses to head contractors and subcontractors. Participants in the current study included architects, engineers, project managers, and quantity surveyors. To run the ANOVA, the following hypothesis was tested. The criterion for accepting or rejecting the hypothesis was set as .05. If the p-value is less than .05, the null hypothesis is rejected.

$$H_0: \mu_1 = \mu_2 = \dots \mu_k ; \text{ all population means are equal.}$$

Alternative hypothesis is that at least one of the means is different.

The results of the ANOVA are given in Table 6.5. The results indicate that at 0.05 level of significance there are no differences among professionals in respect of payment delays to both head contractors and subcontractors. The p-values of payment delays to head contractors (.083) and payment delays to subcontractors (.068) do not allow the rejection of the null hypothesis. This provides evidence that the mean values of different professional groups are equal.

On the other hand, considering payment losses to head contractors and subcontractors, the p-values of less than .05 indicate that the professionals held different perceptions regarding payment losses to head contractors and subcontractors. However, the results of the ANOVA failed to indicate which groups are different from each other. Hence, the Post-Hoc Tukey-B's test was performed to detect the different perceptions that exist between different professional groups. Table 6.6 and 6.7 present the results of Post-Hoc Tukey-B's test.

The ANOVA showed a statistically significant difference in the opinions of the professional groups about payment losses to head contractors ($F = 8.198$, $df = 3$, $p = 0.000$). The Post-Hoc Tukey-B's test shows that quantity surveyors (mean = 2.93) reported that head contractors experience payment losses 'sometimes' while project managers (mean = 3.94) and architects (mean = 4.33) indicated that payment losses to head contractors occur 'rarely'. Similarly, a significant difference ($F = 4.319$, $df = 3$, $p = 0.007$) was observed in the opinions of payment losses to subcontractors. A further examination of the Post-Hoc Tukey-B's test results reveal that quantity surveyors hold a different opinion to architects. Quantity surveyors indicated that payment losses to subcontractors occur 'sometimes' (mean = 2.889) whereas architects reported that subcontractors experience payment losses 'rarely' (mean = 3.954).

Table 6.5: One way ANOVA for statistical differences between professional groups

Payment types	Profession	Std.					
		N	Mean	Deviation	df	F	Sig.
Payment delays – head contractors	Project manager	19	3.57	1.21	3	2.310	0.083
	Engineer	11	3.09	1.04			
	Architect	32	3.81	.93			
	Quantity surveyor	16	3.12	.95			
	Total	78	3.51	1.05			
Payment delays - subcontractors	Project manager	27	3.00	1.35	3	2.465	0.068
	Engineer	8	3.50	.75			
	Architect	23	3.47	1.23			
	Quantity surveyor	27	2.66	.91			
	Total	85	3.07	1.18			
Payment losses– head contractors	Project manager	17	3.94	1.02	3	8.198	0.000
	Engineer	8	3.62	1.30			
	Architect	30	4.43	.62			
	Quantity surveyor	14	2.92	1.20			
	Total	69	3.91	1.09			
Payment losses - subcontractors	Project manager	24	3.58	1.21	3	4.319	0.007
	Engineer	7	3.42	.53			
	Architect	22	3.95	1.17			
	Quantity surveyor	27	2.88	.89			
	Total	80	3.44	1.12			

Table 6.6: Payment losses – Head contractors – Post hoc Tukey –B’s test

Profession	N	Subset for alpha = 0.05	
		1	2
Quantity Surveyor	14	2.9286	
Engineer	8	3.6250	3.6250
Project Manager	17		3.9412
Architect	30		4.4333

Table 6.7: Payment losses – Subcontractors – Post hoc Tukey – B’s test

Profession	N	Subset for alpha = 0.05	
		1	2
Quantity Surveyor	27	2.8889	
Engineer	7	3.4286	3.4286
Project Manager	24	3.5833	3.5833
Architect	22		3.9545

6.2.2 Nature of Payment Problems - Types of Payment

The section describes the analysis of participants’ responses to the question of what types of payment (progress, final, retentions, and claims) experience payment delays and losses. Participants were required to indicate their experience with payment delays and losses in relation to different payment types. As explained under the previous section, a paired samples t-test was performed to test whether responses on payment delays and losses are statistically different. Table 1 in Appendix 3(B) provides the results of the paired samples t-test. The results show that payment delays and losses are statistically different. P-values (less than 0.05) given against each type of payment indicate that there is a difference between payment delays and losses. Therefore, payment delays and losses are considered separately for the purpose of analysis of types of payment which contractors and subcontractors experience delays and losses.

An independent samples t-test was performed on the responses collected from head contractors and subcontractors and found that head contractors and subcontractors are in different opinion about payment delays of ‘final payments’ and ‘retention monies’. The results of the independent samples t-test given in Table 2 Appendix 3 (B) confirm the differences. The p-value of less than 0.05 confirms the rejection of the null hypothesis that there is no statically significance difference between mean values of final payment to head contractors and subcontractors. This is observed in the calculated mean values.

Participants indicated that subcontractors ‘often’ (mean = 2.595) experience payment delays in final payment whereas head contractors experience them ‘sometimes’ (mean = 3.400) in their projects. A similar situation is observed with retention monies. Retention monies are ‘sometimes’ (mean = 3.167) delayed to head contractors while they are ‘often’ (mean = 2.308) delayed to subcontractors. However, there were no significant differences regarding opinions of payment delays and losses of other types of payments considered under this analysis. Hence, it was decided to merge the responses of subcontractors and head contractors.

Following the independent samples t-test between head contractors and subcontractors, the merged responses of both groups were tested against consultants. The results of the independent samples t-test between consultants and constructors (head contractors and subcontractors) are given in Table 3 Appendix 3(B). The results shown on the table indicate that overall, consultants and constructors have similar perceptions about the mean values of all types of payment considered except delays on variation & time extension claims. On average, variation & time extension claims are ‘sometimes’ (mean = 2.843) delayed according to constructors (head contractors and subcontractors). Whereas consultants indicated that payment delays of variation & time extension claims are ‘often’ (mean = 2.179) experienced.

As observed from the independent samples t-test, overall as there are no great differences in mean values, the remaining analysis considered payment delays and losses according to the total of participants who responded. Figure 6.1 depicts the distribution of frequency and the overall mean value for the types of payment delays and losses experienced in construction projects in New Zealand. The mean values were obtained from an average number of responses of 80 (27% of 293). As observed from the Figure, the calculated mean values of payment losses are higher than payment delays of all types of payment considered in the study. This indicates that delays of all types of payment are more prevalent than losses. On average, retention monies and variation & time extension claims are more frequently delayed than progress and final payments. Retention monies and variation & time extension claims are ‘often’ delayed whereas delays of progress and final payments are ‘sometimes’ experienced. On average, payment losses are ‘sometimes’ experienced irrespective of the types of payment.

On closer analysis of the frequencies of different types of payment, 32% and 22% of participants are of the opinion that respectively retention monies and variation & time extension claims are ‘very often’ delayed. Another 21% of participants reported that the above types of payments are ‘often’ delayed. Payment losses of the above two types of payment were considered, and on average about 12% of participants considered that the loss of both payments are ‘very often’ experienced while another 13% and 18% respectively indicated that retention monies and variation & time extension claims are ‘often’ experienced on their projects.

When delays and losses of final and progress payments are considered, about 10% of participants stated that progress and final payments are ‘very often’ delayed on the projects undertaken. Another 16% and 30% respectively of participants indicated that progress and final payments are ‘often’ delayed. The loss of progress and final payments are ‘often’ experienced by about 10% and 20% respectively of participants.

On the other end of the scale, a small percentage (8%) of participants mentioned that delays in retention monies are ‘never’ experienced by contractors and subcontractors, while only 2% of them were of the opinion that variation & time extension claims, progress, and final payments are ‘never’ delayed. According to about 15% of the participants, payment losses ‘never’ occurred in their experience.

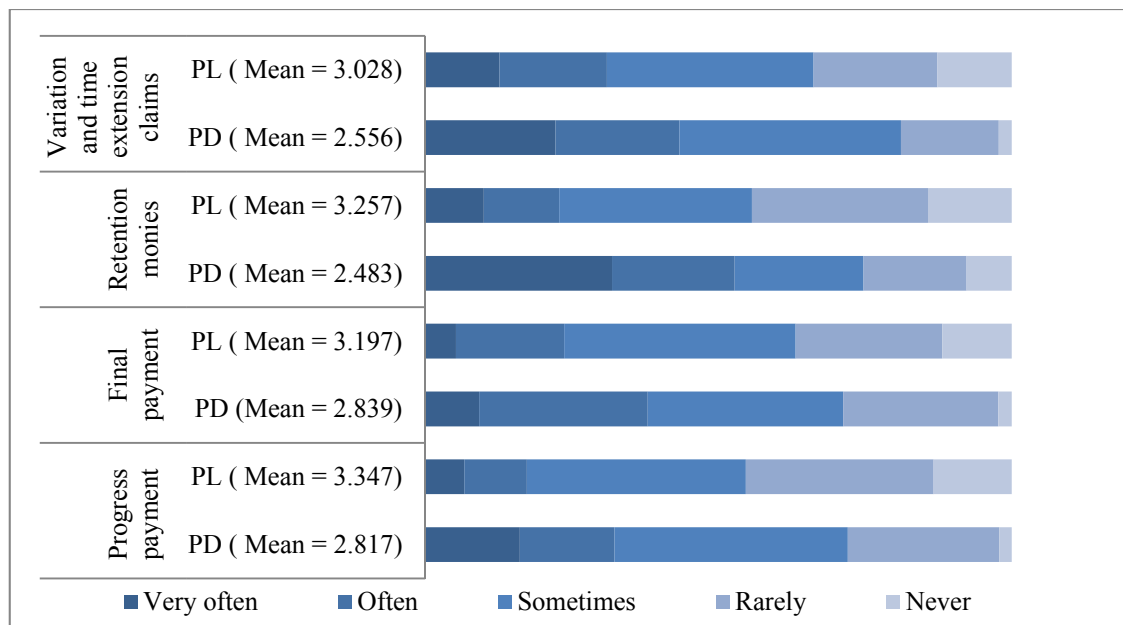


Figure 6.1: Payment delays and losses experienced on different types of payments

6.2.3 Extent of Payment Problems - A Share of Total Projects Undertaken

This section presents the analysis of responses related to the questions where participants were required to indicate the extent of payment delays and losses as a percentage of the number of projects undertaken since the implementation of the CCA. As noted previously, a paired samples t-test was performed to determine whether payment delays and losses are significantly different from one another. The results of the paired samples t-test are given in Table 4 in Appendix 3 (B). As observed from the Table, the analysis shows that payment delays and losses to subcontractors are different at the significance level of 0.05. For head contractors payment delays and losses are not significantly different at 0.05 level of significance. However, at 0.10 level of significance payment delays and losses to head contractors seem to be different. Therefore the extent of payment delays and losses are considered as two different situations

Descriptive statistics of payment delays and losses to head contractors and subcontractors are given in Table 6.8. The analysis shows that the majority of head contractors and subcontractors have experienced payment delays and losses on 10% of the projects they have undertaken. Sixty six percent and 80% of participants respectively were of the opinion that head contractors had payment delays and losses on 10% of their projects. An equal percentage (of around 15%) of participants reported that head contractors seem to experience payment delays and losses on 10-20% of projects undertaken. Considering payment delays and losses to subcontractors, about 35% and 55% of participants respectively indicate that subcontractors experience payment delays and losses on 10% of their projects. Another 22% and 27% of participants respectively were of the opinion that payment delays and losses are prevalent to subcontractors on 10-20% of projects undertaken. However unlike head contractors, subcontractors had payment problems up to 100% of the projects they have undertaken. This indicates that payment problems are substantially more prevalent among subcontractors than head contractors.

However, mean values calculated show that on average, both head contractors and subcontractors experience payment delays and losses on just 10-20% of the projects that they have undertaken.

Table 6.8: Extent of payment delays and losses – share of total projects undertaken

	Payment delays		Payment losses		
	Head contractor	Subcontractor	Head contractor	Subcontractor	
	(N= 47)	(N=74)	(N=44)	(N=69)	
No. of Projects Experienced	0-10%	66%	35%	80%	55%
	10-20%	15%	27%	14%	22%
	20-40%	13%	18%	2%	10%
	40-60%	6%	7%	2%	6%
	60-80%	-	8%	2%	6%
	80-100%	-	5%	-	1%
Mean		1.60	2.42	1.34	1.90
		"10- 20%"	"10- 20%"	"10- 20%"	"10- 20%"

1.00 = "0 -10%"; 2.00 = "10- 20%"; 3.00 = "20- 40%"; 4.00 = "40- 60%"; 5.00 = "60- 80%"; and 6.00 = "80- 100%"

As noted in the previous section, two independent samples t-tests (between consultants and head contractors; and between consultants and subcontractors) were run to examine the perceptions of different groups of participants on the extent of payment delays and losses to head contractors and subcontractors. The results of the tests are given in Table 5 in Appendix 3(B). According to the results, in general, participant groups were in agreement regarding the extent of payment delays and losses. As observed from the (p-value of 0.23 which is greater than 0.05) table, there was only one instance where participants had different views. Head contractors indicated that on average they ‘often’ (mean = 2.071) experience payment delays, whereas consultants stated that payment delays to head contractors occur ‘very often’ (mean = 1.394).

6.2.4 Extent of Payment Problems - Value of Payment Delays and Losses

The value of payment delays and losses is another indicator used in this study to examine the extent of payment problems. Participants were required to indicate the frequency of the given value of payment delays and payment losses. The frequency was indicated using a scale of 1 (very often) to 5 (never).

Prior to performing the analysis to find the extent of payment delays and losses, a paired samples t-test was run to determine whether there was a statistically significant difference between the value of payment delays and losses. Table 6 in Appendix 3(B) presents the results of the paired samples t-test. The results show that there are statistically significant differences between the value of payment delays and losses of

less than \$50k because the p-values of less than .05 allows the rejection of the null hypothesis that there is no difference between the mean values of payment delays and losses. However, the results of paired samples t-test show that there are no significant differences between value of payment delays and losses above \$50k. Therefore for the purpose of analysis the value of payment delays and losses are considered separately.

The distribution of frequencies of value of payment delays and losses with their overall mean values is depicted in Figure 6.2. Overall, the mean values calculated indicate that for all values considered, payment delays are more prevalent than payment losses. As observed from the figure, the mean values calculated increase with the value of payment delays and losses. This indicates that the higher the value of payment delays and losses, the lower is the frequency of delays and losses encountered.

On average, payment delays up to a value of \$50k are ‘sometimes’ experienced while on rare occasions contractors and subcontractors experienced delays and losses up to \$200k and even above \$200k. Considering the payment losses, a different situation is observed. On average, payment losses up to the value of \$25k were ‘sometimes’ experienced. However, the value of payment losses in the range from \$25k - \$200k and above \$200k seemed to be ‘rarely’ experienced by contractors and subcontractors.

On detailed scrutiny of Figure 6.2, about 20-35% of participants reported that payment delays and losses ‘sometimes’ amount up to \$100k. According to over 15% of the participants, payment delays and losses of up to \$50k are ‘often’ experienced, while about 10% of participants were of the opinion that delays and losses are ‘often’ seen with values above \$50k. Twenty percent of respondents indicated that payment delays ‘very often’ amount to sums of less than \$10k. About 7% of participants reported that payment delays were ‘very often’ experienced within the range of \$10k-\$100k.

On the other extreme of the scale, about 10-20% of participants were of the opinion that delays and losses of less than \$50k are ‘never’ experienced, while according to 30-50% of them, delays and losses ‘never’ exceed above \$50k. About 30-40% of participants indicated that payment delays and losses of all range of values considered were ‘rarely’ experienced.

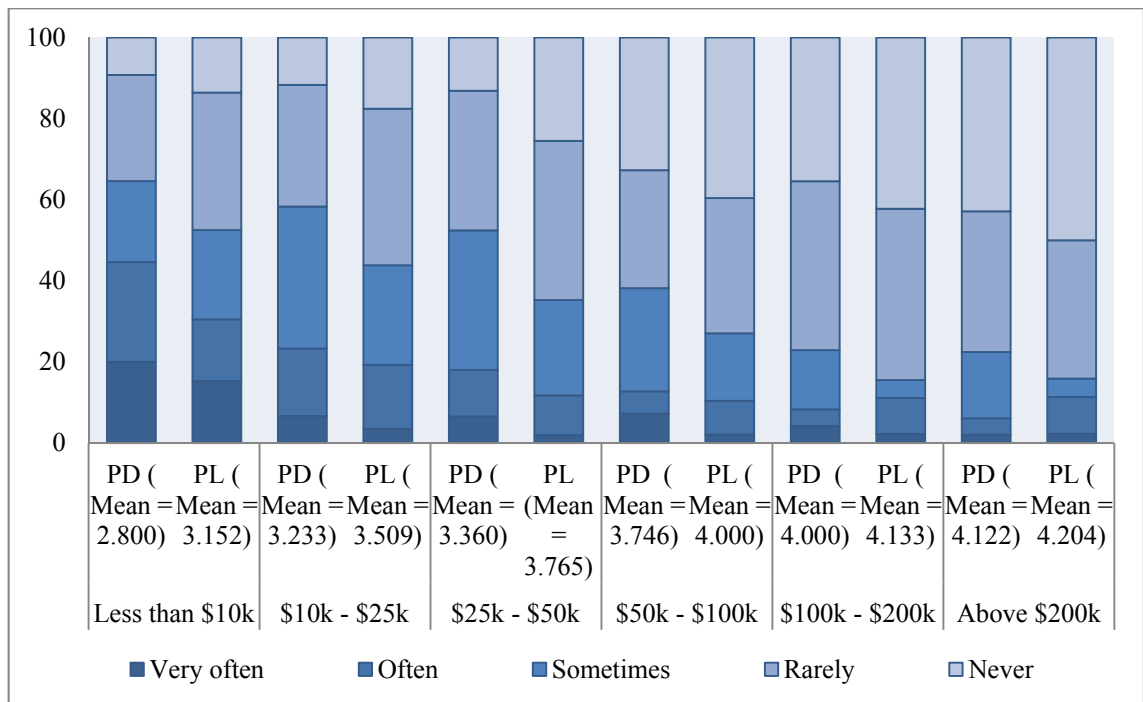


Figure 6.2: Value of payment delays and losses to head contractors and subcontractors

As follow-on to the above analysis, two independent samples t-tests were run separately to determine statistical differences in opinions regarding the value of payment delays and losses to head contractors and subcontractors respectively. The results of the tests given in Tables 7 and Table 8 in Appendix 3(B) reveal that participants were not at all different in their opinion about any given value of payment delays and losses to head contractors and subcontractors. This confirms that the graphical analysis performed above represents the status of the value of payment delays and losses experienced by both head contractors and subcontractors in the New Zealand construction industry.

6.2.5 Extent of payment problems - Duration of Payment Delays

Respondents were required to give the time for which payment was delayed on their respective projects. A range of durations (in weeks) was provided for which respondents were to indicate on a scale of 1 to 5 (1 being ‘Very often’ and 5 being ‘Never’), the most probable duration for which payment would be delayed on projects. Views of consultants and head contractors were sought to identify the duration of such payment delays to head contractors. As shown in Table 6.9, the results of an independent samples t-test performed on the views of duration of payment delays to head contractors indicated that consultants and head contractors had different views on the list of durations except for that of less than two weeks. The calculated mean values for head

contractors seem to be lower than for consultants for the range of durations given. Head contractors reported that on average payments are ‘often’ delayed for less than weeks on projects and ‘sometimes’ delays occur up to 8 weeks. Consultants expressed the view that on average delays of payments to head contractors are ‘sometimes’ experienced for period of less than two weeks up to 4 weeks. Only on rare occasions were payments to head contractors held beyond 4 weeks.

Table 6.9: Duration of payment delays - head contractors

Duration of Delays	Groups	N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Less than 2 weeks	Head Contractors	15	2.267	1.280	-.829	41	.412
	Consultants	28	2.607	1.286			
2-4 weeks	Head Contractors	14	2.857	.949	-2.327	39	.025
	Consultants	27	3.556	.892			
4-6 weeks	Head Contractors	13	3.000	1.000	-3.060	36	.004
	Consultants	25	3.920	.812			
6-8 weeks	Head Contractors	14	3.357	1.151	-2.283	28	.030
	Consultants	16	4.188	.834			
8-10 weeks	Head Contractors	14	3.500	1.092	-3.118	28	.004
	Consultants	16	4.500	.632			
Above 10 weeks	Head Contractors	14	3.714	.994	-2.616	28	.014
	Consultants	16	4.500	.632			

The views of consultants and subcontractors on the duration of payment delays to subcontractors showed an almost similar experience. As observed from Table 6.10, subcontractors indicated that their payments are ‘often’ delayed for less than two weeks and ‘sometimes’ from 2 weeks up to 8 weeks. On rare occasions, subcontractors have to experience of delays beyond 8 weeks. However, consultants have slightly different opinion about the time in which payments are delayed to subcontractors. This group indicated that subcontractors have to wait ‘sometimes’ up to a maximum of four weeks to get their payments. Only ‘rarely’ do subcontractors seem to experience delays in payment beyond four weeks.

A comparison of Tables 6.9 and Table 6.10 show that subcontractors and head contractors encounter a similar situation in respect to duration of delays of their payments on projects.

Table 6.10: Duration of payment delays - Subcontractors

Duration of Delays	Groups	N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Less than 2 weeks	Subcontractors	41	2.098	1.020	-2.601	64	.012
	Consultants	25	2.840	1.281			
2-4 weeks	Subcontractors	40	2.750	.927	-2.847	63	.006
	Consultants	25	3.480	1.122			
4-6 weeks	Subcontractors	37	3.054	1.053	-2.616	58	.011
	Consultants	23	3.783	1.043			
6-8 weeks	Subcontractors	37	3.297	1.222	-1.499	49	.140
	Consultants	14	3.857	1.099			
8-10 weeks	Subcontractors	35	3.571	1.092	-1.916	47	.062
	Consultants	14	4.214	.975			
Above 10 weeks	Subcontractors	34	3.676	1.007	-1.912	46	.062
	Consultants	14	4.286	.994			

Having analysed the different views on durations of payment delays experienced on projects, Figure 6.3 presents the overall view of the duration in a graphical form. This analysis used a total of 70 responses collected from participants. The results show that the significant mean values (2.379 to 3.451) lie between less than 2 weeks (‘often’) and 8 weeks (‘sometimes’). The results show that ‘rarely’ do head contractors and subcontractors experience payment delays for more than 8weeks.

A detailed scrutiny of the results show that around 30% of respondents ‘very often’ encounter delays of less than two weeks while another 32% of them ‘often’ experience delays of less than two weeks Another 20% of participants indicated that less than 2 weeks of delays are ‘rarely’ experienced while only 5% expressed the view that 2 week delays and ‘never’ experienced. For delays up to 8 weeks, 20-30% of participants experienced delays ‘often’ while about 25-40% had experienced them sometimes. On rare occasions delays of over 8 weeks, occur with about 20% of participants reporting that they sometimes experience this duration of delays on their projects.

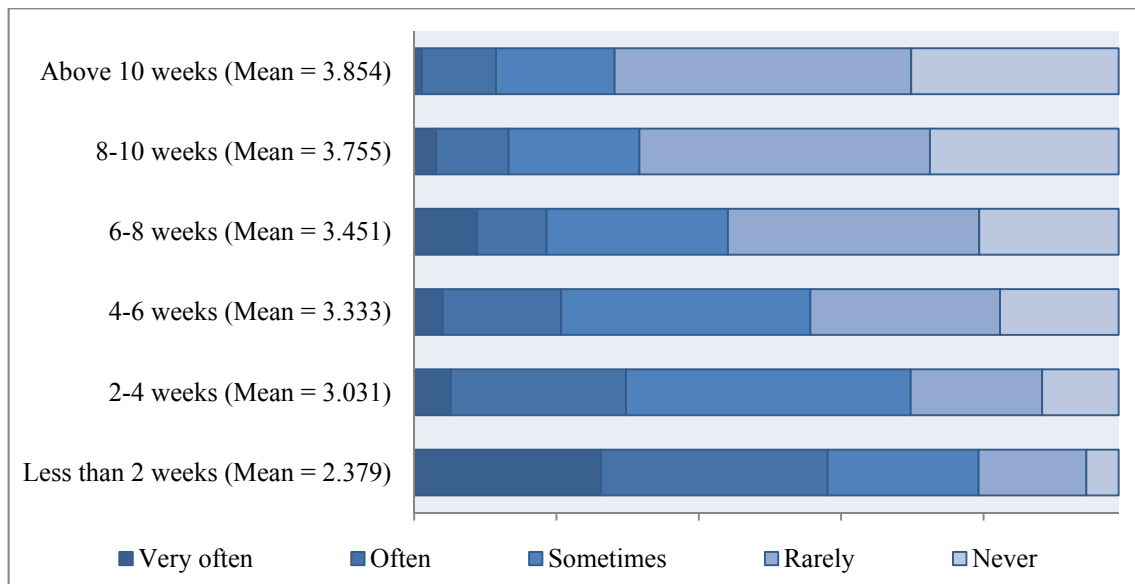


Figure 6.3: Duration of payment delays experienced by head contractors and subcontractors

6.3 Causes of Payment Problems

This section of the questionnaire covered causes of payment delays and losses on construction projects. As highlighted in section 6.2 of the chapter, though payment delays and losses are generally referred to together, this study considered them separately. Twenty eight common causes were identified from the literature and the preliminary investigation into liquidation reports. Participants were given the scale of 1 (Not at all Important) to 5 (Extremely Important) to indicate the importance of causes of payment delays and losses. Their relative importance as contributors to payment delays and losses are tested using descriptive statistics (mean and standard deviations). Prior to finding the important causes of payment problems from the perspective of the participants as a whole, a series of t-tests and ANOVA were performed to determine statistical differences in perceptions of the different participant groups on payment delays and losses. The following sub-sections explain the results of the t-tests performed.

6.3.1 Causes of Payment Delays and Losses

As a first step, paired samples t-test was performed which confirmed that the causes of payment delays and losses are not significantly different. The results of the paired

samples t-test are given in Table 9 in Appendix 3 (B). Amongst 28 causes only four causes are significant at .05 level of significance. Those causes include the following:

- a) Cash flow difficulties due to delays and non-payments on other projects (p-value = 0.008).
- b) Complications from contractual conditions (p-value =0.038).
- c) Improper supervision and financial controls (p-value =0.037).
- d) Economic and market conditions (p-value =0.033).

Overall there were no significant differences between the causes of payment delays and losses. Hence, the subsequent analyses are performed for causes of payment delays only.

6.3.2 Causes of Payment Problems – Contractors and Subcontractors

An independent samples t-test was performed on the causes of payment delays, to determine whether different groups of participants held different perceptions about causes of payment delays. The responses were obtained from the three major industry groups of consultants, head contractors and subcontractors. The number of responses obtained from each of group was 60, 15 and 40 respectively. Since the responses from head contractors were low (15) relative to the two other categories of participants, it was necessary to determine if the response of head contractors could be merged with those of subcontractors. To do this, an independent samples t-test needed to be run to test for equality of means between the responses of head contractors and subcontractors. The results of the independent samples t-test are given in Table 10 in Appendix 3(B). All the list of causes except economic and market conditions (p-value = 0.045) are not significant at 0.05 level of significance. This evidences that there is no statistically significant difference between the perceptions of subcontractors and head contractors regarding the causes of payment delays. Further interrogation of the profile of the head contractors and subcontractors, found that there were similarities (in terms of profession, number of years of experience, and number of projects undertaken) between these two groups. It was therefore decided to merge the responses and then compare these with the responses of the consultant group. Therefore the data used for analysis comprised 60 consultants and 55 head contractors and subcontractors (merged).

Accordingly, the responses of consultants and constructors (head contractors and subcontractors) on the causes of payment delays were compared using an independent samples t-test. Table 11 in Appendix 3(B) provides the results of the independent samples t-test between consultants and contractors. The results show that all causes are not statistically significant at 0.05 level of significance. This indicates that there was no statistically significant difference between consultants and contractors on the causes of payment delays. That is, all research participants were in agreement with respect to the causes of payment delays on construction projects.

6.3.3 Causes of Payment Problems – Views of Professionals

A one-way ANOVA was performed to check the perceptions of the different professions about the causes of payment delays. Table 12 in Appendix 3(B) gives the results of the ANOVA test. The results of ANOVA at .05 level of significance show that there were no significant differences between the opinions of the professions regarding the causes of payment delays at the 0.05 level of significance. All participants, architects, quantity surveyors, engineers, and project managers were in agreement regarding the importance of the causes of payment delays.

A further analysis to determine the importance of causes of payment delays was carried out. Descriptive statistics were used to rank the causes of payment delays according to their importance. Table 6.11 presents the causes of payment delays arranged in descending order of their mean values. From Table 6.11, 17 causes with mean values of 3.5 and above are considered the most important causes of payment delays in construction projects. The most important 10 are:

- a) Cash flow difficulties due to delays and non-payments on other projects (mean = 4.01; s.d. =1.07)
- b) Disputes over claims and responses (mean = 3.88; s.d. =1.00)
- c) Cash flow difficulties due to lack of initial capital (mean = 3.85; s.d. =1.16)
- d) Easy exit of players from the industry (mean = 3.84; s.d. =1.12)
- e) Payment culture of the industry (mean = 3.83; s.d. =1.02)
- f) Attitude of the payer into the industry (mean = 3.81; s.d. =1.32)
- g) Improper supervision and financial control (mean = 3.81; s.d. =1.17)

- h) Easy entry of players (mean = 3.80; s.d. =1.18)
- i) Cost overruns and contract failure (mean = 3.79; s.d. =1.15) and
- j) Lack of knowledge and experience in the field (mean = 3.75; s.d. =1.10).

This analysis indicates that the main causes of payment problems fall within a few areas of: cash flow difficulties, the characteristics of the industry, disputes over claims, lack of experience and financial control, etc.

Table 6.11: Causes of payment delays and losses on construction projects

Causes	N	Mean	Std. Dev.
Cash flow difficulties due to delays and non-payments on other projects	113	4.008	1.073
Disputes over payment claims and responses	113	3.876	1.001
Cash flow difficulties due to lack of initial capital	113	3.849	1.158
Easy exit of players: Little/no liability to creditors	112	3.839	1.119
Payment culture of the industry: Chain payment & work first get paid later	111	3.828	1.016
Attitude of the payer: dishonest/unethical conduct	112	3.812	1.318
Improper supervision and financial control	112	3.812	1.174
Easy entry of players with little/no capital backing	110	3.800	1.179
Cost overruns and contract failure	112	3.794	1.147
Lack of knowledge and experience in the field	114	3.754	1.101
High capital investment nature: Reliance on loan capital	109	3.633	1.143
Economic and market conditions	110	3.572	1.079
Time overrun of projects	112	3.562	1.191
Receivership and liquidation of parent and related companies	105	3.542	1.365
Disputes over quality of work	113	3.531	1.118
Administration/bureaucracy	113	3.531	1.102
Financial difficulties due to failure to secure contracts	106	3.518	1.172
Complications from contractual conditions	114	3.403	1.165
Financial difficulties due to drop in building prices	106	3.301	1.220
Procurement methods used	106	3.235	1.276
Contract types used	106	3.179	1.412
Standard forms of contracts used (right to payment and non-payment provisions)	111	3.144	1.313
Legislative procedures (Construction Contracts Act)	110	3.127	1.388
Disputes with debtors/creditors	106	3.103	1.218
Structure of the industry: Involvement of many commercial parties	114	3.061	1.214
Duration of projects (long-run or short-run)	108	3.027	1.241
Internal conflicts/disputes between owners or management team	103	2.941	1.153
Political/policy changes	102	2.627	1.289

6.3.4 Causes of Payment Problems – Factor Analysis

It seems that some of the causes of payment delays and losses identified are interrelated, each affecting the other. For example, disputes over payment claims and responses, and disputes over quality of work lead to time overruns on projects, which in turn cause cost

overruns on projects. Therefore for a clearer understanding of these interrelationships, a factor analysis was conducted. The use of factor analysis permits the clustering of causes that are highly inter-correlated into a limited number of independent factors.

The suitability of factor analysis for use on the data set was verified using Bartlett’s test of sphericity and the Kaiser-Meyer-Olkin (KMO) statistic. As explained in section 4.6.1.2, Bartlett’s test of sphericity tests the null hypothesis that variables are uncorrelated in the population. The significance level of .05 is considered for the decision to reject or accept the null hypothesis. The Kaiser-Meyer-Olkin (KMO) statistic is used to measure sampling adequacy. Table 19 provides the results of these two tests performed on the data used for the factor analysis. As presented in the table the significant Barlett’s test statistic value of 1392.721 at $p < .05$ level confirms that the null hypothesis can be rejected, the variables are uncorrelated, and therefore the use of factor analysis for the situation is appropriate. Further, the KMO statistic of 0.773 (> 0.50) obtained, confirms the sampling adequacy of the data set for clustering.

Table 6.12: KMO and Barlett’s Test

Statistical Tests		Results
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.773
Bartlett's Test of Sphericity	Approx. Chi-Square	1392.721
	df	378
	Sig.	.000

As explained in in section 4.6.1.2, performing a factor analysis involves the extraction of underlying factors. This was done using principal axis factoring (PAF). Using the PAF method, 20 out of the 28 most important causes were able to be clustered into six main factors. These six factors explain 74.54% of the total variance. Variables with factor loadings above 0.50 were considered when naming each factor. Since the six factors are likely to correlate with one another, an oblique rotation method was chosen as the best method to transform the factor matrix. The results of the factor analysis, factor loadings and Cronbach’s Alpha coefficients, are presented in Table 6.13.

As observed in the table, the first factor relates to contractual issues which comprise procurement methods, contract types, standard forms of contracts (payment provisions), and legislative processes (CCA) that are used in any project. These causes are clustered under ‘Contractual Issues’. The items that make up the second factor represent the financial side of industry players; thus this factor is titled ‘Financial Strength of Industry Players’. The items comprising the third factor include disputes over payment claims

and responses and quality of work, as well as the involvement of many parties in the structure of the industry. It could be argued that the involvement of many parties triggers associated problems such as communication and coordination, time and payment delays which result in conflicts between parties. The factor is therefore labeled, ‘Disputes’. The fourth factor has three causes of delays which represent ‘Project Characteristics’. The final factor is named the ‘Domino Effect’ as it describes the chain payment culture and cash flow difficulties due to payment delays and non-payments on other projects.

Table 6.13: Causes of payment problems on construction projects – factor analysis

Causes	Factors						Cronbach's Alpha
	1	2	3	4	5	6	
Contractual issues (39.33% of variance)							.890
Procurement methods used	.896						
Contract types used	.958						
Standard forms of contracts used (payment provisions)	.945						
Legislative processes (Construction Contracts Act)	.720						
Lack of knowledge and experience in the field	.504						
Political/policy changes	.520						
Financial strength of industry players (11.39% of variance)							.865
Easy entry of players with little/no capital backing		.904					
Easy exit of players: Little/no liability to creditors		.873					
Cash flow difficulties due to lack of initial capital		.891					
Financial difficulties due to failure to secure contracts		.599					
Receivership and liquidation of parent and related companies		.522					
Disputes and issues (8.38% of variance)							.627
Disputes over quality of work			.743				
Disputes over payment claims and responses			.692				
Structure of the industry: Involvement of many commercial parties			.577				
Project Characteristics (5.94% of variance)							.772
Cost overruns and contract failures				.775			
Time overrun of projects				.567			
High capital investment nature: Reliance on loan capital				.511			
Domino Effect (5.50% of variance)							.708
Payment culture: Chain payment, work first get paid later					-.735		
Cash flow difficulties due to delays and non-payments on other projects					-.546		
Others (4.00% of variance)							
Improper supervision and financial control						.538	

Generally a Cronbach’s Alpha value of above 0.70 is an accepted test for scale reliability. As seen in Table 6.13, four factors have an Alpha value over 0.70 while the third factor (disputes and issues) has an Alpha value of 0.627. This shows that items comprising each factor have a strong internal consistency. Since the sixth factor (others) comprises a single item, an Alpha value could not be calculated. The sixth factor is therefore excluded from the discussion.

6.3.5 Other Causes of Payment Problems

As part of the question which required participants to indicate the degree of importance of a list of causes contributing to payment delays and losses, participants were given the opportunity to indicate any other causes that could cause payment problems. Three participants expressed their views regarding other causes which contribute to payment problems in the New Zealand construction industry, and are presented in Table 6.14. Participants indicated that contractors’ deliberately delays making payment in order to improve their cash flow, their inadequate working capital, or ignorance of the CCA are responsible for payment problems in the industry. Conversely, another participant is of the opinion that contractors working for public clients are impacted due client’s failure to meet the deadline for payment.

Table 6.14: Other causes of payment problems

No.	IP Address	Causes of payment delays
1	RID54	“In the industry I work in, (central/local government) the principal reason for delay is not meeting the Principal's schedule for payment dates (often pay on one or two dates a month).”
2	RID98	“90% of the value of any project is normally attributable to the sub trades. Main contractors are adept at contriving excuses to delay payments to subcontractors to improve their own cash flow when they have been paid by the client. It is difficult for subcontractors to confirm the main contractor has been paid, they are often kept at arm’s length from the client, and regardless are contracted to the MC.”
3	RID53	“I am a subcontractor. 1st level builders (eg big builders such as Fletchers which are the best payers) are generally pretty good with payments. After that, it is all downhill with the smaller they get the more ignorant as to their obligations under the CCA and the slower payers they become as they have little or no working capital (Anyone can set themselves up as a 'Builder') These people tend to slow subs payments down and hold retentions for longer than they should as they use their subs for cash flow (i.e. like a bank).”

6.4 Effectiveness of Provisions in the CCA 2002 and Standard Forms of Contract

This section presents the analysis performed on responses obtained from participants for the questions relating to the effectiveness of provisions available within the CCA 2002 and the most commonly used standard forms of contract in New Zealand. By effectiveness of CCA provisions the study considered the extent to which individual provisions within the CCA fulfills the purposes for which they were designed. For example to what extent the adjudication provision within the Act helped respondents to resolve their disputes and recover their money due under the contract. Participants were required to indicate the extent of effectiveness of the provisions, according to their experience on a scale of 1 = (Not at all Effective) to 5 = (Extremely Effective). The use of Likert scale enables the assessment of the degree of effectiveness of the CCA provisions as perceived by participants. The following sub-sections explain the analysis of the effectiveness of the provisions of the CCA and the standard forms of contract.

6.4.1 Effectiveness of Provisions in the CCA

Table 6.15 arranged the provisions according to their mean values and standard deviations calculated using the number of responses collected. Respondents indicated that all the provisions are ‘moderately effective’. According to mean values and standard deviations, payment provisions of ‘P2’ (mean = 3.21; standard deviation = 1.08) and ‘P2’ (mean = 3.20; standard deviation = 1.11) seem to be the most effective payment provisions in the CCA.

Table 6.15: Payment and non-payment provisions in the CCA

Provisions	N	Mean	Std. Deviation
Right to respond to claim: payment schedule (P1)	116	3.207	1.075
Right to claim payment (P2)	117	3.205	1.110
Right to suspend the work (NP1)	114	2.851	1.228
Right to refer to adjudication (NP2)	111	2.820	1.208
Right to review and enforcement of adjudication determination (NP3)	109	2.771	1.190
Right to apply for a charging order (NP4)	108	2.722	1.199

Detailed analysis of the frequency of each provision is depicted in Figure 6.4. As observed, the majority of participants (about 30%) were of the opinion that all provisions are moderately effective. Another 20-30% stated that all provisions are highly effective. Considering non-payment provisions, the results show that around 10% were of the opinion that the provisions are extremely effective. According to about 14% of the participants, the right to payment claim (and payment schedule) is extremely effective provisions in the CCA. On the other hand, only a small percentage of (6%) respondents indicated that the provisions of ‘P1’ and ‘P2’ are not at all effective. Another 20% described those provisions as slightly effective.

Around 17% reported that the CCA provisions on the right to suspend work (NP1), apply for charging order (NP4), refer to adjudication (NP2), right to review and enforcement of adjudication determination (NP3), are not at all effective. However, for another 20-30% of participants those provisions seem to be slightly effective.

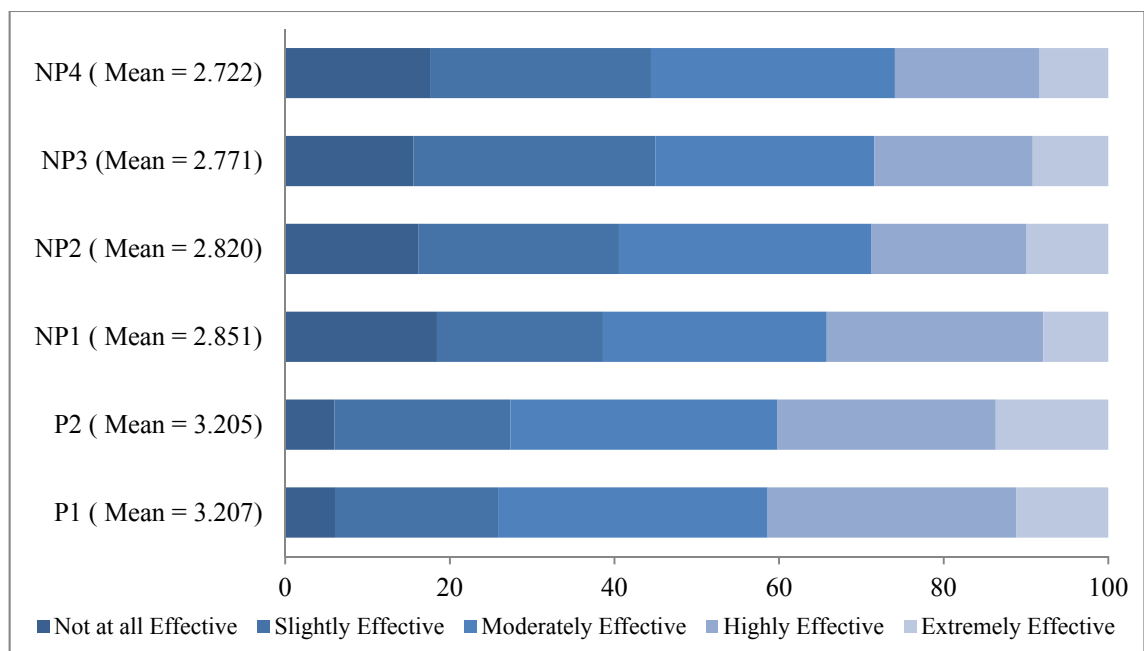


Figure 6.4: Distribution of effectiveness of payment provisions in the CCA

As in previous sections, a series of independent samples t-tests and ANOVA were performed to test the perceptions of respondents from the sub-groups of consultants, head contractors and subcontractors and from different professions, regarding the effectiveness of these CCA provisions. The results of the tests are given in Tables 16, 17, and 18 in Appendix 3 (B). The results of the independent t-tests and ANOVA show that the perceptions of participants on the effectiveness of provisions are similar across

all groups. In other words, participants are in the similar opinion that on average the provisions are moderately effective.

6.4.2 Extent of Use of CCA Provisions

Besides the effectiveness of the CCA provisions, participants were required to give an approximate percentage of projects where those provisions were used to remedy payment problems in New Zealand. Table 6.16 gives a breakdown of the results according to the frequency of the responses. As observed from Table, 84% of respondents reported that the CCA provisions were applied in about 10% of the projects they had undertaken.

Table 6.16: Percentage delays and losses which used CCA provisions

% of projects undertaken	No of Responses (N=44)	%
0 - 10%	37	84
10 - 20%	5	11
20 - 40%	1	2
40 - 60%	-	-
60 - 80%	-	-
80 - 100%	1	2

6.4.3 Effectiveness of Provisions in the Standard Forms of Contract

Similar to the CCA provisions, the effectiveness of contractual provisions available in of the standard forms of contract were assessed using similar scales. Table 6.17 presents the provisions (P1, P2, NP1, and NP2) with their respective mean and standard deviation. It is apparent from the table that on the whole, the provisions are moderately effective. From the mean values calculated, the right to claim (P2) and the right to respond to claims (P1) seem more effective than the two non-payment provisions (NP1 and NP2).

Table 6.17: Payment provisions in the standard forms of contract

Provisions	N	Mean	Std. Deviation
Right to respond to claim: payment schedule (P1)	114	3.168	1.104
Right to claim payment (P2)	116	3.138	1.094
Dispute resolution methods: Arbitration, mediation and negotiation (NP1)	109	2.945	1.192
Right in case of non-payment: Suspension and termination (NP2)	108	2.694	1.226

The responses are further illustrated in Figure 6.5 with the distribution of responses on the effectiveness of the provisions in the standard forms of contract. A large percentage (30% and above) of respondents were of the opinion that the provisions are moderately effective. Another 25% and above indicated that those provisions are very effective. For another 10% of respondents the provisions seem extremely effective. On the other hand, a small percentage (7%) reported that the contractual rights to claim payment (P2) and respond to claims (P1) are not at all effective. Another 22% stated that both ‘P1’ and ‘P2’ are slightly effective. Considering non-payment provisions, around 30% of respondents were of the opinion that both NP1 and NP2 are slightly effective. The provisions of NP1 and NP2 are not at all effective for 12% and 19% of respondents respectively.

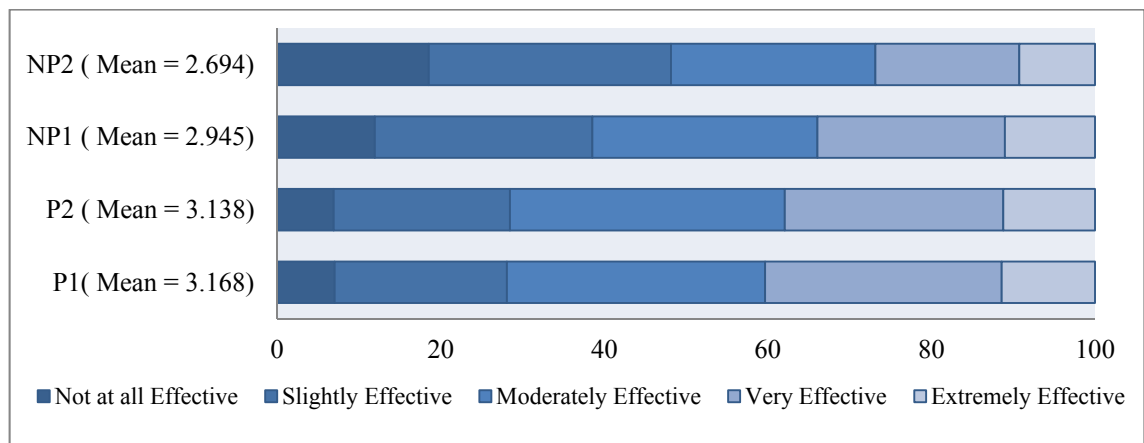


Figure 6.5: Distribution of the effectiveness of payment provisions in the standard forms of contract

6.5 Security of Payments

There is a misunderstanding among construction professionals that the construction payment specific legislation in New Zealand (CCA) is a security of payment legislation, and ensures security for payment. The CCA essentially stipulates payment procedures between parties to a contract. It regulates payments and if a payment is not made as agreed between the parties, the Act provides a dispute resolution process as a means of securing payment losses when there is a genuine dispute regarding payments. The CCA is not designed to guarantee that a party will get paid. This indicates that there needs to be means of securing payments other than the provisions stipulated in the Act. With this in view, this aspect of the questionnaire survey aimed to determine different forms by which payment can be secured in construction contracts.

The following sub-heading presents the analyses of participants' responses to questions relating to effective forms of security that could be used to secure payments, the extent participants have used any form of security in projects they have undertaken, and the reasons for not using any form of security.

6.5.1 Effectiveness of Forms of Security

Participants were required to give their opinions on the effectiveness of 10 different forms of security identified in the literature, using a scale of 1 (Not at all Effective) to 5 (Extremely Effective). An option was provided in the questionnaire for the participants to mention any other forms of security that they have used or were aware of, apart from the 10 provided. However, no response was obtained in this regard.

As noted previously, the number of responses obtained from the main groups of participants was: head contractors (14), consultants (54) and subcontractors (33). Since the responses from head contractors were low (14), it was necessary to determine if the response of head contractors could be merged with those of subcontractors. Hence, a one-way ANOVA was performed to reveal whether there are statistically significant differences between the main groups of participants regarding different forms of security. Descriptive statistics and the results of the ANOVA test are given in Table 6.18. The results of the ANOVA test reveals that there are no significant differences across participants regarding the different forms of security except one which is the disclosure by upper tiers of funding arrangements. In order to detect which group(s) is different to that exception (disclosure by upper tier of funding arrangements) a Post-Hoc Tukey-B's test was performed. Table 6.19 provides the results of this test. From the table, it is observed that head contractors (mean = 2.25) indicated that the disclosure by upper tiers of funding arrangements is a slightly effective form of security, whereas subcontractors (mean = 3.31) were of the opinion that it is moderately effective form of securing payment. On the whole participants shared the opinion that all forms of security are moderately effective.

For individual groups of research participants, the effectiveness of the different forms of security were ranked according to mean and standard deviation. Overall mean values of above 3.0 are considered, and the top four forms of security suggested by the research participants are:

- a) Principal payment bond (mean = 3.13; std.dev = 1.24)

- b) Direct payment/tripartite agreement with the funder (mean = 3.05; std.dev = 1.08)
- c) Retention bond in lieu of retention (mean = 3.05; std.dev = 1.16)
- d) Trust/escrow account (mean = 3.04; std.dev = 1.27)

It is to be noted that the mean values calculated for all four forms of security are close. Thus one could conclude that the top four forms of securities have equal standing. Any one of them could be considered at a time to secure payments to parties.

However, responses received on the effectiveness of forms of security seemed to differ slightly between individual groups. It is worthy to note that contractors expressed advance bonds as the most effective form of security. Contractors may have suggested this because of the fact that providing advance payments could improve their payment situations as they could impact on cash flow positively. Similarly subcontractors indicated that pre-qualification of the upper tiers' financial status is the best form of security from their point of view. Consultants indicated that the use of trust/escrow accounts is preferred, after principal payment bonds and retention bonds. Contractors and subcontractors however ranked escrows as the fifth most effective form of security on construction projects. Along similar lines as subcontractors, consultants indicated that pre-qualification of upper tiers' financial status is another feasible form of security to consider along with retention bonds, principle bonds and escrow accounts.

Table 6.18: Effectiveness of forms of security -one-way ANOVA

Form of security	Participants	N	Mean	Std. Deviation	Rank	F	Sig.
Principal payment bond	Contractors	14	3.286	1.267	2	.842	.434
	Sub-contractors	31	3.323	1.166	2		
	Consultants	50	2.980	1.286	1		
	Total	95	3.137	1.243	1		
Direct payment/Tripartite agreement with the funder	Contractors	12	2.917	1.240	4	1.950	.149
	Sub-contractors	29	3.379	1.014	1		
	Consultants	45	2.889	1.070	5		
	Total	86	3.058	1.088	2		
Retention bond in lieu of retention	Contractors	13	3.077	1.382	3	.382	.683
	Sub-contractors	31	3.194	1.108	6		
	Consultants	49	2.959	1.153	2		
	Total	93	3.054	1.164	3		
Trust/escrow account	Contractors	11	2.909	1.300	5	.608	.547
	Sub-contractors	29	3.241	1.184	5		
	Consultants	44	2.932	1.264	3		
	Total	84	3.036	1.236	4		
Pre-qualification of upper tier to their financial status	Contractors	11	2.454	1.213	9	2.178	.120
	Sub-contractors	29	3.276	1.130	4		
	Consultants	46	2.913	1.151	4		
	Total	86	2.977	1.167	5		
Advance bond	Contractors	13	3.539	1.198	1	2.524	.086
	Sub-contractors	29	2.931	1.066	9		
	Consultants	47	2.766	1.087	8		
	Total	89	2.933	1.115	6		
Personal guarantee by upper tiers	Contractors	13	2.769	1.235	6	.883	.417
	Sub-contractors	31	3.129	1.024	7		
	Consultants	47	2.808	1.154	6		
	Total	91	2.912	1.121	7		
Disclosure by upper tier of funding arrangements	Contractors	12	2.250	1.138	10	3.669	.030
	Sub-contractors	29	3.310	1.227	3		
	Consultants	45	2.800	1.179	7		
	Total	86	2.895	1.227	8		
Letter of credit from funder	Contractors	12	2.583	1.083	8	1.049	.355
	Sub-contractors	30	3.033	1.129	8		
	Consultants	48	2.708	1.110	9		
	Total	90	2.800	1.113	9		
Payment default insurance	Contractors	11	2.636	1.026	7	.544	.582
	Sub-contractors	30	2.900	1.124	10		
	Consultants	46	2.652	1.037	10		
	Total	87	2.736	1.061	10		

Table 6.19: Results of post-hoc Tukey B’s test

Disclosure by upper tier of funding arrangements			
Participant groups	N	1	2
Contractors	12	2.25	
Consultants	45	2.8	2.8
Sub-contractors	29		3.3103

The effectiveness of the different forms of security is illustrated further in Figure 6.6. The figure depicts the overall mean and the distribution of frequencies of all the research participants on the effectiveness of each of the ten forms of payment security. As mentioned previously, the top four forms of security realised from the study are: principal payment bond, direct payment/tripartite agreement, retention bond and escrow account. All four recorded mean values of above 3.0 (see Figure 6.6). Payment default insurance, letters of credit from a funder, and disclosure by upper tier funding arrangements are the least preferred forms of security. As observed from the Figure, on average all forms of security are moderately effective (with mean values of 3.0). This would imply that any of the ten forms of security could be considered in certain situations.

On closer scrutiny of Figure 6.6, a majority (30-40%) of respondents indicated that all forms of security are moderately effective. Another 20-30% were of the opinion that all forms of security are highly effective. Fifteen percent of participants indicated that principal bonds and trust accounts are extremely effective forms to secure payments, while 10% suggested that forms of direct payment/tripartite agreements, retention bonds, pre-qualification of upper tiers, personal guarantees, and disclosure by upper tiers’ funding arrangements are all extremely effective. On the other hand, around 15% of participants gave the opinion that any one of the forms is not at all effective. This gives an indication that there could be practical impediments in obtaining or using any form of payment security whatsoever.

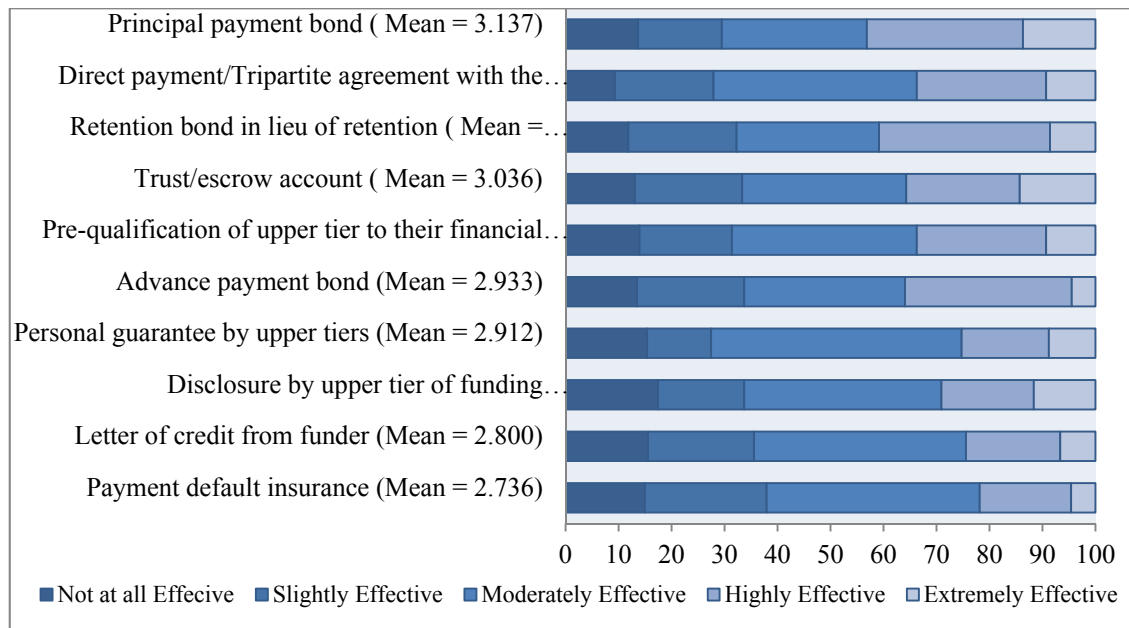


Figure 6.6: Effectiveness of forms of securities – distribution of frequency

6.5.2 Extent of Forms of Security for Payment Used

An aspect of the questionnaire required head contractors and subcontractors to indicate the extent to which they have used any of the 10 forms of security on the projects they have undertaken. This was to be expressed in terms of the number of total projects undertaken since the introduction of the CCA. The breakdown of the responses is presented in Table 6.20. The results show that 92% of the participants (49 out of 53) have used the forms of payment security on only about 10% of their projects. This would seem poor awareness, a lack of trust in the effectiveness of the different forms of security, or difficulties in getting security for payment.

Table 6.20: Extent of forms of security for payment used

% of projects undertaken	No of responses (N=53)	% responses
0 -10%	49	92
10- 20%	3	6
20- 40%	0	0
40- 60%	1	2
60- 80%	0	0
80- 100%	0	0

6.5.3 Reasons for Not Using Payment Security

As a follow-on to questions related to section 6.5.1 and 6.5.2, participants were required to express the reasons for not using any forms of payment security in undertaking

projects. A total of 12 participants responded to this question. Table 6.21 presents the responses obtained from participants. As observed from table, the reasons for not using security for payment fall into four main areas which include:

- a) Contractors and subcontractors are not able to influence/demand clients and contractors respectively to issue a security for payment because there are players available in the market to offer the job without the security (5 out of 12 participants).
- b) Often contracts used do not have a provision to offer a security (3 out of 12 participants).
- c) Cost of the security to clients and contractors (2 out of 12 participants).
- d) Security for payment is not required because the contractors and subcontractors seem to work for trustworthy clients and contractors respectively (2 out of 12 participants).

Table 6.21: Reasons for not using payment security

No.	Respondent ID	Reasons for not using any form of security
1	RID69	Subcontractor with NO choice and retentions held regardless of bond offering to builder.
2	RID17	We work with major construction companies mostly, and very difficult for subcontractor to demand security of any form. With very small contractors, we will insist on a substantial deposit.
3	RID56	If you go for security as a sub-contractor unsecured creditor you may as well not tender as there will always be someone who will do the job without asking for security.
4	RID25	The problem is that when you try to implement any of the above, the principle will probably just run away to the next contractor
5	RID53	We have tried personal guarantees, ramolpa clauses, and direct payments by end user. Always told remove clause(s) or you will not get the job. Frequently we are banker with no security or interest payments for use of our money and rely totally on builders' previous payment record.
6	RID63	Not in contract. Not something our company has set up for contracts.
7	RID27	Principal's contract documents typically do not make any provision for security of payment. Contractors have to comply with the requirements of the contract documents.
8	RID30	It is not very common practice to seek form of security in the Industry
9	RID74	It costs \$\$\$ to have.....that cost will add to the bid price, therefore your bid may be too high
10	RID67	Try to limit outgoing cost, to remain competitive in market place. It's a risk factor.
11	RID39	Trust through previous relationship.
12	RID5	No problems with payments from Principal.

6.6 Insolvencies and Related Payment Problems

The last section of the questionnaire addressed insolvencies and payment-related problems experienced on construction projects. Participants were required to indicate their experiences with insolvencies and other related payment problems. Specifically the questions related to:

- (a) Status of insolvencies in the construction industry
- (b) Status of payment problems due to insolvencies
- (c) Value of payment delays and losses due to insolvencies
- (d) Time taken to receive payment after liquidation proceedings
- (e) Settlement of payments in liquidations
- (f) Forms of securities used to remedy payment problems due to insolvencies

These key themes are covered in the following sub-headings.

6.6.1 Status of Insolvencies in the construction industry

Participants were required to indicate if any upper/lower tier construction parties that they have dealt with, experienced voluntary administration, receivership, bankruptcy or liquidation. Figure 6.7 represents the responses and shows that a majority (about 50%) of participants have ‘rarely’ been exposed to all forms of insolvencies. Considering bankruptcies or liquidations, 20% of participants had ‘sometimes’ been exposed to bankruptcies or liquidations of their upper/lower tiers. Another 27% of participants indicate that bankruptcies or liquidations had ‘never’ been experienced by their upper/lower tiers. As seen from the Figure 6.6, 26% of participants have ‘sometimes’ observed receivership and 14% voluntary administration amongst upper/lower tiers. Receivership of upper/lower tiers have ‘never’ been seen by 24%, and 39% of participants have not experienced voluntary administration in tiers above or below them.

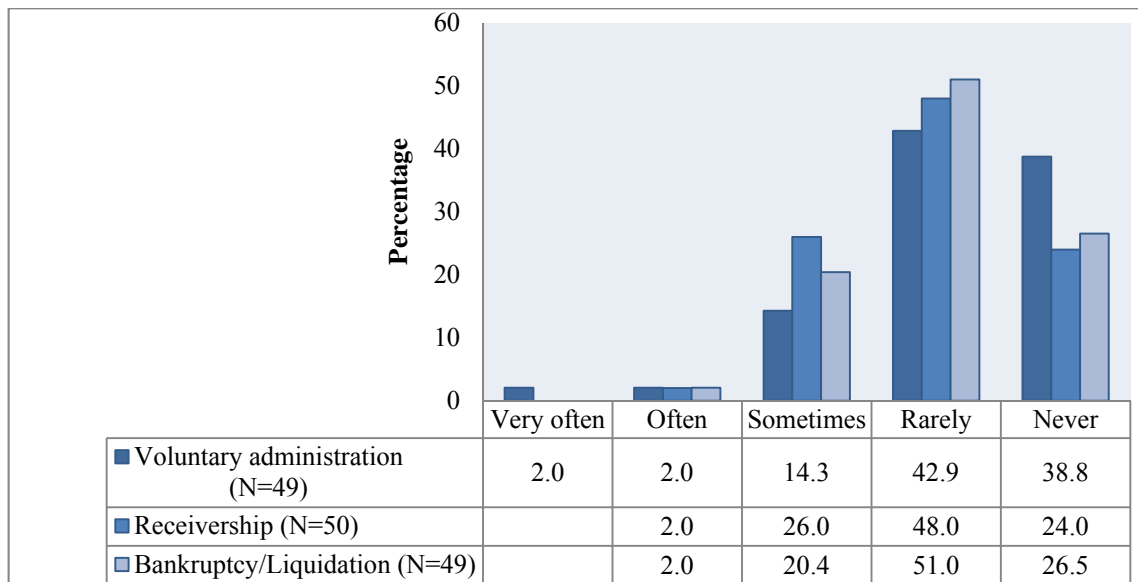


Figure 6.7: Distribution of frequency of construction insolvencies

6.6.2 Status of Payment Problems due to Insolvencies

Participants were required to indicate the type of payment problems experienced due to insolvencies. As shown in Figure 6.8, payment problems due to insolvency were classified as payment delays, payment losses and no problems with regards to payment. It is apparent from the results in the Figure that payment delays and losses are more frequent than no payment issues in the event of insolvency.

Considering payment delays, 27% of participants indicated that payment delays due to insolvencies are ‘sometimes’ prevalent. Further, for another 20% of participants payment delays are ‘often’ experienced. On the other extreme of the scale, 25% of participants were of the opinion that insolvency payment delays ‘rarely’ happen while for another 20% payment delays have ‘never’ been experienced. The distribution of frequencies for payment losses indicate that 29% of participants were of the opinion that payment losses in insolvencies happen ‘rarely’ while 21% ‘never’ experienced. However, another 25% reported that payment losses ‘sometimes’ happen on their projects.

Both payment delays and losses were considered, a small percentage (around 10%) indicated that payment problems ‘very often’ exist in the industry due to insolvencies. In addition to the experience with payment delays and losses, almost 36% of participants were of the opinion that having no problems with regards to payment in

insolvencies happens ‘rarely’ and a similar percentage were in the ‘never’ category. This indicates that payment problems are prevalent in insolvencies.

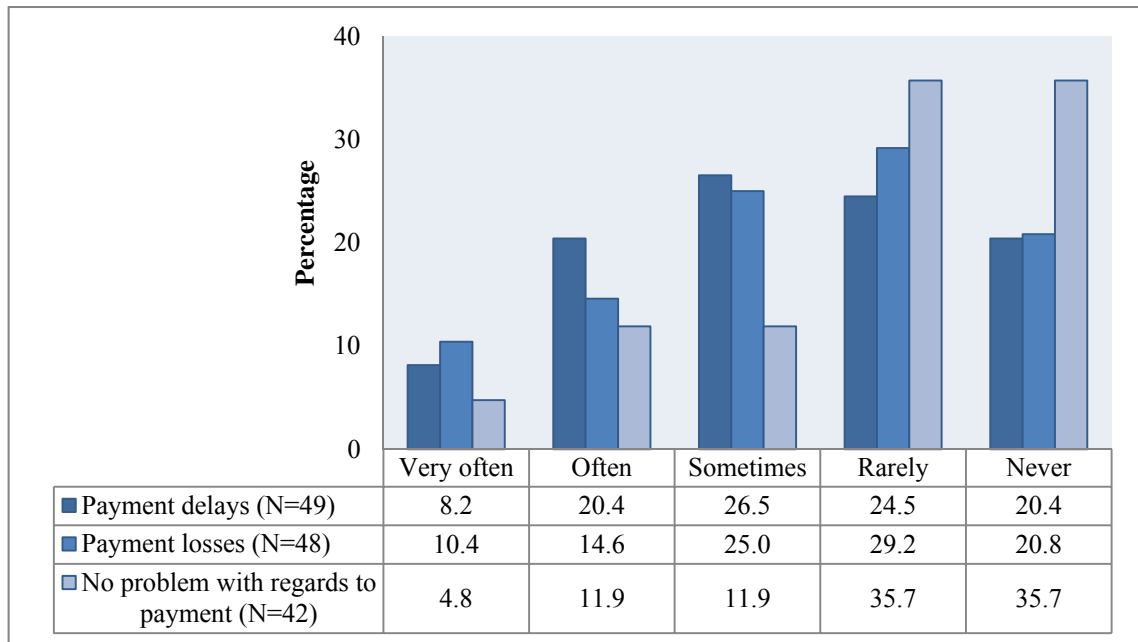


Figure 6.8: Distribution of frequency of types of payment problems in insolvencies

6.6.3 Value of Payment Delays and Losses

The question in this part of the questionnaire was designed to determine the magnitude of financial costs associated with insolvencies. Participants were presented with a list of values of payment delays and losses. Figure 6 represents the distribution of frequency of values of payment delays and losses in insolvencies. Overall, a small percentage (5-10%) of participants indicated that payment delays and losses are at least experienced ‘often’ with all values up to \$400k and above. Around 30% of participants were of the opinion that payment delays and losses are ‘sometimes’ seen with less than \$50k while about 20% of participants reported that payment delays and losses are ‘sometimes’ experienced between \$50k-100k.

As observed from Figure 6.9, payment delays and losses of higher values seem to be less frequent. A majority (30-40%) of participants stated that payment delays and losses up to \$400k are experienced ‘rarely’. Only 23% of participants were of the opinion that payment problems with a value of above \$400k ‘rarely’ happen. Another 50-60% of

participants indicated that the value of payment delays and losses equivalent to \$100-200k, \$200-400k and even above \$400k are ‘never’ experienced..

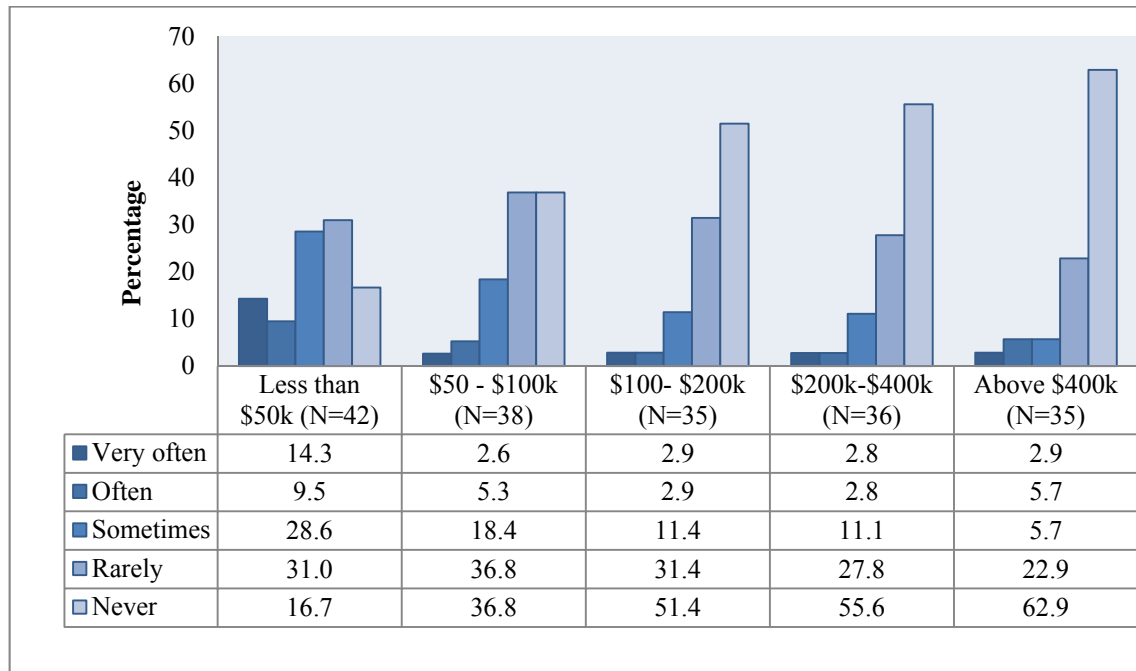


Figure 6.9: Distribution of frequency of value of payment delays and losses in insolvencies

6.6.4 Time Taken to Receive Payment after Insolvencies

This section presents an analysis of responses given by participants related to the question of how long it takes to receive payment after liquidation proceedings are complete. The detailed distribution of responses is depicted in Figure 6.10. A total of 50 (out of 293) responses was considered for analysis under this section. About 25% of participants reported that time taken to receive payment after insolvency is 6-12 months, while a similar percentage reported 12-18 months. Another 22% indicates that it took above 24 months to settle payments. The overall mean value (3.120) calculated indicates that on average the time taken to settle payment is 12-18months.

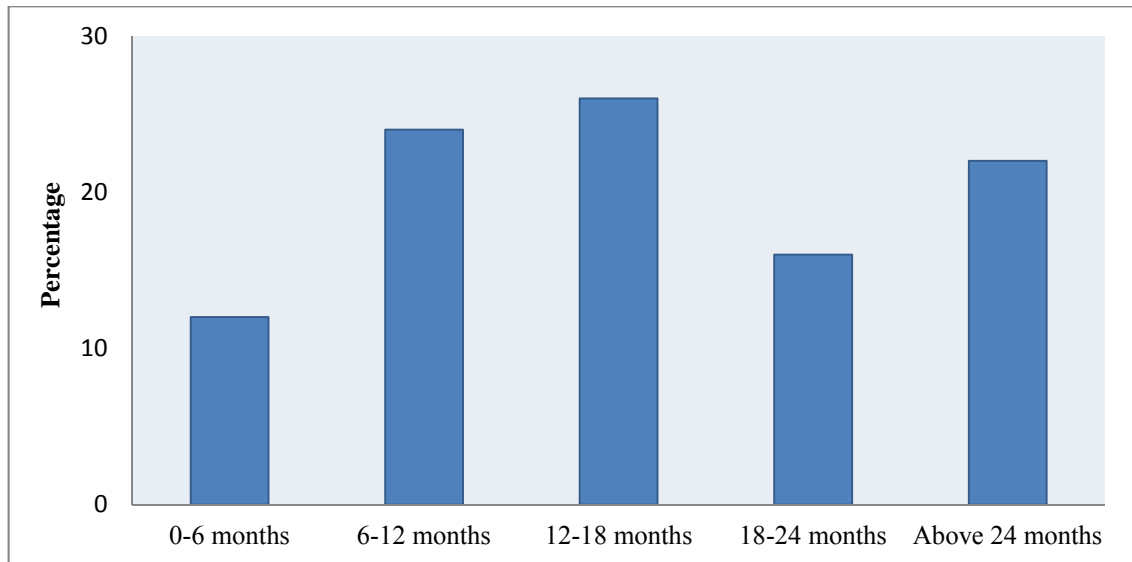


Figure 6.10: Distribution of frequency of time to receiving payment

Following this the participants were required to indicate their satisfaction level in respect to time taken in receiving payment upon the completion of liquidation proceedings. Of the total number of participants, 23% (66 out of 293) completed this question. As seen in Figure 6.11, a majority of participants (40%) are extremely dissatisfied with the time taken to settle payments. Another 30% of participants indicated that the time taken neither satisfied nor dissatisfied them. Only a small percentage (3%) was extremely satisfied with the time taken to receive payment. On average the mean value (3.773) calculated indicates that participants are moderately dissatisfied with the time taken to complete liquidation proceedings and receive payment.

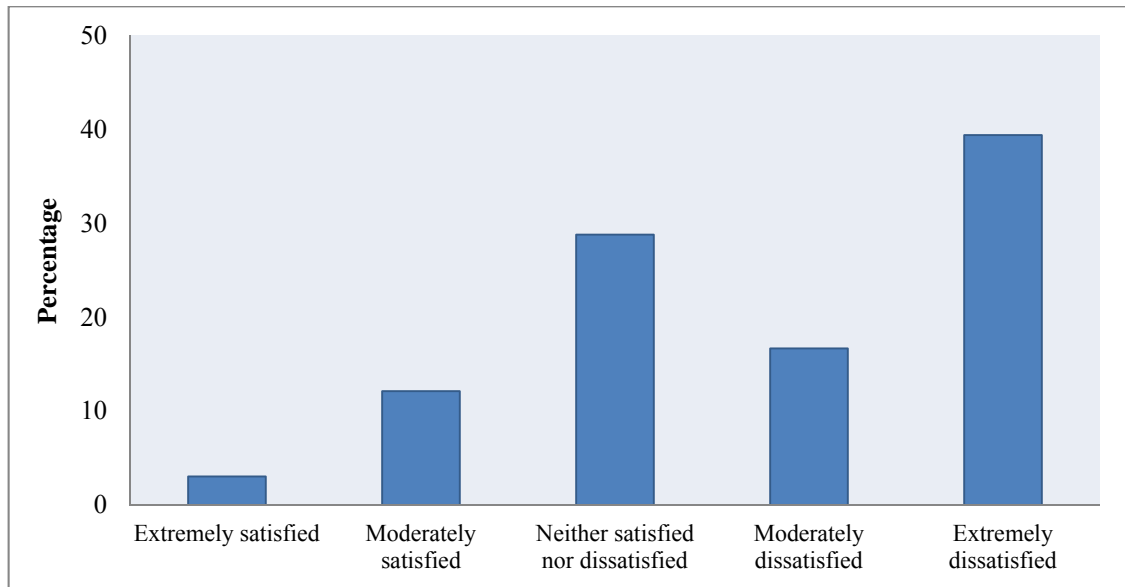


Figure 6.11: Time taken to receive payment after liquidation proceedings

6.6.5 Forms of Security Used in Insolvencies

This aspect of the questionnaire required participants to indicate the forms of securities that were used to secure payments in insolvencies. An average of 43 (out of 293) completed responses were considered for this analysis. Figure 6.12 represents the distribution of frequencies of a list of forms of securities that participants were given. As shown in the Figure, a large percentage (about 80%) of participants have ‘never’ used any of the forms of securities identified except the form of direct payment. Direct payment has been used to secure payment for around 20% of the participants at least ‘sometimes’. Another 25% of the participants have ‘rarely’ used ‘direct payment’. Overall about 10% of the participants have used all forms of securities ‘sometimes’. An equal percentage (15%) of participants has had no payment security ‘often’ and ‘very often’.

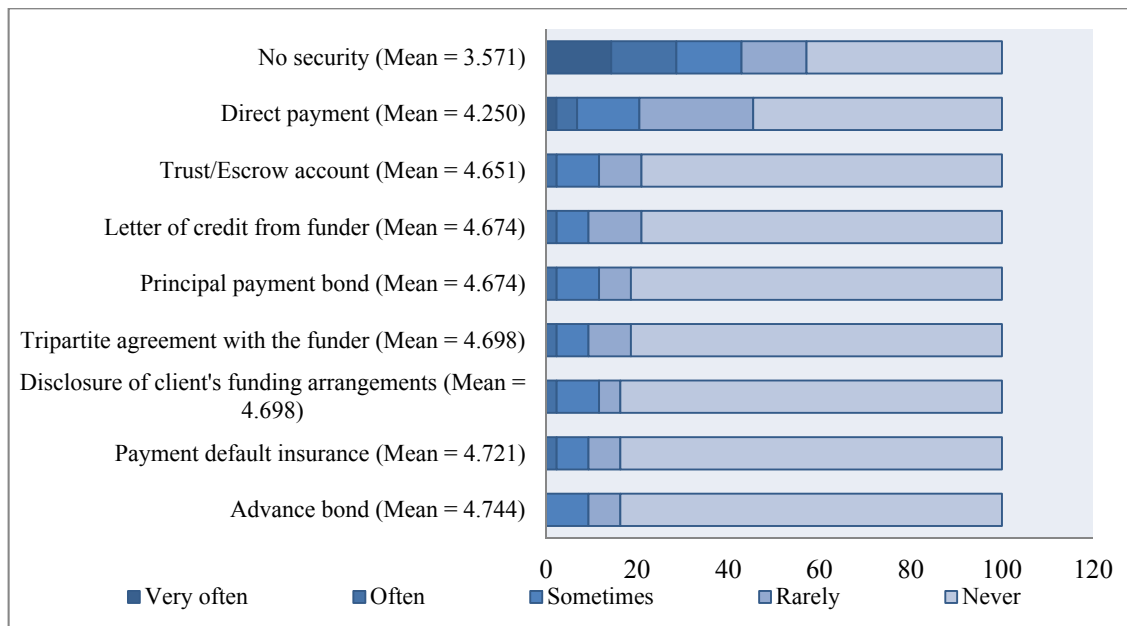


Figure 6.12: Distribution of frequency of forms of security used in insolvencies

6.7 General Comments on Mitigating Payment Problems

The last part of the questionnaire was an open-ended question where participants were given the freedom to provide comments and suggestions on the issues around payment, other mitigating measures, and reasons for not using a security for payment. A total of 25 participants expressed their views on payment problems in the New Zealand construction industry, issues with the CCA, causes of payment problems, forms of security that could be used, and means of improving payments within the New Zealand construction industry. Views obtained from participants are classified under five sub-themes. The following sub-headings explain participants’ views and a summary under each sub-theme identified.

6.7.1 General Comments on Payment issues in New Zealand

This section presents the participants’ general views on the nature of payment issues in the industry. Transcripts of participants responded to this aspect of the survey are given in Table 6.22. Few of the participants were of the view that retention monies and final claims are extremely delayed, particularly subcontractors’ retentions are often deliberately delayed for the purpose of improving the contractor’s cash flow. One of them indicated that contrary to the traditional practice of withholding retentions, the use

of counter claims and disagreements on variation claims are becoming increasingly popular among contractors as a strategy to delay payments and improve cash flows. They found that payment problems to subcontractors are still prevalent, despite the CCA being in place because on one side, the CCA limits its application to retention monies and on the other side, some of the subcontractors are reluctant to use the CCA on their contractors. As a contrast, two other participants indicated they have no problems with their payment from contractors and clients. The reason was suggested that they work for government clients who do not default payments.

Participants' views under this theme indicated that the following could remedy payment problems in the New Zealand industry:

- a) The use of trust accounts for retention monies.
- b) Direct payment to subcontractors by the client, if feasible.
- c) Working for good clients and contractors.

Table 6.22: Comments on payment issues in the industry

No.	Respondent ID	Comments on payment problems
1	RID35	Delays and late payments of retentions are caused by builders holding money to satisfy their company requirements before payment to subcontractors. Often with retentions being held at equal percentage on all subcontractors (they only have this percentage applied to themselves once by the developer/owner builders have positive cash flow on a project until they are required to pay (usually 50% at completion and 50% 12 months later) retentions and if they have been spending above income, when retentions are released they have insufficient funds to pay the subcontractors (or subcontractors on time until they receive further cash flow from another project). Often they can help themselves by delaying when retentions are released with poor management of outstanding maintenance issues, so they do not lose their cash flow advantage. My view is all retention monies should go into a trust account (not yet sure who should manage this) and this will secure these monies for due payment when work is complete and retentions are due for all parties.
2	RID36	As previously stated retentions is a biggy in our industry, never addressed under the CCA 2002. The only other thing would be that Construction companies can't contract out of conditions covered in successful tender letters like they do now. Also Construction companies in recent years are claiming more and more counter claims as another way to increase margin and withhold part payment. In most cases without evidence they quite often levy all subbies. If you fight them even if you are successful meantime they have held our money unjustifiability for months.
3	RID61	Currently working for a sub-contractor and our main problem in relation to payments is the traditional one of slow payment by the Head Contractors during the course of the Contract and extremely long delays for payment of the Final Claim and retentions (in some instances for years and on occasions non-payment). This is the very problem the

		Construction Contracts Act was supposed to resolve and it may have in the major centers but in the provinces sub-contractors are reluctant to take all the steps available in the Act to remedy delayed or non-payment as there is a relatively small number of head contractors in the market and sub-contractors don't want to get off side with any of them for fear it could jeopardise the possibility future work. Don't know the answer, direct payment of sub-contractors by the client would be nice but is not feasible because client's contract is with Head contractor. Also the head contractor needs to have control of the purse strings to ensure sub-contractors perform.
4	RID31	Variation non/agreements used as a delaying tactic to prolong payments or reduce payments
5	RID25	Government funded Public sector projects rarely result in payment losses as there is a committed budget to the project. Private sector projects are more likely to suffer losses due to complicated financial arrangements and loan capital. Head contractors are less likely to suffer payment losses, but sub-contractors may still in some instances be exposed if there are no proper commercial arrangements in place. Again this is rare in public sector projects in NZ. Private sector projects sometimes do depend on global economy and therefore more susceptible to market fluctuations.
6	RID26	Money lenders who are professional risk takers seem to be covered and compensated first with those less knowledgeable and more directly affected receive was left if any. Virtually all of the contracts that I have experienced with are based on NZS 3910 with very precise and complete conditions for payment processing. Application of the CCA arises between the main contractor and their subcontractors.
7	RID20	Never had too many problems when I worked in as a contractor, since my clients were Local and Central Government Organisations. We got paid our claims every month without too many issues. The company I worked for were very good with paying subcontractors monthly so they did not have too many issues either. At times certain dispute items were held for the month but usually would be sorted out for the following month payment round.
8	RID22	Nothing should, all our other customers and clients pay on time.

6.7.2 Causes of payment problems in the New Zealand construction industry

Under the sub-theme of causes of payment problems, one participant explained, based on over 50 years' experience in the industry as an architect and mediator/arbitrator/adjudicator, that causes for non-payments include the following:

- a) Ignorance or misunderstanding of contract provisions for payment and resolution of disputes
- b) Failure to establish proper contract terms
- c) Inadequate specifications and detailing of the work required
- d) Poor comprehension (by contractors) of specifications

- e) Under-pricing, perhaps because contract requirements are not clear, or ignored, or misunderstood
- f) Unrealistic clients: inadequate budget, inability to accommodate risk, unreasonable
- g) expectations
- h) Contractors unwilling to invest on necessary resources required for proper management of time and costs
- i) Late payment claims for changes arising out of the contract
- j) Lack of clarity about the scope of work between subcontractors and main contractors

6.7.3 Comments on the Construction Contracts Act

A total of 10 participants were of the opinion that there are strengths and weaknesses with the CCA, as shown in the Table 6.23 below. Two out of the eight participants claim that the CCA is an effective piece of legislation which helps to resolve disputes and remind parties about their payment obligations. One of them admitted that although the Act provides solutions, a failure to comply with its requirements could negate its purpose. Conversely, some of them were of the opinion that the CCA fails to address certain issues around payment. Variations and retention monies in particular are payments which cause problems. The CCA fails to stipulate rights related to managing variation claims and retention recovery. Another participant clarified that the CCA improves payment practices, helps to resolve disputes but does not guarantee payment. One of the participants expressed the view that although the CCA is in place, a reluctance to apply its provisions against reputed clients and contractors is a concern for parties. That is, participants are wary of using the CCA because of the impact it could have on their relationships with other parties in the industry.

Table 6.23: Comments on the CCA provisions

No	Respondent ID	Comments on CCA Provisions
1	RID35	All the CCA 2002 did is improve payment process however never covered retentions and as long as they put reason on payment certificate in particular variations they meet the acts requirements but still are not committed to pay non accepted lump sum contract values.
2	RID53	CCA is a great piece of legislation. My debtors ledger 90+ days value almost halved within months of CCA coming into effect. I use it on reluctant builders to remind them of their payment obligations when necessary.
3	RID37	Issue we have - how do you invoke provisions of CCA (suspension, termination, arbitration, etc.) when you are dealing with the likes of the Fletchers, Mainzeals and Hawkins - staff within these organisations work on the premise that sib contractors will not pursue debts through the legal channels due to the risk of compromising future work - and to a great extent this is true. A huge amount of energy is wasted in justifying why we exist.
4	RID5	CCA is ineffective as New Zeaand industry too small and nobody wants to damage their co-name by threatening to obtain through the Act.
5	RID25	Payment provisions are NOT any form of security of payment! You don't get paid, you take action and if the other party doesn't want to pay, you won't get paid. End of story.
6	RID61	The CCA is effective to sort out what is owed, there is still not enough responsibility on the principal to pay their bills!!
7	RID20	The contracts that we produce and administer have specific and clear directions for making contract payments. A timeline is always included. Basically the CCA is a fall-back position and generally arises between the main contractor and their subcontractors.
8	RID10	CCA is good for ensuring disputes don't arise. However great care is required throughout contract to ensure the principle and contractor meets their obligations under the CCA. Where issues can arise despite this is when unreasonable claims come through from subcontractors and head contractors don't follow the CCA rules.
9	RID63	I wish we had the answer to this. Perhaps more companies going down the mediation/arbitration act could improve the situation. Use of the CCA is limited in regards to private works. It all comes down to "pay when we can". You can't make a company pay if they don't have money! It's tough out there at the moment so I think the situation will be worse now than it was 3 or 4 years ago.
10	RID6	Payment dates are often varied by the head contractor over the subcontractors subcontract - This effectively allows for Paid when Paid can be applied. Resolution of Variations and there status under CCA is still cloudy especially when variations are only paid in advance and potentially get reversed out.

6.7.4 Forms of Security for Payments

This aspect of the question indicated participants' views regarding the security for payment. As observed from the Table 6.24, participants were of the opinion that there needs to be a way of securing payment to constructors. A large percentage (80% out of 10) of participants had the opinion that escrow is one of the appropriate forms of

security, particularly to protect retention monies. They argue that placing the money up-front into an escrow account ensures payment upon proper completion of the work. A few of them expressed the view that mandatory bonds and advance payments could also secure payment on construction projects.

Table 6.24: Comments on the forms of security for payments

No.	Respondent ID	Forms of Security for payment
1	RID35	Yes get cover for retentions. I believe that retentions held which is millions of dollars at any given time in our industry should be held in trust. instead at present the go into normal company cash flow and by time they are released in some cases only after badgering it could be years later from when the job was started. I know of a few companies that have gone bully up over the years and retentions have been deemed as unsecured and the poor subbies company never gets paid.
2	RID25	Place project funds in escrow before commencement perhaps. This will put a stop to value added builds where the funding going forward is based on the value of what has already been built. As this is the mode of operation of most of the dodgy developers, it may not be such a bad thing!
3	RID44	Money owed to sub-contractors should be held in trust as the biggest losses come after completion of project awaiting retention release.
4	RID56	Widespread use of escrow accounts to ensure funds are available at commencement. Someone independent to manage the payment release process otherwise it is a lottery.
5	RID31	Payments paid into an Escrow account. Both clients and Main Contractors should provide evidence of financial security to supply chain, i.e. subcontractors. It is the subcontractors that are generally on the receiving end of payment delays and losses.
6	RID36	1. Principal's Bond 2. Project Managers altering contracts to ensure sufficient time for Principal to pay upon certification
7	RID27	Principal's Bonds should be mandatory for private clients (developers) - Retention monies should be kept in a trust account.
8	RID5	Advance payment, client/head contractor pays full cost up-front into escrow, insurance/bond
9	RID54	Emphasis on bonds, payments in lawyers trust accounts, pre secured monies.
10	RID53	Payment to subs directly by end user I currently have 4 bad debts [3rd/4th level builders] where I know builder has been paid but I have been either short paid (2) or not paid at all (2) (Total value ~ \$40K)

6.7.5 Other Means of Improving Payment Problems in the Industry

Altogether 26 participants indicated that there are other means by which payment practices in the New Zealand construction industry could be improved. Table 6.25 presents the views of participants.

Participant indicated that having proper contract documentation (consisting of drawings, specifications, explaining scope of the work, payment terms, etc.), along with qualified professionals having a sound knowledge and understanding of construction contracts

could improve payment problems in the New Zealand industry. Participants were of the opinion that ensuring higher level of integrity between project players, providing proof of funding for the project before commencement of contracts and making claims on time, are all other ways that would avoid or minimise such problems. One of the participants is of the opinion that a regulatory requirement for construction companies to have a certain level of their own working capital to tender for the project could improve the cash flow of contractors which would remedy payment problems.

Some of the participants were of the opinion that having open communications and negotiations could remedy the problem. In worse cases, some of the contractors and subcontractors applied the strategies of withholding of documents required for code of compliance, threatens to stop works, and change locks or remove contract items to recover their payments from upper tiers.

Table 6.25: Other means of mitigating payment problems

No.	Respondent ID	Other means of securing payment
1	RID47	By engaging a C.O.W. or an Independent Registered Q.S. on ALL projects, to administrate ALL monies to a project.....(just like Trading/Saving Banks carry out).
2	RID54	Being persistent.
3	RID59	Discuss with the parties and reach some agreement if there is a problem. Generally there can be some give and take if required but comes down to good will on all sides.
4	RID36	Generally for smaller sized project, the delays and losses could be minimised within the construction industry by having good documentation and communication channel as well as involving all possible relevant personnel from initial stage so they are aware of all necessary procedures and items.
5	RID20	Maintaining open communications between the engineer, the contractor and the principal - often principal organisations do not take into account that contract payments will occur "off cycle" and as such the principal needs to make payments to meet their contract obligations to pay rather than adhere to the principals standard terms of payment.
6	RID21	Employment of an impartial architect or engineer to the contract to act as neutral party to check payment claims and remind parties of their obligations.
7	RID22	If there are serious payment issues it is always good to have a meeting with the Client, in which a lot of payment issues can be sorted out.
8	RID27	Meetings - all present to discuss issues.
9	RID11	Regularly review Project Management Plan with all stakeholders and discuss delays and impact on payment schedule quickly.
10	RID13	High level of integrity of all project players; Adoption of 'Alliance' model of contract.

11	RID24	In short front end preparation. Having good solid documentation [plans, spec & contract], the right client, consultants and contractors with the intent to carry out the contract without making every communication about defining the work and if it is a change is it more or less work.
12	RID23	Good knowledge of both construction contracts and CCA by the person administering the contract (they should be independent and free of conflicts of interest. Contract admin document procedures should be clear, formal and well organized by all parties. Contract documents clearly show scope of work and are complete - i.e. contain all drawings/specs and tender correspondence. Building contracts need to be equitable and free of unreasonable payment or retention requirements that are sometimes requested by principles. Special conditions of contract such as liquidated damages are to be used only if absolutely necessary. As they automatically set up an adversarial relationship between the principle and head contractor over time and cost issues. Contractors need to be fair and reasonable with their claims and submit them in a form that is clear, and clearly attributed to a section of work within the contract and thus can be assessed in good time. Well documented claims other documents to back up variation claims important. All parties including the QS need to be aware of their rights obligations under CCA. The contract administer should ensure this from the outset. Payment schedules should be clear and document any areas of the claim in dispute or under review. All done strictly to req. time frames, If the above is done there should be little room for delays or losses in payment.
13	RID49	Proof of funding before construction starts.
14	RID16	The contractor needs to ensure he submits a CORRECT claim ON TIME!!!
15	RID45	By them being aware of what the funders and banks require from day one and the banks being open about this and not deciding to unilaterally can the rules whenever they feel like it. Consultants also need to be more pragmatic when dealing with cost overruns and claims.
16	RID17	Refusal to provide documents for code of compliance until payment received.
17	RID8	Change the date that they are paid.
18	RID53	Main Contractors to be honest.
19	RID39	Requirement for construction companies to have a certain level of their own working capital before being allowed to tender on projects. Perhaps they should have working capital no less than x% of the contract value they are bidding on.
20	RID37	Contractor threatens to stop works, change locks or remove contract items gets the best response.
21	RID6	As a subcontractor it would be good if we could A/ receive payment schedules earlier in the month & B/ guarantee that we would receive a payment schedule from each contractor claim against for etc. and every claim.
22	RID11	Careful selection of head contractor and its subcontractors. Do reference checks of head contractor's performance from other clients. Ensure construction design is as detailed as possible and all outstanding unknowns are clarified before any site work begins Hire competent project managers and tradesmen.
23	RID10	Most issues are resolved with need for Arbitration. Usually resolved by negotiation between principle and builder. Sometimes an architect's decision is called for and we have found this is accepted by contractors.
24	RID15	Litigation and promise of future work.
25	RID31	By mediation
26	RID35	Really, until insolvency laws are toughened up, nothing will change.

6.8 Summary

This chapter has presented analyses of the questionnaire survey findings in line with the research objectives identified in chapter one. Analyses were performed using both descriptive and inferential statistics. Statistical significance tests of t-test and ANOVA were used to determine differences in perceptions between different participant groups. Major causes of construction payment problems have been identified using factor analysis.

The nature and extent of payment problems were analysed in relation to contractors and subcontractors, types of payment, and value of payment delays and losses, duration of payment delays, and the number of projects undertaken. The analysis has identified the most important causes of payment problems in the New Zealand construction industry. Further, the effectiveness of contractual and legislative payment provisions available in the Construction Contracts Act and standard forms of contracts have been assessed together with the extent of use of those provisions to remedy payment problems. The effective forms of security that could mitigate payment problems in the New Zealand construction industry were analysed. In addition, the extent of the use of securities for payment and the reasons for not using any form of security were also analysed.

These findings were validated and extended using subject matter experts (SMEs). The following chapter presents the views of the SMEs on these findings.

CHAPTER SEVEN

Data Analysis and Results – SMEs Interviews

7.0 Introduction

This chapter presents the results of the semi-structured interviews conducted using subject matter experts (SMEs). Views of SMEs were sought to validate and extend the findings obtained from the questionnaire survey and preliminary document analyses. Interviews were guided by the indicative questions prepared based on the research findings obtained so far, which were in accordance with the research objectives. The list of indicative questions used for the interviews with different SME groups is provided in Appendix 1(G to I).

SMEs' views are organized under five sub-themes in line with the research objectives identified. The first sub-theme outlines the opinions of SMEs regarding the first objective: the nature and extent of payment delays and losses. The second sub-theme covers SMEs' views on the second objective which is related to construction insolvencies and payment problems associated with them. The causes of payment delays and losses, the third research objective, are further confirmed using SMEs in the third sub-theme. The last two sub-themes present the SMEs' views on the fourth and fifth research objectives covering the effectiveness within the provisions of the standard forms of contract and the CCA, and feasible forms of security of payment respectively.

The chapter begins with a profile of the SMEs interviewed and then goes on to present their views under each of the sub-themes aforementioned. The chapter concludes with a highlight of the key points emanating from the interviews.

7.1 Profile of Subject Matter Experts (SMEs)

The SMEs interviewed were selected with due consideration to their backgrounds, field of involvement, exposure to the key subject matters of the current research objectives, and persons to whom the preliminary investigations had identified as important to the study. Key persons, sectors and sub-sectors of the construction industry in New Zealand

were considered in the selection of participants (e.g. contracting, subcontracting, clients, etc.). In order to encourage participation, potential interviewees were sent brief outlines of the research objectives and key findings from the preliminary investigations. The potential interviewees were further provided with the participants' information sheet (Appendix 1(C)) which explained the nature and purpose of the research, time limits for the interviews, etc., a consent form (Appendix 1(B)), and indicative questions via email at the time of invitation (See Appendix 1 (G to I)). If the interviewees approached were non-knowledgeable in the subject area of the research, the emails were directed to more appropriate persons. Accordingly, through the solicitation process, 21 persons from different sectors of the industry expressed their willingness to participate and share their views. Table 7.1 gives the profile of the SMEs interviewed.

As shown in the table, the SMEs represent clients groups (government and private developers), head contractors, subcontractors and specialist trade contractors, construction trade associations and professional institutes, construction specialist service providers (adjudicator and construction lawyers construction liquidator, surety underwriter, and escrow service). The information used for the profiling of the interviewees included: position held in their organisations, professional affiliations, nature of job and work involvement, years of experience etc. (see table 7.1). Most SMEs occupied managerial positions, and were involved in various construction related activities. More than 60% of the SMEs had more than 15 years of experience in their field while another 30% SMEs had more than 25 years of experience. The profile information of the interviewees gives credibility to their opinions and helps to ensure data integrity and reliability.

Table 7.1: Profile of participants – SMEs interview

Interviewees	Representative organization/ sector of the industry	Position/Profession	Nature of Work/Field of involvement	Work Experience (years)
I01	Government Client	Manager – Project Management Office	Contract documentation, managing contracts and people involved in payment processes	20
I02	Developer client	Director/Quantity Surveyor	Property development business	10
I03	Contractors Federation	CEO	Facilitator, engaged with industry subject matter experts and represents the industry with government departments	3
I04	Professional Institute	Executive Director	Liaison with construction related institutes and listening to issues of Quantity Surveyors, contractors, subcontractors and property owners	12
I05	Retiree	Arbitrator/Adjudicator	Co-author of a guide to CCA	25
I06	Dispute resolution and Escrow service specialist	Director	Arbitrator, Adjudicator, Mediator, subcontractor, main contractor, designer	40
I07	Insolvency & Business Recovery Specialists	Associate/ Chartered Accountant	Construction liquidation	18
I08	Construction Bonds and Guarantees specialist	Surety Underwriter	Underwriting contract securities	15
I09	Escrow service	Managing Director	Specialized Escrow Service	3
I010	Kensington Swan - Wellington	Partner	Legal Service	13
I011	Main contracting	Commercial Manager – Infrastructure/Quantity Surveyor	Building and Civil engineering - Large	40
I012	Main contracting	Chief Financial Officer NZ/Chartered Accountant	Civil Engineering - Large	10
I013	Main contracting	National Commercial Manager/Quantity Surveyor	Building and property - Large	23
I014	Main contracting	Commercial Risk Manager/Civil	Building and Civil Engineering - Large	40

		Engineer			
I015	Main contracting	CEO/Civil Engineer		Civil Engineering - Large	30
I016	Main contracting	Chief Quantity Surveyor		Building work – Medium size	44
I017	Main contracting	Director		Civil Engineering – Small size	42
I018	Subcontracting	Managing Director		Road construction and Maintenance	12
I019	Subcontractor – Specialist trade	Manager		Roofing	35
I020	Subcontractor – Specialist trade	Managing Accountant	Director/Chartered	Fire protection	15
I021	Subcontractor – Specialist trade	Managing Director		Scaffolding, and formwork	10

7.2 Nature of Payment Delays and Losses

This section summarises the views of the interviewees regarding the sub-theme of the prevalence of payment delays and payment losses in the construction industry. Participants were required to comment on the nature and extent of payment problems experienced by contractors and subcontractors, the party that is affected the most. Other commentaries on the practice of withholding payments on the basis of pay-if and when-paid conditions are presented, as well. Further views on payment problems with regards to private and public clients, and residential and commercial contracts are also presented.

7.2.1 Nature and Extent of Payment Problems

In general, the SMEs views were that payment problems are still prevalent in the construction industry but not as widespread as they used to be before the CCA was promulgated. Interviewees were unanimous that the introduction of the CCA in 2003 had improved payment issues by tidying up the industry to a greater extent. Construction parties are becoming more and more aware of the provisions and power of the Act leading to an increased and the power of it and the ability to use the CCA to further their organisation's interest. The CCA provision requires that project owners make prompt response to payment claims and provides remedies in the event of non-payment. Delays seem to be more frequent in the construction industry in New Zealand than losses. In terms of the opinion losses are more likely when there are relationship breakdowns or insolvency issues.

One of the legal experts (I011) and dispute resolution experts (I08) are of the opinion that payment problems have always been an issue within the industry and will continue to be, unless the industry changes. They both recognise payment problems as one of main/significant issues creating disputes in the industry. According to one of them (I08), the number of payment-related disputes in the industry does not seem to have changed or been reduced, even with the CCA. On the other hand, the legal expert (I011) expressed the view that payment problems in the New Zealand industry are associated with its culture. In his opinion the New Zealand construction industry is quite cooperative and concerned about relationship management. According to this legal

expert (I011), contractors and subcontractors therefore tend to leave or walk away from payment problems, and often hope that they will be resolved later.

Conversely interviewees (I011-I016) of large and medium size construction companies are of the opinion that payment problems have improved significantly with the introduction of the CCA. In general, they believe that the CCA has helped to improve the situation. However, one of them (I011) indicated that payment delays are still occurring, particularly among smaller commercial builders involved in projects up to \$20-30 million. Another interviewee (I014) stated that payment problems are still occurring and are significant as contractors have to pay subcontractors whether or not the contractor is paid. Some of the SMEs from the same group commented that payment problems are experienced around financial difficulties of principals themselves or with funders.

According to interviewees from large and medium size construction companies the client group they work for is another important factor which has contributed to less significant payment problems. Large companies are reliant on 70-80% of their commissions from Councils and the New Zealand Transport Agency (NZTA). Interviewees that work for the large construction firms (e.g. I011, I012, I013, I014, and I015) indicated that the settlement of claims by these government agencies is reliable. Two interviewees (I013 and I015) observed that payment problems were significant in the past where the construction market had an equal (50-50) share of private development and public client related construction activities. Currently the construction market consists of a small share of private development activities (5%) which is responsible for just a few payment problems.

As opposed to large and medium size companies, an interviewee (I017) from a relatively smaller (third tier) construction company claims that the company experienced significant payment problems. The interviewee said that even though remedial provisions were referred to during payment disputes, the company was not able to recover its claims because of difficulties in complying with the requirements of the CCA. In support of this opinion, an interviewee (I013) of one of the larger companies indicated that payment problems seem to happen beyond first and second tier construction companies who are less familiar with the requirements of the Act and do not operate in accordance with its provisions.

When interviewees from subcontractors are considered, three (I018, I020, and I021) out of four interviewees have indicated that they experience payment problems. The one exception (I019) felt payment problems were insignificant because of the following company strategies.

- a) Negated payment problems mainly by working for a selected group of clients who are good payers (pay as and when claims are due).
- b) By eliminating clients who have been problematic in the past. (The company has been in operation for 35 years).
- c) By having a good credit control system in place
- d) By being directly involved with the CCA and the Subcontract Agreement (SA2009) from the infancy of both of those documents.

Although the company admitted that payment problems are still prevalent in the industry they are not as significant as they used to be. Another subcontracting company (I018), involved in road construction and maintenance works reported that they experience delays in payment infrequently and they followed similar strategies as the above. The interviewee explained that the company had a regress credit control procedure on its new customers and is very careful about to whom they offer credits. However, the same interviewee admitted that they still experience payment delays, while they delay payment to their own suppliers and subcontractors occasionally. An interviewee (I021) from another subcontracting company suggested that payments are being constantly delayed for both non-disputed and disputed amounts. Further reasons given by this interviewee for payment delays are reported in section 7.4 of this chapter.

The SME that represents government agency (I01) admitted to contributing to payment delays, while a private developer (I02) agreed that they are sometimes in default to their own contractors and subcontractors.

7.2.2 Types of Payments at Risk of Delay and Loss

Interviewees were asked to comment on the type of payments that were at risk of delays and losses in the construction industry. Dispute resolution experts (I05 and I06) were of the opinion that payment delays and losses could happen with any sort of payment irrespective of whether it is a progress or final payment or retention monies. All types of

payments are at equal risk. The interviewee said that the type of payment which is most at risk depends on the contract administration, the solvency of the parties, and the attitude of the payers.

There is a consensus that payment problems are usually around variation claims. Legal experts are of the opinion that quite often variations are the source of most construction disputes. One legal expert (I010) clarified that the nature and scope of work, whether something is a variation or not, issues related to risk sharing being causes of variation which result in liquidated damages, are all reasons for payment deduction. In those situations payments are withheld till the variation claim is approved.

Interviewees from a government agency and large construction companies (I01, I013, and I014) indicated that for both private and public projects variations are generally pushed towards the end for settlement. The government client commented that contractors failed to alert engineers about variations early enough and to get variation claims approved. Interviewees from large contracting companies (I013 and I014) were of the opinion that variation claims are initially agreed with client representatives or engineers, but often clients disagree when final accounts are compiled later. This heavily impacts on cash flow and as a result payments are delayed. However, another interviewee (I012) from a large contracting company claimed that the company had a very firm policy and internal system for managing the variation process and thereby they avoided losses due to variation claims. The interviewee further said that the company makes sure before claiming the variation through their internal system that it is an approved variation.

One of the interviewees (I01) was of the opinion that for some contractors final payments and retentions are at greater risk than payments during the progress of the project. The interviewee explained that one reason for this is that contractors do not have a system in place which reminds them about outstanding amounts, particularly retention monies, after the completion of a project. Retention monies are sometimes released 12 months or 2 years after a project completed. Therefore retention monies tend to be a loss for many contractors and subcontractors.

An interviewee (I02) representing a private developer was of the opinion that payment losses are experienced at the end of the project with retention monies, and arguments over final accounts and variation claims, while payment delays are experienced with

progress claims to contractors and subcontractors. The interviewee explained that the value of loss as a result of payment irregularities is not known till the very last payment.

7.2.3 Parties Affected by Payment Defaults

One aspect of the semi-structured interview questions covered the impact of payment defaults on construction parties. Interviewees were required to indicate the construction parties that are most affected by the payment default of their upper tier. A large majority of interviewees (9 out of 11) (I011-I013 and I016-I021) from construction companies, including subcontracting companies, have indicated that subcontractors are the most affected by default payments. They stated that the effect of the problem would have been much worse if the CCA had not been in place. The interviewees further explained that subcontractors still experience payment problems because they are less familiar with the requirements of the CCA, and fail to operate in accordance with the provision of the Act. On a similar note, SMEs from trade associations (I03) also opined that most of the time subcontractors are affected by payment defaults due to a failure to use the CCA in the way it was designed to be used. Claims are often not in accordance with the requirements of the CCA, for example if there is a failure to indicate that invoices are generated under the CCA provisions. An SME involved in underwriting construction bonds and guarantees (I08) was also in line with the generally held view that parties at the bottom of the chain are impacted the most. The interviewee indicated that generally the financial strength and liquidity of subcontractors are far below that of head contractors, which places subcontractors at a greater risk in withstanding the effects of default payments.

Contrary to the above view, interviewees (I014 and I015) representing 2 large contracting companies claimed that they are mostly affected due to payment default of clients rather than their subcontractors. Contractors can no longer be reliant on pay-when-if-paid clauses. As it is their obligation, contractors make payments to subcontractors irrespective of whether they are paid by the client or not. These interviewees expressed the view that there is no such protection available for main contractors and they are exposed to their clients. They therefore suggested that the contractor needs to ensure that they have some security in place for payment.

One of the interviewees (I017) representing small size contractors explained that on two projects, they had used the CCA to recover money that was unpaid from the project owner. Their claim was however not paid because it was not in accordance with the requirements of the CCA. I017 explained that it is almost impossible for subcontractors or smaller contractors to meet the requirements of the CCA. According to the interviewee (I017) the following makes the Act ineffective for subcontractors.

- a) The documentation requirements to make claims are too complicated. A claim could be rejected for even a minor error in the documentation such as the date was incorrect or not shown, or the wording was wrong, or it was not served to the right people.
- b) The ways provisions are interpreted do not seem convincing to small contractors and subcontractors.
- c) The documentation required to get to adjudication does not encourage small contractors to use the process.

The interviewee further stressed that minor issues with documentation makes the process ineffective for subcontractors to take action against their clients, despite the CCA being designed to protect subcontractors. The interviewee (I017) therefore suggested that the provisions of the CCA needed to be simplified in order for the subcontracting fraternity to use them effectively.

On a different view, an interviewee (I02) that represents developers pointed out that payment problems are more common with subcontractors than head contractors because the latter have to wait for payment from project owners in order to make payments to subcontractors. Further, the SME is of the opinion that because of the large number of subcontractors that head contractors deal with, it is inevitable that delays will occur in large development projects.

A SME from a legal service provider (I010) stressed the view that payment problems occur similar across the board because if a contractor experiences them, the effect gets passed on to subcontractors and others down the chain. Hence, parties at the lower end of the chain are more susceptible to those effects than others above.

7.2.4 Payment Practices in Relation to Pay-If and When-Paid

Some of the participants to the questionnaire survey indicated through open-ended questions that payment practices of pay-when paid are still exercised by head contractors on subcontracts. The change of payment dates for subcontractors allows the head contractor to withhold payment to subcontractors until they are paid, despite the CCA making withholding payment provisions unlawful. Further, there is no mechanism on the side of subcontractors to verify whether head contractors are paid or not. The semi-structured interviews therefore considered this aspect further to clarify and confirm. Participants were asked to indicate their views about the pay-when-paid practice of payment.

In the main, SMEs representing large and medium size contractors (I013, I014, I015, and I016) were of the opinion that pay-if-when-paid clauses are unlawful and are no longer practiced by the contracting fraternity. According to these interviewees, payments to subcontractors are made as per agreed payment terms irrespective of whether they are paid by clients or not. Interviewees (I014 and I015) representing two large contracting organisations were of the opinion that the pay-when-paid condition is one of the reasons they experience cash flow difficulties. One of the interviewees (I013) opined that although large companies do not exercise the provision of pay when-paid, the practice is still prevalent in the industry, particularly among smaller contractors. On a similar note, another interviewee (I021) from one of the specialist trade subcontractors, also explained that not being paid by the client is still an excuse offered by some of the smaller tier construction companies and sole proprietor builders for not making payments to their subcontractors.

An interviewee who works for a government agency (I01) was of the opinion that the practice of withholding payments is still an issue in the industry, despite the CCA making withholding provisions illegal. According to the interviewee, a lot of subcontractors are quite regularly not paid on the basis that contractors are yet to be paid by the clients. Further, an interviewee (I06) represents dispute resolution experts indicated the same opinion that is contractors are reliant on payments from clients to be able to make payments to their subcontractors.

7.2.5 Payment Problems with Private and Public Clients

As part of the first theme, participants to the semi-structured interview were asked to comment on the nature of payment problems between private and public clients. Two SMEs (I013 and I014) from large construction companies were of the view that payment problems are more prevalent with private clients than public clients. Interviewees (I013, I014 and I016) explained that the risk of non-payment is greater with private developers due to financial difficulties whereas public clients quite often had funding in place but were well-known for late payment due to their many layers of bureaucracy. One of the interviewees (I014) from a large construction companies stated that payment could be one or two months late in some situations with some government departments, larger commercial and industrial clients. However, there had been no payment losses, bad debts or insolvency losses as a result of delayed payments by government agencies. This was confirmed by the interviewee representing a government agency (I01) that because of the many layers of bureaucracy, payment is very often delayed by government clients. The same interviewee further admitted that government clients contribute to contractors' cash flow problems through the retention process as well. An SME (I014) from one of the large contractors suggested that although delayed payment by government agencies could be mitigated through the CCA, large companies are reluctant to apply such remedies as this could endanger long standing relationships and thereby impact on potential future businesses. According to the interviewee (I014), a late payment is sometimes mitigated by charging interest. The above indicates that payment delays by government agencies seem to be accepted feature of the industry.

7.2.6 Payment Problems with Residential and Commercial Contracts

This section of the semi-structured interview required SMEs to comment about how they perceive payment problems in residential and commercial contracts. An SME interviewee (I016) from a medium size contractor are of the opinion that residential contracts are a lot more personal and payment problems seem to occur as a result of clients' dissatisfaction. For example a minor defect in a completed property may be used as an excuse for not paying. The same interviewee indicated that clients' insufficient funding and reliance on funding from other sources are reasons for delayed payment in residential contracts.

The representative interviewee (I01) from a government agency commented that often there are no formal contracts, agreements are made verbally, the sector tends to operate on trust, and having a written contract are all novelties in residential building construction. The same interviewee observed that residential building contracts are very much one sided and mostly favours the contracting company. Despite this, a large number of contractors operating in the residential contracts seem to experience more payment problems. Further, an interviewee (I013) from one of the large contracting companies indicated that most of the residential contracts involve small contracting companies and individuals who are less aware and familiar with the CCA. This makes it difficult for smaller contractors to secure and enforce payments. In addition, the interviewee (I01) from a government agency expressed the opinion that the CCA distinguishes between residential and commercial contracts, and that the application of the CCA is limited to residential contracts. The interviewee claims that this is one of the aspects which make payment problems in residential contracts significant to some extent.

7.3 Construction Insolvency and Payment Problems

It is widely recognised in the literature that insolvencies in the construction industry are higher than in other industries due to several inherent characteristics: a heavy reliance on credits, poor entry barriers to undercapitalized individuals and firms, the cyclical nature of the construction market and the economy in general, the cascade system of payment, and so on. Further, the preliminary investigation into liquidators' reports indicated that construction insolvencies cause significant payment problems to construction parties in New Zealand. SMEs were therefore asked to comment on the status of construction insolvencies and associated payment problems.

An interviewee (I07), an expert in construction insolvencies with one the leading insolvency and business recovery practitioners in New Zealand commented that there are not many insolvencies in the industry at the moment. The reason suggested was there were not many construction projects in the current market. However, the interviewee expressed the view that when insolvencies occur, it is quite challenging because generally there are no funds available in the company to cover the liquidators' fee which is always the first to be settled in liquidation. Based on the experience of liquidating two large construction companies in 2009 and 2010, and collecting from

debtors in many other small construction businesses in liquidation, the interviewee explained that the following are issues around construction insolvencies: companies under-pricing and experiencing low margins, or taking profit margins early in the project; issues with payment claims under the CCA; and disputes and difficulties in recovery of retentions. Representatives of trade associations and dispute resolution experts (I03, I04 and I06) were of the opinion that insolvency is always an issue in the industry but currently is not as bad as it used to be. One of them (I06) indicated that insolvency is not an unusual happening because a lot of participants in the industry are undercapitalized. Interviewees (I04 and I06) suggested that insolvency depends on general economic conditions to some extent. At the moment construction insolvencies are low because fewer construction projects are taking place due to the overall economic conditions. They commented that companies are very cautious about which projects they undertake while other companies have become insolvent, meaning their subcontractors are not being hired, staff are let to go and so on. An interviewee (I015) of one of the large contracting companies expressed a similar opinion to the above interviewee. The interview suggested that the back ends of the economic cycle cause insolvencies in the construction industry. He explained that at present construction insolvencies are due to such reasons as the market being depressed, there is insufficient work for the capacity that exists in the industry and that prices are very low.

Three interviewees (I013, I015, I016) representing some of the large and medium size construction companies opined that construction insolvencies are prevalent but not related to payment problems. Two of the interviewees (I013 and I015) commented that currently the reduction in development market activities causes insolvencies, and that liquidations of developers is less significant. Another company representative (I014) stated that there had not been any major building contractor entering liquidation in the last 3-4 years. Conversely, another interviewee (I016) who represents a second tier contracting company indicated that the company has experienced the failure of some its subcontractors due to under-pricing and low profit margins. The interviewee clarified that the tight competitive market situation makes companies under-pricing and receive low margin which results in cash flow constraints and an eventual closing down of the business. By and large the interviewees were of the opinion that payment problems are not the cause of insolvencies but that insolvencies are often a reason for non-payments (I011 and I016).

Based on the CCA related cases under dispute in the High Court, the legal expert interviewed (I010) suggests that payment problems are not the cause of insolvency; the cause is construction companies using the strategy of placing companies under liquidation to avoid paying. The interviewee further indicated that developers and subcontractors are more prone to insolvency than head contractors and, that insolvency of head contractors is not uncommon. On a similar note, an SME representing government agency (I01) was of the opinion that insolvencies of their head contractors are never experienced because government agencies tend to contract only with contractors who are financially viable and have a good history in the industry. According to the same interviewee, insolvencies seem to be more significant among subcontractors than head contractors.

In general, most (3 out of 4) of the SMEs representing subcontracting organisations were of the opinion that insolvencies are prevalent in the industry but not very significant at the moment. An interviewee (I020) of the sub-trade subcontractors sector indicated that a lot of companies become insolvent and as a result other companies who owed money are at risk of crawl back payments where the liquidator/receiver of a liquidated company has the right to crawl back the payment made to creditors in the last two years. According to another subcontracting company interviewee (I021), insolvencies seem to be a usual happening in the industry and cause problems particularly during downturns.

7.4 Causes of Payment Delays and Losses

Identifying the causes of payment problems is essential in resolving such problems. The SMEs were asked to confirm and extend knowledge on the causes identified through the questionnaire survey. The opinions of the SMEs are presented in three sub-headings, corresponding to the causes expressed by the three groups of participants.

7.4.1 Views of SMEs - Legal Service and Dispute Resolution

A majority of SMEs (12 out of 21) representing a government agency, developers, large and medium size contractors, construction bonds and guarantees and legal services indicated that variations are a major concern in terms of payment problems with both private and public clients. The SMEs (I06 and I010) from legal and dispute resolution

advisors expressed that claims related to variations are often disputed more than the quality of the original work, or time extensions and liquidated damage claims. One SME (I08) representing the contract surety underwriting sector argued that variation are a significant cause in terms of payment problems in both private and public projects. Most often with private as well as government clients, variations are priced at the end of a project when finance is limited and justifying additional funds from financiers may be difficult.

Interviewees from dispute resolution experts (I05 and I06) were of the opinion that payment problems are partly because of clients. Most construction clients are heavily reliant on finance coming from other sources to fund their projects. If funds are slow coming, or they are unable to access the amount they expected, then payments are affected. On the other hand, the same interviewees (I05 and I06) explained that genuine disputes between clients and contractors are sometimes responsible for delays or loss of payment. Interviewee (I06) indicated that contractors claim monies for which they are not contractually entitled due to defective or incomplete work. On a similar note, based on the disputes referred to adjudication and arbitration, interviewee (I05) clarified that claims are not sufficiently well prepared, having insufficient documentation to substantiate them. This SME pointed out that the construction industry, is having many participants who lack the skills, knowledge and experience to deal with payment issues, is another reason for payment problems.

Unlike the SMEs who represented contracting, subcontracting and legal service providers, SME (I04) who represents a professional institute indicated that payment problems in the industry are endemic and systemic, parties always pay a few days late and losses are prevalent when there is receivership or insolvency.

7.4.2 Views of SMEs - Clients and Contractors

As aforementioned, most (80%) of the interviewees of large and medium size construction companies are of the opinion that variation claims cause disputes and cash flow constraints. This results in payment problems to contractors as well as subcontractors. The representative interviewee (I01) from a government agency was of the opinion that the variation process is not effectively managed by contractors in terms of informing them early enough and agreeing on the value. The interviewee explained

that contractors often spent the money on variations but failed to notify the principal or engineer to the contract to get it approved it at the earliest possible date. Even when notified, claims are not approved by engineers till the end of a project. Interviewees (I013 and I015) of some of the large contracting companies were of the opinion that even if the security for payment is in place, payment problems are not remedied because of variation claims. Generally, funding for projects and limits of security for payments are established by banks or funding organisations prior to the commencement of projects. The interviewees therefore suggested that variation claims are the primary concern in addressing payment problems in the construction industry.

An interviewee (I02) representing private developers indicated that they deliberately delayed payments to save finance charges and this is one of the primary reasons for payment default in the private development market. According to the interviewee, developers simply delay payments and are not concerned about maintaining relationships with contractors.

One of the interviewees (I012) from large civil engineering company indicated that clients not having sufficient cash to pay contractors are due to a failure to appreciate the size and value of the job fully at the time of entering into contract. The same interviewee identified that developers default payments to contractors because of inadequate pre-sale of property and reliance on money from other sources.

SMEs (I011-I015) of large construction companies who deal with government clients, and an SME for developer clients (I02), were of the opinion that although approved funding may be in place for government projects, delays in payments to contractors are due to the existence of many layers of bureaucracy that need to be passed through before the money is released to the contractor.

Some of the interviewees (I013 and I015) suggested that economic conditions causing a downturn in the construction market is another indicator of payment problems in the industry. As the market experiences a downward trend, payment problems become significant. Contractors are under-pricing their work and receive low margins. This results in cash flow constraints and as a result payment problems to subcontractors occur.

7.4.3 Views of SMEs – Sub-Trade Contractors

A total of 4 subcontractors including specialist trade subcontractors were interviewed. They gave the following as some of the main causes by which they have experienced payment problems in the New Zealand construction industry.

Interviewee (I019) explained that contractors' financial difficulties often lead to default payments to subcontractors. Contractors utilise the income from the current project on the development of their next project. The interviewee further indicated that some of the large contractors exercise shift based performance which creates financial constraints on committing payments to their subcontractors. In shift based performance funds are diverted from projects that are not performing well to other projects. This reduces payments in those less well performing projects.

The same interviewee felt that reasons for payment problems lie on the part of the subcontractors as well. He (I019) indicated that subcontractors are not sufficiently proactive in getting and following up payments owing in a timely fashion. Further, subcontractors fail to exercise effective credit control and debt collection practices on their customers. Based on his experience of practicing the above strategies, the interviewee stressed that companies need to exercise credit control on their customers, particularly new customers, which helps to avoid problematic customers and improve cash flows. According to interviewees (I019 and I20), subcontractors' insufficient administrative skills in preparing payment claims and meeting the requirements of the CCA, in addition to their knowledge and understanding of contractual obligations, are other cause of payment problems.

Some other interviewees (I018, I20 and I021) who represent sub-trade subcontracting companies were of the opinion that payment problems occur due to contractors' deliberate reasons to improve their own cash flows. One of them (I019) indicated that contractors sometimes use the tactic of querying a claim if it does not seem for the work that is being done, to delay payment to subcontractors. The interviewee explained that this is due to poor contract documentation, or poor understanding of the contract by either the project manager on the part of the contractor or subcontractors. However, one of the above interviewees (I021) suggested that payment delays and losses could be due to genuine disputes. For larger companies, disputes around whether or not items are variations or within contract scope lead them to defer payments until disputes are

resolved. On the other hand the same interviewee found that smaller contractors and subcontractors are affected by payment problems due to contractors not having funds because they are waiting to be paid by clients.

7.5 Forms of Contract and the Effectiveness of Payment Provisions

A construction contract sets out rights and obligations of parties to the contract. A clear understanding of contractual rights and obligations stipulated in the contract help to avoid issues around pricing and eventual payment. In respect of payments, forms of contract provide contractual rights to claim payment and provide remedies in the event of non-payment. Essentially these contractual payment provisions supercede legislative provisions available within the CCA, which are default provisions. In the interviews questions were put in order to gain knowledge on the forms of contracts used and how the provisions of those influence payment problems.

SME interviewee (I010) representing construction legal service providers indicated that major construction companies use contracts which are mostly based on NZS3910 and NZS3915. The interviewee further explained that the contracts between contractors and subcontractors are based on other forms like the Baster Builders Subcontract form or NZIA SCC1 which are consistent with NZS3910. According to this interviewee, payment provisions in those of forms of contract work reasonably well. He pointed out that although forms of contracts are in place, parties to contracts do not necessarily rely on those provisions until there is a dispute. Another interviewee (I06) representing disputes resolution experts was of a similar opinion, that most of the cases he deals with have a form of contract but it does not stop parties getting into disputes. According to the interviewee, most of the disputes arise due to parties' obligations and rights under the contract not being clear. On the other hand, he contended that contractors are sometimes lazy, and they won't price their work carefully and include a prime cost. Further, he stated they deliberately under estimate the value of their work.

Large and medium size construction companies interviewed (I011-I016) indicated that they often had a contract which mostly conforms to NZS3910 and occasionally NZS3915, the Institute of Architects standard conditions of contract (SCC1), and FIDIC. According to most (5 out of 6) of the interviewees from large and medium size

construction companies, payment provisions in those contracts are effective and working well. The interviewees explained that NZS3901 is powerful document in terms of payment provisions where the payment is approved by an independent engineer within a stipulated time frame. Predominantly, if there is a payment issue, such companies tend to rely on the provisions of the CCA. According to one of the SMEs (I013), his company had suspended work because of non-payment, as per the contractual provisions but from their experience this action did not help them to recover funds. He therefore suggested that the use of contractual provisions along with CCA provisions provide a better outcome in contracts.

Interviewee (I014) from another large contracting company expressed the opinion that the provisions of NZS3910 are not effective. The interviewee explained that there are differences between what a contract stipulates and the actual practice in relation to matters such as the party which is signing the payment certificate (e.g. a quantity surveyor who does not exist in the contract signs it instead of engineer), the timeframe agreed for payment and the actual payment time, etc. According to this interviewee, flaws in the internal system may lead to taking a longer time to process payment claims which in turn causes companies to default on payments as per the agreed timeframe.

Unlike top tier large and medium size construction companies, sub-trade subcontractors used a variety of forms of contract. One of them (I019) has used NZS3910 and SA2009 as their usual form of contract and in certain cases they have agreed to the contractor's own form of contract. The interviewee from the above sub-trade company indicated that such payment provisions are effective because it provides them with an opportunity to negotiate terms before they enter into a contract. One of the SMEs (I020) representing sub-trade contractors explained that they rely on their own form of contract in order to keep things simple and understandable for the people who work for them. This ensures that their own subcontractors understand what they are signing to. This particular SME (I020) suggested that there needs to be a simplified standard form of contract for less financially, legally, contractually and professionally literate people. SMEs (I018 and I020) of other subcontractors have indicated that they use their own terms of trade along with quotations for work, which are reasonably effective and appropriate for their work.

7.6 Effectiveness of Provisions of the CCA

The Construction Contracts Act (CCA) is a major piece of legislation in respect of providing payment processes and remedying payment problems within the New Zealand construction industry. The Act was promulgated to improve cash flows by introducing two major payment provisions, one for administering progress payments and the other for resolving disputes that may arise under the construction contract. As a follow up to the questionnaire survey, this part of the semi-structured interview sought SMEs views to extend and validate findings in this regard. The SMEs were asked to comment on the effectiveness of the above provisions and their overall knowledge and understanding of the CCA among participants.

SMEs from large contracting companies, trade associations and dispute resolution providers were of the view that the CCA has made a significant contribution by improving payment practices within the industry, though they believe that some aspects of the provisions have to be tidied up (I03, I05, I011 and I016). Generally, the CCA has been a powerful tool in terms of construction parties recovering payment dues. Overall, however knowledge and understanding of the CCA is below expectations (I03, I04), despite efforts to educate construction professionals to understand its provisions. One of the interviewees (I014) who represent a large contracting company explained that a lot of clients, engineers to contract and subcontractors are not greatly aware of the provisions of the Act. He explained that engineers do not follow the proper process regarding payment schedules, thus exposing their clients to the risk of being adjudicated by the contractor. However, he believed that knowledge and understanding are slowly improving (I04 and I010). A representative (I06) from disputes resolution experts suggested that a lack of understanding is attributed to the ignorance of the CCA by many participants. Subcontractors and small contractors tend to prefer to get things done with the minimum amount of documentation as they possibly can. The same interviewee further commented that small contractors and subcontractors consider such documentation is a hassle and it is unnecessary to follow the processes and procedures of the CCA, especially as they involve additional costs, and bureaucracy.

The following sub-headings describe in detail the opinions of the three groups of SMEs concerning the effectiveness and ineffectiveness of the CCA provisions on payment procedures in the construction industry.

7.6.1 Views of SMEs -Large and Medium Size Contractors

In general, interviewees of large and medium size construction companies (I011, I012, I015, and I016) have indicated that the CCA provisions are effective and all their contracts are based on it. SME (I012), representing one of the largest contracting companies indicated that they had used the CCA provisions to the extent of pushing for payment from the client. However, the company had neither exercised the adjudication or charging order provisions on its customers nor did their subcontractors use those provisions on the company. According to this interviewee, the company understands the power and the rights within the CCA but most of the time it tried to negotiate and settle problems outside the contract. On a similar note, another larger company's representative (I011) indicated that the adjudication provisions of the CCA are a good vehicle for negotiating the acceptable parts of claims. In the last nine years of the existence of the CCA, the company has applied adjudication just once on a customer where there was a dispute about adjusted contract values.

One of the SMEs (I016) representing a medium size contracting company shared that in his experience the CCA works well. His company has used adjudication twice with its customers and three times their subcontractors had used adjudication against the company to recover money due under invoices. According to the interviewee, the company was successful in all instances for the reason that they followed the process properly in relation to receiving and responding to claims and notifying the reasons for non-payments, etc.

Conversely, another SME (I015) stated that his company complies with the CCA provisions in serving payment claims on their customers as well as responding to payment claims received from their subcontractors. However, the interviewee indicated that occasionally the company had not been able to respond to payment claims by its subcontractors in a timely manner and as a result of that subcontractors sought adjudication against the company. On the other hand, the company also entered adjudication against its customers occasionally. Overall, interviewee (I015) indicated that the adjudication provisions of the CCA are not effective for the suggested reasons below.

The following summarises some of the comments made by this group of SMEs on the effectiveness and ineffectiveness of CCA provisions in remedying payment problems in the construction industry.

Effectiveness of the provisions

- (a) The CCA is a powerful tool and is a reminder of the right to adjudicate which prompts the client to pay (I011 and I016).
- (a) The CCA enables the application of a charging order. A charging order prevents project parties from arbitrarily laying claims over the land upon which construction is being carried out because it involves an independent checking process (I011 and I016).

Ineffectiveness of the provision

- (a) One of the SMEs (I015) commented that the adjudication provisions of the CCA do not provide satisfactory outcomes. The SME explained that the contractor may go through all the legal procedures but still has a client without money or who does not want to pay. In such situations the CCA is unable to provide redress, as if the contractor applies to the court and obtains a personal guarantee from the client this still does not provide protection if the client becomes insolvent.
- (b) The CCA fails to provide any mandatory protection for contractors. The SMEs explained that the Act is powerful, only if the client has money. The SMEs therefore suggested that there needs to be a form of security either in the form of a bond, or a letter of credit from a bank or by putting funds in to an escrow account (I014 and I015).
- (c) One of the SMEs indicated that the charging order provisions of the CCA are not effective. Although a charging order may be approved by an adjudicator, the owner (respondent) has three weeks to object the enforcement of adjudication determination before claimant registering the charging order in court. Within such time the property can be sold or transferred to another person. This makes the provision ineffective. The SME suggested that the objection time for the enforcement adjudication determination needs to be reduced (I014).

7.6.2 Views of SMEs - Smaller Size Contractors and Sub-trade Contractors

Most (3 out of 5) of the SMEs who were sought to provide views about the use of the CCA and the effectiveness of its provisions were of the opinion that the CCA is a powerful tool and is reasonably effective. A representative (I021) of one of the sub-trade subcontractors indicated that the company prepares all their claims in accordance with the CCA. According to the interviewee, although the company sometimes uses invoices in some of their smaller projects, it refers the invoices as “this is a claim made under the CCA”. This helps the company to take action under the CCA in the event of non-payment by its customers. Further, the interviewee stated that the company had referred its claims against customers for adjudication only in a few instances. This was mainly due to the company not wanting to take legal action against its customers. Another interviewee (I020) from the similar group of SMEs expressed the view that the CCA provisions are effective and working well for those who understand them. The company had used the adjudication provisions of the CCA only once to recover payment from a contractor.

On the other hand, one of the SMEs (I017) involved in road construction and maintenance work was of the opinion that the CCA is mostly applicable to building work and his company had not had a great deal of exposure to the CCA. Another SME (I017) from small a scale contracting company commented that the CCA is not effective for small contractors and subcontractors. The company has referred a few of its claims to adjudication but was unsuccessful. Based on his experience, the interviewee stressed the CCA requires perfect documentation which small contractors and subcontractors are not able to meet. The following sub-sections summarise the comments made by SMEs in this group in relation to the effectiveness and ineffectiveness of the provisions.

Effectiveness of the provisions

- (a) As with some of the large and medium size contractors, some of the sub-trade subcontractors were of the opinion that the CCA is an effective and powerful tool (I018, I019, and I020)
- (b) The CCA forces the client to clearly explain the reasons for holding back payments money and on the basis of that the claimant can refer the dispute to a resolution process (I021).

- (c) The adjudication provisions of the CCA have enabled recovery of money which the subcontractor would not have been able to receive otherwise. The provisions have helped to improve cash flows (I021).
- (d) The adjudication process of the CCA is procedural, not judgemental; hence following the process helps to recover money (I021).
- (e) Serving an adjudication notice on another party (e.g. client or contractor) acts as a threat and provides an opportunity for the parties to come forward for a discussion and to settle their dispute (I019).

Ineffectiveness of the provisions

- (a) The CCA was introduced to protect the subcontracting fraternity. However, one of the SMEs from this group believed that the CCA fails to serve this purpose because subcontractors are not able to use the CCA effectively (I017).
- (b) The administrative requirements of the CCA are complicated and impossible for subcontractors to meet. Further, a minor documentation error can make the process ineffective (I017).
- (c) Subcontractors do not possess adequate administrative skills to handle the documentation related to the payment process. The interviewees suggested that the required administrative process needs to be simplified (I017 and I019).
- (d) Some of the subcontractors are reluctant to use the adjudication provisions on their customers (contractors) as they might lose them. This is particularly so when the market is downturn and competition for jobs are high (I021).
- (e) Similar to the views held by the contractor group, SMEs representing sub-trade contractors were of the opinion that knowledge and understanding of CCA rights and privileges is low among smaller construction firms (I020).

7.6.3 Views of SMEs - Legal Service and Dispute Resolution

Similar to the previous two groups, SMEs representing legal services and dispute resolution were of the opinion that in general the CCA is working well and its provisions are reasonably effective (I05, I06 and I010). Generally, industry participants

comply with the requirements of the CCA and apply them when disputes arise in their construction contracts. One interviewee (I010) explained that participants are aware that adjudication is the dispute resolution forum for the construction industry. However, in terms of knowledge and understanding of the provisions, some of the head contractors and subcontractors have a good understanding and pay respect to the CCA, but overall knowledge, awareness and benefits of its provisions are limited. One of them (I06) stressed that because the culture of the industry is such that it is unable to change its practices, some of participants are ignorant of the CCA. The interviewee representing legal experts (I010) indicated that limited levels of understanding and knowledge is natural with any piece of legislation.

The following sub-sections describe the reasons the SMEs of this group gave regarding the effectiveness and ineffectiveness of the CCA.

Effectiveness of the provision

- (a) The CCA is a powerful and effective tool for contractors to recover their money (I06, I05 and I010).
- (b) The adjudication process of the CCA is very quick and has a statutory time limit. If the adjudication process was not there, construction parties would have to wait indefinitely to recover their money because other dispute resolution processes have no statutory time limit (I06).
- (c) The adjudication provisions of the CCA allow claimants to secure the appointment of an adjudicator within 24 hours, and a dispute can be determined within 30 working days or less from that point in time (I06).
- (d) The adjudication determination is still binding and enforceable, though a dispute can go to court for further judicial review (I06).
- (e) The adjudication provisions of the CCA can be considered as a threat because generally construction parties prefer to avoid going through the process if they can (I06, I04).
- (f) The CCA adjudication provisions encourage parties to discuss and resolve differences privately because once a notice of adjudication is served, a party must respond and cannot delay or avoid the process. Further, the process will create costs

for the parties (I06). On average, 50% of the cases referred are settled upon the receipt of an adjudication notice (I06).

- (g) A notice of adjudication under the CCA costs the claimant less than a solicitor's letter of demand (I06).

Ineffectiveness of the provisions

- (a) On average, the adjudication determination becoming the final decision occurs in about 50% of cases. In the 50% of cases where the determination is final, payment is made. In other cases it is taken to judicial review or arbitration or the company is put into liquidation (I06 and I010).
- (b) The interviewees suggested that the adjudication determination needs to be more secured, based on a "pay now argue later" concept. The adjudication determination needs to have an immediate effect following the determination, and the adjudicated amount should be settled prior to being further reviewed (I010).
- (c) The CCA provides three weeks for respondents to oppose the enforcement of adjudication determination. Within this time the title of the property is transferred and the company could be placed into liquidation. This makes the charging order provision of the CCA ineffective. An interviewee suggested that the timeframe to review and oppose the adjudication determination needs to be tightened to just 5 days (I010).
- (d) The CCA does not provide any security against insolvencies. In cases of non-payment, a claimant can get a charging order prior to a company going into liquidation. However even though the charging order against the company's assets is approved, construction parties (claimant) are unsecured creditors and behind other secured creditors in any liquidation settlement (I010).

7.7 Security of Payment and Forms of Security for Payment

Exploring the feasible forms of security for payment is the ultimate objective of this study. With this view, one aspect of the questions to interviewees covered the effectiveness of different forms of security and the extent those forms are currently used in the industry. This section reports on the opinions of the interviewees (SMEs) under

three headings: commonly used forms of security for payment; other forms of security for payment; and the practical impediments around securing payments.

7.7.1 Commonly Used Forms of Security for Payment

Most (85%; 5 out of 6) of the large and medium size companies that SMEs represented indicated that their payments were secured by private development clients occasionally. Regarding subcontractors, this group of interviewees was of the opinion that they did not sufficiently attempt to obtain some form of security of payment. Usually subcontractors neither demand nor do contractors give any security for payment to subcontractors. One of the interviewees (I014) from a large contracting company indicated that his company does not offer security for its subcontractors' payments and conversely, subcontractors are not required to submit performance bonds. The same interviewee suggested that request for payment security almost entirely exists between principals and contractors.

Two of the subcontractors interviewed (I020 and I021) agreed with the opinions of large contractor that subcontractors did not seem to make any attempt to get security for their payments from contractors. On a similar note, an interviewee from a subcontracting company (I018) stated that his firm neither requested a security from its upstream parties nor did its subcontractors demand a security. However, a subcontractor who is involved in the roofing sub-trade business indicated that although his company sought security for its account receivables from contractors, it was often unsuccessful (I019).

According to the interviewees the following forms of security seem to be in-use by contractors and subcontractors on their projects.

- a) Direct payment/Tripartite agreements with funders
- b) Escrow/trust accounts
- c) Retention bonds in lieu of retention
- d) Principal bonds

Amongst these forms of security, large contracting companies have indicated that direct payments/tripartite agreements with funders, and retention bonds are quite commonly,

used compared to principal bonds and escrow/trust accounts. An interviewee (I02) representing private developers was of a similar opinion, that large contractors to development projects are usually bound by tripartite agreements. According to the same interviewee, contractors' retention monies in development projects are generally secured by a lawyer's trust account. For sub-trade subcontractors retention bonds in lieu of retentions are the only security measure available. Overall, interviewees were of the opinion that the extent of use of retention bonds is very limited among subcontractors.

The following sub-headings explain in detail these forms of security used.

a) Direct payments/Tripartite agreements with funders

Most (4 out of 5) large construction companies arranged direct payments/tripartite agreements with funders in large scale commercial development projects (I011, I013, I014, and I015). According to these interviewees, contractors insisted on tripartite agreements between developers, developers' banks and contractors in instances where the developers were financially unstable. This guaranteed the contractors' payments as it was made directly thorough the developers' banks. A larger contracting company interviewed (I011), suggested that a tripartite agreement is one of the more pleasant ways of securing payment, rather than insisting upon a principal bond which imputes untrustworthiness regarding construction clients. According to another large contracting company (I013), a tripartite agreement had protected the company against default by private developers. The company had two instances where developers went into liquidation and the bank stepped in and continued the projects as per the tripartite agreement between the developers and their banks.

On the other hand, some of the interviewees (I014 and I015) indicated that a tripartite agreement did not help to guarantee their payments in certain instances. They suggested that variations and unethical behaviour on the part of the engineers to contracts were the reasons for this. One of the interviewees (015) was of the opinion that the impartial position of some of the engineers (due to their relationship with their developers) in approving variations prevents banks from settling variation claims to contractors. Another interviewee (014) indicated that in instances where there are disputes and engineers have not approved the claims and in the meantime developer becomes insolvent, contractors' payments are unsecured. The interviewees therefore suggested

that contractors need to be vigilant to ensure that variation claims are approved and additional funds are allocated by banks for such extras and delays.

As a variation to the tripartite arrangements commonly available in the development market, the possibility of having the similar tripartite arrangement between developers, contractors and subcontractors was explored. An interviewee representing private developers (I02) indicated that his company had made this type of arrangement on rare occasions where the subcontractors were nominated or the subcontract value was significant. According to another interviewee (I012) from the largest civil engineering company, such arrangements could be possible in cases to implement where the contractor is not financially strong and is potentially insolvent. In these situations, the subcontractor could request the principals to make payment directly to them with the consent of the contractors. The same interviewee explained that the tripartite agreement has the potential crawl back risk of payment in the event the contractor goes into receivership or liquidation. Payments to subcontractors are unsecured creditors and therefore not preferred over other creditors in liquidation proceedings. The interviewee therefore suggested that subcontractors need to ensure that their payments are secured against insolvency risk, as a contractors' liquidator/receiver has no right to claim back from contractors. On this note, the SME representing legal experts (I010) explained that a tripartite agreement is a complex one and could become worthless unless it is carefully worded with proper supporting documentation.

Further, an interviewee (I013) from a large contracting company was of the view that a three way agreement between contractors, subcontractor and the developer's company is of no use unless the funder is involved. According to the interviewee, in general, development companies have a holding company, a post development Ltd, which has no assets. Further, funders are not generally expected to enter an agreement with the supply chain. Sub-trade subcontractors interviewed also did not show any experience with direct payments or tripartite agreements with either funders or developers. One of the interviewees (I019) expressed the opinion that these does not seem to work as clients or funders do not like to deal with a large number of subcontractors.

Further to the above, the interviewee representing a government agency (I01) explained a situation where his company had made direct payments to suppliers occasionally. This happens when the company deals with pre-purchased materials and is providing them

under the contract. However, in such cases there is only a direct payment to suppliers; there is no funding agreement.

b) Escrow/trust accounts

Interviews with SMEs indicated that large and medium size contractors are quite familiar with the concept of trust/escrow accounts and have used them occasionally in certain dispute situations and to protect retention monies. According to one of the large contracting companies interviewed (I015), the judgment money was put into a lawyer's trust account until the final settlement was reached. A medium size contractor interviewed (I016), had requested his clients to deposit the money due to contractor into lawyers trust account. The interviewee explained the two situations where his company had kept the project money in a trust account. One was the company did not really like to work for a particular client due to previous experience, and other the instance was where the company had to work for a family owned business. In both situations the money owed to the contractor was kept in a lawyer's trust account and was released progressively upon the certification by the project quantity surveyor.

Another large contracting company (I013) had arranged a proper bank trust account facility with the developer. This was used by the company to protect the retention monies owed from the developer. Another large company (I014), which had no experience with trust/escrow accounts suggested that they could be used in instances where the tripartite agreement sometimes ends with the practical completion of the project. Hence, the retention monies which are not protected could be placed into a trust account. In general, large and medium size contractors recognise that the escrow/trust account is a simple and quite practical method for securing money (I013, I011, I014, and I015). Thus, these interviewees suggested that there needs to be a mandatory requirement to place retention monies into a trust account.

On a similar note, some of the sub-trade subcontractors expressed the view that the escrow is a simple and realistic concept (I019 and I020). According to another interviewee (I012), smaller contractors with \$20,000-30,000 projects are using the trust and escrow route, with the money being paid into a solicitor's trust account. Regarding large contractors, some of the sub-trade subcontractors were of the opinion that retention monies need to be in solicitors' trust accounts so that if the construction

companies become insolvent and are liquidated, the retention monies are still secured (I019 and I020). An interviewee (I019) therefore suggested that the client should pay all retention monies into a solicitor's trust account and which are then released to all parties, including the main contractor upon the proper completion of the work. This guarantees the payment of contractors as well as subcontractors.

An interviewee representing a private development company (I02) was also of the opinion that retention monies are secured through solicitors' trust accounts. There were instances where developers have had retention monies owed to their contractors placed into a lawyer's trust account. According to the interviewee, retention monies are the likely to be lost if the developer goes into liquidation. The loss of head contractors' retention monies could impact on subcontractors because main contractors sometimes hold such retentions until requested by the subcontractors.

As previously mentioned in chapter three, the research found that there are two companies providing escrow services to construction parties in New Zealand. The semi-structured interview sought views of the SMEs who administer these escrow services. The following sub-section explains the important features of escrow services according to the SMEs.

c) Views of SMEs - Escrow services in New Zealand

The independent escrow service providers in New Zealand are called BuildSafe security and SafeKiwi. BuildSafe security is an escrow service specifically designed to protect construction clients, contractors and subcontractors and others down the chain, while SafeKiwi offers escrow services all kinds of businesses in New Zealand. SMEs (I06 and I09) representing both companies indicated that an escrow is relatively simple and incredibly economical form of security with no downside to either party in construction contracts. The SMEs explained that putting money into an escrow offers parties the following merits.

- (a) Having money held in independent custody guarantees the party to a contract that payment will be made once the obligations under the contract are fulfilled to the satisfaction of the other party.

- (b) Having money under independent custody eliminates or minimises the fear of non-payment and unnecessary time and money in chasing it.
- (c) Failure to put money into an escrow account gives an indication of potential insolvency or default. In other words, placing money in escrow requires the company or individual to be solvent.

Apart from the above benefits, SME (I06) representing the construction specific escrow provider has indicated that their escrow service offers the following merits to parties in the New Zealand construction industry.

According to the SME, their escrow service requires the parties in a construction contract to hold a security amount which is equivalent to the likely final payment under the contract. The SME indicated that the final payment is often disputed and likely to be delayed and lost. Further, generally clients would not be willing or able to commit to pay the whole of the contract price upfront because the industry operates on credits and funds come through progressively from a bank or other sources. The security amount is generally calculated and prescribed by the company that provides the service but could also be agreed to by the parties to the contract.

The SME explained that holding a security amount in trust from the beginning of the project protects the project owner in the event that the contractor becomes insolvent because the contractor will not be able to receive the deposit. On the other hand, holding money in an escrow guarantees contractors that if there is a dispute or money is not paid, that it nonetheless will be paid upon the establishment of entitlement to it. This SME further clarified that as the money has already left the project owners and is held in trust, it is less likely to experience disputes and is also protected from contractors deliberately delaying payments for various reasons.

In terms of releasing of security amounts, the SME indicated that 90% of the security amount is released to the contractor on the authority of the principal at the end of the practical completion of a project, and the remaining 10% is released after 20 working days of defects liability period, once again on the authority of the principal. He therefore suggested that the security amount effectively becomes a retention monies at practical completion because the contractor is not entitled to that amount until such practical completion of the project is reached. This incentivises contractors to finish the work properly. The SME indicated that with the escrow service the security amount retained

is released within 24 or 48 hours following the practical completion instead of 20 working days in the usual situation under the contract. This is another benefit of holding money in escrow.

According to the SME, in cases of small building project that is to be completed within a single billing period like a month and the contract price is under \$20,000, the escrow provider requires the whole of the contract price to be deposited in the trust account. In terms of administrative skills, the SME explained that the company provides construction parties with all of the documents required to comply with the CCA, and default conditions of contract that are fair, and do not favour either builders or owners.

This SME suggested that holding money in escrow could protect a subcontractor who is not directly involved in the escrow transaction. The protection of contractors' money in escrow improves contractors' cash flows and payment down the contractual chain. The SME indicated that holding money in escrow provides evidence to a contractor about a client's financial commitment to the project and his ability to pay. Unlike bonds and guarantees, the cash is available in the escrow account. The deposit is held in escrow is the client's money until the contractor is entitled to it. Therefore holding money in escrow provides no risk to the owner other than the cost of administering the service. In terms of the cost of the service the SME explained that the administration charge is calculated based on the contract value which is approximately \$100 on small projects and \$675 on a million dollar project. Further, the interest accruing on the deposit is also considered as an administration charge.

According to the SME, although escrow systems offer benefits and these two systems have been in operation for the last three years, participants do not seem to take advantage of them. He stressed that the main reason is the culture of the industry which does not seem to accept change. The SME felt that changing the culture of the industry is incredibly hard and challenging. He therefore suggested that there needs to be a regulatory change which protects contractors and subcontractors losing their monies in construction projects.

d) Retention bond in lieu of retention

The widespread use of a retention bond in lieu of retention was indicated by all the SMEs. Those from all the top tier large companies had retention bonds with their

customers and some of them have accepted retention bonds with their subcontractors. One of the SMEs (I014) explained that retention bonds are usually practiced through the defects liability period and sometimes from the beginning of the construction contract. According to the above interviewee (I014), his company had used two bonds in certain instances. One was for the half value of the total retention monies and expired at the practical completion of the project. The second was for the remaining value of retentions goes over the defects liability period.

The interviewee (I01) representing a government agency indicated that the use of retention bonds is common with public clients. However, this interviewee pointed out that the use retention bonds become less preferred with public sector clients where they have to manage a large amount of documentation in any given time.

Overall 75% (3 out of 4) of sub-trade subcontractors interviewed have issued retention bonds in lieu of retentions on a number of occasions. One of the sub-trade subcontractors (I020) explained that his company had retention bonds on its customers (contractors) in instances where the contractors were financially unstable. The interviewee stressed that reasonable size contractors of his company could manage to get a bond. However, for most of the subcontractors who are under-capitalised and heavily reliant on receipts from projects to run their daily business, it is not feasible to obtain a bond. Another sub-trade subcontractor interviewed (I019) was of the opinion that retention bonds are not accepted sometimes as they are finance for contractors and improve their cash flow. The interviewee explained that on the part of subcontractors, retention monies are liquidation debt and a profit for them. Thus, subcontractors need protection for their retention monies at least in the form of retention bonds, despite their cost. On the part of clients and contractors, it is rational to hold retentions without having dire effects on subcontractors but clients and contractors fail to provide protection by putting retention monies into a trust account, thus subcontractors issue retention bonds in lieu of retentions (I021).

e) Principal bonds

Although the standard form of contract (NZS3910:2003) requires project owners to provide contractors a principal payment bond, the SMEs indicated that the practice of using a principal payment bond is not widely recognized within the New Zealand

industry. Most of the project owners are not willing to provide a payment bond for the reasons explained in section 7.7.3.1. SMEs representing (2 out of 5) large contracting companies have obtained payment bonds from their developers only on very rare occasions.

7.7.2 Other Forms of Security for Payment

Apart from the above forms of securities, SMEs have indicated that there are other ways for companies practice to secure their payments from upstream on construction projects. The following sub-sections explain the other forms of securities used by the SMEs interviewed.

a) Advance payment bonds

The research found that an advance payment bond could be used to ensure a smooth cash flow to contractors which in turn could result in uninterrupted payments to subcontractors. The SME (I03) representing a trade association was of the opinion that providing an advance payment to head contractors is a rational way of doing business. Otherwise contractors are funding the project all the way through to the defects liability period. Conversely, the SME (I06) representing dispute resolution experts indicated that giving money in advance for work that contractors have not done is an absolute disincentive and would encourage contractors to practice this as an easy way to earn money and go into liquidation. One of the SMEs (I011), who represents a larger contracting company suggested that an advance payment bond could be used in overseas transactions. This in situations where a contractor requires something from overseas and the overseas firm requires the contractor to pay 80% of the contract value before the goods are transported to New Zealand. The contractors' advance payment in this situation could be secured using an advance payment bond.

b) Letters of credit from funders

In general, SMEs from large and medium size contracting companies and some of the sub-trade subcontractors have used a letter of credit from funders as a form of security in offshore transactions, particularly when importing construction plant and machinery

(I011, I012, and I014). SME (I013) was of the opinion that a proper irrevocable unconditional letter of credit could guarantee the payment to suppliers in cases where a contractor or subcontractor needs to import material or equipment. One of the SMEs (I016), from a medium size contracting company, indicated that his company is required to provide a letter of credit from their bank as a confirmation that the bank will put up a performance bond on behalf of the contractor once the contract is awarded. This is required by the client of the company interviewed at the time of tendering. However, this is not a security for payment to contractors.

c) Pre-qualification of upper tiers to the financial status

Some of the SMEs (large and medium size contracting companies and sub-trade contractors) interviewed indicated that they profile and pre-qualify their clients by choosing who they will work for (I011, I012, I015, I016, and I019). According to them, this is an informal and internal business practice of the companies interviewed. One of the SMEs reported that the company's credit control check enables them to pre-qualify their customers (I012). Alternatively, some of the large contractors and a few subcontractors stated that their companies perform due diligence on their clients (I016, I018 and I012). The interviewees suggested that pre-qualifying their clients avoids exposing themselves to risky clients. An interviewee (I011) from one of the largest construction companies explained that his firm is a public company, and any subcontractor who deals with them understands its financial strength, hence the company is not requested by subcontractors to pre-qualify.

Conversely, pre-qualifying upper tiers is problematic as it is difficult to assess contractors' financial liability, according to SME I013.

d) Disclosure of upper tier funding arrangements

According to some of the SMEs, disclosure of upper tier funding arrangements does not seem to be an effective form of security for payment (I012, I014, and I016). Although it is requested sometimes by large contractors, funding arrangements between the bank and the principal are usually not disclosed. The disclosure of upper tier funding arrangements is effective only if it binds the upper tier funder into the arrangement

(I013). The interviewee suggested that if the tripartite agreement is properly structured and in place, it confirms the funding arrangements.

e) Insurance cover against payment default

In general, SMEs (I011, I014, and I015) indicated that the insurance coverage against payment default is less preferred due to two factors: the cost of the premium and the unavailability of the insurance market for such insurance cover. One of the SMEs representing largest civil engineering company has export guarantee insurance in overseas projects as a security for payment from the offshore company. According to the interviewee, the cost of the policy did not seem very expensive.

f) Personal Property Securities (PPS) Register and retention of title

Some of the SMEs (I012 and I018) expressed the opinion that the PPS register and retention of title clause is a form of security used in the construction industry particularly around bridge building. SMEs from two of the civil engineering companies have used the PPS register. The property that is being built is registered under the name of the contractor until the contractor is paid. This provides protection for contractors in the event of the principal going into receivership or liquidation before the project is completed.

g) Business practices

i) Credit control checks and debt collection

Some of the SMEs representing large contracting and sub-trade subcontracting companies use credit control and debt collection as their normal business practices (I012, I018, and I019). This helped them to work for selected clients who are wealthy and have not defaulted on payment in the past.

According to interviewee (I012), his company does an independent credit check on their residential customers where the contract value is greater than \$5000. Any bankruptcy information and any bad debts are collected through a debt collection agency prior to entering into a contract. Depending upon the outcome of the credit control and debt collection process, preferred clients are selected to work with. In certain instances, if the

company decided to work with a particular client, a security in the form of an upfront payment of 25% or 50 %of the contract value is requested along with the request to make weekly payments.

ii) Change of payment terms or pricing

One of SMEs (I012) indicated that his company has applied the strategies of changing payment terms or pricing in the event of failure to obtain security for payment from developers. According to this SME, his company requests a principal bond from developers and if the developers refuse to provide this security, this gives an indication of developer’s ability to raise such security for payment. Hence, the company changes payment terms or alternatively changes its pricing to minimise the potential risk of payment default.

iii) Caveats and Charge orders

One of the SMEs (I012) representing the largest civil engineering company, considered caveats and charging orders as a form of securitisation in the few cases where the company fails to obtain a principal payment bond.

h) Assignment clauses

The private developer interviewed (I02) was of the opinion that the assignment clause in a contract agreement between a developer and the main contractor guarantees payment to contractors by the bank if the developer goes into liquidation or receivership. According to this interviewee, the assignment clause states that “*should we go into receivership or liquidation the bank straightaway steps into and finishes off the contract as if they are the principal*”. The assignment clause essentially links the bank and the contractor together in the event of the developer going into liquidation or receivership. The SME indicated that this is a quite common way but is only applicable where there is a developer and bank funding.

7.7.3 Practical Impediments and the Need for Mandatory Requirement for Security of Payment

SMEs’ views were sought regarding aspects of the practical impediments faced by parties in obtaining a security for payment and mandating it. According to the SMEs,

head contractors and subcontractors require security for their payment on construction projects in New Zealand. In general, SMEs were of the opinion that a security would not be necessary with some types of clients such as government departments, councils, health boards, etc. One of the SMEs (I014), representing a large construction company indicated that there may be a need for a security when government departments enter into a joint venture with private developers. However, all SMEs unanimously stressed that payments from private developers and some contractors need to be properly secured.

The SME (I014) of one of the top tier construction companies suggested that there needs to be a security for payments which could be at the discretion of the contractor. The contractor could decide according to the client, size of the job, and size of the company etc. and agree on a security with the client.

One of the interviewees (I012) indicated that his company usually requests a security where it is necessary; if it was not given, the company chose not to work for that client. On a similar note, interviewee (I016) from a medium size company indicated that even if it was made mandatory, it does not make any difference to his company because of the following reasons.

- a) The company is very selective about the clients they work for.
- b) The company would choose not to work for a particular client, if the funding arrangements were not clear.
- c) The company maintains good relationship with its existing customers.
- d) The company has a close monitoring system on its debtors and makes regular checks on debtors' reports.

Regarding security for subcontractors, they do seem to make adequate attempts to obtain a security for their payment on projects. SMEs of different groups indicated that there are practical difficulties in getting and implementing any security measure. The following sub-sections explain the views of the different groups of SMEs regarding the practical difficulties of securing payment using proper forms of securities and other means of ensuring payment on construction projects.

7.7.3.1 Views of SMEs –Clients and Large Construction Companies

- a) An interviewee representing private developers indicated that provisions available within the CCA are powerful and essentially working well unless there is liquidation or receivership involved (I02).
- b) Liquidation or receivership of developers or construction companies is inevitable because businesses tend to fail sometimes due to poor risk management (I02).
- c) Developers are not prepared to pay upfront or make payment into an escrow account before the work is done as there is no guarantee that the contractor will not disappear, leaving the work incomplete. However, developers are prepared to secure retention monies through an escrow account (I02).
- d) A contracting conversation is vital for remedying payment issues within the construction industry. A clear understanding of the rights and obligations of each party to a contract and discussion and negotiation of differences between them would minimise the effects in the systems already in place (I01).
- e) Getting a security for payment is a challenge against the power of the principal. Contractors are not in a strong enough position to demand a security from the principal. If a security is requested, the principal could approach the next tier contractor for a firm that is prepared to take the risk and is willing to work without a security (I015).
- f) Market forces determine the effectiveness of getting a security for payment. For example at present the construction market in New Zealand is less active and clients are in a dominating position. Hence contractors demanding security for payment would not be an effective strategy (I015).
- g) Private development clients are not able to get a bond or any other form of security because of their inadequate capital base. The nature of the private development business in New Zealand is that development companies are set up only for a particular development project and operate on credits (I015).
- h) Issuing bonds to secure payment to subcontractors creates an additional imposition on contractors' balance sheets because contractors would then be required to provide bonds upstream (I013).
- i) Developers are concerned about the costs of establishing a payment security (I013).

- j) Requesting a bond from clients would be considered as an untrustworthy move against them (I011).
- k) The industry has no few barriers to new clients and contractors entering the market. This allows poorly funded or unscrupulous clients to find a contractor to work for them (I015).

7.7.3.2 Views of SMEs - Sub-trade contractors

- a) Smaller companies operating in the sub-trade industry are not able to obtain a retention bond to protect retention monies. This could be a barrier for their business growth as they need to have fairly large assets in order to get a security for payment from contractors. Hence, it is impossible for smaller contractors and subcontractors to protect themselves, unless it is made a mandatory requirement to provide a security (I020).
- b) Mandatory requirement to issue a security is measurably preferred, although it will introduce a cost. It would eliminate clients or contractors refusing to provide a security when requested and approaching contractors or subcontractors who are prepared to work without a security. Mandatory to have a security would maintain an equal status across the players in the industry in terms of getting security for payment (I019).
- c) Mandatory requirements will provide higher levels of protection for the parties and the industry generally but would impact on market forces as they would restrict the entry of new participants (I21).
- d) Businesses need to assess and determine the amount of risk that they are prepared to withstand. If there is a need for a payment security, parties need to procure an appropriate form of it. If parties fail to obtain a security, they should decide not to work for those clients (I021).
- e) Parties to a contract doing pre-due diligence on each other before embarking on business transactions would improve the situation (I018 and I019).

7.7.3.3 Views of SMEs – Trade Associations and Professional Institutes

- a) The best security to remedy payment problems is consultation and maintaining good relationships between parties. Parties can negotiate issues without bringing contract conditions up and by maintaining good relationships; and if serious problems emerge, then the conditions of the contract could be used to mitigate the situation (I04).
- b) Working for clients/contractors who are trustworthy and wealthy minimises the effects of defaulting. A prior due diligence on clients/contractors would reduce payment problems (I03).
- c) Clients are unwilling to provide a security unless it is forced upon them. Contractors collectively need to agree and request for a payment security via a standard or by any other form of contract that are used in construction projects in New Zealand (I03).

7.8 Summary

This chapter has presented the discussion points with the SMEs approached to validate the prior research findings. The opinions of the SMEs have been presented in line with the key themes covered by the research. The SMEs' views were sought to extend the findings where necessary, and by and large, their views are in line with previous findings of the study.

The general opinion is that payment problems are still prevalent in the construction industry in New Zealand. Sometimes the problems are widespread as was the case before the introduction of the CCA. The CCA has generally improved the payment situation but the Act still needs further refinement. SMEs are of the opinion that payment problems are less significant with large and medium size construction companies than with the subcontracting fraternity. In terms of the clients' contributions to payment problems, public clients tend to delay payments while the non-payment of claims/invoices is significant with private development clients and some of the contractors. This evidences that payment problems are centered on clients' and contractors' financial backgrounds. When securities for payments are considered, the CCA provides protection against payment default to the extent that clients have sufficient funds and are willing to pay. The SMEs' views indicated that large

contractors were able to insist on payment security on construction projects occasionally while obtaining securities from contractors is almost impossible for subcontractors. Thus subcontractors are of the opinion that obtaining a security for their payment would be not effective, unless it were a mandatory requirement.

The SMEs' views are synthesised with the previous findings of the study in the following chapter.

CHAPTER EIGHT

Discussion of the Research Results

8.0 Introduction

This chapter presents a synthesis of the research findings. It contains information that has been collated from findings of preliminary analyses of documents, questionnaire surveys and interviews of SMEs in relation to the research objectives. Reference is also made within the chapter to some of the literature reviewed in chapter two and three. The chapter therefore provides a triangulated output of the current research study. All information collated is organized under five main headings in line with the research objectives outlined in chapter one. At the end of the chapter, a summary of all the findings is presented.

8.1 Nature and Extent of Payment Problems

This section collates findings on the nature and extent of payment problems in the construction industry under two sub-sections. The first sub-section presents the key findings on the nature of payment problems in terms of payment risk types, and provides information on parties who mostly experience payment risks on construction projects. The magnitude of payment problems in terms of the number of projects undertaken, the value of payment delays and losses, and the duration of payment delays are presented in the second sub-section. All information provided was collated using documents analyses, a questionnaire survey among construction consultants, head contractors and subcontractors, and follow-up interviews with SMEs.

8.1.1 Nature of Payment Problems

The current study has used three key measures to understand the nature of payment problems. These are: types of payment risks, either payment delays or losses; types of payments either progress, final or others; and parties who are impacted adversely by payment problems. Although payment problems are viewed differently (e.g. as late,

partial and non-payment) by Hughes et al (1998), Ameer-Ali (2004) and Abeysekera and Wedawatta (2008), the current study considers payment problems as involving two different situations: payment delays and losses. The preliminary investigation into construction payment disputes revealed that payment problems are commonly in three forms. Thus the forms of payment problems in New Zealand are:

- (1) delayed – this occurs in about 50% of construction projects
- (2) partially delayed or lost – occurs in 10% of construction projects, and
- (3) non-paid - occurs in 25% of situations in which invoices/claims are not paid.

The remaining 15% of construction projects, payment is likely to be delayed or lost. Some of these claims however are likely to be unresolved and referred to adjudication.

These findings are confirmed by the questionnaire survey analysis. The results of the analysis show that around 20% of head contractors have experienced payment delays at least ‘often’, while only 9% of them had payment losses in their projects at a similar frequency. About 40% of subcontractors had their payment ‘often’ delayed, while around half of that percentage had lost their payments at least ‘often’. On the other extreme of the scale, 14% of head contractors had ‘never’ experienced payment delays while 32% of them had ‘never’ experienced losses on their projects. Considering payment delays and losses to subcontractors, 9% and 16% of them had ‘never’ experienced delays and losses respectively.

Types of payment are another variable which was used in this study to determine the nature of payment problems in the construction industry. From the analysis of disputes, the study found that they were over validity of progress and final payment claims, discrepancies between claims and scheduled amounts, non-payment due to defective and incomplete work, and non-issuance of a payment schedule. The analysis of 40 disputed cases reveals that progress claims are mostly disputed (70%) than final (25%), and other claims (5%). This indicates that delays and losses occur because of disputes on progress claims rather than on final claims. Further, the statistical analysis of the questionnaire responses indicates that variations and time extension claims, and retention monies, are more frequently delayed than progress and final payments on construction projects in New Zealand. Progress and final payments are ‘sometimes’

delayed on projects. Considering payment losses, contractors and subcontractors ‘sometimes’ experience losses in all types of payments considered in this study.

Probing further into the types of payment that are usually in default, the study interviewed some SMEs. The SMEs were of the opinion that variations are mostly disputed, and often payment problems arise, towards the end of a project rather than during the work’s progress. Progress payments are mostly delayed while final accounts and retention monies are unpaid. This aligns with the view of the National Specialist Contractors Council in the UK (2003) that the biggest problem in respect of payment is with the final payment (as cited in Odeyinka & Kaka, 2005). On a similar note, the current study corroborates Bayley’s (2007) finding, that construction disputes relate more to final accounts settlements which span several months and result in losses to claimants.

One of the reasons for disputes over final payments could be attributed to contractors’ pricing practices, especially the practice of front loading to improve cash flow at the beginning of projects. This leaves contractors with insufficient money towards the end of a project and therefore little incentive to complete the work. Eventually head contractors default their subcontractors by not settling last invoices and retention monies. The SMEs interviewed were of the opinion that most of the time retention monies tend not to be paid as clients and contractors become insolvent by the end of projects. For this reason, it may be useful to consider opening separate trust accounts which could be used to settle invoices despite negative cash flows that may be experienced at later stage of construction projects. Setting aside retention monies may incentivise contractors/subcontractors to attend to defective work (Latham, 1994; Hughes et al (1998). Further, in the event of insolvencies, monies in trust accounts could offer some of form protection for their retention monies in the event of insolvencies. SMEs further indicated that on the part of contractors there seems to be no proper system in place to remind them (and also subcontractors) to follow-up on accounts receivable from upstream parties.

On a general note, the SMEs suggested that payment problems could happen with any sort of payment, be it either progress or final payment. Variations and retention monies form a part of either progress or final payments. They stated that the likelihood of experiencing payment problems is dependent on contract administration, the solvency of the payer and the types of client (private/public).

The nature of payment problems has also been viewed in relation to parties mostly at risk when payment problems occur. The analyses of the questionnaire responses found that the consequential effects of payment delays and losses are felt more by subcontractors than head contractors. Thirty six percent of subcontractors claim that they experience payment delays often while only 17% of head contractors do.

Concerning losses as a result of payment problems, the questionnaire found that 17% of subcontractors and 9% of head contractors experience payment losses. At the other end of the frequency scale, 32% of head contractors in the survey claim that payment losses had never been experienced by them, compared to 16% of subcontractors. It can be concluded from the results of the survey that subcontractors are more vulnerable to payment problems than head contractors.

These findings support a generally held view that parties towards the bottom of the chain are more vulnerable when there are problems with payments on projects (Cheng et al., 2009). Further, Uher and Brand (2008) argue that subcontractors are not usually able to recover money using formal dispute resolution mechanisms as they are financially under-capitalized. Even if subcontractors are financially viable, they are often reluctant to take action against their head contractors. The analyses of construction payment dispute cases in this study found that there were fewer (15%: 7 out of 40) payment disputes between principals and subcontractors; and contractors and subcontractors. That is most disputes were between principals and head contractors. The SMEs interviewed also confirmed that smaller contractors and subcontractors are affected by the problem more due to ignorance of the CCA and failures to comply with the requirements of it. However, subcontractors are reluctant to take action against their clients as this could endanger existing relationships. The SMEs opined that the CCA has helped some of the subcontractors to recover payments easily. A simple notice of adjudication usually prompts contractors to negotiate and settle subcontractors' claims/invoices. The SMEs were quick to add that this threat mechanism could work only if clients and or upper tier parties have the money and are willing to pay however. Some larger contractors and subcontractors have devised strategies to keep long term relationships with known clients and are very selective regarding which clients they are to work with. That is, they selectively work for clients that are financially sound and trustworthy. The ability to monitor debt profiles and credit control systems that track accounts receivable are another strategies used to minimise payment problems. This

indicates that the strong financial background of clients and contractors could be one of the best mechanisms to improve payment problems.

Finally the research found that public clients are most likely to delay payment primarily due to bureaucracy, while private clients delay for reasons of financial difficulties. There is every likelihood that when private clients default on payment, it could result in losses to contractors and ultimately subcontractors. Currently the construction market is dominated by public sector construction activities with less private sector involvement. This may account for the moderate level of payment problems experienced by the industry at the present time.

Within the construction sub-sectors, the study found that residential construction projects are also affected by irregular payment practices of clients and contractors, like commercial contracts. According to SMEs, contractors and subcontractors working in residential sector sometimes experience significant payment problems. Clients' expectations in terms of quality are high for residential work and could mean that minor defects may result in non-payment. Moreover, residential contracts are generally based on trust and often there are no written contracts

8.1.2 Extent of Payment Problems

The questionnaire survey assessed the extent of payment problems in terms of the value of payment delays and losses, number of projects undertaken, and the duration of the delays.

The research found that there is no significant difference between payment delays and losses in terms of value. Often payment delays and losses account for less than NZ\$10k. However, sometimes delays and losses could be up to the NZ\$50k. On rare occasions delays and losses account for more than NZ\$200k. The analysis of construction payment disputes equally revealed that a significant percentage of claims were within NZ\$100k range and few above NZ\$500k. However, it should be noted that these values were based on an analysis of the claims submitted.

When the magnitude of payment problems is considered in terms of the number of projects undertaken by head contractors and subcontractors, payment delays are more than payment losses, and subcontractors are more exposed to both payment delays and

losses, in New Zealand. In terms of payment delays, 66% of head contractors encountered delays on up to 10% of their projects while 35% of subcontractors had similar experiences. For about 40% of projects, more subcontractors (45%) experienced delays than head contractors (28%). These results are indicative of the vulnerability of subcontractors being lower tier parties in the construction supply chain.

Similar results were found by the current study in terms of payment losses. Eighty percent of head contractors had losses in up to 10% of projects, while 55% of subcontractors stated that their losses account for up to 10% of their projects. However, another 22% and 10% of subcontractors indicated that their losses were in 10-20% and 20-40% of projects respectively. Only 14% of head contractors experienced losses in 10-20% of their projects. These results further confirm that subcontractors are more impacted than head contractors by payment defaults.

Finally the study found that payment delays are often experienced for less than 2 weeks. In extreme situations delays of up to 8 weeks were experienced by research participants but rarely more than 8-10 weeks.

8.1.3 Concluding Remarks

From the above syntheses it can be concluded that payment problems are still prevalent in the New Zealand construction industry. Although the promulgation of the CCA has significantly reduced such problems, a considerable percentage of construction parties (particularly subcontractors) are vulnerable to them. While delays are prevalent, the value of economic losses is not significantly high. From another perspective payment problems are less significant for large and medium sized contractors because they are able to apply the CCA provisions to their advantage. Moreover large and medium size contractors are able to choose their clients because of their bargaining power in the industry. This category of contractors is able to demand payment security which guarantees settlement of their invoices/claims in the event of insolvency and payment default.

8.2 Construction Insolvency and Payment Problems

As highlighted in previous chapters, payment problems driven by insolvencies seem widespread and significant within the New Zealand construction industry. Developers and construction companies go into liquidation, mostly voluntarily, and often leave unsecured creditors (contractors, subcontractors and suppliers) unpaid of a substantial proportion of the amount owed to them. This research therefore investigated construction insolvencies and other associated problems through an analysis of liquidators' reports, a questionnaire survey and interviews of subject matter experts. The key findings on this subject matter are presented under four sub-sections: status of insolvencies, causes of insolvencies, cost effects of insolvencies and settlement of claims in liquidation proceedings.

8.2.1 Status of Insolvencies

The status of insolvencies in New Zealand seems not to be serious. Fifty percent of survey participants indicated that insolvencies are rare while a considerable percentage (20%) were of the opinion that insolvencies are sometimes prevalent. The SMEs interviewed were of the view that insolvency is mostly associated with general economic situations. Because of the current low levels of construction market activities, under-pricing of tenders with low margins results in cash flow difficulties. Consequently, construction companies become insolvent. Insolvency has been used as an excuse for non-payment/settlement of insolvencies, thereby adversely affecting creditors. The analysis of liquidators' reports revealed that most of the companies (20 out of 22 property developers, 24 out of 27 general construction, and 13 out of 16 construction trade services) went into voluntary liquidation between 2005 and 2009. The reasons for voluntary liquidation were cash flow difficulties and financial losses because of disputes between shareholders, creditors, etc.

8.2.2 Causes of Insolvencies

The study identified the causes of construction liquidations in New Zealand. Details of the results are provided in section 5.1.4. The main causes of insolvencies found are: a downturn in the construction market, financial losses, liquidation of related companies,

and other reasons such as contract failure and cost overruns, and poor asset bases. Financial losses to companies are due to non-payment, a drop in property market values and an inability to collect money owed by debtors and other bad debts. The analysis of liquidators' reports further revealed that sometimes cash flow difficulties and disputes cause liquidations in the construction industry. Other important factors identified in the study are the rate of growth of companies in the short term, delays in progress payments, and a lack of ability to secure contracts. Generally the findings are in consonance with Harris et al (2006) which concluded that poor financial management and inadequate attention to cash flow forecasting, exposes construction companies to risks of insolvency. The SMEs were of the opinions that currently insolvencies in the construction industry are mainly due to the low level of activities as a result of the economic downturn.

8.2.3 Cost Effects of Insolvencies

Literature provides evidence (section 2.3 and 2.5.3) that the cost effects on unsecured creditors due to liquidation of developers and construction companies are significant in New Zealand.

The analysis of liquidators' reports revealed that the cost consequences of the insolvency of property developers are less than NZ\$10k for 55% of companies in this category. For general construction companies and construction trade services, the cost consequences are between NZ\$100k and NZ\$500k and less than NZ\$100k for 37% and 56% of these companies respectively. This shows that the effects of construction companies going into liquidation are much higher than specialist trade contractors, which in turn are higher than property developers. These findings seem to differ slightly from the general perception that insolvency tends to affect parties down the chain more. This is because property development market activities in New Zealand have witnessed a downward trend in recent times. However the effects of the insolvency of general construction companies on their creditors are found to be significant due to the fact that these companies outsource a large share (65-70%) of their work.

In terms of value of claims, the survey results confirmed that payment delays and losses as a result of insolvencies are often up to NZ\$100k and sometimes up to NZ\$400k. According to 15% of participants, these delays and losses are often up to NZ\$100k.

However, the value of payment delays and losses occasionally account for up to NZ\$400k and even above, according to 30% of participants.

It is worth noting that the reasons for these cost consequences due to insolvencies are partly to the result of failure of companies to procure any form of security. The research found from both the analyses of liquidators' reports and the questionnaire survey, that there was no form of security procured to protect against losses due to insolvency.

8.2.4 Settlement of Claims in Insolvency Proceedings

The previous section discussed the cost consequences of insolvencies. The effects are worse when the status of payment is considered upon the completion of liquidation proceedings. In liquidation, the claims eventually result in delays or losses even once liquidation proceedings are complete.

The analysis of liquidator's reports undertaken in the current study found that more than 75% of companies that went into liquidation did not pay their creditors anything. Only 5% of companies paid fully, while the remaining 20% paid partially. Worse still, the time taken to receive payments after liquidation proceedings are completed is significant. The results show that on average liquidation proceedings take 18 months to be completed. This indicates the dire effect that insolvencies can have on unsecured creditors. Survey participants' comments supported the above comments regarding the duration of liquidation proceedings. On average they suggested that liquidation proceedings take 12 - 18 months to complete.

8.2.5 Concluding Remarks

Although insolvency of companies in the construction industry is currently low, the effects (cost consequences) are significant and demand attention. The effects on lower tier construction parties due to insolvencies of the upper tier are equally significant. The results show that frequently, lower tier parties have no protection against losses due to the liquidation of upper tier parties.

8.3 Causes of Payment Problems

Understanding the causes of payment problems in the construction industry is essential to mitigating its effects on parties to a construction contract. This is one key objective of the current study, particularly with regard to the situation in the New Zealand construction industry. Causes of payment problems vary across countries due to the characteristics and culture of the industry, economic and political situations, etc. This section collates the causes identified through the questionnaire survey, and follow-up interviews with SMEs to validate and extend knowledge in respect of the causes of payment problems in the New Zealand construction Industry. These causes are explained with reference to previous studies. Table 8.1 maps the causes identified by the current research with those of previous studies.

As observed in Table 8.1, the 10 most important causes among 28 causes of payment problems identified are: cash flow difficulties due to delays and non-payments on other projects, disputes over claims and responses, cash flow difficulties due to lack of initial capital, easy exit of players, payment culture of the industry, attitude of payers, improper supervision and financial control, easy entry of players, cost overruns and contract failure, and lack of knowledge and experience in the field.

Cash flow difficulties due to delays and non-payments on other projects and lack of initial capital are the most important factors responsible for payment problems in New Zealand. This finding is justified because the lack of initial capital and cash flow constraints of upstream players can cause payment default to the downstream parties. For upstream parties this can be the easiest recourse when they are experiencing financial difficulties. Motawa and Kaka (2009) and Ye and Abdhul-Rahman (2010) are of the similar opinion that payments are delayed to subcontractors by main contractors to improve their cash flow position during work on a project. Construction firms often have a poor asset base, and thus are heavily reliant on a steady cash flow for their survival (Stenning and Associates, 2006).

The SMEs interviewed also indicated that cash flow constraint is one of the reasons for payment default. Problems around the administration of variations claims and settlement are also a major contributory cause of payment problems in the construction industry in New Zealand. Delayed decisions on variation claims are found to contribute to cash flow constraints to contractors, as they are not often notified early enough to make additional financing arrangements and thereby avoid payment delays. Both

private and public clients have difficulties in raising additional/top up funds when variation claims occur.

The SMEs further indicated that the client's financial position is also responsible for payment problems. Clients frequently do not have sufficient funds and are heavily reliant on credit from banks and other sources. Delays with such sourcing of money by project owners cause deliberate payment delays to contractors. From a subcontractors' point of view, contractors' financial difficulties are due to the diversion of funds to other projects by their head contractors. Developers claim that they deliberately delay payments to save on finance costs since interest is charged from the time money is drawn from their accounts. Some of the SMEs have suggested that deliberate delay of payments is a common business practice by some large contractors. Generally these views are in line with previous studies where Hughes et al (1998) suggest that payment default is attitudinal in the construction industry and clients especially deliberately delay payment for their own financial advantage (Ye and Rahman, 2010). As table 8.1 indicates, Ye and Abdhul-Rahman (2010) suggest that cash flow constraints are also due to other reasons which include: client's ineffective utilization of funds, deficiencies in client's management capacity, and lack of proper process implementation. In view of these the current research suggests that improper supervision and financial control, and lack of knowledge and experience in the field, are some of the important causes of payment problems. The knowledge, skills, and experience of some industry participants (contractors and subcontractors) cause cash flow problems. For example, contracts typically require proper risk allocation but some contractors fail to read their contract or fully understand the risks associated with it prior to pricing. On this note, subcontractors surveyed conceded that their poor administrative skills contribute to their cash flow problems. Generally it appears that subcontractors have not taken full advantage of the payment provisions in the CCA and are unable to invoke/apply CCA clauses that could help them recover delayed claims. Further, failure to have a clear understanding about a client's expectation and contractual obligations are contributing to payment problems to some extent.

Uninterrupted payment down the chain ensures the smooth flow of cash which is essential for survival of firms within the industry as a whole. The study finding suggests that the industry would need to address the entry requirement or prequalification criteria of firms wishing to enter the industry. This will ensure that firms are financially viable to carry out construction activities.

Unlike in previous researches, the current study identifies disputes over payment claims and schedule as a cause of payment defaults. The dispute resolution experts among the (SMEs) interviewed opined that disputes over claims and variations are responsible for payment problems in the industry. This group of SMEs, indicated that claims are sometimes not well prepared and contain insufficient support information to substantiate them. Contractors seem to claim over what they are entitled to the contracts. The SMEs pointed out that large and medium size contractors comply with the requirements of the Act, while small contractors and subcontractors are ignorant and less compliant with it. In support of this, Uher and Brand (2005) found, based on the disputes referred to, that deductions for defective work and invalid claims are two major reasons for non-payment of the full amount of payment claims in 50% of cases referred to adjudication under the Security of Payment Act in NSW, Australia. The invalid claims referred to by Uher and Brand claims made after the final payment date, submitted too early, wrong reference dates, claims not made within the provisions of the Act, etc.

The study found that the payment culture of the industry - work first and get paid later, and attitude of payers are another contributory causes. This is similar to previous researchers' findings. As observed from table 8.1, previous findings indicate that clients' assume that contractors will finance the project in the event of late payment by them, and contractors accept late payment from clients as they are always at the mercy of their clients, are two other issues that lead to late payments.

In contrast to previous researches, this study identified that the easy exit and entry of construction businesses lead to late and non-payment in the industry. Easy entry encourages poor capitalisation, and poorly qualified clients and contractors in the market. On the other hand, if these poorly capitalised firms become insolvent and liquidated due to poor financial management or inexperience, there are little implications on the part of those companies other than tarnishing their image and limiting their re-entry for 3 years as per the insolvency Law in New Zealand.

Further, the SMEs suggested that the cyclical nature of the industry influences payment problems. The market goes through cycles and accordingly payment problems occur. Thus the volume of payment problems corresponds to the boom and bust cycle of construction activities.

Apart from the survey findings, the SMEs interviewed suggested the following are some of the causes for payment problems in the New Zealand construction industry.

- (a) Unlike private development clients, government projects involve many layers of bureaucracy that could delay the release of monies owing to project contractors. The involvement of many external consultants on some major projects adds to the layers of bureaucracy on such projects.
- (b) Subcontractors are responsible for their own problems to some extent because they are not proactive in following up their account receivables in a timely manner. Thus sufficient emphasis is not placed on credit control and debt collection.
- (c) Some of the large contractors practice ‘shift base performance’ where the funds are diverted from projects that are not performing well to other projects. This causes payment default to subcontractors who are engaged in those less well performing projects.

Table 8.1: Comparison of causes of payment problems

Findings of the current research (section 6.3)	Rank	Findings of the previous research (section 2.4)
Cash flow difficulties due to delays and non-payments on other projects	1	Cash flow problems because of deficiencies in client’s management capacity
Disputes over claims and responses	2	Client’s ineffective utilization of funds
Cash flow difficulties due to lack of initial capital	3	Scarcity of capital to finance the project: Client’s need to keep money rolling?
Easy exit of players	4	Client’s failure to generate income from bank when sales of houses do not reach the targeted amount
Payment culture of the industry	5	Poor cash flow because of lack of proper process implementation
	5	Delay in releasing of retention monies to contractor
	5	Delay in evaluation and certification of interim and final payment
Easy entry of players	6	Slow processing and delay in finalizing of variations and final accounts
Attitude of payers	7	Clients assume contractors will finance the project in advance in the event of late payment from them
	7	Client’s deliberate delays for their own financial advantage
	7	Contractors will accept late payment from clients as they are always at the mercy of clients
Improper supervision and financial control	8	Inflation
	9	Shortage allocation of funds from sources of funding when contract sum increased due to variation orders
	9	Client’s loan from bank not in place to pay the contractors
Lack of knowledge and experience in the field	10	Financial failure due to bankruptcy or winding up of paymaster’s other business activities

As a distinction from previous studies which investigated the causes of payment problems, this research study clustered the causes of payment problems to contractors and subcontractors in New Zealand using a factor analysis. According to this analysis, major causes for payment problems are: contractual issues, financial strength of industry players, disputes, project characteristics, and domino effects. The segregation of these five major causes is given in section 6.3.4 of chapter six. This clustering indicates that a focus on these key areas could improve the payment problems within the industry.

8.3.1 Concluding Remarks

The syntheses of findings indicate that although there are several causes that contribute to payment problems on construction projects in New Zealand, financial instability is central to them. Stability of payment is ensured through a regular flow of cash during work progress and ensures that all parties' financial claims are able to be settled as and when due. Such financial stability seems to be the common factor that could assist in resolving payment problems in the construction industry. Adjustments to contractual provisions that could guarantee financial stability may include the procurement of some sort of financial security at the outset of a project. Thus any payment default would be immediately indemnified by the security provider. It may also be worth incorporating mandatory requirements for the prequalification of the financial status of critical funding parties to any contract. In this way vulnerable parties can rest assured of the financial status of critical funding parties.

8.4 Effectiveness of CCA Provisions

Undoubtedly, the large construction companies that went into liquidation in late 1990s led to the promulgation of the CCA in New Zealand. This valuable piece of legislation was introduced to improve payment practices within the New Zealand construction industry by providing statutory payment rights and rights to use fast-track dispute resolution mechanisms. Based on this, one of the objectives of the current study was to investigate the extent of the use and effectiveness of these CCA provisions. This aspect of the study was investigated using a preliminary investigation of construction payment disputes and a questionnaire survey. The outcome of these two approaches was validated using SMEs.

Analyses of construction payment disputes show that more than 50% (21 out of 40) of the disputes used CCA provisions to remedy the payment problems that arose in their contracts. However, the questionnaire responses show that about 85% (out of 44) research participants used the provisions in about 10% of projects they have undertaken since the enforcement of the CCA. Overall, it was found that the provisions of the Act relating to payment procedures are considered moderately effective according to most research participants.

These findings are corroborated by the SMEs' views. Interestingly, large and medium size contractors have found the CCA useful and give more cognisance to it. Greater implementation of the requirements of the CCA by large and medium size contractors gives them the confidence that even if a claim or response is adjudicated, it is more likely the decision will be in their favour. However, in cases of occasional payment defaults, negotiating for the settlement of claims is preferred in order to maintaining good relationships between project partners. Thus smaller contractors and subcontractors seem not to see the CCA as a recourse and generally do not use it. Some large contractors and legal experts interviewed were of the view that smaller contractors and subcontractors appear ignorant of their rights and obligations under the CCA. The same group of SMEs further explained that subcontractors and smaller contractors consider the CCA to be an additional administrative burden which is unnecessary and costly.

On this note, one of the smaller contractors interviewed conceded that the smaller companies of his size are not able to meet the requirements the CCA in relation to preparation of payment claims and taking remedial action. The same SME was of the opinion that expectations on the part of the consultants and lawyers are high, which makes the CCA ineffective for smaller contractors. However, another SME indicated that CCA procedures involved in preparing claims and remedies are simple but most subcontractors do not possess the administrative skills required to perform them. The SMEs views seem to be in line with the generally held view that subcontractors generally have a low level of knowledge and understanding of the Act (Uher & Brand, 2006, 2008).

According to some of the subcontractors interviewed and those that participated in the questionnaire survey, invoking the CCA provisions on their reputed contractors is a greater challenge when they seek to remedy non-payment. This is due to the perceived negative impact such invoking may have on their relationships with those contractors.

Further reasons for the effectiveness or ineffectiveness of the payment provisions of the CCA are given in the following sub-sections. Summary of general views on the CCA follows after.

8.4.1 The Effectiveness of the CCA

The effectiveness of the CCA is generally around its adjudication provisions. The following four points give the reasons for the effectiveness of the CCA realised from this study.

- a) The CCA provides respondents an opportunity to take prompt action when an adjudication notice is served. Serving an adjudication notice encourages parties to discuss and give reasons for withholding money, and settle differences privately. An adjudication notice is a good threatening tool for the settlement of claims.
- b) The adjudication provision of the CCA is a quick and cost effective dispute resolution process that gives a statutory time limit to decide disputes. The provision allows a claimant to secure the appointment of an adjudicator within 24 hours and to obtain a determination within 30 working days or less from that point.
- c) An adjudication determination is binding and enforceable, although the determination could be transferred to court for further judicial review or to continue litigation or arbitration proceedings.
- d) The CCA enables claimant to seek approval for issuing a charging order over the property of the defendant in the event of a dispute over payment (s.29). A charging order prevents the property owner from selling or having further dealings with the property until all dues are settled.

8.4.2 The Ineffectiveness of the CCA

The following reasons may account for the ineffectiveness of the CCA. These reasons suggest that improvement opportunities exist to make the Act more effective.

- a) Some large contractors and subcontractors were of the opinion that the CCA is only effective, if clients had sufficient money and was willing to pay. Also the adjudication procedure in the CCA could make it ineffective because of the lengthy enforcement process to obtain payment for work and additional problems in having

to go through the court procedure. Although the approval for issuing of a charging order is given by the adjudication determination, the adjudication determination needs to be enforced prior to the issuing a charging order. Currently the CCA provides a 15 day objection period after an application to have a determination entered as a judgement. This seems to make the provision of charging order less effective because according to the SMEs, within this objection time the project owners tend to liquidate their company or provide personal guarantees then go into liquidation.

- b) The research found retention monies are being withheld longer than expected. Participants indicated variations are a cause of disputes and result in payment delays and losses in construction projects. The CCA does not seem to provide protection for the release of retention monies or any procedure to improve the practice of variations. Participants were of the opinion that the CCA could prescribe for clients to hold the retention money on trust until contractors fulfil their obligations under a contract.
- c) Some of the participants were of the opinion that the CCA provides default payment provisions when contractual provisions are absent. In practice head contractors tend to vary payment terms to subcontractors in line with their own contract terms with clients. Essentially this allows the practice of conditional payment provisions, though unlawful within the CCA.

8.4.3 Concluding Remarks

From the above discussion it could be concluded that the CCA is moderately effective because there are arguments on the side of effectiveness as well as ineffectiveness. In the main, it is effective in getting disputes resolved faster. However, it does not seem to guarantee payment unless the time frame for objection was reduced. Even then, considering the extent of use of the CCA, particularly by subcontractors and the legal and administrative procedures involved, contractors and subcontractors do seem to rely on the CCA to get paid.

8.5 Security of Payment for Construction Parties

A main focus of this research study was to determine feasible solutions that could secure payment to contractors and subcontractors on construction projects in New Zealand. This aspect of the investigation focused on determining: different forms of security that could be used, the extent and the reasons for the lack of use of different forms of security, and identifying if there were obstacles to the procurement of different securities by construction parties. These issues were examined using a questionnaire survey and semi-structured interviews with SMEs. The following sub-headings explain the above issues.

8.5.1 Forms of Security Used on Construction Projects

The results obtained from the analyses of the questionnaire survey confirm that several forms of securities are in-use. Research participants were unanimous that principal payment bonds, direct payments/tripartite agreements with funders, retention bonds in lieu of retention and escrow accounts are the most effective forms of security that could be used on construction projects in New Zealand. Amongst these forms of securities, direct payments/tripartite agreements with funders and retention bonds are more frequently used than payment bonds and escrow accounts.

The SMEs interviewed have shown that often contractors are protected by tripartite agreements with funders in commercial development projects. If the developer becomes insolvent, the bank takes over the development and completes it as per the agreement. This guarantees payment to contractors. Although the tripartite agreement is entered between parties, payment could still be defaulted, if there are variations on projects which are not approved by engineers. Therefore an effective security under the tripartite agreement requires contractors to ensure additional funds are allocated by the bank and variations are approved as early as possible. Furthermore, the tripartite agreement requires contractors to be careful about the terms and conditions set out in the agreement, particularly when a developer becomes insolvent, as the bank sometimes might not continue and complete the project, or the receiver/liquidator could apply claw back provisions on contractors. The research shows that the tripartite agreement does not seem to offer any protection to subcontractors because SMEs indicated that

fundere/project owners are generally not willing to enter into agreements with their supply chain.

The research found that solicitor's trust accounts are commonly used by large contractors and subcontractors to hold retention monies, money due in disputed claims, and sometime to hold entire project funds. As indicated in section 6.7.4 and 7.8, most of the research participants (contractors and subcontractors) have stressed that retention monies need to be in escrow accounts which would ensure their timely release and security of retention monies. Especially in the event that project owners or contractors become insolvent. Some of the research participants were of the opinion that mandatory requirements to hold retention monies could provide guaranteed protection. This corroborates the opinions of Latham (1994) and Hughes et al (1998) who suggest that employers need to hold contractors' retention monies in a separate trust account as an insolvency protection. On a similar note, Supardi, Adnan, and Mohammad (2010) in Malaysia and Cheng et al (2009) in Hong Kong also suggest that some of their standard forms of contract requires employers to hold contractors' retentions in trust. This research suggests that a contractual provision to hold retention monies could be considered for New Zealand construction industry because participants (including project owners) are in agreement with this practice (sections 6.7.4, 7.8.3, and 7.8).

The research found that holding an amount equivalent to the likely final payment under the contract would be more feasible than holding retention monies or whole project funds. As explained in section 7.8, the security amount (equivalent to the likely final payment) held in an escrow account essentially becomes retention monies because 90% of the money withheld is released upon practical completion of the project, while the remaining 10% is released at the end of the defects liability period. Thus the BuildSafe security escrow account in New Zealand seems more feasible than just holding retention monies in Lawyers' trust accounts as is the practice currently. The study finds that the escrow account offers several benefits that include:

- a) Money upfront incentivises contractors and subcontractors and prompts completion of work.
- b) Unlike bonds and guarantees, escrow holds cash which could be released within 24/48 hours of establishing entitlement under the contract. Thus, holding money in escrow prompts the release of money upon the practical completion of a project

- c) For small building projects (less than \$20,000) an amount equivalent to the total contract price is withheld, while for large building projects it should be equal to the likely final payment under the contract.

Although the analysis of the questionnaire responses indicates that the principal payment bond is an effective form of security, the SMEs were of the opinion that payment bonds are rarely used due to the reasons explained in section 8.5.3 of this report. Thus some of the participants have indicated that there needs to be mandatory requirements for private developers to provide payment bonds to contractors. Mandatory payment bonds are required in the US construction industry through the Miller Act (S.3131 to 3134). The Act requires contractors undertaking federal projects of more than \$100,000 to provide payment bonds for the protection of subcontractors and suppliers employed on the project (Wu et al., 2011). Not only in government projects in the US private project owners also issue payment bonds in order to prevent contractors placing lien over their property. Thus there seems essential considering mandatory payment bonds by private development clients in New Zealand because this research evidence that the contractual requirement (under the NZS3910:2003) to provide payment bonds is less effective.

Most of the sub-trade subcontractors interviewed have only used retention bonds in lieu of retention monies. These views align with project owners. On government projects contractors were offered retention bonds in lieu of retention monies. These bonds were on-demand bonds obtained from banks in the form prescribed by the NZS3910:2003, which is the standard form of contract used by most of the large contractors on government projects. Similarly from the perspective of developers, security of payment to contractors could be in the form of tripartite agreements with funders and/or escrow accounts where retention monies are deposited.

The study found that there are other forms of security that could be considered by New Zealand construction industry. For example, contractors surveyed indicated that the use of advance bonds is an effective form of security, although this is traditionally used as a security for the principal where a contractor receives advance payment. Advance bonds could reduce payment defaults by contractors. One of the primary reasons for payment problems is cash flow difficulties which could be overcome if contractors are paid in advance. In this case, a client has anyway secured his advance payment by way of an advance bond.

Subcontractors surveyed within this study have indicated that the pre-qualification of upper tier construction parties for their financial status, or disclosure of their financial arrangements for a project, could be feasible remedies to counter payment default. Pre-qualification could prevent dishonest and unethical project developers and contractors entering the market and thereby raise the standard of practice within it. Such a pre-qualification may not be operable in a free market however, unless government policy makes financial disclosure mandatory for projects. Some of the SMEs representing large and medium size contracting and sub-trade subcontracting companies indicated that they pre-qualify their customers and work only for selected clients who are trustworthy, financial wealthy, and have not defaulted on any payment in the past. With this business strategy therefore they have been able to avoid the risk of working for potentially defaulting customers.

Apart from the above, the research found other means and ways by which construction companies in New Zealand have protected themselves from payment default by upper tiers. Some of the contractors and sub-trade contractors have a business practice of doing a due diligence and debt collection on their customers before undertaking projects. These are done through market intelligence and information from banks and debt collection agencies. If the outcome of the process is negative, contractors/subcontractors have requested project owners/contractors to disclose their financial arrangements for a project or to issue a security using one of the above forms. When clients/contractors refuse, these contractors and subcontractors have decided not to undertake the work. However, occasionally contractors and subcontractors have worked for those types of client under certain conditions. For example project owners were requested to make payments to contractors and subcontractors weekly or fortnightly instead of monthly and payments were sometimes made to lawyers' trust account.

8.5.2 Extent of Security for Payment Used in Projects

Though there are forms of securities in-use in the construction market in New Zealand as covered in section 8.6.1, delays and losses due to liquidations still exist. The research therefore investigated the extent of the use of security of payments and to determine if there are practical impediments to these in New Zealand.

The analyses of liquidators' reports (covered in section 5.1) provided significant information to show that different forms of payment security have not been explored in New Zealand construction industry. 75% of companies that went into liquidation were not able to pay their creditors after liquidation. Only 5% of companies paid fully while the remaining 20% made partial payments. Primarily the losses were due to absence of any form of security against liquidation. Further, more results from the questionnaire survey confirmed that 92% of the 53 survey participants indicated that on only 10% of construction projects were some form of security procured by the project participants.

According to large contractors, the concept of security for payment is mostly confined to contractor-principal relationships. It is not common for subcontractors to request security of payment from their head contractors. Subcontractors also indicated that their experience of security of payments is limited. Few medium sized subcontractors protected their retention monies with retention bonds. However, very often subcontractors have no security for their payments as was explained in section 6.5.3 and 7.8 of this report.

8.5.3 Practical Impediments to Obtaining Security for Payments

This research study went further in determining the practical impediments to obtaining and applying different forms of security of payments in the construction industry in New Zealand. The interviews with SMEs were revealing. It was made clear that project owners are the major determinants for the use of any form of security on projects. Clients'/contractors' willingness and ability (or lack of it) to provide security for payment is the primary reason for parties not being able to procure security for payments. Project owners are not willing to offer security for head contractors' payment because they could get the job done by contractors who are prepared to work without any security. On the side of the contractors, they are not able to influence the client's decision and demand guarantees for their payment. The situation worsens down the supply chain where subcontractors are in many ways powerless compared to head contractors. They cannot make demands and therefore are not able to influence contractors' decision of not to give security of payment to their subcontractors. Some of the subcontractors are not able procure security on their own as they are thinly capitalised and have no security in their businesses (section 6.7.4 and 7.8). Fundamentally this is due to the nature of the construction market which has no barriers

to entry. Thus poorly funded, unscrupulous clients/contractors will always find contractors/subcontractors to work for them.

Offering security depends on the ability of clients/contractors to secure their debts. In general, the construction industry is characterised by low capitalised firms and working primarily on credit. Private developers usually set up a development project with borrowed capital and little or no equity of their own. Having inadequate personal security in the form of money or assets prevents developers and construction companies from offering any form of security for payment. Further, from the contractors' point of view, securities in the form of bonds or any other form present a squeeze on cash flow for contractors as the money becomes tied up on security. The negative implication is higher, if the contractor is required to provide performance security by those upstream (principal).

The cost associated with different forms of security may be an impediment. All costs are borne by the project owner, and thus the cost of providing security may be prohibitive to provide security. If the client failed to provide a security, a prudent contractor would add a risk factor into the contract price which would ultimately increase the cost of the project. On the part of the contractor, this could impact on competitiveness in the market. Hence, it would seem sensible that parties negotiate and agree on a viable form of security, if other requirements are satisfied by parties.

The research found that market forces could be another obstacle for parties to procure security for payment. For example when the market is in a downturn, limited works are available and high competition prevails which does not support contractors obtaining or insisting on securities. If construction activities are low, payment problems become significant and insolvency related payment losses would increase.

Apart from practical barriers to implementing security measures, getting a security against clients or contractors may be perceived in a negative light. It may seem as if the clients and head contractors are not trustworthy. Also this may be seen as being out of the line/contrary to normal industry practice.

From the forgoing, it would seem that the barriers to implementing payment security are significant. Thus there has to be means by which security of payment could be implemented which confer a win-win on parties to construction projects. Some of the ways by which security of payment can be implemented are discussed in the next section.

8.5.4 Effective Ways of Securing Payment to Construction Parties

The interviews held with SMEs have given insights to ways by which security of payment could be implemented with the construction industry in New Zealand.

The research has shown that implementation of security for payment could be effective, if there is a regulatory or legislative requirement to protect construction parties against non-payment by upper tiers. The regulatory/legislative requirement could provide same level of protection for each player in the market. This would restrict the freedom of clients and contractors choosing between players who are prepared to work with or without securities. Furthermore, this would provide a higher level of protection against insolvency losses and eventually eliminate poorly funded potential players from entering the market. As discussed in section 8.5.3, this mandatory requirement to provide a security could create an additional transaction cost to the clients/contractors. However this could be compensated by negotiating a feasible form of security or making other financial arrangements between parties.

The research found that the level of financial strength of clients and contractors is a primary cause of payment problems. Thus, a regulatory requirement to have adequate information on the financial background of players, particularly developers and contractors entering the market and to issue a security for payment if requested may be beneficial.

Besides the above, the research found that effective contractual arrangements could help to get a security for payment in place. This would not be effective unless the contractors and subcontractors collectively agree to prescribe a requirement for payment security in all forms of contract used. In general, parties tend to use a variety of forms of contract, and subcontractors in particular are not using similar forms of contract to head contractors. Although the contract forms stipulate the requirement for security of payment, often the contract conditions are amended in practice by the client's representative or engineers. Thus having a contractual provision requiring security for payment could work in limited instances only. For example the NZS3910:2003 allows contractors to request a principal payment bond in contracts. However it is seldom used in practice as indicated by the research participants in section 7.8.1.

8.5.5 Concluding Remarks

The synthesis of research findings within this sub-theme reveals that escrow accounts and tripartite agreements are the most effective forms of security seeming to work without any mandatory requirements because the parties concerned are in agreement to provide them. Developers are in agreement that retention monies could be secured using escrow accounts. Escrow accounts seem to offer more benefits to contractors and subcontractors than tripartite agreements. The research indicates that subcontractors are not able to obtain retention bonds in lieu of retention monies. Use of payment bonds could involve mandatory legislative requirement for its effective implementation, because developers and contractors may not be willing to provide them.

8.6 Summary

This chapter has presented a synthesis of the research findings which involved the collated outputs of three approaches: preliminary document analysis, questionnaire survey and SMEs interviews. The synthesis were presented under five key sections in accordance with the research objectives highlighted in chapter one.

The synthesis of findings reveals that payment problems are still prevalent in the construction industry but not as significant as before the enforcement of the CCA. Issues around variation claims and retention monies are widespread across the industry. The research found that causes of payment problems are mainly around the financial status of clients/contractors which does not enable them to provide security for contractors/subcontractors. Although the CCA has improved payment practices, the security of payment to contractors and subcontractors remains a problem. The synthesis shows that contractors are able to procure securities for their payment occasionally but it seems challenging for subcontractors to get security from contractors. By and large contractors and subcontractors are of the opinion that the retention monies need to be protected using escrow accounts. Given the nature of the industry, contractors are of the opinion that mandatory requirement to have security for payment could work on the other hand subcontractors are of the opinion that a mandatory requirement is the only means that could provide effective implementation of security in New Zealand.

CHAPTER NINE

Conclusions and Recommendations

9.0 Introduction

This chapter mainly focuses on conclusions and recommendations based on the findings of this research study. The first section of the chapter reviews the aim and objectives of this study and explains how these were achieved. This is followed by the contribution of the current research to existing body of knowledge. The next section in the chapter explains the recommendations made from the study. The last section gives a list of recommendations for future work based on this study. Finally the chapter provides the concluding remarks on the current study.

9.1 Review of Aim and Objectives of the Research

The primary focus of this study was to explore feasible solutions to payment problems in the New Zealand construction industry. In view of this, the study established the five objectives which were highlighted in chapter one. A multi-method approach consisting of document analyses, a questionnaire survey and validation interviews using subject matter experts (SMEs) was employed. Firstly, the research involved the preliminary investigation into documents relating to payment disputes heard in the High Court, and Liquidators' reports, to gain understanding of payment problems in the New Zealand construction industry. The next stage of the research involved administering a questionnaire survey to construction practitioners (contractors, consultants and subcontractors) in the New Zealand construction industry. Finally the research sought SMEs views in order to validate and amplify all prior findings. The way and manner by which each objective was fulfilled is presented in sections 9.1.1 to 9.1.5 below.

9.1.1 Objective 1: To Investigate the Nature and Extent of Payment Problems

The first objective of the study was to investigate the nature and extent of payment problems in the New Zealand construction industry. A triangulated approach was used in data collection to be able to fulfill this objective.

Preliminary analyses of construction payment disputes that were heard in the High Court and Liquidators' reports of construction companies were performed using simple analysis techniques (charts and tables). Results of these preliminary analyses are presented in chapter five. Further investigations involved the analyses of information obtained from a questionnaire survey administered to construction practitioners in New Zealand. The analysis of the questionnaire survey is presented in chapter six (section 6.2). The analyses predominantly involved descriptive statistics and statistical significance tests. Finally the results of both the preliminary investigations and questionnaire survey were validated with the aid with interviews of SMEs.

The collated results using this triangulated approach show that payment problems are still prevalent in the New Zealand construction industry, although significant progress was achieved with the promulgation of the CCA in 2003. Payment delays to head contractors and subcontractors are more prevalent than losses. Smaller contractors and subcontractors are affected more by payment defaults due to their failure to use the CCA provisions as appropriate. The research found that the administrative requirements are cumbersome and the skill bases of contractors and sub-contractors may need to be improved.

The research found that payment defaults are mostly with variations, retention monies, and final payments. The timing of variations claims, make it difficult for project owners to arrange for top-funds needed to offset variation claims. Disagreements and disapproval of variations cause cash flow difficulties and resultant payment default. Similarly delay with retention monies are a significant concern in the industry, particularly to subcontractors. Payment losses are usually realised towards the end of the project by construction parties when the situation would appear to be irredeemable. Thus it is evident from the nature and extent of the payment problem in the New Zealand construction industry that different forms of security of payment would need to be explored.

The general findings from the preliminary investigations and surveys were validated by the SMEs interviewed for the study. It is concluded that overall payment practices within the New Zealand construction industry have improved significantly with the introduction of the CCA but still exist and are sometimes significant.

9.1.2 Objective 2: To Investigate Construction Insolvencies and Related Payment Problems

As an extension to objective one, objective two investigates payment delays and losses due to insolvencies. To achieve this objective, the research used a similar triangulated approach as in objective one. The study found that insolvencies are still prevalent in the construction industry New Zealand but not as significant as was before the introduction of the CCA. Currently, the industry experiences low insolvencies due to the downturn in the construction market and the national economy. The analyses of liquidators' reports along with SMEs' views confirmed that construction companies going into liquidation cause significant payment delays and losses to lower tier construction parties. Payment losses are found to be more prevalent than delays because most of the companies were unable to pay their creditors after liquidation proceedings. The research also found that significant cost consequences due to insolvencies are partly due to the failure of companies to procure any form of security. Overall, payment problems related to construction insolvencies also suggest that some form of payment security is needed to protect against payment risks in insolvencies.

9.1.3 Objective 3: To Investigate the Causes of Payment Problems

The third objective was to investigate the causes of payment problems in the New Zealand construction industry.

Literature (covered in section 2.4) and preliminary investigation into liquidators' reports have shown that bankruptcy/liquidation of project owners, project owners' poor sourcing and management of funds, absence of conditional payment provisions (pay-when and if-paid), and owners' dissatisfaction with performance are reasons for payment default to contractors in New Zealand.

The analyses of the questionnaire survey to industry practitioners in the next stage of the research found the following most important causes of payment problems in the industry.

- a) Cash flow difficulties because of delays and non-payments on other projects and lack of initial capital.
- b) Disputes over payment claims and responses.
- c) Industry characteristics (easy entry and exit of players, payment culture, and attitude of payers).
- d) Improper supervision and financial control.
- e) Cost overruns and contract failure.
- f) Lack of knowledge and experience in the field.

The study employed factor analysis of cluster the interrelated factors and find the salient causes. From the factor analysis the five key causes of payment default identified include: contractual issues, financial strength of industry players, disputes between players, project characteristics, and domino effects.

The last stage of the investigation involved verifying and amplifying the findings using SMEs. Interviews with SMEs found that deficiencies within subcontracting companies' internal systems lead to their cash flow difficulties. Subcontractors generally do not have a robust practice of credit checks on new customers (contractors) and their debt collection and management activities are poor. Large contractors are in the habit of funds transfer from one project to another which also affects their ability to settle invoices due to their subcontractors.

9.1.4 Objective 4: To Evaluate the Effectiveness of the CCA

The fourth objective of the study was achieved through the triangulated approach of literature review, a questionnaire survey and interviews with experts (that included legal and dispute resolution experts).

Literature on the CCA in section 3.3.3 revealed that industry participants are not using the CCA effectively, and that knowledge and understanding of its provisions are insufficient. There were commentaries on the fact that the provisions of the CCA do not

address payment losses in the event of liquidation, even though the CCA was established because many high profile companies had failed to pay their creditors when they were liquidated. Details of the inadequacies of the CCA are provided in section 3.3.3 and 7.6. In the course of the study programme the researcher submitted a memo to the Department of Building and Housing in 2010 for consideration of the review of the CCA. The memo was an intermediate research output based on reviews of literature on the effectiveness of the CCA. A copy of the memo is attached as Appendix 2.

In furtherance of this objective, some aspects of the questionnaire administered to construction practitioners. Analyses of the survey found that provisions of the CCA are moderately effective. A large percentage (85% out of 44) of participants stated that their claims were referred to the CCA in up to 10% of their projects, suggesting that the CCA is of future. Participants indicated that proper understanding and application of the provisions of the CCA enable to prevent and resolve disputes in construction contracts.

Follow-up interviews were conducted using SMEs to validate and extend knowledge on the use and effectiveness of the Act. According to them, overall the Act is effective but requires improvement in certain areas. For example, some of the administrative processes associated with adjudication were noted are cumbersome. In particular smaller contractors and some subcontractors are not able to follow the proper procedure and documentation required to refer their grievances to adjudication. In general, the CCA is effective to resolve disputes but does not guarantee payment to a party to a contract. Also the CCA provides 3 weeks for respondents to oppose the enforcement of adjudication determination. This timeframe is sufficient for respondents to take counter action to avoid paying. Thus the claimant is not only delayed payments due but also risk outright loss.

9.1.5 Objective 5: To Explore the Feasible Solutions to Payment Problems

This objective corresponds with the ultimate aim of this research study which seeks feasible forms of security for payment in the construction industry. The triangulated approached used in the study concludes the following in relation to this objective.

The literature reviewed for the study gives a list of different forms of security for payments in-use all over the world. Each of the forms of security has their unique

character, benefits and circumstances where they could be used. The review had also identified the forms of security in-use in New Zealand, but found that key ones are in seldom use. Investigations into liquidators' reports found that there is no form of security when companies are liquidated and that trade creditors risk losing all when their principals become insolvent. Further, the results obtained from the analyses of payment disputes among construction parties in New Zealand High Courts reveal that only in few instances did parties apply charging orders provided under the CCA and registered caveat over properties as remedies to payments defaults on construction projects.

The other arm of the research investigation then covered the determination of feasible forms of security. The analyses of a questionnaire survey to industry participants reveal that 92% of research participants have had a form of security in less than 10% of the projects undertaken. The results also found that principal payment bonds, retention bonds, direct payment/tripartite agreement, and trust/escrow account are top four forms of security that research participants have suggested could be the most effective in New Zealand construction industry.

These findings were verified and extended by the SMEs interviewed after the survey analyses. Mainly large and medium size contractors obtain security from their clients, particularly from private developers. Large and medium size contractors usually enter into tripartite agreement with funders which guarantees a fairly steady income stream. Lawyers' trust accounts and principal payment bonds are also used occasionally. However smaller contractors and subcontractors who are mostly at the receiving end of payment problems seldom use any form of security for their payments. Few protect their retention monies using retention bonds. The study found that most subcontractors are not financially viable enough to obtain bonds, while industry perception makes them unpopular if they insist on any form of security from their principals. Escrow accounts are becoming popular for retention monies and research participants have suggested making the use of escrows in construction industry mandatory. The research found the two major practical impediments to procuring payment security: The prohibitive cost of the securities and downstream (contractors/subcontractors) parties' powerlessness to influence the decision of upstream (project owners/contractors).

9.2 Contributions of the Research

Undoubtedly, the contribution of this study to the body of the knowledge emanates from the achievement of the research objectives. Accordingly the current research makes the following list of contributions to both theory and practice.

9.2.1 Contributions to theory

- a) The study has found that payment problems are still prevalent in the New Zealand construction industry. This confirms the existing theory that payment problems are prevalent in the industry. However the study has gone further to identify the nature and extent of payment problems. In terms of types of payment, the study found that variations and retention monies are mostly at the risk of default by upper tier construction parties. Subcontractors are affected more than head contractors, despite the fact that the CCA had abolished the pay-if-when-paid clauses. In addition the current study has quantified payment delays and losses to construction parties in insolvencies. This provides another dimension to theory about the nature of payment problems within the construction industry.
- b) The study has identified a list of causes of payment problems and confirms some of the causes identified by previous studies. For example cash flow difficulties due to lack of initial capital, payment culture (contractor finance the project – work first get paid later), receivership and liquidation, financial difficulties, and deliberate delays are some of the common causes of payment problems. This study adds to knowledge base regarding causes of payment problems from the perspective of New Zealand. The research found that failure to manage variation claims in a timely manner, failure to exercise effective credit control and debt collection practices, transfer of funds across different projects based on performance, existence of many layers of bureaucracy in public projects significantly contribute to payment problems in New Zealand construction industry. Further the study has clustered the causes identified into five major areas of focus for improvement of payment practices which include: contractual issues, financial strength of industry players, project characteristics, disputes over claims, and domino-effect.
- c) The research has found that procuring a feasible form of payment security in contracts could minimize payment losses to construction parties. The study

confirms that the commonly used forms of security of payment bond, retention bond, escrow account and tri-partite agreement are in practice within the NZ construction industry but to a very limited extent. According to the participants surveyed, the most appropriate form of security is to set aside a sum of money in an independent escrow account for any payment eventuality.

- d) The research found that upper tiers' deterministic power and cost of security are the two major practical impediments to the implementation of payment securities in New Zealand. The study therefore contributes to theory by showing the importance of making security for payment a mandatory clause within payment-related legislation in New Zealand.
- e) Apart from having a security in place, the research found that there are other means by which payment problems within the industry could be improved. For example, selectively working for clients or groups that are trustworthy and financially viable would help with cash flow, or implementing effective debt management systems would reduce backlog of account receivables.
- f) Unlike in previous studies, the current study is positioned under pragmatism paradigm which enabled the adoption of the mixed-methods approach in the inquiry of the current research phenomena. In terms of theoretical perspective, the current study is viewed under pragmatism based on its philosophical assumptions while all previous studies in the subject area were mostly from a positivist perspective. The current research has derived knowledge using a triangulated approach whereas previous studies have employed mostly questionnaire surveys.

9.2.2 Contributions to Practice

- a) The study found that the CCA in its current form is effective in resolving disputes and recovering due payments but does not guarantee that a party to a contract will get paid unless the timeframe for objecting the application to enter the adjudication determination as judgement is shortened. This research findings show that negotiating for a feasible form of security at the outset of the project would ensure the payment to contractors/subcontractors if clients/contractors defaulted. Consequently the research suggests that practitioners could consider setting up an independent escrow at the time of entering into a contract. This would provide

protection against insolvency risk and thus improve construction project management practice.

- b) Unlike previous studies that examined the causes of payment problems, the current study clustered the causes of payment problems in the industry into five major areas, contractual issues, financial strength of industry players, disputes, project characteristics, and domino effect. In addition the study identified that companies have avoided payment problems by working with trustworthy clients, having proper debt management and credit checking processes. This suggests that practitioners could focus on these aspects for improving payment practices within the industry.
- c) Although there are improvement opportunities within the CCA, it is an effective tool to resolve disputes quickly and thereby improve cash flow. Practitioners could use the CCA provisions effectively by complying with requirements of the Act.

9.3 Recommendations

Based on the findings and general conclusions, this research study makes the following recommendations to theory and practice.

9.3.1 Recommendations to Theory

- (a) The current study investigated the payment issues with the view to finding feasible forms of security that could be applied in New Zealand construction industry. The study recommends that there needs to be security for payment to contractors and subcontractors. Because contractors and subcontractors are usually unsecured creditors in construction business and are often left unpaid in the event of client's default.
- (b) The study found two main practical impediments to the use of payment securities in New Zealand. One is the cost of the security to the project owners/contractors and the other is the deterministic power of the project owners/contractors to be able to refrain from providing a security for payment. The construction market has no barriers to entry which allows poorly funded, less-qualified and unscrupulous construction parties to operate. Project owners/contractors are able to acquire the services from contractors/subcontractors who do not demand any security for

payment and are prepared to tolerate the risk. Thus for effective implementation of security for payment, the study recommends having a mandatory requirement to provide this for construction parties. The legislative requirement would offer benefits of: eliminating less capitalized and qualified players entering the market and thereby improve the standard of the industry, and provide equal opportunity/competitive power for industry players.

- (c) The study identified that holding project funds/retention monies in an escrow account seems the most appropriate security compared to other forms of security (e.g. principal payment bonds, direct payments/tripartite agreements with funders, retention bonds). Thus the study recommends that mandatory requirement to set aside a sum of money in an independent escrow account could protect contractors and subcontractors against any cash flow irregularity on projects in New Zealand.
- (d) The study found that the inadequate capital base of project owners and contractors is the primary cause of payment problems in the industry. It therefore recommends that there needs to be some regulatory requirements for developers and contractors to disclose funding arrangements to lower tier parties or to have a certain amount of working capital (e.g. a stipulated percentage of the contract value of the project) to be able to tender for a project. This could ensure smooth cash flow on projects and ensure timely payment by lead contractors down the supply chain. This could also prevent undercapitalized and unethical developers and contractors entering the market and thereby raise the standard of construction contracting.

9.3.2 Recommendations to Practice

Apart from the above recommendations to theory, the study believes that the following list of recommendations could help practitioners to reduce payment problems within the construction industry in New Zealand.

- (a) The study recommends practitioners to consider holding project funds/retention monies on escrow accounts amongst other forms of security (e.g. principal payment bonds, direct payments/tripartite agreements with funders, retention bonds). The study found that construction specific escrow account (BuildSafe Security) in New Zealand which requires project owners/contractors to hold a deposit amount which is equal to the likely final payment under the contract seems

feasible. The way in which this account is set up would seem capable of protecting retention monies as well.

- (b) The study further reinforces issues around adjudication determination, considered in the on-going review of the CCA by the Department of Building and Housing (DBH). The study recommends that practitioners could ensure that the timeframe allowed (currently 15 days) for respondent to oppose the enforcement of adjudication determination is shortened (3 - 5days was largely suggested by the SMEs interviewed). Shortening the timeframe would enable the charging order provision of the CCA to be more effective and reduce the time for claimants to recover any adjudicated amount.
- (c) The study found that variation claims are one of the causes for defaulting payment by both private and public clients. In this view, the on-going review of NZS3910:2003 has proposed that variation claims need to be notified and approved within a given timeframe limit (1 month). In line with the current revision, this study recommends that constructors need to manage the variation process effectively by timely notification and approval from engineers to contract. This could be achieved by agreeing on a contractual timeframe for attending variations in all forms of contracts.
- (d) The study recommends that project owners could look at advanced payments to contractors in New Zealand. This would improve contractors' cash flow and thereby reduce payment defaults.
- (e) Some of the companies surveyed have avoided payment problems by doing proper credit checks on new customers. These companies have also been selective of their clientele, whilst pursuing effective debt collection and management systems to track down their account receivables. The study therefore recommends that companies have internal systems in place with reminders which facilitate collection of their receivables in a timely manner, and allows efficient credit control during progress of their projects.

9.4 Limitations of the Study

There are certain limitations to the current study. Firstly, this research has investigated payment problems and feasible solutions to these problems from the perspectives of

head contractors, subcontractors and consultants operating within the New Zealand construction industry. Recognising the importance of clients' views for the study, the researcher had attempted to collect the views of project owners but was not successful due to practical difficulties in contacting and getting responses from clients. Although consultants' views were considered as proxy to project owners as they could best represent project owners. In addition, the SME interviews conducted to validate survey findings generated some project owners' views on the research problem.

Secondly, the participants for this research could only be approached through organisations such as the New Zealand Contractors, Specialist Trade Contractors Federations and professional institutes. This offered a response rate of only 12% (out of 989 participants contacted) and limited responses within individual groups (e.g. head contractors and individual professions – architect/quantity surveyor/project managers/engineers). However, the overall responses obtained from participants were sufficient to perform the required statistical analysis. Further, the effects of the low response rate were mitigated with the validation exercise using SMEs. SMEs for the validation interviews were key personnel representing different sectors (clients, large/medium/small scale contractors, subcontractors, construction specialist services, and key construction representative organisations) within the construction industry in New Zealand.

Finally, lower tier construction parties may not have been adequately catered for in this study because, the organisations approached had a large percentage of registered members that were large and medium scale contractors and subcontractors in the industry. Hence third and fourth tier small contractors' and subcontractors' views may not have been sufficiently considered in this study.

9.5 Recommendations for Further Study

Based on the limitations of the current study, the following recommendations are made for the consideration of future study related to subject area.

- (a) As mentioned above in section 9.3, smaller contractors and subcontractors (third and fourth tier) may not have been adequately covered by the current research study. The research believes that the magnitude of the payment problems could be more significant to this layer of construction parties. The general consensus is that parties

down the contractual chain are more vulnerable to payment problems and insolvencies, than parties in the top tiers of the chain. The legislative and contractual forms of remedies tend to work less effectively further down the chain. Therefore the study recommends that the future research could be extended to focus on these categories of participants.

- (b) The current research was unable to obtain as much views/opinions from client groups as anticipated, regarding payment problems and solutions. The feasibility of suggested solutions to payment problems could be enhanced by this. The study therefore recommends that future research investigation covers perspective views of project owners.
- (c) Despite the measures (such as pilot survey, reminders and questionnaire design) taken to improve the response rate, the current research were able to obtain views from a small percentage (12%) of the population using an internet administered questionnaire survey. Although the effect of this was mitigated using a triangulated approach, the study believes that the response rate could be improved using alternative modes of administering the survey simultaneously. For example along with the internet administered survey, the researcher could employ postal and delivery and collection modes to collect views. Further the research suggests that interviews as the primary method of data collection may improve the response rate as it could enable potential participants to be reached through known contacts established during initial interviews.
- (d) There was no distinction made between payment problems and solutions for residential and commercial contracts. In practice, there are significant differences between residential and commercial contracts in terms of contractual arrangements and legislative requirements. For example, remedies provided in the CCA for residential contracts are different to commercial contracts. Therefore further study could segregate residential and commercial projects in relation to payment problems and possible solutions.

9.6 Concluding Statements

This research study investigated payment problems in the New Zealand construction industry with a view to determining feasible solutions to these problems. The study

finds that payment problems are still experienced by construction parties, mostly by smaller contractors and subcontractors in New Zealand. This is in spite of regulation and legislative provisions that are in place to ensure the smooth administration of construction projects. For example the CCA in New Zealand is a payment-specific legislation introduced after the liquidation of several high profile companies. The CCA provides for efficient administration of payment claims and where disputes arise these could be expedited through adjudication procedures prescribed in the Act. However payment problems persist and irregularities are mostly found with variations and retention monies than in other types of payments. The research found that financial weakness of industry players is the root cause of most payment problems. Currently construction insolvencies appear less significant in New Zealand but research found that the financial impacts on construction parties in the event of insolvencies are significant because often no securities are sought as insolvency protection measures. The level of use and implementation of different forms of security for payment is low and for smaller firms there seems to be poor knowledge of the benefits accruable when security is procured. These practices fall short of expectations and to address these causes and effects of payment problems, the research study provided a list of recommendations. The recommendations include among others, adjustments to provisions within the CCA and other regulatory documents, changes to registration and pre-qualification of project owners and participants, changes to project administration processes, and general attitudinal changes within the construction industry.

Finally it is hoped that this thesis contributes to existing knowledge and will improve industry practice that could help to minimise (or mitigate) payment problems in the New Zealand construction industry.

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APPENDIX 1(A)



MEMORANDUM

Auckland University of Technology Ethics Committee (AUTEC)

To: James Rotimi
From: **Charles Grinter** Ethics Coordinator
Date: 21 July 2011
Subject: Ethics Application Number 11/163 **Security of payment and solutions in the New Zealand construction industry.**

Dear James

Thank you for providing written evidence as requested. I am pleased to advise that it satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC) at their meeting on 27 June 2011 and I have approved your ethics application. This delegated approval is made in accordance with section 5.3.2.3 of AUTEC's *Applying for Ethics Approval: Guidelines and Procedures* and is subject to endorsement at AUTEC's meeting on 8 August 2011.

Your ethics application is approved for a period of three years until 21 July 2014.

I advise that as part of the ethics approval process, you are required to submit the following to AUTEC:

- A brief annual progress report using form EA2, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. When necessary this form may also be used to request an extension of the approval at least one month prior to its expiry on 21 July 2014;
- A brief report on the status of the project using form EA3, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. This report is to be submitted either when the approval expires on 21 July 2014 or on completion of the project, whichever comes sooner;

It is a condition of approval that AUTEC is notified of any adverse events or if the research does not commence. AUTEC approval needs to be sought for any alteration to the research, including any alteration of or addition to any documents that are provided to participants. You are reminded that, as applicant, you are responsible for ensuring that research undertaken under this approval occurs within the parameters outlined in the approved application.

Please note that AUTEC grants ethical approval only. If you require management approval from an institution or organisation for your research, then you will need to make the arrangements necessary to obtain this.

When communicating with us about this application, I ask that you use the application number and study title to enable us to provide you with prompt service. Should you have any further enquiries regarding this matter, you are welcome to contact me by email at ethics@aut.ac.nz or by telephone on 921 9999 at extension 8860.

On behalf of AUTEC, I wish you success with your research and look forward to reading about it in your reports.

Yours sincerely

Charles Grinter

On behalf of Dr Rosemary Godbold and Madeline Banda **Executive Secretary**
Auckland University of Technology Ethics Committee

Cc: Thanuja Ramachandra tramacha@aut.ac.nz

APPENDIX 1(B)

Consent Form

For use when interviews are involved.



Project title: *Security of payment and the solutions in the New Zealand Construction Industry*

Project Supervisor: *Dr. James Rotimi*

Researcher: *Thanuja Ramachandra*

- I have read and understood the information provided about this research project in the Information Sheet dated 20 July 2011.
- I have had an opportunity to ask questions and to have them answered.
- I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed.
- I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
- If I withdraw, I understand that all relevant information including tapes and transcripts, or parts thereof, will be destroyed.
- I agree to take part in this research.
- I wish to receive a copy of the report from the research (please tick one): Yes No

Participant's signature:

Participant's name:

Participant's Contact Details (if appropriate):

.....
.....
.....
.....

Date:

Approved by the Auckland University of Technology Ethics Committee on type the date on which the final approval was granted AUTEK Reference number type the AUTEK reference number

Note: The Participant should retain a copy of this form.

APPENDIX 1(C)

page 1 of 2

Participant Information Sheet



Date Information Sheet Produced:

31 May 2011

Project Title

Security of payment and solutions in the New Zealand Construction Industry

An Invitation

I am Thanuja Ramachandra, a Doctoral Student at the Auckland University of Technology. I am investigating the payment problems and the solutions in the New Zealand construction industry. I would like to invite you to participate in this research which I am doing for my doctoral degree.

Your participation in this research is completely voluntary and you can withdraw at any time prior to the completion of data collection without any adverse consequences. Your participation is greatly appreciated. If you agree to participate, your privacy and confidentiality will be strictly maintained.

What is the purpose of this research?

This research aims to investigate the payment delays and losses within the New Zealand construction industry. It would provide feasible solutions that will secure payments to construction parties on construction projects. An emphasis is placed on the impact of payment losses due to the insolvency of principal parties. The results of this study would contribute to the body of knowledge about how the payments to parties could be secured in the construction industry. The outcome of this research/survey would be used for my thesis and any possible conference and journal publications.

How was I identified and why am I being invited to participate in this research?

As a subject matter expert you are invited to participate in this research. The subject matter experts for this study are persons of high standing/reputation in the construction industry. They are members of Building Dispute Tribunal, Construction Industry Federations, Institute of Quantity Surveyors, Association of Consulting Engineers New Zealand, and Insolvency and Business Recovery Specialists.

What will happen in this research?

This part of the research involves obtaining subject matter experts' views on the solutions/measures identified and that could be used to remedy the payment delays and losses in the construction industry. This interview with subject matter experts is conducted to validate and extend findings obtained from the questionnaire survey.

If you agree to participate, you will be provided with a consent form and the indicative questions for interview. This interview will take approximately 60 minutes to complete. Your opinions will be recorded using a voice recorder and researcher's field notes.

What are the discomforts and risks?

No significant potential discomforts and risks are associated with this research. However, measures will be taken to ensure the privacy and confidentiality of the information collected from participants.

How will these discomforts and risks be alleviated?

The information collected from you will be transcribed by the researcher. The transcript would be kept under lock and key in the primary supervisor's custody.

This version was last edited on 13 October 2010

What are the benefits?

This provides the participants with knowledge about the magnitude of the payment problems in the construction industry and the possible security measures that could be used to mitigate/minimise the problem and prevent the adverse effects.

In general research findings will contribute to the body of the knowledge about how the payment problem could be minimised/solved. The implementation of research findings will improve the performance of the industry and thereby contribute to the development of the industry and the economy.

The research findings will lead the researcher to publish a thesis and obtain a doctoral philosophy qualification. This will contribute the researcher to the enhancement of knowledge in the subject area.

How will my privacy be protected?

All information collected from you will be kept strictly confidential. The interview transcript and your consent form will be stored under lock and key. The researcher and supervisors have access to them. None of your personal information will be disclosed to any third parties or in any part of this research output (thesis, journal/conference papers). Your decision to participate is entirely your personal decision and you are free to withdraw from the research at any time.

What are the costs of participating in this research?

There is no cost except your valuable time involved in participating in this research. This interview involves approximately 60 minutes to complete.

What opportunity do I have to consider this invitation?

You are given one week's time to consider this invitation; within this time if you need any further information or clarification, I would be free to answer your questions. During this time you will also have the opportunity to see the indicative interview questions.

How do I agree to participate in this research?

Your consent to participate in this research is obtained through a consent form which will be sent you along with this email invitation. If you decide to participate by signing the consent form, this will be considered as your consent.

Will I receive feedback on the results of this research?

You will have the opportunity to verify the interview transcripts. The access to the published thesis and any conference or journal publications arises out of this research will be made available to you via email on request.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, *James Rotimi*, *jrotimi@aut.ac.nz*, and +64 9 921 9999 ext 6450 .

Concerns regarding the conduct of the research should be notified to the Executive Secretary, AUTEK, *Madeline Banda*, *madeline.banda@aut.ac.nz* , 921 9999 ext 8044.

Whom do I contact for further information about this research?

Researcher Contact Details:

Thanuja Ramachandra, *tramacha@aut.ac.nz*, and +64 9 921 9999 ext 6635.

Project Supervisor Contact Details:

Dr. James Rotimi, *jrotimi@aut.ac.nz*, and +64 9 921 9999 ext 6450.

Approved by the Auckland University of Technology Ethics Committee on type the date final ethics approval was granted, AUTEK Reference number type the reference number.

This version was last edited on 13 October 2010

APPENDIX 1(D)

page 1 of 2

Participant Information Sheet



Date Information Sheet Produced:

31 May 2011

Project Title

Security of payment and solutions in the New Zealand Construction Industry

An Invitation

I am Thanuja Ramachandra, a Doctoral Student at the Auckland University of Technology University. I am investigating the payment problems and the solutions in the New Zealand construction industry. I would like to invite you to participate in this research which I am doing for my doctoral degree.

Your participation in this research is completely voluntary and you would be free to withdraw at any time prior to the completion of data collection without any adverse consequences. Your participation would be greatly appreciated. If you agree to participate, your privacy and confidentiality will be strictly maintained.

What is the purpose of this research?

This research aims to investigate the payment delays and losses within the New Zealand construction industry. It would provide feasible solutions that will secure payments to construction parties on construction projects. An emphasis is placed on the impact of payment losses due to the insolvency of principal parties. The results of this study would contribute to the body of knowledge about how the payments to parties could be secured in the construction industry. The outcome of this research/survey would be used for my thesis and any possible conference and journal publications.

How was I identified and why am I being invited to participate in this research?

This research intends to survey the building contractors and trade/subcontractors in the New Zealand construction industry. You are identified through New Zealand local business directory (Yellow TM). As you are from registered builders and subcontractors operating in the New Zealand construction industry, you are invited to participate in this research.

What will happen in this research?

This research involves collection of information about contractors and subcontractors' experience on payment delays and losses and the possible solutions to remedy the effects. You are invited to complete the questionnaire survey online. You will be provided the URL link via email to access the questionnaire. This questionnaire has three sections: the general information; experience on payment delays and losses; and experience on insolvency and payment problem. This survey will take 30 minutes to complete.

What are the discomforts and risks?

No significant potential discomforts and risks are associated with this research. However, measures will be taken to ensure the privacy and confidentiality of the participants' information.

How will these discomforts and risks be alleviated?

The survey responses are collected by a collector in the system. The collector will be restricted with a password. The "Save IP address" option in the collector settings will be set to "No" to make the responses anonymous. The corporate policy of this online system ensures that the data collected is kept private and confidential. The system also offers an enhanced secure sockets layer (SSL) encryption to

This version was last edited on 13 October 2010

protect the survey link and survey pages during transmission. Once the survey is completed, all data collected will be downloaded to the researcher's personal computer for further analysis. The PDF version of the survey results will be printed and kept confidential.

What are the benefits?

This provides the participants with knowledge about the magnitude of the payment problems in the construction industry and the possible security measures that could be used to mitigate/minimise the problem and prevent the adverse effects. In general research findings will contribute to the body of the knowledge about how the payment problem could be minimised/solved. The implementation of research findings will improve the performance of the industry and thereby contribute to the development of the industry and the economy. The research findings will lead the researcher to publish a thesis and obtain a doctoral philosophy qualification. This will contribute the researcher to the enhancement of knowledge in the subject area.

How will my privacy be protected?

No information of yours will be identified in any part of this research output (thesis, journal/conference papers). The nature of this questionnaire does not identify the participants. Your decision to participate is entirely on voluntary basis and you can withdraw from the research at any time prior to submission of this questionnaire. As the questionnaire survey is anonymous, once the submission is made, withdrawal would not be possible.

What are the costs of participating in this research?

There is no cost except your valuable time involved in participating in this research. This questionnaire involves approximately 30 minutes to complete.

What opportunity do I have to consider this invitation?

You are given three weeks' time to complete the questionnaire. Within this time if you need any further information or clarification, you are free to contact the researcher or the supervisor via the contact details given below. A follow up reminder will be sent in one week prior to closing of survey. If any extension required, the survey will be kept open for another two weeks.

How do I agree to participate in this research?

Completion of this questionnaire survey is considered as your consent to participate in this research.

Will I receive feedback on the results of this research?

The feedback on the results of this research and access to the published thesis will be made available to you via email on request.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, *James Rotimi*, *jrotimi@aut.ac.nz*, and +64 9 921 9999 (6450).

Concerns regarding the conduct of the research should be notified to the Executive Secretary, AUTEK, Madeline Banda, *madeline.banda@aut.ac.nz*, 921 9999 ext 8044.

Whom do I contact for further information about this research?

Researcher Contact Details:

Thanuja Ramachandra, *tramacha@aut.ac.nz*, and 64 9 921 9999 Ext (6635)

Project Supervisor Contact Details:

Dr. James Rotimi, *jrotimi@aut.ac.nz*, and +64 9 921 9999 Ext (6450).

Approved by the Auckland University of Technology Ethics Committee on *type the date final ethics approval was granted*, AUTEK Reference number *type the reference number*.

APPENDIX 1(E)

QUESTIONNAIRE

Security of Payments in the New Zealand
Construction Industry
Consultants’ Views



Dear Participants,

This research investigates payment delays and losses to contractors and subcontractors in the construction industry, with special emphasis on insolvency losses, and intends to propose solution(s) to the problem. This study would provide the participants with knowledge about the extent of the payment problems in the construction industry and the possible security measures that could be used to mitigate the problem and prevent the adverse effects. The outcome of this research would be used for my thesis and any possible conference and journal publications.

This online questionnaire survey is being administered among consultants, contractors, and subcontractors operating within the New Zealand construction industry. You are identified as one that could provide valuable input into research.

Your participation in this survey is highly appreciated. Your privacy and confidentiality will be strictly maintained. Completion of this questionnaire is considered as indicating your consent to participate.

This questionnaire consists of 3 sections: general information; experience with payment delays and losses; and experience with insolvencies and related payment losses.

This survey will take about 30 minutes to complete. However, the survey is open until 16 December 2011. Within this time you are free to start, discontinue, and continue until you complete the survey. You may choose to quit the survey now and continue later by closing the window. Please note that this survey needs to be completed from the same computer in order to avoid losing previously given responses.

Two follow up reminders will be sent in every two weeks from the receipt of survey links. A final reminder will be sent two days prior to closing of the survey. If any extension of time is required, the survey may be re-opened for another two weeks.

If you need any further information or clarification, please feel free to contact the researcher or the supervisor via the contact details given below. A summary of this research will be made available to you upon your request.

Thank you.

Researcher:
Thanuja Ramachandra
Email: tramacha@aut.ac.nz
Phone: +64 9 921 9999 Ext 6635

Research Supervisor:
Dr. James Rotimi
Email: jrotimi@aut.ac.nz

Page 1

Section A: General information

1. Please indicate your profession

- Project Manager
- Engineer
- Architect
- Quantity Surveyor
- Others

Other (please specify)

2. Please indicate the number of years you have been working in the construction industry

- 0-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- 21-25 years
- More than 25 years

3. Please indicate the nature of the construction business your company is involved in

- Residential building construction
- Commercial building construction
- Construction trade services
- Property development
- Heavy construction

Others (please specify)

4. Could you give an indication of the number of projects your company has undertaken since the implementation of the Construction Contracts Act (CCA) in 2003?

- 0-10
- 11-20
- 21-30
- 31-40
- 41-50
- More than 50

Section B: Experience with payment delays and losses to head contractors an...

NOTE:

By payment delays we refer to a situation where your payment claims/invoices were not received on time, as per the timelines agreed between project parties.

By payment losses we refer to a situation where your payment claims/invoices were not paid fully/partially due to bad debts write-off or insolvency.

In completing this section please consider the projects you have undertaken since the implementation of the CCA.

5. Since the implementation of the CCA, could you indicate the frequency of following payment problems your head contractors/subcontractors have experienced?

Please click the drop-down menu to select the appropriate frequency option (Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Head contractor	Subcontractor
Payment delays	<input type="text"/>	<input type="text"/>
Payment losses	<input type="text"/>	<input type="text"/>

6. Could you indicate the most occurrence type(s) of payment delays and losses to head contractors/subcontractors?

Please click the drop-down menu to select the appropriate frequency option (Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Payment delays	Payment losses
Progress Payments	<input type="text"/>	<input type="text"/>
Final Payments	<input type="text"/>	<input type="text"/>
Retention monies	<input type="text"/>	<input type="text"/>
Variation and time extension claims	<input type="text"/>	<input type="text"/>

Please specify

7. Could you indicate in what project type(s) the payment delays and losses mostly occur to head contractors/subcontractors?

Please click the drop-down menu to select the appropriate frequency option (Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Payment delays	Payment losses
Privately funded projects	<input type="text"/>	<input type="text"/>
Government funded projects	<input type="text"/>	<input type="text"/>
Public - private partnership funding	<input type="text"/>	<input type="text"/>

Please specify

8. Could you indicate how frequent payment delays and losses occur to head contractors/subcontractors in the following project duration(s)?

Please click the drop-down menu to select the appropriate frequency option (Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Payment delays	Payment losses
0-6 months	<input type="text"/>	<input type="text"/>
6-12 months	<input type="text"/>	<input type="text"/>
12-18 months	<input type="text"/>	<input type="text"/>
18-24 months	<input type="text"/>	<input type="text"/>
Above 24 months	<input type="text"/>	<input type="text"/>

Please specify

9. Could you indicate how frequent payment delays and losses occur to head contractors/subcontractors in the following project cost levels?

Please click the drop-down menu to select the appropriate frequency option (Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Payment delays	Payment losses
\$0-\$50k	<input type="text"/>	<input type="text"/>
\$50k-\$100k	<input type="text"/>	<input type="text"/>
\$100k-\$200k	<input type="text"/>	<input type="text"/>
\$200k-\$400k	<input type="text"/>	<input type="text"/>
\$400k-\$800K	<input type="text"/>	<input type="text"/>
\$800k-\$1200k	<input type="text"/>	<input type="text"/>
Above \$1200k	<input type="text"/>	<input type="text"/>

Please specify

10. Since the implementation of the CCA, could you indicate approximately what percentage of your total projects you had HEAD CONTRACTORS experiencing payment delays and losses?

	0 -10%	10- 20%	20- 40%	40- 60%	60- 80%	80- 100%
Payment delays	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Payment losses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. Since the implementation of the CCA, could you indicate approximately what percentage of your total projects you had SUBCONTRACTORS experiencing payment delays and losses?

	0 -10%	10- 20%	20- 40%	40- 60%	60- 80%	80- 100%
Payment delays	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Payment losses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. Relating to typical projects, could you give an indication of the (average) payment delay time to head contractors/subcontractors?

Please click the drop-down menu to select the appropriate frequency option (Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Head Contractor	Subcontractor
Less than 2 weeks	<input type="text"/>	<input type="text"/>
2-4 weeks	<input type="text"/>	<input type="text"/>
4-6 weeks	<input type="text"/>	<input type="text"/>
6-8 weeks	<input type="text"/>	<input type="text"/>
8-10 weeks	<input type="text"/>	<input type="text"/>
Above 10 weeks	<input type="text"/>	<input type="text"/>

13. Relating to typical projects, could you give an indication of the (average) value of payment delays and losses to HEAD CONTRACTORS?

	Payment delays	Payment losses
Less than \$10k	<input type="text"/>	<input type="text"/>
\$10k - \$25k	<input type="text"/>	<input type="text"/>
\$25k - \$50k	<input type="text"/>	<input type="text"/>
\$50k - \$100k	<input type="text"/>	<input type="text"/>
\$100k - \$200k	<input type="text"/>	<input type="text"/>
Above \$200k	<input type="text"/>	<input type="text"/>

14. Relating to typical projects, could you give an indication of the (average) value of payment delays and losses to SUBCONTRACTORS?

Please click the drop-down menu to select the appropriate frequency option (Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Payment delays	Payment losses
Less than \$10k	<input type="text"/>	<input type="text"/>
\$10k - \$25k	<input type="text"/>	<input type="text"/>
\$25k - \$50k	<input type="text"/>	<input type="text"/>
\$50k - \$100k	<input type="text"/>	<input type="text"/>
\$100k - \$200k	<input type="text"/>	<input type="text"/>
Above \$200k	<input type="text"/>	<input type="text"/>

15. In your experience, could you indicate how effectively the following payment provisions (mostly found in standard forms of contract) help to remedy the PAYMENT DELAYS to head contractors/subcontractors?

Not at All Effective (NI) = 1; Slightly Effective (SE) = 2; Moderately Effective (ME) = 3; Very Effective (VE) = 4; Extremely Effective (EE) = 5.

	NE	SE	ME	VE	EE
Right to claim payment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right to respond to claim: payment schedule	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right in case of non-payment: Suspension and termination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dispute resolution methods: Arbitration, mediation and negotiation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify other provisions

16. Could you indicate how effectively the following payment provisions within the CCA help to remedy the PAYMENT DELAYS to head contractors/subcontractors.

Not at All Effective (NI) = 1; Slightly Effective (SE) = 2; Moderately Effective (ME) = 3; Very Effective (VE) = 4; Extremely Effective (EE) = 5.

	NE	SE	ME	HE	EE
Right to claim payment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right to respond to claim: Payment schedule	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right to suspend the work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right to apply for a charging order	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right to refer to adjudication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right to review and enforcement of adjudication determination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other provisions (please specify)

17. Are there other means (apart from the CCA and standard forms of contract) by which PAYMENT DELAYS to head contractors/subcontractors can be remedied?

18. Could you indicate how important the following factors are in contributing to PAYMENT DELAYS on construction projects?

Not at All Important (NI) = 1; Slightly Important (SI) = 2; Moderately Important (MI) = 3; Very Important (VI) = 4; Extremely Important (EI) = 5.

	NI	SI	MI	VI	EI	N/A
Structure of the industry: Involvement of many commercial parties	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Payment culture of the industry: Chain payment & work first get paid later	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High capital investment nature: Reliance on loan capital	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Easy entry of players with little/no capital backing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Easy exit of players: Little/no liability to creditors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Delay in submitting the payment claim	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Delay in issuing the payment response	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administration/bureaucracy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cash flow difficulties due to delays and non-payments on other projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cash flow difficulties due to lack of initial capital	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial difficulties due to failure to secure contracts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial difficulties due to drop in building prices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disputes over payment claims and responses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disputes over quality of work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internal conflicts/disputes between owners or management team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disputes with debtors/creditors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Receivership and liquidation of parent and related companies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Procurement methods used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contract types used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Standard forms of contracts used (right to payment and non-payment provisions)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Legislative processes (Construction Contracts Act)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Attitude of the payer: dishonest/unethical conduct	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost overruns and contract failures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Complications from contractual conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improper supervision and financial control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of knowledge and experience in the field	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Duration of projects (long-run or short-run)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time overrun of projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Economic and market conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Political/policy changes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please specify any other reasons which you think could contribute to payment delays						

19. In your experience, could you indicate how important the following factors are in contributing to PAYMENT LOSSES to head contractors/subcontractors?

Not at All Important (NI) = 1; Slightly Important (SI) = 2; Moderately Important (MI) = 3; Very Important (VI) = 4; Extremely Important (EI) = 5.

	NI	SI	MI	VI	EI	N/A
Structure of the industry: Involvement of many commercial parties	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Payment culture of the industry: Chain payment & work first get paid later	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High capital investment nature: Reliance on loan capital	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Easy entry of players with little/no capital backing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Easy exit of players: Little/no liability to creditors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frequent payment delays	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administration/bureaucracy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cash flow difficulties due to delays and non-payments on other projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cash flow difficulties due to lack of initial capital	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial difficulties due to failure to secure contracts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial difficulties due to drop in building prices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disputes over payment claims and responses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disputes over quality of work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internal conflicts/disputes between owners or management team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disputes with debtors/creditors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Receivership and liquidation of parent and related companies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Procurement methods used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contract types used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Standard forms of contracts used (right to payment and non-payment provisions)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Legislative processes (Construction Contracts Act)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Attitude of the payer: dishonest/unethical conduct	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost overruns and contract failures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Complications from contractual conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improper supervision and financial control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of knowledge and experience in the field	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Duration of projects (long-term or short-term)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time overrun of projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

○ ○ ○ ○ ○ ○

Economic and market conditions ○ ○ ○ ○ ○ ○

Political/policy changes ○ ○ ○ ○ ○ ○

Please specify any other significant factors that you think could contribute to payment losses

20. Please indicate how effective the following forms of security that could be used to remedy the PAYMENT LOSSES to head contractors/subcontractors.

Not at All Effective (NI) = 1; Slightly Effective (SE) = 2; Moderately Effective (ME) = 3; Very Effective (VE) = 4; Extremely Effective (EE) = 5.

	NE	SE	ME	HE	EE
Use of principal payment bond	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of advance payment bond	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of retention bond to secure retention monies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal guarantee by upper tiers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Direct payment/Tripartite agreement with the funders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Letter of credit from funders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Payment default insurance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pre-qualification of upper tier to their financial status	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disclosure by upper tier of funding arrangements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of trust/escrow account	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify any other forms of security that could be used to remedy the payment losses

21. Please give reasons why you have identified the remedial solutions in question 17 to payment delays and losses.

NOTE: Please press "Next" to proceed OR "Close the window if you want to quit the survey now and continue later".

Section C: Experience with insolvencies and related payment delays and loss...

Note: In completing this section please consider your experience with head contractors/subcontractors who experienced insolvencies, payment delays and losses.

Please consider your experience since the implementation of the CCA.

22. Could you indicate how often your head contractors/subcontractors experienced the following?

(Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Very often	Often	Sometimes	Rarely	Never
Voluntary administration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Receivership	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bankruptcy/Liquidation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify if any other comments

23. Could you indicate how often your head contractors/subcontractors experienced the following due to any of the situations in question 19?

(Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Very often	Often	Sometimes	Rarely	Never
Payment delays	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Payment losses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No problem with regards to payments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify if any other comments

24. Could you indicate how frequently your head contractors/subcontractors experienced the following value of PAYMENT DELAYS due to any of the situations in question 19?

(Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Very often	Often	Sometimes	Rarely	Never
Less than \$50k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
\$50 - \$100k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
\$100- \$200k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
\$200k-\$400k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Above \$400k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

25. Could you indicate how frequently your head contractors/subcontractors experienced the following value of PAYMENT LOSSES due to any of the situations in question 19?

(Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Very often	Often	Sometimes	Rarely	Never
Less than \$50k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
\$50 - \$100k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
\$100- \$200k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
\$200k-\$400k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Above \$400k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

26. Where your head contractors/subcontractors experienced bankruptcy/liquidation, could you indicate how often they used the following forms of security to remedy the payment problems?

(Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Very often	Often	Sometimes	Rarely	Never
Principal payment bond	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trust/Escrow account	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advance payment bond	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Letter of credit from funders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Payment default insurance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Direct payment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disclosure of clients' funding arrangements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tripartite agreement with the funders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No security used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify if any other forms that could be used

27. If no form of security is used, could you indicate how often head contractors/subcontractors experienced the following payment situations after the bankruptcy/liquidation proceedings?

(Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Very often	Often	Sometimes	Rarely	Never
Payments fully received	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Payments partially received	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No payments received	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

28. If no form of security is used, could you give reasons why?

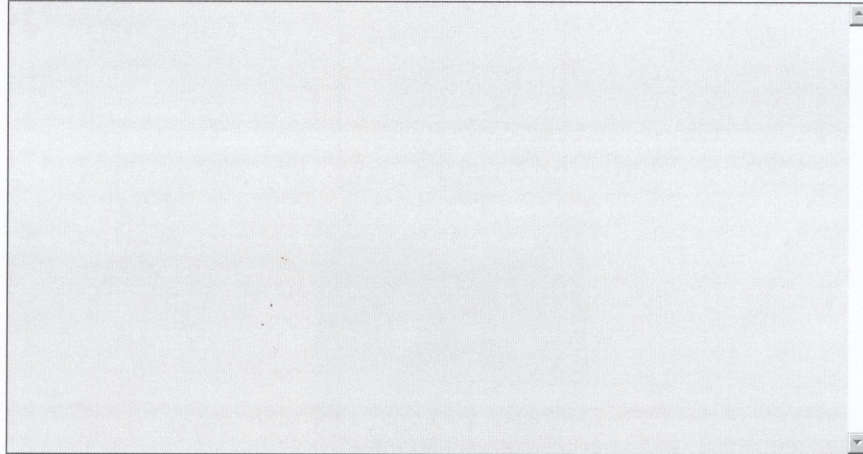
29. Could you indicate on average how long it takes contractors/subcontractors to receive payments after bankruptcy/liquidation proceedings?

- 0-6 months
- 6-12 months
- 12-18 months
- 18-24 months
- Above 24 months

30. Could you indicate your satisfaction with the time taken for settlement of payment to head contractors/subcontractors in the case of bankruptcy/liquidation proceedings?

- Extremely satisfied
- Moderately satisfied
- Neither satisfied nor dissatisfied
- Moderately dissatisfied
- Extremely dissatisfied

31. Please feel free to comment on any other ways that you feel payment delays and losses could be minimised within the construction industry and any other issue that could benefit this research.



APPENDIX 1(F)

QUESTIONNAIRE

Security of Payments in the New Zealand
Construction Industry

Contractors and Subcontractors' Views



Dear Participants,

This research investigates payment delays and losses to contractors and subcontractors in the construction industry, with special emphasis on insolvency losses, and intends to propose solution(s) to the problem. This study would provide the participants with knowledge about the extent of the payment problems in the construction industry and the possible security measures that could be used to mitigate the problem and prevent the adverse effects. The outcome of this research would be used for my thesis and any possible conference and journal publications.

This online questionnaire survey is being administered among consultants, contractors, and subcontractors operating within the New Zealand construction industry. You are identified as one that could provide valuable input into research.

Your participation in this survey is highly appreciated. Your privacy and confidentiality will be strictly maintained. Completion of this questionnaire is considered as indicating your consent to participate.

This questionnaire consists of 3 sections: general information; experience with payment delays and losses; and experience with insolvencies and related payment losses.

This survey will take about 30 minutes to complete. However, the survey is open until 16 December 2011. Within this time you are free to start, discontinue, and continue until you complete the survey. You may choose to quit the survey now and continue later by closing the window. Please note that this survey needs to be completed from the same computer in order to avoid losing previously given responses.

Two follow up reminders will be sent in every two weeks from the receipt of survey links. A final reminder will be sent two days prior to closing of the survey. If any extension of time is required, the survey may be re-opened for another two weeks.

If you need any further information or clarification, please feel free to contact the researcher or the supervisor via the contact details given below. A summary of this research will be made available to you upon your request.

Thank you.

Researcher:
Thanuja Ramachandra
Email: tramacha@aut.ac.nz
Phone: +64 9 921 9999 Ext 6635

Research Supervisor:
Dr. James Rotimi
Email: jrotimi@aut.ac.nz

Page 1

Section A: General information

1. Please indicate your profession

- Project Manager
- Engineer
- Architect
- Quantity Surveyor
- Others

Please specify

2. Please indicate the number of years you have been working in the industry

- 0-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- 21-25 years
- More than 25 years

3. Please indicate the nature of the construction business your company is involved in

- Residential building construction
- Commercial building construction
- Construction trade services
- Property development
- Heavy construction
- Others

Please specify

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

- 0-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- 21-25 years
- More than 25 years

5. Please indicate the number of employees your company has employed

- 0-5
- 6-10
- 11-15
- 16-20
- 21-25
- 26-30
- 31-35
- More than 35

6. Could you give an indication of the number of projects your company has undertaken since the implementation of the Construction Contracts Act (CCA) in 2003?

- 0-10
- 11-20
- 21-30
- 31-40
- 41-50
- More than 50

Section B: Experience with Payment Delays and Losses

NOTE:

By payment delays we refer to a situation where your payment claims/invoices were not received on time, as per the timelines agreed between project parties.

By payment losses we refer to a situation where your payment claims/invoices were not paid fully/partially due to bad debts write-off or insolvency.

In completing this section please consider the projects you have undertaken since the implementation of the CCA.

7. Since the implementation of the CCA, could you indicate how frequently you experienced payment delays and losses?

Please click the drop-down menu to select the appropriate frequency option (Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Very often	Often	Sometimes	Rarely	Never
Payment delays	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Payment losses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. Please indicate how frequently payment delays and losses are experienced with the following payment types.

Please click the drop-down menu to select the appropriate frequency option (Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Payment delays	Payment losses
Progress Payments	<input type="text"/>	<input type="text"/>
Final Payments	<input type="text"/>	<input type="text"/>
Retention monies	<input type="text"/>	<input type="text"/>
Variations and time extension claims	<input type="text"/>	<input type="text"/>
Other (please specify)	<input type="text"/>	<input type="text"/>

9. Please indicate how frequently payment delays and losses are experienced in the following types of projects.

Please click the drop-down menu to select the appropriate frequency option (Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Payment delays	Payment losses
Privately funded projects	<input type="text"/>	<input type="text"/>
Government funded projects	<input type="text"/>	<input type="text"/>
Public-private partnership funding	<input type="text"/>	<input type="text"/>

10. Please indicate how frequently payment delays and losses are experienced in the following project durations.

Please click the drop-down menu to select the appropriate frequency option (Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Payment delays	Payment losses
0-6 months	<input type="text"/>	<input type="text"/>
6-12 months	<input type="text"/>	<input type="text"/>
12-18 months	<input type="text"/>	<input type="text"/>
18-24 months	<input type="text"/>	<input type="text"/>
Above 24 months	<input type="text"/>	<input type="text"/>

11. Please indicate the frequently payment delays and losses are experienced in the following project cost levels.

Please click the drop-down menu to select the appropriate frequency option (Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Payment delays	Payment losses
\$0-\$50k	<input type="text"/>	<input type="text"/>
\$50k-\$100k	<input type="text"/>	<input type="text"/>
\$100k-\$200k	<input type="text"/>	<input type="text"/>
\$200k-\$400k	<input type="text"/>	<input type="text"/>
\$400k-\$800K	<input type="text"/>	<input type="text"/>
\$800k-\$1200k	<input type="text"/>	<input type="text"/>
Above \$1200k	<input type="text"/>	<input type="text"/>

12. Since the implementation of the CCA, could you indicate approximately what percentage of your total projects have you experienced payments delays and losses?

	0 -10%	10- 20%	20- 40%	40- 60%	60- 80%	80- 100%
Payment delays	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Payment losses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Please indicate the frequency of occurrence of the following value of payment delays and losses.

Please click the drop-down menu to select the appropriate frequency option (Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Payment delays	Payment losses
Less than \$10k	<input type="text"/>	<input type="text"/>
\$10k - \$25k	<input type="text"/>	<input type="text"/>
\$25k - \$50k	<input type="text"/>	<input type="text"/>
\$50k - \$100k	<input type="text"/>	<input type="text"/>
\$100k - \$200k	<input type="text"/>	<input type="text"/>
Above \$200k	<input type="text"/>	<input type="text"/>

14. Please indicate the frequency of the following payment delay times from the due date.

Please click the drop-down menu to select the appropriate frequency option (Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Very often	Often	Sometimes	Rarely	Never
Less than 2 weeks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2-4 weeks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4-6 weeks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6-8 weeks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8-10 weeks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Above 10 weeks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. Please indicate how important the following factors are in contributing to PAYMENT DELAYS on construction projects.

Not at All Important (NI) = 1; Slightly Important (SI) = 2; Moderately Important (MI) = 3; Very Important (VI) = 4; Extremely Important (EI) = 5.

	NI	SI	MI	VI	EI	N/A
Structure of the industry: Involvement of many commercial parties	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Payment culture of the industry: Chain payment & work first get paid later	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High capital investment nature: Reliance on loan capital	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Easy entry of players with little/no capital backing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Easy exit of players: Little/no liability to creditors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administration/bureaucracy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cash flow difficulties due to delays and non-payments on other projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cash flow difficulties due to lack of initial capital	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial difficulties due to failure to secure contracts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial difficulties due to drop in building prices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disputes over payment claims and responses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disputes over quality of work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internal conflicts/disputes between owners or management team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disputes with debtors/creditors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Receivership and liquidation of parent and related companies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Procurement methods used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contract types used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Standard forms of contracts used (payment and non-payment provisions)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Legislative processes (Construction Contracts Act)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Attitude of the payer: dishonest/unethical conduct	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost overruns and contract failures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Complications from contractual conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improper supervision and financial control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of knowledge and experience in the field	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Duration of the project (long-term or short-term)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time overrun of projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Economic and market conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Political/policy changes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify any other reasons which you think could contribute to payment delays

16. Please indicate how important the following factors are in contributing to PAYMENT LOSSES on construction projects.

Not at All Important (NI) = 1; Slightly Important (SI) = 2; Moderately Important (MI) = 3; Very Important (VI) = 4; Extremely Important (EI) = 5.

	NI	SI	MI	VI	EI	N/A
Structure of the industry: Involvement of many commercial parties	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Payment culture of the industry: Chain payment & work first get paid later	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High capital investment nature: Reliance on loan capital	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Easy entry of players with little/no capital backing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Easy exit of players: Little/no liability to creditors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administration/bureaucracy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cash flow difficulties due to delays and non-payments on other projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cash flow difficulties due to lack of initial capital	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial difficulties due to failure to secure contracts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial difficulties due to drop in building prices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disputes over payment claims and responses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disputes over quality of work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internal conflicts/disputes between owners or management team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disputes with debtors/creditors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Receivership and liquidation of parent and related companies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Procurement methods used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contract types used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Standard forms of contracts used (payment and non-payment provisions)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Legislative processes (Construction Contracts Act)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Attitude of the payer: dishonest/unethical conduct	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost overruns and contract failure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Complications from contractual conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improper supervision and financial control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of knowledge and experience in the field	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Duration of projects (long-term or short-term)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time overrun of projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Economic and market conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Political/policy changes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify any other significant factors that you think could contribute to payment losses

17. Please indicate how effectively the following payment provisions (mostly found in standard forms of contract) help to remedy PAYMENT DELAYS on construction projects.

Not at All Effective (NI) = 1; Slightly Effective (SE) = 2; Moderately Effective (ME) = 3; Very Effective (VE) = 4; Extremely Effective (EE) = 5.

	NE	SE	ME	VE	EE
Right to claim payment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right to respond to claim: Payment schedule	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right in case of non-payment: Suspension and termination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dispute resolution methods: Arbitration, mediation and negotiation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other provisions (please specify)					

18. Please indicate how effectively the following payment provisions within the CCA help to remedy PAYMENT DELAYS on construction projects.

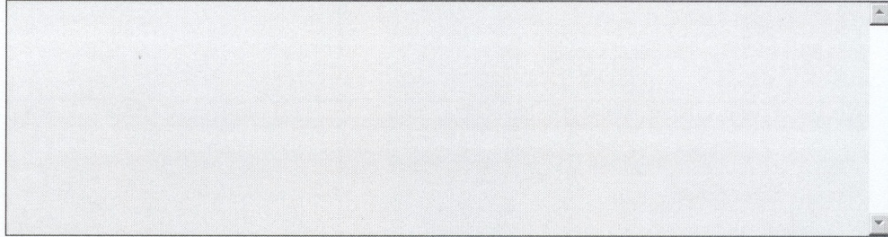
Not at All Effective (NI) = 1; Slightly Effective (SE) = 2; Moderately Effective (ME) = 3; Very Effective (VE) = 4; Extremely Effective (EE) = 5.

	NE	SE	ME	VE	EE
Right to claim payment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right to respond to claim: Payment schedule	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right to suspend work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right to apply for a charging order	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right to refer to adjudication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right to review and enforcement of adjudication determination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other provisions (please specify)					

19. Please indicate the approximate percentage of PAYMENT DELAYS and LOSSES you have used the CCA provisions to remedy.

- 0 -10%
- 10- 20%
- 20- 40%
- 40- 60%
- 60- 80%
- 80- 100%

20. Are there other means (apart from the CCA and standard forms of contract) by which PAYMENT DELAYS can be remedied on construction projects?



21. Please rank the effectiveness of following forms of security that could be used to remedy the PAYMENT LOSSES.

Not at All Effective (NI) = 1; Slightly Effective (SE) = 2; Moderately Effective (ME) = 3; Very Effective (VE) = 4; Extremely Effective (EE) = 5.

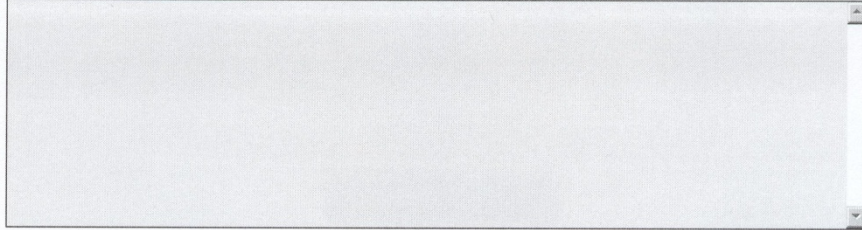
	NE	SE	ME	VE	EE
Principal payment bond	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advance payment bond	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of retention bond to secure retention money	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal guarantee by upper tiers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Direct payment/Tripartite agreement with the funder	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Letter of credit from funder	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Payment default insurance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pre-qualification of upper tier to their financial status	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disclosure by upper tier of funding arrangements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of trust/escrow account	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify, any other forms of security that could be used to remedy the payment losses

22. Since the implementation of the CCA, approximately what percentage of your projects have you had any form of security against PAYMENT LOSSES?

- 0 -10%
- 10- 20%
- 20- 40%
- 40- 60%
- 60- 80%
- 80- 100%

23. If no form of security is used, could you give reasons why?



NOTE: Please press "Next" to proceed OR "Close the window if you want to quit the survey now and continue later".

Section C: Experience with Insolvencies and related Payment Delays and Loss...

NOTE: In completing this section, please consider your experience since the implementation of the CCA.

24. Please indicate how often your upper/lower tiers experienced the following.

(Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Very often	Often	Sometimes	Rarely	Never
Voluntary administration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Receivership	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bankruptcy/Liquidation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

25. Please indicate how often have you experienced the following due to any of the situations in question 24.

(Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Very often	Often	Sometimes	Rarely	Never
Payment delays	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Payment losses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No problem with regards to payments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

26. Please indicate how frequently have you experienced the following value of PAYMENT DELAYS due to any of the situation in question 24.

	Very often	Often	Sometimes	Rarely	Never
Less than \$50k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
\$50k- \$100k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
\$100k- \$200k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
\$200k- \$400k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Above \$400k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

27. Please indicate how frequently have you experienced the following value of PAYMENT LOSSES due to any of the situations in question 24.

(Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Very often	Often	Sometimes	Rarely	Never
Less than \$50k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
\$50k - \$100k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
\$100k- \$200k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
\$200k- \$400k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Above \$400k	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

28. Where you had experienced bankruptcy/liquidation, please indicate how often you had used the following forms of security to remedy the payment problems.

(Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Very often	Often	Sometimes	Rarely	Never
Principal Payment bond	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trust/Escrow account	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advance payment bond	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Letter of credit from funders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Payment default insurance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Direct payments by clients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disclosure of clients' funding arrangements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tripartite agreement with the funders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No security used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Others (please specify)

29. If no form of security is used, could you indicate how often you had experienced the following payment situations after the bankruptcy/liquidation proceedings?

(Very often = 1; Often = 2; Sometimes = 3; Rarely = 4; Never = 5).

	Very often	Often	Sometimes	Rarely	Never
Payment fully received	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Payment partially received	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No payment received	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

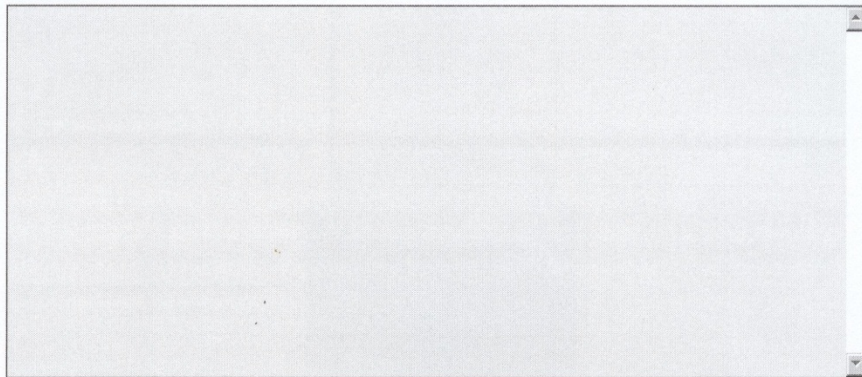
30. Based on your experience, could you indicate the average time taken to receive payments after the completion of bankruptcy/liquidation proceedings of your upper/lower tiers?

- 0-6 months
- 6-12 months
- 12-18 months
- 18-24 months
- Above 24 months

31. Are you satisfied with the time taken for settlement of your payment (creditors) in bankruptcy/liquidation proceedings?

- Extremely satisfied
- Moderately satisfied
- Neither satisfied nor dissatisfied
- Moderately dissatisfied
- Extremely dissatisfied

32. Please feel free to comment on any other ways that you feel payment delays and losses could be minimised within the construction industry and any other issue that could benefit this research.



APPENDIX 1(G)

Indicative Questions
Subject Matter Experts’
(SME) Interview -Escrow
Account



Research Title: Payment Problems and Security of Payments in the Construction Industry

Research Objectives

- a) Investigate the nature and extent of payment delays and losses in the construction industry
- b) Investigate the construction insolvencies and the related payment problems
- c) Identify the causes and effects of payment problems
- d) Evaluate the effectiveness of provisions of Construction Contracts Act
- e) Investigate the feasible solutions to secure payments.

Participant’s profile

- a) Profession:
 - b) Nature of business:
 - c) Main roles played/fields of involvement in the industry:
 - d) Number of years of experience in the industry:
 - e) Company profile in brief:
-
1. Could you comment on the nature and extent of payment problems in the industry?
 2. What was the prime reason for setting up the BuildSafe Security?
 3. Could you explain how does your escrow service provide protection for construction parties, the special features, merits and demerits of your escrow service?

4. How long the BuildSafe security escrow service is in operation?
5. Could you comment on the use and aware of this escrow account by construction parties?
6. Could you comment what type of payment (retention, progress, final payment) that could be protected by escrow account?
7. Could you how does the escrow account provide protection against insolvency risk?
8. Would you suggest use of escrow account is most appropriate/feasible form of security for payment problems in the construction industry?
9. What are the limitations regarding the use of BuildSafe security in terms of types of projects, cost of the projects, types of construction parties, amount of deposit, etc.?
10. Could you say how do you charge for the service and depends on any factors? (less than 1% of cost of building)
11. Are you aware of any other escrow services available in New Zealand?
12. How does BuildSafe differ from other escrow services in New Zealand? In terms of protection to parties, cost of the service, administrative procedure?
13. Do you think this escrow service is something that there needs to be a mandatory requirement to use this form (escrow account) of security?
14. Any significant project in New Zealand that you could mention where escrow accounts have been used?
15. Would you suggest any other securities to remedy payment problems especially to protect insolvency payment losses?

Thank you for giving me this opportunity to interview you. Your views are highly appreciated. You would be given access to my report upon your request in the consent form.

APPENDIX 1(H)

Indicative Questions
Subject Matter Experts’
(SME) Interview -
Construction Law/Dispute



Research Title: Payment Problems and Security of Payments in the Construction Industry

Research Objectives

- a) Investigate the nature and extent of payment delays and losses in the construction industry
- b) Investigate the construction insolvencies and the related payment problems
- c) Identify the causes and effects of payment problems
- d) Evaluate the effectiveness of provisions of Construction Contracts Act
- e) Investigate the feasible solutions to secure payments.

Participant’s profile

- a) Profession:
 - b) Nature of business:
 - c) Main roles played/fields of involvement in the industry:
 - d) Number of years of experience in the industry:
 - e) Company profile in brief:
-
1. Based on your experience could you comment on the extent and nature of payment problems experienced by contractors and subcontractors in the industry?
 2. Could you comment on the payment provisions in the standard forms of contract? How effective are they? Extent of knowledge and awareness of provisions by construction parties?

3. Could you comment on the payment provisions in the CCA? How effective are they? Extent of knowledge and awareness of provisions by construction parties?
4. CCA does not provide protection for retention money which is mostly at risk, could you comment on this?
5. CCA does not provide any solution against insolvency payment problems, could you comment on this?
6. Do you think that there should be a form of security for payment to parties? Which needs to be mandatory? Could you comment?
7. Could you comment on the feasibility/effectiveness of solutions identified by construction parties according to their preference and effectiveness?
 - Use of principle bond/Contractor bond
 - Use of retention bond
 - Direct payment/Tripartite agreement with the funder
 - Use of trust/escrow account
 - Payment guarantee by upper tiers
 - Letter of credit from funder Payment default insurance
 - Pre-qualification of upper tier to their financial status
 - Disclosure by upper tier of funding arrangements
8. Would you suggest any other securities to remedy payment problems especially to protect insolvency payment losses?
9. Any other comments that you would like to make regarding this research, please feel free to do so

Thank you for giving me this opportunity to interview you. Your views are highly appreciated. You would be given access to my report upon your request in the consent form.

APPENDIX 1(I)

Indicative Questions Subject Matter Experts’ (SME) Interview -Clients, contractors and



Research Title: Payment Problems and Security of Payments in the Construction Industry

Research Objectives

- a) Investigate the nature and extent of payment delays and losses in the construction industry
- b) Investigate the construction insolvencies and the related payment problems
- c) Identify the causes and effects of payment problems
- d) Evaluate the effectiveness of provisions of Construction Contracts Act
- e) Investigate the feasible solutions to secure payments.

Participant’s profile

- a) Profession:
 - b) Nature of business:
 - c) Main roles played/fields of involvement in the industry:
 - d) Number of years of experience in the industry:
 - e) Company profile in brief:
-
1. Payment delays and losses are prevalent according to head contractors and subcontractors. Do you agree with this view? Could you comment on the extent of this problem? In your opinion who is suffering more, contractors or subcontractors?
 2. In your opinion what are the genuine causes of payment delays and losses in the industry?

3. Insolvency and liquidation of developers and construction companies are prevalent and contractors and subcontractors are suffering from payment delays and losses. Do you agree with this view? Could you comment on this?
4. Are you in an agreement that there needs to be security for payment to contractors and subcontractors? Could you comment?
5. If “Yes” what is form(s) of security that you would like to provide?
 - Payment bonds
 - Retention bond in lieu of retention
 - Advance payment bond
 - Direct payment/Tripartite agreement with the funders
 - Use of trust/escrow accounts
 - Disclosure of upper tier’s funding arrangements/ pre-qualification of upper tiers to their financial status
 - Personal guarantee by upper tiers
 - Letter of credit from funders
 - Obtaining an insurance cover against payment default
6. If “No” what are the reasons for not willing to provide a security for payment? Could you comment?
7. Have you asked or been asked for a payment security from your upper and lower tier respectively? What form (s) of security used?
8. What is your opinion about recommending to have mandatory form of security/ mandatory to provide security for payment? Could you comment on this?
9. How do you see the payment problems in the commercial and residential contracts? Could you comment?
10. How do you see the payment problems with public and private clients? Could you comment?
11. Could you comment on the practice of pay-if-paid and when-paid provisions?
12. What form(s) of contract conditions are you using? Could you comment on the effectiveness of payment provisions in those forms of contract?

13. Have used CCA provisions of adjudication and charging order provisions? Are they effective? Could you comment on understanding, and awareness of provisions among construction parties?
14. Would you like to make any changes to the CCA provisions?
15. Are there other ways that you think payment problems in the industry could be mitigated/improved?
16. Would you like to make any personal comment regarding this research? If so, please feel free to.

Thank you for giving me this opportunity to interview you. Your views are highly appreciated. You would be given access to my report upon your request in the consent form.

APPENDIX 2

Submission to Construction Contracts Act 2002

The possible amendments to Construction Contracts Act (CCA) 2002

Construction contracts Act (CCA) 2002 was enforced in April 2003 as many high profile construction companies went into liquidation due to non-payments by clients and developers (Degerholm, 2003). Thus the CCA is expected to remedy the delays and losses to lower tiers. However the situation has now changed, upper tiers facing insolvencies causes contractors and subcontractors requiring protection from project owners, should the owners' default.

a) Payment provisions:

The review of payment provisions in security of payment acts (see Ramachandra and Rotimi, n.d) across countries reveals that CCA provides fairly reasonable time frame for payment claim and payment schedule. However it is noticed that the time to honour payment response could be made more effective by providing two time limits as is the case with the Singapore Act, Building and Construction Industry Security of Payment Act 2004. The Singapore Act provides a due date for payment followed by a final date. The Singapore Act provides respondent a 7 days grace period (dispute settlement period) after the allowed response time. This allows the respondents to vary the payment response or provide a payment response within this period if one has not been issued earlier. Similarly the Queensland Act, Building and Construction Industry Payments (BCIP) Act 2004 distinguishes the payment response time according to type of contractors; subcontractors and the types of payment; whether progress and final payment. This could make the payment response time more effective to all parties down the chain.

b) Provision for payment losses due to liquidation:

Our study (Ramachandra and Rotimi, 2010) into liquidation and payment losses in New Zealand construction industry mainly identifies two issues; reasons for liquidation and the losses due to liquidation. We have analysed liquidators' reports for construction companies that went into liquidation during 2005 to 2009 period, found from one of the leading business recovery and insolvency firms in New Zealand. A total of 80 companies went into liquidation within the period, but this analysis is based on 65 companies (property development 22; general construction 27; and construction trade services 16). A focus is given to payment delays and losses to trade creditors as they could be used as proxy to construction parties. Other information such as the time taken to complete the liquidation process; amount paid/not paid to trade creditors are used to determine delays and losses in payment.

Some of the findings of this study (see also Ramachandra and Rotimi, 2010) which could necessitate an amendment of the CCA to more accurately tackle payment problems as a result of insolvencies in the construction industry.

Analyses reveal that the payment losses and delays due to liquidations are more serious than payment delays and losses causing insolvency. It shows that liquidation of property developers and construction companies are rife and trade creditors are left unpaid the amounts owed to them. The amount owed to trade creditors by companies in the general construction is higher than those in the construction trade services category. The latter is equally higher than those of property developers. 37% of companies in the general construction category owed between NZ\$100,000 to NZ\$500,000 while 30% owed less than NZ\$100,000. In construction trade services category, more than 50% of companies owed less than NZ\$100,000 whilst the 55% of property developers owed less than NZ\$10,000. Further analyses of the results show that, companies in general construction (100%), property developers (77%), and construction trade services (75%) could not to pay anything to their creditors. The remaining 23% and 25% of property developers and construction trade services respectively, only managed to pay back a proportionate amount to their creditors.

It is apparent from the analyses that liquidation of property developers, general construction and construction trade companies leave trade creditors (construction parties) unsecured. This is further backed by the findings of Chilli Marketing (2010) that a 15% (of 342 respondents) state that insolvency

and receivership causes non-payment to head contractors and subcontractors. Our study therefore considers finding viable solutions; purchasing some kind of security prior to commencement of the project, provides bonds and guarantees, allows assessment of financial stability of upper tiers, and payment default/insolvency insurance. In this context, payment bond provision in NZS3910:2003 could be used as a viable solution. However Chilli Marketing (2010) shows that a 50% (of 66 respondents) used principal's bond, trust account, tripartite agreement with the funder, letter of credit from funder, and disclosure by client while the remaining 50% used none of the above as a form of security.

We believe that effective implementation of these solutions need to be supported by appropriate legislative or regulatory body. We therefore recommend the CCA to provide a solution to this problem.

c) Adjudication provision of the Act:

Adjudication in general seems to be speedy and interim dispute resolution mechanism. It is a concept of "pay now argue later" nature. However, the flexibility of the provision allowing the party to apply for a review of adjudicator's decision in case of dissatisfaction leaves respondents at a potential risk, as they may not be able to recover the adjudicated amount paid to a claimant. The respondent might experience this, if the final judgment is favourable but the claimant becomes insolvent by the time of the decision is arrived at. This is in concern of people (Ndekugri and Russell, 2005; Uher and Brand, 2006; Chan, 2006). However, this could be arguable as the respondent is required to pay the adjudicated amount to the court or give a security pending final decision. The extent to which an adjudicator's decision becomes effectively the final decision is also questioned (Kennedy, 2006).

We believe that limiting the review to certain instances would improve the above said situation. For example the Singapore Act allows the respondent to apply for a review, provided the disputed amount is in excess of \$100,000 of the response amount.

We also believe that extent of use of adjudication provision of the Act among lower tiers is also in question. Our ongoing analysis of construction disputes filed in the high court, inclusive of cases referred to adjudication and subsequently to high court, from 2008 to 2010 shows that that 80% (out of 40 cases) of payment disputes are between the principals and contractors. This is further supported by the recent study (Chilli Marketing, 2010) on issues of non-payments by the principal to the head contractor in the construction industry. The sample of the study consists of 79% (out of 593) of head contractors while the remaining is subcontractors. A 5% (out of 342) of respondents has indicated the use of adjudication as the resolving mechanism when there is a difference between payment claim and schedule. Similarly New Zealand Specialist Trade Contractors Federation (2007), research into use of CCA provisions by subcontractors states that a 8% (of 255 respondents) used adjudication provision of the Act.

d) Legislative protection for retention:

Retention is a part of the payment which is likely at risk in the event of liquidation of upper tiers. Standard form of contracts NZS3910:2003 requires the first half of the retention to be released after the practical completion of the work and remaining to be after the completion of defects liability period. Alternatively, it allows contractors to provide a bond in lieu of retentions, called retention bond, along with other bonds required by the contract and in that case the bond is to be released only after the issuance of defects liability certificate.

The purpose of the Act is to improve the cash flow for contractors and others down the chain by ensuring the timely payment and providing speedy dispute resolution. Therefore retaining from the interim payments and holding it until the end of the project may affect the cash flow of lower tiers and eventually solvency if upper tiers become insolvent. In some countries retention money is paid in to the trust account so that the recovery of money is guaranteed in case of insolvency. It is therefore

suggested that CCA could provide legislative protection for retention by the introduction of provision in the form of either retention bond or maintenance of trust account. This will be similar to the provision in the security of payment legislation of Construction Contracts Act 2004 (Western Australia) and Construction Contracts (Security of Payments) Act 2009 (Northern Territory of Australia). The Schedule 1 Division 9 of the Western Australian Act allows the principal to hold the retention money on trust for the contractor until whichever of the following happens first;

- a) the money is paid to the contractor;
- b) the contractor, in writing, agrees to give up any claim to the money;
- c) the money ceases to be payable to the contractor by virtue of the operation of this contract; or
- d) an adjudicator, arbitrator, or other person, or a court, tribunal or other body, determines that the money ceases to be payable to the contractor.

This suggestion is made with a limited knowledge. However, there is a study ongoing within the school of Engineering at Auckland of University of Technology by one of our colleagues, **Priyanka Raina**. She can be contacted if necessary.

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APPENDIX 3(A)**Non-Bias Analysis Results**

Questions	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Payment delays - Head contractor	-1.971	69	.053
Payment delays - Subcontractor	-2.981	75	.004
Payment losses - Head contractor	-3.270	60	.002
Payment losses - Subcontractor	-3.116	69	.003
Head contractor	1.215	22	.237
Subcontractor	.834	39	.409
Less than 2 weeks - Head contractor	-.862	22	.398
Less than 2 weeks - Subcontractor	-.135	34	.893
2-4 weeks - Head contractor	-1.698	22	.104
2-4 weeks - Subcontractor	-.822	35	.416
4-6 weeks - Head contractor	-1.989	19	.061
4-6 weeks - Subcontractor	-.576	29	.569
6-8 weeks - Head contractor	-1.858	20	.078
6-8 weeks - Subcontractor	-.215	30	.831
8-10 weeks - Head contractor	-1.552	20	.136
8-10 weeks - Subcontractor	.199	29	.844
Above 10 weeks - Head contractor	-1.431	20	.168
Above 10 weeks - Subcontractor	.411	28	.684
Less than \$10k - Payment delays	-.655	21	.519
Less than \$10k - Payment losses	-.434	21	.669
\$10k - \$25k - Payment delays	-1.235	19	.232
\$10k - \$25k - Payment losses	-.939	19	.360
\$25k - \$50k - Payment delays	-.416	21	.681
\$25k - \$50k - Payment losses	-.085	21	.933
\$50k - \$100k - Payment delays	-.814	18	.426
\$50k - \$100k - Payment losses	-.757	18	.459
\$100k - \$200k - Payment delays	-.928	18	.366
\$100k - \$200k - Payment losses	-.701	18	.492
Above \$200k - Payment delays	-.620	16	.544
Above \$200k - Payment losses	-.583	17	.568
Less than \$10k - Payment delays	-.265	36	.793
Less than \$10k - Payment losses	-.375	32	.710
\$10k - \$25k - Payment delays	-.814	32	.421
\$10k - \$25k - Payment losses	-.339	30	.737
\$25k - \$50k - Payment delays	-.825	34	.415

Appendix 3 (A) – Non-Bias Analysis Results

\$25k - \$50k - Payment losses	-263	28	.795
\$50k - \$100k - Payment delays	-835	28	.411
\$50k - \$100k - Payment losses	-684	26	.500
\$100k - \$200k - Payment delays	-217	26	.830
\$100k - \$200k - Payment losses	-603	24	.552
Above \$200k - Payment delays	-743	26	.464
Above \$200k - Payment losses	-488	24	.630
Progress payments - Payment delays	3.543	59	.001
Progress payments - Payment losses	.366	45	.716
Final Payments - Payment delays	-.557	52	.580
Final Payments - Payment losses	1.310	46	.197
Retention monies - Payment delays	2.398	57	.020
Retention monies - Payment losses	1.564	41	.126
Variation and time extension claims - Payment delays	4.799	57	.000
Claims - Payment losses	3.261	43	.002
\$0-\$100k - Payment delays	-1.316	55	.194
\$0-\$100k - Payment losses	-.093	46	.926
\$100k-500k - Payment delays	-.087	48	.931
\$100k-500k - Payment losses	.072	41	.943
\$500k-\$1Million - Payment delays	-.470	41	.641
\$500k-\$1Million - Payment losses	.367	37	.716
\$5Million-\$10Million - Payment delays	-.126	37	.900
\$5Million-\$10Million - Payment losses	.000	34	1.000
\$10Million-\$20Million - Payment delays	-.395	31	.695
\$10Million-\$20Million - Payment losses	-.391	28	.699
\$20Million-\$50Million - Payment delays	-.390	31	.699
\$20Million-\$50Million - Payment losses	-.454	28	.653
Above \$50Million - Payment delays	-.314	30	.756
Above \$50Million - Payment losses	-.400	28	.692
Right to claim payment	-1.508	79	.136
Right to respond to claim: payment schedule	-.763	78	.447
Right in case of non-payment: Suspension and termination	.033	72	.974
Dispute resolution methods: Arbitration, mediation and negotiation	.039	73	.969
Right to claim payment	-1.629	80	.107
Right to respond to claim: Payment schedule	-1.480	80	.143
Right to suspend the work	-1.196	77	.235
Right to apply for a charging order	-.225	72	.822
Right to refer to adjudication	-.788	75	.433
Right to review and enforcement of adjudication determination	-.179	72	.859
Structure of the industry: Involvement of many commercial parties	-.412	75	.682
Payment culture of the industry: Chain payment & work first get paid later	.411	72	.683
High capital investment nature: Reliance on loan capital	1.022	70	.310
Easy entry of players with little/no capital backing	1.640	72	.105
Easy exit of players: Little/no liability to creditors	1.851	74	.068
Delay in submitting the payment claim	2.452	37	.019
Delay in issuing the payment response	.874	34	.388
Administration/bureaucracy	.010	76	.992
Cash flow difficulties due to delays and non-payments on other projects	1.713	76	.091
Cash flow difficulties due to lack of initial capital	2.539	75	.013
Financial difficulties due to failure to secure contracts	1.649	70	.104
Financial difficulties due to drop in building prices	1.818	69	.073

Appendix 3 (A) – Non-Bias Analysis Results

Disputes over payment claims and responses	1.179	75	.242
Disputes over quality of work	-1.462	77	.148
Internal conflicts/disputes between owners or management team	-.629	68	.532
Disputes with debtors/creditors	1.132	68	.262
Receivership and liquidation of parent and related companies	1.343	68	.184
Procurement methods used	-1.003	70	.319
Contract types used	-.826	70	.411
Standard forms of contracts used (right to payment and non-payment provisions)	-.436	74	.664
Legislative processes (Construction Contracts Act)	.035	74	.972
Attitude of the payer: dishonest/unethical conduct	1.543	73	.127
Cost overruns and contract failure	.140	74	.889
Complications from contractual conditions	1.438	75	.155
Improper supervision and financial control	1.640	75	.105
Lack of knowledge and experience in the field	.861	75	.392
Duration of projects (long-run or short-run)	1.025	71	.309
Time overrun of projects	.255	73	.799
Economic and market conditions	.339	73	.736
Political/policy changes	.229	68	.819
Payment provisions in the Construction Contracts Act	-1.783	70	.079
Payment provisions in the standard forms of contract	-3.729	70	.000
Use of principal/payment bond	1.524	66	.132
Use of advance bond	2.156	61	.035
Use of retention bond to secure retention money	.909	63	.367
Payment guarantee by upper tiers	1.462	62	.149
Direct payment/Tripartite agreement with the funder	1.716	58	.091
Letter of credit from funder	.771	61	.444
Payment default insurance	.035	58	.972
Pre-qualification of upper tier to their financial status	.094	57	.925
Disclosure by upper tier of funding arrangements	.508	57	.614
Use of trust/escrow account	1.198	55	.236
Voluntary administration - Head contractor	-.144	20	.887
Voluntary administration - Subcontractor	-.215	25	.832
Receivership - Head contractor	-.346	20	.733
Receivership - Subcontractor	.962	25	.345
Bankruptcy/Liquidation - Head contractor	.796	20	.436
Bankruptcy/Liquidation - Subcontractor	1.291	25	.209
Payment delays - Head contractor	-.731	18	.474
Payment delays - Subcontractor	.419	24	.679
Payment losses - Head contractor	-.053	18	.958
Payment losses - Subcontractor	.450	24	.657
No problem with regards to payments - Head contractor	-.345	14	.735
No problem with regards to payments - Subcontractor	.977	19	.341
Less than \$50k - Head contractor	-.536	17	.599
Less than \$50k - Subcontractors	.791	22	.437
\$50 - \$100k - Head contractor	-.247	16	.808
\$50 - \$100k - Subcontractors	2.453	20	.023
\$100- \$200k - Head contractor	1.536	15	.145
\$100- \$200k - Subcontractors	4.020	19	.001
\$200k-\$400k - Head contractor	.451	15	.658
\$200k-\$400k - Subcontractors	4.876	19	.000
Above \$400k - Head contractor	.521	15	.610
Above \$400k - Subcontractors	5.604	19	.000
Less than \$50k - Head contractor	.145	16	.887

Appendix 3 (A) – Non-Bias Analysis Results

Less than \$50k - Subcontractors	.880	20	.389
\$50 - \$100k - Head contractor	1.207	15	.246
\$50 - \$100k - Subcontractors	3.408	18	.003
\$100- \$200k - Head contractor	1.808	15	.091
\$100- \$200k - Subcontractors	2.581	17	.019
\$200k-\$400k - Head contractor	.664	15	.517
\$200k-\$400k - Subcontractors	3.344	17	.004
Above \$400k - Head contractor	.750	15	.465
Above \$400k - Subcontractors	4.045	17	.001
Payment/Principal bond - Head contractor	-.523	14	.609
Payment/Principal bond - Subcontractor	-.363	21	.720
Trust/Escrow account - Head contractor	-.401	14	.694
Trust/Escrow account - Subcontractor	-.423	21	.677
Advance bond - Head contractor	-.564	14	.582
Advance bond - Subcontractor	-.302	21	.765
Letter of credit from funder - Head contractor	-.564	14	.582
Letter of credit from funder - Subcontractor	-.324	21	.749
Payment default insurance - Head contractor	-.367	14	.719
Payment default insurance - Subcontractor	-.324	21	.749
Direct payment - Head contractor	-.788	14	.444
Direct payment - Subcontractor	-.635	21	.532
Disclosure of client's funding arrangements - Head contractor	-.487	14	.634
Disclosure of client's funding arrangements - Subcontractor	-.296	21	.770
Tripartite agreement with the funder - Head contractor	-.401	14	.694
Tripartite agreement with the funder - Subcontractor	-.209	21	.837
No security - Head contractor	.356	4	.740
No security - Subcontractor	-.632	3	.572

APPENDIX 3(B)

Hypothesis Testing Results

Table 1: Paired samples t-test for payment delays and losses – Types of payment

Types of payments		Mean	N	Std. Dev.	t	df	Sig. (2-tailed)
Progress payment	Payment delays	3.027	73	.957	-3.070	72	.003
	Payment losses	3.384	73	1.036			
Final payment	Payment delays	2.973	73	.986	-3.623	72	.001
	Payment losses	3.288	73	.964			
Retention monies	Payment delays	2.761	67	1.304	-5.723	66	.000
	Payment losses	3.358	67	1.083			
Variation & time extension claims	Payment delays	2.662	71	1.055	-4.058	70	.000
	Payment losses	3.028	71	1.195			

Table 2: Independent samples t- test – Types of payment (Head contractors Vs Subcontractors)

Types of payments	Groups	N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Progress payments - Payment delays	Head Contractor	15	3.333	.724	1.945	54	.057
	Subcontractor	41	2.805	.954			
Progress payments - Payment losses	Head Contractor	15	3.533	.640	.935	47	.354
	Subcontractor	34	3.265	1.024			
Final payments - Payment delays	Head Contractor	15	3.400	.828	3.072	55	.003
	Subcontractor	42	2.595	.885			
Final payments - Payment losses	Head Contractor	15	3.533	.743	1.512	46	.137
	Subcontractor	33	3.121	.927			
Retention monies - Payment delays	Head Contractor	12	3.167	1.337	2.177	49	.034
	Subcontractor	39	2.308	1.151			
Retention monies - Payment losses	Head Contractor	12	3.667	.778	1.383	40	.174
	Subcontractor	30	3.167	1.147			
Variation & time extension claims - Payment delays	Head Contractor	13	3.077	.954	1.084	49	.284
	Subcontractor	38	2.763	.883			
Variation & time extension claims - Payment losses	Head Contractor	12	3.250	1.055	.243	40	.809
	Subcontractor	30	3.167	.986			

Table 3: Independent samples t- test – types of payment (Constructors Vs Consultants)

	Groups	N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Progress payments - Payment delays	Constructors	56	2.946	0.923	1.451	91	.150
	Consultants	37	2.622	1.233			
Progress payments - Payment losses	Constructors	49	3.347	0.925	.003	73	.998
	Consultants	26	3.346	1.294			
Final payments - Payment delays	Constructors	57	2.807	0.934	-.411	85	.682
	Consultants	30	2.900	1.125			
Final payments - Payment losses	Constructors	48	3.250	0.887	.572	74	.569
	Consultants	28	3.107	1.286			
Retention monies - Payment delays	Constructors	51	2.510	1.239	.215	89	.830
	Consultants	40	2.450	1.413			
Retention monies - Payment losses	Constructors	42	3.310	1.070	.459	68	.648
	Consultants	28	3.179	1.307			
Variation & time extension claims - Payment delays	Constructors	51	2.843	0.903	3.011	88	.003
	Consultants	39	2.179	1.189			
Variation & time extension claims - Payment losses	Constructors	42	3.190	0.994	1.386	69	.170
	Consultants	29	2.793	1.424			

Table 4: Paired samples t-test for payment delays and losses – share of total projects

Parties		Mean	N	Std. Deviation	t	df	Sig. (2-tailed)
Head contractor	Payment delays	1.62	43	0.97	1.968	42	0.056
	Payment losses	1.30	43	0.80			
Subcontractor	Payment delays	2.46	66	1.51	3.755	65	0.000
	Payment losses	1.86	66	1.25			

Table 5: Independent samples t-test for payment delays and losses – share of total projects

Payment problems	Groups	N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Delays - Head contractors	Head Contractor	14	2.071	1.141	2.349	45	.023
	Consultants	33	1.394	.788			
Losses - Head contractors	Head Contractor	14	1.500	.941	.862	42	.394

	Consultants	30	1.267	.785			
Delays - Subcontractors	Subcontractor	44	2.545	1.562	.878	72	.383
	Consultants	30	2.233	1.406			
Losses - Subcontractors	Subcontractor	42	2.024	1.388	1.010	67	.316
	Consultants	27	1.704	1.103			

Table 6: Paired samples t- test – value of payment delays and loses

Value of payment delays & losses		Mean	N	Std. Dev.	t	df	Sig. (2-tailed)
Less than \$10k	Payment delays	3.324	34	1.249	-2.956	33	.006
	Payment losses	3.647	34	1.041			
\$10k - \$25k	Payment delays	3.548	31	.961	-2.334	30	.026
	Payment losses	3.839	31	1.036			
\$25k - \$50k	Payment delays	3.781	32	.906	-2.946	31	.006
	Payment losses	4.000	32	.916			
\$50k - \$100k	Payment delays	3.933	30	.944	-1.000	29	.326
	Payment losses	4.000	30	.947			
\$100k - \$200k	Payment delays	3.966	29	.981	-1.162	28	.255
	Payment losses	4.103	29	.900			
Above \$200k	Payment delays	4.111	27	.974	-.570	26	.574
	Payment losses	4.148	27	.949			

Table 7: Independent samples t-test value of payment delays and losses – head contractors

Value of Delays and Losses	Groups	N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Less than \$10k - Delays	Head Contractors	15	3.267	1.100	-.274	34	.786
	Consultants	21	3.381	1.322			
Less than \$10k - Losses	Head Contractors	15	3.600	.910	-.096	35	.924
	Consultants	22	3.636	1.255			
\$10k - \$25k - Delays	Head Contractors	14	3.429	.938	-.608	31	.548
	Consultants	19	3.632	.955			
\$10k - \$25k - Losses	Head Contractors	14	3.857	.770	.270	32	.789
	Consultants	20	3.750	1.333			
\$25k - \$50k - Delays	Head Contractors	14	3.714	.726	-.273	32	.787
	Consultants	20	3.800	1.005			
\$25k - \$50k - Losses	Head Contractors	14	4.000	.679	.143	33	.888
	Consultants	21	3.952	1.117			
\$50k - \$100k - Delays	Head Contractors	13	3.923	.760	.083	30	.934
	Consultants	19	3.895	1.049			
\$50k - \$100k - Losses	Head Contractors	13	4.000	.707	.154	30	.878
	Consultants	19	3.947	1.079			
\$100k - \$200k - Delays	Head Contractors	13	3.846	.899	-.433	29	.669
	Consultants	18	4.000	1.029			
\$100k - \$200k - Losses	Head Contractors	13	4.154	.689	.310	30	.758
	Consultants	19	4.053	1.026			

Above \$200k - Delays	Head Contractors	11	4.182	.874	.502	28	.620
	Consultants	19	4.000	1.000			
Above \$200k - Losses	Head Contractors	12	4.250	.754	.402	28	.691
	Consultants	18	4.111	1.023			

Table 8 - Independent samples t-test value of payment delays and losses – subcontractors

Value of Delays and Losses	Groups	N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Less than \$10k - Delays	Subcontractors	43	2.651	1.251	-1.308	63	.196
	Consultants	22	3.091	1.342			
Less than \$10k - Losses	Subcontractors	38	3.105	1.181	-.378	57	.707
	Consultants	21	3.238	1.480			
\$10k - \$25k - Delays	Subcontractors	39	3.051	1.025	-1.815	58	.075
	Consultants	21	3.571	1.121			
\$10k - \$25k - Losses	Subcontractors	36	3.389	.994	-1.109	55	.272
	Consultants	21	3.714	1.189			
\$25k - \$50k - Delays	Subcontractors	41	3.244	.969	-1.231	59	.223
	Consultants	20	3.600	1.231			
\$25k - \$50k - Losses	Subcontractors	33	3.727	.911	-.355	49	.724
	Consultants	18	3.833	1.200			
\$50k - \$100k - Delays	Subcontractors	37	3.730	1.170	-.139	53	.890
	Consultants	18	3.778	1.263			
\$50k - \$100k - Losses	Subcontractors	32	3.969	.999	-.288	46	.774
	Consultants	16	4.063	1.181			
\$100k - \$200k - Delays	Subcontractors	32	4.031	1.031	.294	46	.770
	Consultants	16	3.938	1.063			
\$100k - \$200k - Losses	Subcontractors	29	4.172	.966	.345	43	.732
	Consultants	16	4.063	1.124			
Above \$200k - Delays	Subcontractors	32	4.125	.942	.025	47	.980
	Consultants	17	4.118	1.054			
Above \$200k - Losses	Subcontractors	29	4.276	.996	.624	42	.536
	Consultants	15	4.067	1.163			

Table 9: Paired samples t-test for causes of payment delays and losses on construction projects

Causes	Mean	t	df	Sig. (2-tailed)
Cash flow difficulties due to delays and non-payments on other projects	4.036	2.722	82	.008
Cash flow difficulties due to lack of initial capital	3.952	1.795	82	.076
Attitude of the payer: dishonest/unethical conduct	3.893	.776	83	.440
Easy exit of players: Little/no liability to creditors	3.892	1.454	82	.150
Improper supervision and financial control	3.871	2.116	84	.037
Cost overruns and contract failure	3.867	1.035	82	.304
Easy entry of players with little/no capital backing	3.854	.786	81	.434
Disputes over payment claims and responses	3.821	1.552	83	.125
Lack of knowledge and experience in the field	3.810	1.405	83	.164
Payment culture of the industry: Chain payment & work first get paid later	3.790	1.306	80	.195
High capital investment nature: Reliance on loan capital	3.659	1.645	81	.104
Time overrun of projects	3.612	-.360	84	.720
Disputes over quality of work	3.607	-.210	83	.834
Economic and market conditions	3.602	2.167	82	.033
Receivership and liquidation of parent and related companies	3.558	.674	76	.502
Administration/bureaucracy	3.543	1.771	80	.080
Financial difficulties due to failure to secure contracts	3.538	1.013	77	.314
Complications from contractual conditions	3.417	2.105	83	.038
Procurement methods used	3.341	1.710	81	.091
Financial difficulties due to drop in building prices	3.286	.121	76	.904
Contract types used	3.266	.980	78	.330
Legislative processes (Construction Contracts Act)	3.169	1.917	82	.059
Standard forms of contracts used (right to payment and non-payment provisions)	3.155	1.955	83	.054
Disputes with debtors/creditors	3.103	.000	77	1.000
Duration of projects (long-run or short-run)	3.074	1.275	80	.206
Structure of the industry: Involvement of many commercial parties	3.072	-.785	82	.435
Internal conflicts/disputes between owners or management team	3.013	-.225	74	.823
Political/policy changes	2.571	1.442	76	.153

Table 10: Independent samples t-test between head contractors and subcontractors

Causes of payment problems	Groups	N	Mean	t	df	Sig. (2-tailed)
Structure of the industry: Involvement of many	HC	15	2.8	-	52	0.218
	SC	39	3.179			
Payment culture of the industry: Chain payment &	HC	14	3.929	0.565	51	0.575
	SC	39	3.769			
High capital investment nature: Reliance on loan	HC	12	3.667	0.18	49	0.858
	SC	39	3.59			
Easy entry of players with little/no capital backing	HC	13	3.462	-	50	0.208
	SC	39	3.949			
Easy exit of players: Little/no liability to creditors	HC	13	3.923	-	51	0.996
	SC	40	3.925			
Administration/bureaucracy	HC	15	3.267	-	52	0.312
	SC	39	3.59			
Cash flow difficulties due to delays and non-payments	HC	14	4.143	-	50	0.882
	SC	38	4.184			
Cash flow difficulties due to lack of initial capital	HC	14	3.929	-	52	0.682
	SC	40	4.05			
Financial difficulties due to failure to secure contracts	HC	14	3.5	-	50	0.667
	SC	38	3.658			
Financial difficulties due to drop in building prices	HC	13	3.077	-1.49	50	0.143
	SC	39	3.641			
Disputes over payment claims and responses	HC	14	3.571	-	51	0.149
	SC	39	4.026			
Disputes over quality of work	HC	15	3.2	-0.56	49	0.578
	SC	36	3.389			
Internal conflicts/disputes between owners or	HC	14	2.714	-	48	0.55
	SC	36	2.944			
Disputes with debtors/creditors	HC	13	3.385	0.617	50	0.54
	SC	39	3.154			
Receivership and liquidation of parent and related	HC	13	4	1.199	49	0.236
	SC	38	3.474			
Procurement methods used	HC	11	3.182	0.053	47	0.958
	SC	38	3.158			
Contract types used	HC	12	3.333	0.371	48	0.712
	SC	38	3.158			
Standard forms of contracts used (right to payment	HC	14	3.286	0.494	50	0.623
	SC	38	3.079			
Legislative processes (Construction Contracts Act)	HC	14	3.429	0.927	50	0.359
	SC	38	3.026			
Attitude of the payer: dishonest/unethical conduct	HC	14	3.857	-	51	0.763

	SC	39	3.974			
Cost overruns and contract failure	HC	15	3.467	-	52	0.17
	SC	39	3.923			
Complications from contractual conditions	HC	15	3.533	0.24	53	0.811
	SC	40	3.45			
Improper supervision and financial control	HC	14	3.786	-	52	0.583
	SC	40	3.975			
Lack of knowledge and experience in the field	HC	14	3.929	0.09	52	0.929
	SC	40	3.9			
Duration of projects (long-run or short-run)	HC	13	3.308	0.395	50	0.694
	SC	39	3.154			
Time overrun of projects	HC	13	3.231	-	51	0.289
	SC	40	3.625			
Economic and market conditions	HC	14	3.143	-	52	0.045
	SC	40	3.75			
Political/policy changes	HC	13	2.385	-	48	0.388
	SC	37	2.73			

Table 11: Independent samples t-test between consultants and constructors

Causes	Twogroups	N	Mean	t	df	Sig. (2-tailed)
Structure of the industry: Involvement of many commercial parties	Constructors	54	3.074	-.135	109	.893
	Consultants	57	3.105			
Payment culture of the industry: Chain payment & work first get paid later	Constructors	53	3.811	-.222	106	.825
	Consultants	55	3.855			
High capital investment nature: Reliance on loan capital	Constructors	51	3.608	-.207	104	.837
	Consultants	55	3.655			
Easy entry of players with little/no capital backing	Constructors	52	3.827	.116	105	.908
	Consultants	55	3.800			
Easy exit of players: Little/no liability to creditors	Constructors	53	3.925	.481	107	.632
	Consultants	56	3.821			
Administration/bureaucracy	Constructors	54	3.500	-.460	109	.647
	Consultants	57	3.596			
Cash flow difficulties due to delays and non-payments on other projects	Constructors	52	4.173	1.519	109	.132
	Consultants	59	3.864			
Cash flow difficulties due to lack of initial capital	Constructors	54	4.019	1.457	109	.148
	Consultants	57	3.702			
Financial difficulties due to failure to secure contracts	Constructors	52	3.615	.918	102	.361
	Consultants	52	3.404			
Financial difficulties due to drop in building prices	Constructors	52	3.500	1.712	102	.090
	Consultants	52	3.096			
Disputes over payment claims and responses	Constructors	53	3.906	.227	109	.821
	Consultants	58	3.862			
Disputes over quality of work	Constructors	51	3.333	-1.724	109	.088
	Consultants	60	3.700			
Internal conflicts/disputes between owners or management team	Constructors	50	2.880	-.520	99	.604
	Consultants	51	3.000			
Disputes with debtors/creditors	Constructors	52	3.212	.882	102	.380

	Consultants	52	3.000			
Receivership and liquidation of parent and related companies	Constructors	51	3.608	.257	101	.797
	Consultants	52	3.538			
Procurement methods used	Constructors	49	3.163	-.631	103	.529
	Consultants	56	3.321			
Contract types used	Constructors	50	3.200	.130	103	.896
	Consultants	55	3.164			
Standard forms of contracts used (right to payment and non-payment provisions)	Constructors	52	3.135	-.230	107	.818
	Consultants	57	3.193			
Legislative processes (Construction Contracts Act)	Constructors	52	3.135	-.030	106	.976
	Consultants	56	3.143			
Attitude of the payer: dishonest/unethical conduct	Constructors	53	3.943	.963	108	.338
	Consultants	57	3.702			
Cost overruns and contract failure	Constructors	54	3.796	-.115	108	.909
	Consultants	56	3.821			
Complications from contractual conditions	Constructors	55	3.473	.627	110	.532
	Consultants	57	3.333			
Improper supervision and financial control	Constructors	54	3.926	.924	109	.358
	Consultants	57	3.719			
Lack of knowledge and experience in the field	Constructors	54	3.907	1.146	110	.254
	Consultants	58	3.672			
Duration of projects (long-run or short-run)	Constructors	52	3.192	1.191	105	.236
	Consultants	55	2.909			
Time overrun of projects	Constructors	53	3.528	-.620	108	.537
	Consultants	57	3.667			
Economic and market conditions	Constructors	54	3.593	-.090	106	.929
	Consultants	54	3.611			
Political/policy changes	Constructors	50	2.640	-.027	99	.978
	Consultants	51	2.647			

Table 12: Causes of payment delays and losses - one-way ANOVA test

Causes of payment delays and losses	Professions	Descriptives			F	Sig.
		N	Mean	Std. Dev.		
Structure of the industry: Involvement of many commercial parties	Project manager	16	3.250	1.183	.129	.942
	Engineer	14	3.000	1.177		
	Architect	28	3.071	1.303		
	Quantity surveyor	27	3.037	1.255		
	Total	85	3.082	1.227		
Payment culture of the industry: Chain payment & work first get paid later	Project manager	17	3.824	1.131	.428	.734
	Engineer	15	3.800	0.676		
	Architect	26	3.692	1.123		
	Quantity surveyor	26	4.000	0.894		
	Total	84	3.833	0.980		
High capital investment nature: Reliance on loan capital	Project manager	17	3.882	1.054	1.280	.287
	Engineer	13	3.231	1.235		
	Architect	26	3.500	1.030		
	Quantity surveyor	25	3.840	1.143		
	Total	81	3.642	1.110		
Easy entry of players with little/no capital backing	Project manager	16	4.000	1.095	.481	.696
	Engineer	15	3.867	1.302		
	Architect	26	3.615	1.098		
	Quantity surveyor	25	3.920	1.115		
	Total	82	3.829	1.131		

Appendix 3 (B) – Hypothesis Testing Results

Easy exit of players: Little/no liability to creditors	Project manager	17	4.118	0.993	1.177	.324
	Engineer	15	4.067	0.961		
	Architect	27	3.593	1.047		
	Quantity surveyor	25	3.920	1.077		
	Total	84	3.881	1.034		
Delay in submitting the payment claim	Project manager	9	4.111	0.782	2.036	.121
	Engineer	5	4.000	0.707		
	Architect	29	3.207	1.236		
	Quantity surveyor	10	3.800	1.229		
	Total	53	3.547	1.170		
Delay in issuing the payment response	Project manager	9	3.667	0.866	2.715	.055
	Engineer	5	4.400	0.548		
	Architect	26	3.269	1.282		
	Quantity surveyor	11	4.182	0.874		
	Total	51	3.647	1.146		
Administration/bureaucracy	Project manager	16	3.688	0.946	.144	.933
	Engineer	15	3.533	0.990		
	Architect	27	3.482	1.282		
	Quantity surveyor	27	3.630	1.115		
	Total	85	3.577	1.106		
Cash flow difficulties due to delays and non-payments on other projects	Project manager	16	4.000	1.095	1.335	.269
	Engineer	14	4.071	0.997		
	Architect	28	3.607	1.166		
	Quantity surveyor	28	4.143	0.970		
	Total	86	3.930	1.071		
Cash flow difficulties due to lack of initial capital	Project manager	17	4.118	0.857	1.839	.147
	Engineer	15	3.800	1.474		
	Architect	27	3.407	1.248		
	Quantity surveyor	27	4.037	1.018		
	Total	86	3.814	1.173		
Financial difficulties due to failure to secure contracts	Project manager	17	3.529	1.179	1.034	.382
	Engineer	15	3.667	1.175		
	Architect	23	3.087	1.164		
	Quantity surveyor	26	3.577	1.172		
	Total	81	3.444	1.173		
Financial difficulties due to drop in building prices	Project manager	17	3.529	1.068	2.053	.113
	Engineer	14	3.571	1.399		
	Architect	24	2.792	1.062		
	Quantity surveyor	26	3.462	1.272		
	Total	81	3.296	1.219		
Disputes over payment claims and responses	Project manager	16	4.375	0.619	2.721	.050
	Engineer	14	4.143	1.027		
	Architect	28	3.571	1.103		
	Quantity surveyor	27	4.000	0.920		
	Total	85	3.953	0.987		
Disputes over quality of work	Project manager	16	4.000	1.095	1.663	.182
	Engineer	14	3.500	0.941		
	Architect	29	3.690	1.105		
	Quantity surveyor	28	3.143	1.297		
	Total	87	3.540	1.169		
Internal conflicts/disputes between owners or management team	Project manager	14	3.286	0.994	1.663	.182
	Engineer	14	3.500	1.286		
	Architect	24	2.750	1.189		
	Quantity surveyor	26	2.885	1.071		
	Total	78	3.026	1.151		
Disputes with debtors/creditors	Project manager	17	3.353	0.996	1.354	.263
	Engineer	14	3.571	1.453		
	Architect	23	2.826	1.302		
	Quantity surveyor	27	3.000	1.177		
	Total	81	3.124	1.239		
Receivership and liquidation of parent and related companies	Project manager	16	3.875	0.957	1.727	.168
	Engineer	15	4.067	1.486		
	Architect	23	3.174	1.267		

Appendix 3 (B) – Hypothesis Testing Results

	Quantity surveyor	27	3.741	1.403		
	Total	81	3.667	1.323		
Procurement methods used	Project manager	16	3.375	1.204	.297	.827
	Engineer	13	3.615	1.387		
	Architect	26	3.346	1.093		
	Quantity surveyor	26	3.231	1.210		
	Total	81	3.358	1.186		
Contract types used	Project manager	16	3.688	1.448	1.212	.311
	Engineer	13	3.539	1.391		
	Architect	25	3.240	1.393		
	Quantity surveyor	27	2.926	1.328		
	Total	81	3.272	1.388		
Standard forms of contracts used (right to payment and non-payment provisions)	Project manager	16	3.500	1.211	1.262	.293
	Engineer	15	3.733	1.223		
	Architect	27	3.185	1.360		
	Quantity surveyor	27	3.000	1.271		
	Total	85	3.282	1.287		
Legislative processes (Construction Contracts Act)	Project manager	15	3.667	1.291	.653	.584
	Engineer	14	3.286	1.326		
	Architect	27	3.185	1.331		
	Quantity surveyor	26	3.038	1.587		
	Total	82	3.244	1.402		
Attitude of the payer: dishonest/unethical conduct	Project manager	16	4.125	1.147	1.615	.192
	Engineer	15	4.400	1.056		
	Architect	27	3.593	1.448		
	Quantity surveyor	28	3.714	1.301		
	Total	86	3.872	1.300		
Cost overruns and contract failure	Project manager	16	4.063	.854	1.058	.372
	Engineer	15	4.000	1.134		
	Architect	27	3.889	1.050		
	Quantity surveyor	28	3.536	1.232		
	Total	86	3.826	1.098		
Complications from contractual conditions	Project manager	17	3.647	.862	2.386	.075
	Engineer	15	4.000	1.000		
	Architect	26	3.038	1.183		
	Quantity surveyor	28	3.464	1.347		
	Total	86	3.465	1.185		
Improper supervision and financial control	Project manager	17	4.235	.970	2.737	.049
	Engineer	15	4.333	.900		
	Architect	27	3.481	1.156		
	Quantity surveyor	27	3.778	1.188		
	Total	86	3.872	1.125		
Lack of knowledge and experience in the field	Project manager	17	3.941	.966	1.732	.167
	Engineer	15	4.267	1.033		
	Architect	27	3.630	1.043		
	Quantity surveyor	28	3.571	1.136		
	Total	87	3.782	1.072		
Duration of projects (long-run or short-run)	Project manager	17	3.118	1.054	.970	.411
	Engineer	13	3.538	1.266		
	Architect	24	2.875	1.035		
	Quantity surveyor	28	3.000	1.277		
	Total	82	3.073	1.163		
Time overrun of projects	Project manager	17	4.059	.827	1.733	.167
	Engineer	14	3.857	1.231		
	Architect	26	3.654	1.093		
	Quantity surveyor	28	3.321	1.219		
	Total	85	3.659	1.129		
Economic and market conditions	Project manager	16	3.625	.957	.385	.764
	Engineer	15	3.667	.976		
	Architect	25	3.440	1.193		
	Quantity surveyor	27	3.741	.944		
	Total	83	3.614	1.022		
Political/policy changes	Project manager	14	2.714	1.326	1.393	.252

	Engineer	14	3.286	1.490		
	Architect	23	2.391	1.234		
	Quantity surveyor	26	2.615	1.267		
	Total	77	2.688	1.320		

Table 13: Independent samples t-test between head contractors and subcontractors - CCA provisions

Provisions	Groups	N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Right to claim payment	Head Contractor	15	2.933	.961	-.127	53	.899
	Subcontractor	40	2.975	1.121			
Right to respond to claim: Payment schedule	Head Contractor	15	3.067	.961	.379	53	.706
	Subcontractor	40	2.950	1.037			
Right to suspend the work	Head Contractor	15	2.867	1.060	.767	53	.446
	Subcontractor	40	2.575	1.318			
Right to apply for a charging order	Head Contractor	14	2.786	1.251	.561	52	.577
	Subcontractor	40	2.575	1.196			
Right to refer to adjudication	Head Contractor	14	2.786	1.188	.354	52	.725
	Subcontractor	40	2.650	1.252			
Right to review and enforcement of adjudication determination	Head Contractor	14	2.643	1.216	-.277	52	.783
	Subcontractor	40	2.750	1.256			

Table 14: Independent samples t-test between consultants and contractors - CCA provisions

	Groups	N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Right to claim payment	Constructors	55	2.964	1.071	-2.254	115	.026
	Consultants	62	3.419	1.110			
Right to respond to claim: Payment schedule	Constructors	55	2.982	1.009	-2.175	114	.032
	Consultants	61	3.410	1.101			

Appendix 3 (B) – Hypothesis Testing Results

Right to suspend the work	Constructors	55	2.655	1.250	-1.661	112	.100
	Consultants	59	3.034	1.189			
Right to apply for a charging order	Constructors	54	2.630	1.202	-.807	106	.422
	Consultants	54	2.815	1.183			
Right to refer to adjudication	Constructors	54	2.685	1.226	-1.145	109	.255
	Consultants	57	2.947	1.187			
Right to review and enforcement of adjudication determination	Constructors	54	2.722	1.235	-.416	107	.678
	Consultants	55	2.818	1.172			

Table 15: CCA provisions - one-way ANOVA test

Provisions	Professions	N	Mean	Std. Deviation		
					F	Sig.
Right to claim payment	Project manager	18	3.333	1.237	.856	.467
	Engineer	16	3.688	.873		
	Architect	29	3.310	1.039		
	Quantity surveyor	28	3.107	1.343		
	Total	91	3.319	1.154		
Right to respond to claim: Payment schedule	Project manager	18	3.389	1.145	1.120	.346
	Engineer	15	3.733	.884		
	Architect	29	3.276	.996		
	Quantity surveyor	28	3.107	1.227		
	Total	90	3.322	1.090		
Right to suspend the work	Project manager	18	2.778	1.517	.494	.687
	Engineer	16	3.250	1.238		
	Architect	27	3.074	1.035		
	Quantity surveyor	28	2.893	1.286		
	Total	89	2.989	1.248		
Right to apply for a charging order	Project manager	18	2.833	1.383	1.368	.259
	Engineer	14	3.357	1.216		
	Architect	23	2.609	1.076		
	Quantity surveyor	28	2.607	1.257		

Appendix 3 (B) – Hypothesis Testing Results

	Total	83	2.783	1.240		
Right to refer to adjudication	Project manager	18	2.889	1.451	1.264	.292
	Engineer	14	3.500	1.019		
	Architect	26	2.808	.981		
	Quantity surveyor	28	2.786	1.315		
	Total	86	2.930	1.215		
Right to review and enforcement of adjudication determination	Project manager	18	2.944	1.434	1.202	.315
	Engineer	14	3.357	1.008		
	Architect	24	2.667	1.007		
	Quantity surveyor	28	2.679	1.335		
	Total	84	2.845	1.227		

APPENDIX 3(C)

Internal Reliability: Cronbach’s Alpha Value

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Procurement methods used	15.6778	28.468	.714	.869
Contract types used	15.7667	26.024	.826	.850
Standard forms of contracts used (right to payment and non-payment provisions)	15.8222	26.373	.861	.845
Legislative processes (Construction Contracts Act)	15.8667	27.106	.753	.863
Lack of knowledge and experience in the field	15.0667	32.939	.487	.900
Political/policy changes	16.1889	29.705	.604	.887

Case Processing Summary			
		N	%
Cases	Valid	90	30.7
	Excluded	203	69.3
	Total	293	100.0

Reliability Statistics	
Cronbach's Alpha	N of Items
.890	6

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Easy entry of players with little/no capital backing	15.0417	14.419	.776	.813
Easy exit of players: Little/no liability to creditors	14.9792	15.621	.680	.838
Cash flow difficulties due to lack of initial capital	14.9583	15.072	.756	.820
Financial difficulties due to failure to secure contracts	15.3750	15.226	.677	.838
Receivership and liquidation of parent and related companies	15.3125	14.996	.570	.871

Case Processing Summary			
		N	%
Cases	Valid	96	32.8
	Excluded	197	67.2
	Total	293	100.0

Reliability Statistics	
Cronbach's Alpha	N of Items
.865	5

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Structure of the industry: Involvement of many commercial parties	7.4854	3.135	.386	.615
Disputes over payment claims and responses	6.6602	3.560	.497	.461
Disputes over quality of work	7.0000	3.314	.442	.518

Case Processing Summary			
		N	%
Cases	Valid	103	35.2
	Excluded	190	64.8
	Total	293	100.0

Reliability Statistics	
Cronbach's Alpha	No of Items
.627	3

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
High capital investment nature: Reliance on loan capital	7.3663	4.474	.524	.780
Cost overruns and contract failure	7.1782	4.108	.642	.652
Time overrun of projects	7.4158	3.925	.656	.635

Case Processing Summary			
		N	%
Cases	Valid	101	34.5
	Excluded	192	65.5
	Total	293	100.0

Reliability Statistics	
Cronbach's Alpha	No of Items
.772	3

Appendix 3 (C) – Internal Reliability: Cronbach’s Alpha Value

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Payment culture of the industry: Chain payment & work first get paid later	3.9808	1.184	.549	.
Cash flow difficulties due to delays and non-payments on other projects	3.8269	1.038	.549	.

Case Processing Summary			
		N	%
Cases	Valid	104	35.5
	Excluded	189	64.5
	Total	293	100.0

Reliability Statistics	
Cronbach's Alpha	No of Items
.708	2