

# **SURVIVAL STRATEGIES OF SERVICES SUBCONTRACTING FIRMS IN AN ECONOMIC DOWNTURN**

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## **ABSTRACT**

The construction industry is extremely responsive to the pressures of the economic conditions of the wider economy. Between 2007 and 2008 a major economic downturn affected economies around the world. New Zealand was one of these economies and as a result of this downturn the New Zealand's economy was pushed into a recession. The construction industry in New Zealand has subsequently suffered from a downturn as a result of this. There is a small amount research available which focuses on how firms within the construction industry adapt to cope with these external changes. However there is very little research available on how subcontracting firms adapt to survive such times. This is particularly evident of the New Zealand market. The research therefore has the objective to discover what strategies are used by subcontractors, particularly of the services trades, to survive these times. The research has been based off previous research on an earlier downturn in the Singaporean main contractor's market by Lim, Oo & Ling (2010). The survey method was a semi-structured questionnaire of eight participants who were senior managers of subcontracting firms from the services markets. The participants were first asked demographic questions on themselves and their company followed by questions on the utilisation and importance of a list of strategies. The list of strategies was based on the findings from a literature review. Findings of the paper were that there are various strategies which are most important to the survival of these firms 'increasing the focus on forming relationships with main contractors', 'implementing stricter financial management on company cash flow' and 'implementing stricter site management to reduce material and time wastage'. A strategy which was also highly utilised but found to be of lesser importance as the strategies above was 'trying to break into new sources of work (i.e. different main contractors)'. Further studies around this topic could investigate how companies implement these strategies. Research could also be undertaken into how employment in subcontracting firms is affected by economic downturns, as there was a very low response recorded by the participants to any change in employment strategy.

## **CONFIDENTIALITY STATEMENT**

The author has agreed that all personal and company names of participants in this research will be kept confidential. The participants in the interviews were kept anonymous throughout the process. Their responses cannot be linked to the individuals involved in any way. This was ensured by storage and management of responses in hard form being referred to using labels (e.g. Plumbing Subcontractor 1).

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# 1 INTRODUCTION

## 1.1 The Economic Downturn

The construction industry as a whole has a significant relationship to the economy, in that a change in economic output of an economy can result in a proportionate change in demand and, as a result, a change in the output of the construction industry (Raymond & Ganesan, 1997). The follow-on effect of this change is that firms within the industry have to dramatically adapt to the changing economic climate (Forman, 2010).

The global economy suffered a major recession in the years of 2007-2009. This recession has been labeled “the global financial crisis”. It is well documented that there are numerous reasons for this collapse. A large downturn in the US housing market combined with financial stress (also known as the “credit crunch”), high oil prices, as well as a large slide in economic confidence are some of the well noted reasons for this recession (Ranchhod, 2010). According to Chan & MacCabe (2008) the financial stress, which began in the United States can be summarised as “The sub-prime mortgage market in the US coupled with imprudent investment behavior by banks have led to the decay of financial assets, which have in turn caused the collapse of major financial institutions” (Chan & McCabe, 2008, p. 523). These collapses and their subsequent government bail-outs then had a ripple affect which impacted markets world-wide.

This recession is the largest felt by the economies of the organisation for Economic Co-operation and Development (OECD) since the Great Depression of the 1930’s. All 30 nations of the organisation have suffered a decrease in real GDP with an average drop of 5% recorded over all of the nations within one year (The Treasury, 2010).

At the time of writing the New Zealand economy had narrowly avoided two consecutive quarters of negative growth, which, in terms of the definition above some would have argued would have resulted in a recession (or in this case a double dip recession where the economy had looked to be starting its recovery when it fell back into recession) (Tarret, 2010). This shows that the New Zealand economy is yet see the recovery which we many have expected. It is also a similar pattern to those which have affected New Zealand in recent times. The recessions in the late 1980’s, early 1990’s and late 1990’s all suffered from a double dip recession before recovering (New Zealand GDP Growth Rate, 2011).



Statistics New Zealand (2011) provide statistics on the value of building work put in place by the New Zealand construction industry. Between 2005 and 2008 the New Zealand construction industry's output was consistently over \$12billion NZD, peaking in 2007 at \$13.5billion. Since this time, in 2009 only \$10.7billion was achieved, and just over \$11billion of building work was produced in 2010.

The number of building consents issued is also recorded by Statistics New Zealand and provides a useful tool for assessing the short term forecast for the construction industry. Since 2008 the value of building consents has dropped from over \$12billion to just over \$9billion. More recently the number of consents issued has dropped over a further 30% since March 2010, causing a negative trend which is the situation in the building industry is currently at the time of writing (Statistics New Zealand, 2011).

## **1.2 The Research**

A number of studies on the effect that economic downturns have on construction firms, and the resulting changes in strategies of those firms, have been conducted for different times of recession around the world. Examples are the global downturn as a result of the stock market crash in the late 1980's (Hillebrandt, Cannon & Lansley, 1995), the Asian financial crisis of 1997-1998 (Pheng & Hua, 2002), the extended recession as a result of the Asian financial crisis in Singapore (Lim, Oo & Ling, 2010), the downturn in building activity in America in 2001-2002 (Tulacz, Rubin, Grogan, Hampton, Powers, Illia & Dixon, 2003) and the recent global recession as a result of the 'credit crunch' of 2008 (Redfern, 2010).

However all of these studies focus on main contractors and subsequently there is little evidence of research into subcontracting firms within the industry. This is despite the large number of firms who operate in the subcontracting market. In particular there is a lack of research into the adaptation of subcontractors in the comparatively small New Zealand market. Therefore this research will provide an insight into this area of the topic, using the research of Singaporean main contractors by Lim, Oo & Ling (2010) as a basis for the study, and including their suggestion to not only question which strategies are utilised by the contractors, but also which strategies are the most important to the contractors. This research will therefore answer the research question 'What are the strategies used by services subcontractors to survive the economic downturn?'

The research aims to add to the existing body of knowledge about survival strategies of construction firms in an economic downturn. As the economic downturn is still having an effect on the New Zealand construction industry, the research is relevant to the current context. By adding to the existing body of knowledge it is hoped that the research will assist firms and individuals within the New Zealand construction industry to understand the ways in which firms operate in this industry during a recession.

## **2 Literature Review**

### **2.1 Introduction**

Research into the effect of the recession on companies is well documented. In particular, the construction industry is the focus of numerous studies in relation to economic downturns because of the large impact changes in the economic condition have on the construction industry. Research in this area includes topics such as the effect of the recession on the industry as a whole, on sub-sectors for the industry, on individual companies and on indicators of the industry such as employment. There is a wide range of literature available with a focus on main contracting; however information on sub-contracting is limited.

The following chapter is a literature review on the effect of the recession on the construction industry and survival strategies of contractors to survive. More specifically, the effect on subcontractors will be investigated. The chapter begins with information on recessions and their effect on the industry as a whole. The focus then switches to reasons for company failures within the industry and the strategies companies use to avoid such failures in times of recession.

## **2.2 Recessions/economic downturns**

### **2.2.1 Definition of a recession**

The most common definition of a recession is two or more continuous economic quarters of decreases in an economy's GDP (gross domestic product) growth (New Zealand Herald, 2008). However this is a relatively simplistic definition, and numerous economists believe that it doesn't consider other variables such as unemployment and consumer confidence ("Definition", 2010). The National Bureau of Economic Research (NBER), which is the agency that officially declares a recession in the United States, defines a recession as "a significant decline in activity spread across the economy, lasting more than a few months; and normally visible in production, employment, real income, and other indicators" (Iqbal & Vitner, 2011, p. 22). This definition is widely accepted as an accurate explanation of a recession. An important aspect of this definition is that a recession is required to be a significant decline in economic activity. As noted in the first definition, economic activity is generally measured by the GDP of an economy.

It is widely accepted that recessions are an economic certainty as a part of the business cycle. Recessions generally occur after a time of economic prosperity (a peak) and the contractions of a recession are always followed by an expansion period, also known as a recovery (although the length of time to get to this point differs). (Iqbal & Vitner, 2011)

### **2.2.2 History of Recessions**

History is plagued with economic recessions all over the globe. As noted by Adams (2010) the NBER has recorded a total of 33 recessions in the United States since 1857. Due to the large number of recessions over the course of history the following section will focus on the most recent recessions and the effect they have had on the New Zealand economy. It is because of the relatively small size of the New Zealand economy that it often follows the recessionary lead of the larger economies which it trades with.

Early 1990's – Following the share market crash in 1987 there was a global recession in the years of 1990-1991. Various reasons were behind this economic slowdown, namely a global

economic slowdown, financial stress and high oil prices (Ranchhod, 2010). The high oil prices are a reflection of the oil price spike over this period.

Late 1990's – The recession in New Zealand in the years of 1997-1998 was as a result of two major events. The first was the Asian financial crisis. This was an economic downturn in Asia which was a result of the opening up of capital markets in south East Asia as well as significant weaknesses in the banking systems of these nations. Although this was not in New Zealand the flow-on effects had dramatic consequences on the New Zealand economy as well as many others around the world. (Gan & Li, 2000) The second event was a major drought which had a considerable impact on the New Zealand economy as a result of the high proportion of the economy involved in agricultural related business.

Early 2000's – During 2001 a number of events occurred which resulted in a world wide recession. Once again a global downturn occurred, on the back of the “dot.com burst” which was a large scale collapse in the value of the rapidly growing internet industry. According to Ranchhod (2010) the other major event which caused this recession was the September 11 terrorist attacks and the subsequent fallout in the American economy.

### **2.2.3 Present situation**

The global economy suffered a major recession in the years of 2007-2009. This recession has been labelled “the global financial crisis”. It is often documented that there are numerous reasons for this collapse. A large downturn in the US housing market combined with financial stress (also known as the “credit crunch”), high oil prices as well as a large slide in economic confidence are some of the well noted reasons for this recession (Ranchhod, 2010). According to Chan & MacCabe (2008) the financial stress, which began in the United States can be summarised as “The sub-prime mortgage market in the US coupled with imprudent investment behavior by banks have led to the decay of financial assets, which have in turn caused the collapse of major financial institutions.” (Chan & McCabe, 2008, P. 523) These collapses and their subsequent government bail-outs then had a ripple effect which impacted markets world-wide.

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#### **2.2.4 Effect of a recession on the construction industry**

Extensive research has been conducted into the effect that an economy wide or global recession has on the construction industry as a whole as well as specific businesses within the industry. There are many similarities between the effects felt by the economy as a whole and the construction industry in particular. However there are also a number of characteristics of the construction industry which suffer in effect from a recession which are unique to the industry.

## **2.3 Effect of a recession on construction firms**

### **2.3.1 Output**

Hillebrant, Cannon & Lansley (1995) note that during times of recession the output of the construction industry falls dramatically. Indeed, in their study of the UK construction industry during the recession of the early 1990's they record the output of some sectors of the industry falling in the trough of the business cycle to less than 30% of what they were in the peak, only three years earlier (Hillebrant, Cannon & Lansley, 1995). In the four years leading up to the Asian Financial crisis of 1997 the value of new construction output in the Hong Kong construction industry increased steadily by just under half of the total output of the industry. In the years of recession which followed the crisis the amount of output fell dramatically at first, then steadily returned to pre-boom levels (Leung & Wong, 2005).

Ramond & Ganesan's (1996) research into construction flows conclude that GDP, one of the key measures for recording a recession is heavily interlinked with construction output. This is because construction output makes up part of the measure of economies' GDP. The conclusion is that a decrease (or increase) in GDP will cause a decrease (or increase) in the demand for construction projects. This will in turn affect construction output as the suppliers to the market (the contractors) decrease their production (revenue) to meet the demand requirement. This decrease in output will cause GDP to fall further as construction output makes up a sector of GDP.

Almost all of the previous research supports the idea that an economic turndown has a lag effect in the construction industry. Tulacz's (2009) research into the effect of the current recession on construction contractors in the USA found that even though the recession started in 2008, contractors had a big enough backlog of work to last through 2008 and 2009. There was even growth in the construction industry in 2008 with 11.2% more work produced by the top 400 contractors than in 2007. However, "as backlogs shrink, 2010 will be a tough year." (Tulacz, 2009)

The revenue production of subcontractors is also greatly affected by market conditions. After the recession hit in America in 2001 subcontracting revenue fell by approximately 10% in the

year of 2002, after rising in the boom period of 2000 by 24% in one year (Tulacz, Rubin, Grogan, Hampton, Powers, Illia & Dixon, 2003).

### **2.3.2 Employment**

The most recent recession in the UK has had a dramatic effect on employment conditions in the construction industry with 250,000 less people employed in the industry in mid- 2009 compared with mid-2007 (Chan et al., 2010). Similarly in the period of recession between 1989 and 1993 employment was also reduced within the construction industry in the UK with a decrease of up to 30% in the number of managers employed by construction firms (Hillebrant, et al., 1995).

There are many reasons for this change in employment numbers, mainly the restructuring of firms to reflect the decrease in work available to the firms and to reduce costs (Hillebrant, et al., 1995). It is also important to note that recessions also cause company insolvencies which in turn create unemployment within the industry (Chan et al., 2010).

Interestingly, Chan & McCabe's (2010) research highlights that recessions have less of an impact on the employment of woman in the industry than men. This implies that the type of roles in which woman are employed in the industry are probably critical to the day to day running of the firms, regardless of the quantity of work produced.

### **2.3.3 Profitability**

Tulacz et al.'s (2003) research showed that the changes in market conditions in 2001 had a dramatic effect on the profitability of the top subcontractors in the United States of America. "In 2002, 8% of the top 600 [Subcontractor's] operated in the red." The subcontractors who were still profitable had their profits shrink from an average of 7.3% in the peak of the boom in 2000 to 5.8% in 2002.

A similar reduction in profits was noted in the UK during the same time period. Ball, Farshchi & Grilli (1999) calculated profitability ratio's (profits/turnover) of major contractors whose results were listed on the stock exchange. Profitability ratios were visibly reduced in 1991 to a low in 1992, and began to recover in 1993/1994. Ball, et al. (1999) also found that the environment in which the firms operated had a larger impact on the profitability ratio's than any attempt to better their business through internal controls. "There is no evidence that



some firms persistently do better than others through superior management or strategies.”  
(Ball, et al., 1999, p. 743)

The main source of profit for contractors is the margin that is added onto the price of contracts at the bidding stage. Akintola & Skitmore's (1991) research describes these bidding margins as “prior estimates of profitability” and further point out that although the markup positions during tenders and actual profitability are not the same, they do reflect each other. Therefore, further to common economic theory in times of high competition when contractor's mark up positions are low, inevitably so are their profit margins (Akintola & Skitmore, 1991).

Oo, Drew & Lo (2007) suggest that contractor's bidding margins are directly affected by four decision factors, being:

- Number of bidders
- Market conditions
- Type of project
- Size of project.

This study noticed that contractors in Hong Kong and Singapore adjust their mark-ups in response to the market conditions. In numerous cases during times of recession contractors were found to be ‘marking-down’ their bids in order to “buy work”. These bids would end up well below cost and therefore have a negative profit margin (Oo, Drew & Lo, 2007).

## 2.4 Specific reasons for company failures in the past

Failure of a company is defined in several different ways. It can be defined as when the firm is unable to pay its creditors, when the rate of return for the investment in the business is no longer worth while, or when there is insufficient revenue to cover costs (Arditi, Koksall & Kale, 2000).

In the first quarter of 2010, nearly one in five corporate insolvencies were found in the construction and real estate sectors in the UK (Chan et al., 2010). The overall level of insolvency within the industry is much higher than for other sectors of the economy (Mutti & Hughs, 2002).

In the period of recession in the early 1990's many firms in the Italian construction industry went bankrupt as a result of two significant factors. Firstly a sharp worldwide economic recession struck which decreased the amount of private work available. Then the major catalyst occurred in 1992 when a scandal broke regarding price fixing of public work contracts, which led to a drop in public work & investment (Pietroforte & Tangerini, 1998). When this event happened companies who relied on this work had to change their strategy to survive. Private work was now the most appealing, however with the state of the economy at the time this work stream had also decreased significantly.

During periods of economic weakness the number of construction firms which fail as a result of the economic conditions increases dramatically. Poor economic conditions were the cause of 22% of construction firm failures between 1989 and 1993, second only to insufficient profits. (Arditi, Koksall & Kale, 2000). Mutti & Hughs (2002) record that there were more than three times the number of construction firm insolvencies in the trough of 1992 than in the earlier peak of the cycle.

Arditi, et al. (2000) describe the biggest cause of construction firm insolvency to be "budgetary issues and can, therefore, be handled by companies that are cognizant of the effects of these factors on their survivability." (Arditi, et al., 2000 p. 130). "Lack of financial control or accounting information figure is one of the major causes of economic failure, after inadequate management" (Mutti & Hughs, 2002 p. 25). A suggestion should be made at this

point that inefficient financial management combined with the timing of periods of economic downturn is possibly the situation when the greatest majority of construction firms become insolvent. This is similar to the conclusion of Arditi, et al. (2000) who note that business failure is normally dependent on a number of different factors.

## 2.5 Strategies employed by construction businesses (& specifically sub contracting businesses) to survive during a recession

There are many different strategies construction firms are able to utilise in order to assist them in surviving an economic downturn. Various authors have contributed to the topic and below is a table adapted from Lim, Oo & Ling, (2010) showing a number of different contractor survival strategies which will be discussed in the following chapter, and the various authors who discuss these strategies.

	Lansley and Quince (1981)	Wong & Lopcheh (1986)	Lansley (1987)	Hillebrant, Cannon & Lansley (1989)	Boort (1996)	Mills (1997)	Contractor (1998)	Low & Lim (2000)	Lim, Oo & Ling (2010)	Wan-Pun (2009)
1 Cuttings Bonuses and Overtime			x				x	x		
2 Developing a stable network of regular subcontracting parties				x				x	x	
3 Developing new relationships with clients			x	x	x			x	x	x
4 Explaining current difficulties to staff							x	x		
5 Focusing on competitive bidding for subcontracting work							x	x		
6 Freezing or reducing salaries & bonuses			x				x	x		
7 Implementing stricter financial management			x	x			x	x	x	
8 Improving safety records	x							x		
9 Increasing the amount of working capital	x		x					x		
10 Joint venturing with other firms to further explore business opportunities		x			x	x		x	x	
11 Learning new skills to further explore business opportunities		x			x			x		
12 Minimising staff redundancies			x	x		x		x		
13 Moving or diversifying into new market areas or other lines of business		x	x	x		x		x	x	
14 Placing greater emphasis on core businesses	x		x	x			x	x	x	
15 Placing greater emphasis on employees' needs	x		x					x		
16 Placing greater emphasis on marketing, and effective planning and management		x	x	x			x	x	x	
17 Placing greater focus on the long-term goals of a firm	x							x		
18 Providing better contracting services (e.g. providing financial packages)				x				x		
19 Seeking flexibility in resources, cost structure and financial Structure		x						x		
20 Submitting a lower tender price to secure projects				x		x	x	x		
21 Tightening of organisational structure				x				x		
22 Trying new methods and technologies for improved productivity		x					x	x		
23 Undertaking smaller contracts								x	x	
24 Implementing stricter day-to-day management protocols								x		
25 Increasing the use of subcontracting										x

Table adapted from Lim, Oo & Ling (2010)

Figure 1: Grid shown literature involving different strategies as adapted from Lim, Oo & Ling (2010)

### 2.5.1 Diversification, Differentiation & Focusing on Core Business

According to Cannon & Hillebrandt (1990) diversification can include backward integration (diversification into business with inputs into the main operations), forward integration (expansion into the business activities of those firms who would typically purchase the outputs of the main operation) and horizontal integration (integration into other markets not linked with the existing business). The following are reasons for such diversification (Hillebrandt et al., 1995):

- Increase in the escalation of profits
- Increase efficiency through other vertical connections
- Increase the value of fixed assets of the company
- Avoid dependence on the construction industry's cyclical nature

Differentiation is to change the appearance of what the firm is providing to create a point of difference from its competitors (McCabe, S., 2010). In the construction industry this could involve offering innovative services, such as design and build packages (Hillebrandt et al.'s, 1995) or capitalizing on niche markets such as sustainable buildings (McCabe, S., 2010).

In Hillebrandt et al.'s (1995) study construction firms were asked what they considered their core business to be. The majority of these firms defined contracting as their core business. Hillebrandt et al.'s study also notes that during the recession in the UK in the early 1990's contractors discarded their plans for diversification to focus on their core business survival. The reason for this was found to be that they did not have the expertise necessary to manage the acquired businesses through the tougher times of the recession.

Oo et al.'s (2007) study showed 82% of the companies questioned used diversification into other construction related business as a strategy to help survive the recession. However of the same respondents, only 24% noted their interest in diversifying into non-construction related business.

In contradiction to the study noted above, Pheng et al.'s (2000) results show that 61% of the surveyed firms did not intend to diversify either vertically or into overseas markets during the same period of recession in Singapore. The remaining 39% saw diversification as an important way to reduce risk by spreading work across a range of different sources. A

possible reason for this difference is provided by Oo, et al. (2007). As Pheng et al.'s study was undertaken in the early years of the financial crisis firms were reluctant to entertain the idea of venturing into new business, and tried to focus on the core business, which 82% of firms attempted to do by "bidding for more projects that are within the firm's resources and capabilities" (Oo et al., 2007, p. 391). However, as the recession in Singapore continued for eight years, the market conditions became so severe that contractors were forced to diversify into other construction related business to survive.

### **2.5.2 Target Markets**

Investment expenditure in the construction industry comes from two main sectors, the private and public (Government) sectors. "Private developers buy construction works for profits while public sector developers buy for social and political needs." (Leung, C. K., & Wong, K.S., 2005)

During the boom periods of the business cycle the private sector is visibly more active than the public sector. This is because the opportunity to create profits and the need for new buildings are highest in a growing market. The public sector operates very differently. The construction industry is often used as a government stimulus to the economy as a whole. The government can use it to pump money into the economy by bringing major infrastructure projects forward (Pheng et al., 2000).

Leung, et al.'s (2005) paper shows an example of this change in the Hong Kong construction market. After the Asian financial crisis in the mid to late 1990's private sector spending decreased dramatically whilst in the public sector it increased. In Dubai, during the boom of 2003-2008, large real estate developments dominated the construction market. These ran dry in 2009 as development investment credit fell away due to the credit crunch. In response to this 2009 saw several Middle Eastern governments, including Abu Dubai, respond to the recession by dramatically increasing public sector work through the construction of infrastructure such as airports, universities and hospitals (Forman, C., 2010). Governments will also achieve lower cost building prices from stimulus packages to the construction industry as the price of construction works will fall as competition increases during economic downturns (Pheng et al., 2000).

As a result of this increase in spending in the Middle East, contractors returned to focus on the publicly funded work which was now available (Forman, C., 2010). Another example of this is the recession in the early 1990's in the UK. Contractors found themselves relying heavily on publicly funded housing schemes which began rapid expansion in 1993. (Hillebrandt et al., 1995)

In Oo et al.'s (2007) research 50% of contractors found themselves forming partnerships with existing clients. If an established client is undertaking redevelopment this could also be a very lucrative strategy for construction companies. This concept will be discussed further in a later section on relationships.

### **2.5.3 Marketing**

“Because of the recession contractors have been forced to explore every possible way of obtaining work to maintain their turnover” (Hillebrandt et al., 1995, P. 77). To achieve this construction companies may decide to increase their marketing activity in order to attract new clients or build on relationships with existing clients (Pheng et al., 2000). Bennett (2005) notes that a number of studies have heavily criticized the construction industry as a whole for not adapting a more modern marketing approach, focusing on an adversarial, tendering market instead of establishing long term relationships with clients.

A study into the responses of Singapore's contractors to the Asian financial crisis in the late 1990's included findings into construction firms' marketing techniques, focusing on existing clients (Pheng et al., 2000). The findings were based on three “modes” which the contractors rated in terms of usefulness. The first was speeding up project delivery. 65% of the contractor's interviewed noted that they adopted this policy to “provide improved service to clients” (Pheng et al., 2000). The study also found that faster rectification of defective works was a focus for 59% of the firms surveyed. The reason for this strategy was to provide better service to clients. New financing arrangements with clients was a focus for 22% of the firms. Advantages of this strategy were perceived to be creating increased trust with established clients and securing more work with these clients (Pheng et al., 2000). All of these marketing techniques relate to securing repeat work for the company with existing clients.

Marketing to new clients is defined by Slatter (1990) as sales management, the process which links the bid opportunities available in the market to those which are received into the company. One of the main variables in how many people are assigned to sales management roles is the location on the business cycle. Bennett (2005) describes the typical approach of construction firms during a recession being able to decrease spending on marketing in order to reduce costs. This is despite referencing in the same article to many studies which have proven that businesses which continued to invest in marketing throughout the recessionary period of the business cycle are the least likely to suffer from a serious reduction in sales. However it is the companies who are the most prepared who seem to be able to cope with recessions the best. “Most successful companies accept the inevitability of cycles and thereafter adopt proactive and long term approaches and systematically prepare for a recession during prosperous periods” (Bennett, 2005, p. 119).

#### **2.5.4 Employment**

A number of different studies on the construction industry’s response to a recession have noted significant changes to employment patterns. The studies typically note a decrease in employment within the industry during times of recession, which reflects a decrease in the output of the industry and the obvious decrease in resources required to achieve this output.

The urgent need to decrease costs, in particularly overhead costs, is behind the need to reduce staff in construction firms during this time (Hillebrant et al., 2005). In a study of the UK construction industry during the period of recession between 1989 and 1993 Hillebrant et al. (1995) recorded that the firms interviewed decreased the number of managers employed by between 10%-30%. Lim, et al. (2010) record that of the contractors surveyed regarding the recession in Singapore between 1997- 2005, 76% laid off employees to control costs. This figure is notably higher than the findings of Pheng et al. (2000) at only 13%. Lim, et al. (2010) explain this difference as a result of the extraordinarily long recession as most of the redundancies were carried out in 2002 & 2003, after Pheng et al.’s (2000) paper was written. Chan et al. (2010) also noted a significant reduction in employment in the UK construction industry during the current recession, where between 2007 and 2009 employment in the construction market had decreased by over 250,000.



These negative trends have a number of side effects for both the employees who remain employed and on the long term position of the company. Morale is unsurprisingly low in situations where jobs are disappearing, as other staff fear they are next (Hillebrant et al.,1995). This fear is intensified by the cutting of staff bonuses and freezing or cutting employees pay (Hillebrant et al.,1995). Lim, et al. (2010) record that 91% of firms froze the salaries of staff, and the same number stopped hiring any additional staff. On top of this 50% of the companies stopped paying out bonuses during this time of recession, whilst 62% even went to the extreme of decreasing the pay given to employees. Lesser numbers were recorded in Pheng et al.'s (2000) paper related to the same location but covering an earlier period of the same recession. The reason for this difference has been described as the more desperate times of Lim, et al.'s (2010) study at a later stage in the recession.

There are a range of opinions on the long term effects on construction firms of laying off workers in a recession. The common theme is that companies avoid laying off workers unless it is absolutely necessary. "Most interviewees insisted that this practice [of laying off employees] was their last resort." (Lim, et al., 2010, p. 397) The main reason for this was to avoid a shortage of skilled staff when the recession was over, and having to build up workers' knowledge to replace those who had been laid off (Hillebrant et al.,1995). However, employers do select workers who they wish to lay off, and in particular focus on making those who are least vital to the company or who performed the least satisfactory (typically those who were employed in the last economic boom, when skilled labor was in short supply) (Hillebrant et al.,1995).

### **2.5.5 Financial Management & Investment**

Correct Financial Management is an important contributor to the success of any company. In Arditi, et al.'s (2000) study into the reasons for company failures in the construction industry budgetary problems including insufficient profits, heavy operating expenses, insufficient capital & institutional debt accounted for over 40% of all failures. These budgetary issues are noted as internally controlled by the companies (Arditi, et al., 2000). Mutti, et al.'s (2002) research notes main causes of insolvency in construction. Inadequate management is the most common reason, followed by a lack of financial control.

A number of specific studies related to recession strategy comment on the importance of effective financial management to survive a recession. Pheng et al. (2000) found that companies took on various financial strategies to survive the recession in Singapore in 1997-1998. One of the most influential of these was the creation of solid relationships with banks and other facilities which were providing capital to the businesses (91% of the firms surveyed undertook this practice) (Pheng et al., 2000). Lim, et al.'s (2010) research reflected these findings in relation to capital within a business, with 82% of companies confirming they increased uncommitted financial resources, whilst 74% negotiated alternative loan services. In addition to borrowed capital "The majority of the companies interviewed had set aside contingency funds from their companies' reserves" (Lim, et al., 2010, p.397).

Other studies have noted the importance of reducing operating costs for survival. Hillebrant et al.,(1995) record that out of the 14 businesses which were involved in their survey, 13 of them focused on reducing both employment costs and head office costs to survive. Lim, et al.'s (2010) paper shows that as well as reducing employment costs, 100% of firms attempted to control costs by implementing stricter site management, reducing material wastage and implementing stricter procurement procedures.

The lack of cash flow management and budgetary control is a major cause of business failure within the construction industry (Mutti, et al., 2002). Information on cash flow modelling and forecasting is relatively easy to find, and being such a major cause for company failure, it seems construction firms simply need to take the concept more seriously. 100% of firms in Lim, et al.'s (2010) research recorded that they "implemented stricter financial management on company cash flow" (Lim, et al., 2010, p.392). Lim, et al.'s survey did, however, only include companies which managed to survive the recession. A common problem during a recession is noted by Tulacz et al. (2003) as a lack of cashflow. This is often the result of late payments by clients. In 2002 subcontractors were reporting that "35% of payments owed to them are late by an average of 40 days" (Tulacz et al., 2003).

### **2.5.6 Relationships**

Relationships with both clients and suppliers are vital to any industry. For construction subcontracting firms, client relationships are with main contractors, as well as clients of main contractors, who may directly employ subcontractors. Suppliers are not only suppliers of

materials, but also specialist subcontractors who subcontract their skills to subcontractors themselves. Below Lim et al. (2010) describes good relationships with clients as one of the main reasons why only a few construction companies who were questioned regarding the recession didn't have to freeze their own employees pay.

The three companies interviewed that did not practise any recruitment and salary freezes were able to do so because they secured a few projects during the recession through their established reputation in the local industry and good relationship with clients. This further suggests that reputation and relationship are the key factors to increase firms' competitiveness (Lim, et al., 2010, p. 397).

It is a common understanding within the construction industry that an adversarial attitudes towards customers is prevalent within construction companies. The result of this is a focus on tendering, rather than on long-term mutually beneficial relationships with clients (Bennett, 2005). Contractors can benefit from better relationships with their clients through a number of different ways. Repeat business, work continuity, improved profitability. Clients can benefit through reliability of work, loyalty to their projects and the time savings in not having to find a contractor (To, 2009). Research by Dainty, Briscoe & Millett (2001) included interviews with numerous subcontractors on their opinions on supply chain alliances between main contractors and subcontractors. The response from the subcontractors were that main contractor's didn't fully comprehend the idea of partnering and the reasons main contractors undertook the practice was only for their own benefit (Dainty, et al., 2001). In the same survey some subcontractors noted that they had success in alliances with client organizations but believed that such relationships with main contractors were much more problematic (Dainty, et al., 2001).

It is well documented that main contractors use subcontracting as a way of achieving competitive advantage over their rivals (Hillebrant et al., 1995) as well as decreasing risk exposure and reducing overhead costs (Costantino, Pietroforte & Hamill, 2000). To (2009) explains that in the recession in the UK in the late 1980's main contractors increased the amount of subcontracting they utilised in to ensure more competitive pricing, and therefore successful bids for projects. Pheng et al.'s (2000) study found that contractors preferred to send subcontractors' work packages to the market place rather than negotiate in order to achieve cheaper prices. This also reflects Dainty, et al's (2001) research above.

For smaller companies, joint ventures with other smaller contractors are another way that contractors use relationships to ride out the recession (Hillebrant et al., 1995). This allows contractors to combine resources and therefore attempt to secure larger projects than they have been able to before. In Lim, et al.'s (2010) research 65% of the companies interviewed undertook joint ventures, seeing other benefits such as mitigation of risks, gaining from expertise of other contractors and gaining of new markets (Lim, et al., 2010).

## 2.6 Summary

The impact of the recession on the construction industry has a variety of severe flow on effects. It is vitally important for the firms in the industry to adjust their strategy to the cyclical economic environment in order to survive. The survival of small firms such as subcontractors in times of economic downturn relies on the correct strategies being implemented. There are a large number of strategies which affect different areas of a business available to these firms, which can be used to survive such times. Specific research into the survival techniques and strategies of subcontractors in the New Zealand environment is non-existent.

Extensive research is available on the topic of the survival of main contractors within the industry and some of this knowledge can be easily transferred to the subcontractors within the industry. In particular, for this research the journal paper by Lim, Oo & Ling (2010) entitled “The Survival Strategies of Singapore Contractors in Prolonged Recession” will be used as a basis for the research. The paper by Pheng, L. S., & Hua, L. N. (2002) entitled “The Strategic Responses of Construction Firms to the Asian Financial Crisis in 1997-1998” will also be heavily used for this purpose. This will assist the research in areas such as research methods and the type of strategies which should be questioned. Both papers were about the same period of time in the same country so are very relevant to each other, however the paper by Lim, Oo & Ling is more recent and therefore will be the more extensively used. In the paper by Lim, Oo & Lim a limitation noted was that no scale was provided as to the importance of the strategies identified. A similar scale could be added to this research to remove this limitation from this research.

There are, however, various aspects about subcontracting which are specialised and therefore require independent strategies to be considered. There are a wide range of differing strategies involved in running a contracting business, and all of these need to be considered when attempting to survive a recession. Therefore the following research will attempt to answer the following question:

What are the survival strategies used by services subcontractors to survive the economic downturn?

## **3 METHODOLOGY**

### **3.1 Introduction**

The following chapter examines the research methods used to answer the question posed in this paper. This research is based on similar previous research. The earlier research is described and assessed as a practical starting point for the research methodology. subsequently a description of the research is provided, which is followed by an explanation of the methods used to collect and analyse the data. Later in the chapter the validity of the research methods and the research ethics are investigated.

### **3.2 Research design**

The research question which the data is required to answer is “What are the strategies used by services subcontractors to survive the economic downturn?” This question defines the data which is required for the research and has been derived from several pieces of literature which have been reviewed in the previous chapter. However the most influential paper is that produced by Lim, Oo & Ling (2010). The objective of the research is to identify strategies employed by subcontractors to survive an economic downturn and then to understand which of these strategies were the most useful and why this was the case. The research examined in the previous chapter has a very similar purpose to the question posed and with that in mind it is logical to follow a similar methodology to enable possible comparisons in the analysis stage of the research.

### **3.3 Lim, Oo & Lings’ (2010) research**

The research by Lim, Oo & Ling (2010) had the purpose to “examine the survival strategies of Singapore contractors in the eight years of unprecedented recession”. (Lim, Oo & Ling, 2010, p 387) They collected their data in 34 interviews with senior managers from medium to large sized construction firms. The interviews were conducted in a semi-structured manner based on a list of strategies, which respondents answered either positively or negatively regarding whether they undertook such strategies in the time of recession. They were then

further questioned, using open ended questions, on their responses to each strategy, and why they adopted or chose not to adapt such strategies. The average interview length was noted at 90 minutes.

The data collected in the interviews was then analysed in terms of the percentage of participants who adopted the strategy. This was followed by an explanation of the responses provided by the interviewees as to why the strategy was or was not adopted.

### **3.4 Other Research**

Other published studies were assessed and found to collect both quantitative and qualitative data for accurate and in depth analysis such as the paper by Pheng & Hua (2002) which provides analysis of the quantitative data, in terms of how many contractors out of those surveyed undertook each strategy. They then followed this up with analysis of the qualitative information, primarily by answering the question why the contractors used or didn't use each strategy. Pheng & Hua (2002) undertook their research in a structured interview based on a questionnaire format.

### **3.5 Chosen research design**

In order to fully answer the research question, responses will be required from subcontractors on the strategies they have used to survive the recession so far. Therefore the responses will be based on the subcontractor's own experiences and knowledge. It is apparent that the most appropriate method of research to collect this type of data is a survey. Bernard (2000) describes the three methods for collecting data through a survey as face-to-face, self administered or telephone. The two main focus research studies from the literature (Lim et. al. (2010) & Pheng & Hua (2002)) conducted their survey through a face-to-face, structured interview method. A structured interview is an interview based on a prepared list of questions to which the respondent can provide restricted answers to (Denscome, 2007).

The purpose in using a semi-structured interview is explained by Bernard (2000) as getting the interviewees to respond to as close to an identical set of questions as possible whilst still enabling the maximum amount of information to be extracted from the respondent. This method will reduce the amount of variation between responses to the questions. The

researcher has adopted this approach through the creation of a questionnaire from which interviews will be based. Previous research by Lim et al. (2010) and Pheng & Hua (2002) includes a detailed analysis which provides the basis of the questions which were asked in the interview. The full questionnaire can be found in Appendix A.

There are two questions asked regarding each strategy. The first is a simple tick box asking the respondent if they have used the strategy or not. If they respond positively to this question the respondent is asked to continue to the second question regarding the particular strategy.

The second question requires a Likert Scale type response which has been developed by the researcher to ascertain the perceived importance of each strategy to the survival of the subcontracting company during the current recession. The scale ranges from 1 (not important) to 5 (very important). Then for each strategy a space for comments has been provided. The researcher will ask further questions based on the respondent's rating of each strategy on the importance scale. This will provide the qualitative data required. Lim, Oo & Ling (2010) note that their research was limited by the fact that such a scale was not utilised to research this particular topic.

The research sample will be confined to the services trades of the Auckland construction subcontract market (i.e. Electrical, Mechanical, Plumbing and Fire Services contractors). This is to reduce variables in the research as all of these contractors typically have similar procurement methods and join the project at a similar time. The sample will include 8 firms (2 from each trade), and members from the upper management level of these firms will be interviewed.

Analysis will be conducted on both the quantitative and qualitative data. This is likely to be in the form of an interlinked data analysis because of the relationship between the two sets of data.



### **3.6 Data collection**

Data for the research will be collected through a series of semi-structured interviews which are based upon a questionnaire. Interviews are a suitable method when the researcher requires a higher level of in-depth information than simple facts (Denscome, 2007). This information is often in the form of opinions and experiences of the respondents. It is important that the data collected for this study provides this information, as the topic in question is essentially asking the participants' opinion as to how the firms' have survived the recession so far. This will be a reflection of their experiences as high level managers of the firms.

Interviewing can be undertaken in four different levels of structure - informal, unstructured, semi-structured and structured (Bernard, 2000). A semi-structured interview has been selected for the research in question by a process of elimination. This process clearly showed this was the best type of interview for the research in question. Informal and unstructured interviews have a severe limitation in that they are unable to provide comparative data between the respondents. This is because the variables between the interviews are too diverse to (i.e. questions may be asked in very different ways) which is likely to have an impact on any comparisons made (Bernard, 2000). A structured interview approach is too restrictive for this research as it doesn't allow the researcher to go even slightly off topic and probe the respondent further, based on the respondent's answers to questions. This constraint would prevent adequate information from being provided for the qualitative side of the research which is required.

The use of a face-to-face interview for the research resulted from a number of factors, in particular the constraints imposed by the Unitec Institute of Technology. However there are also numerous advantages to using such a survey technique. Namely the main advantage of this method is that the interviewer can "take advantage of social cues" (Opdenakker, 2006, p. 1). It is because the communication between the interviewee and interviewer occurs at the exact same time and place (unlike the likes email interviews) that the interviewer can use these social cues such as tone of voice to extract additional information from the interviewee. Another positive aspect of a face-to-face interview is that when they are prepared correctly all of the data collection can be carried out on one occasion with a quick turn around. One to one, face-to-face interviews are also relatively easy to control. (Denscombe, 2007).

De Vaus (2002) notes that the interviewer is also available to answer any questions that the interviewee may have on the spot. They are also able to probe for further information on open ended questions. This is an important advantage when collecting qualitative data such as for this study.

Disadvantages of face-to-face interviews include the need for the interviewee to arrange a suitable time for both parties. There is also the need to travel to the destination of the interview. It is also typically difficult to take accurate and detailed notes throughout the interview. A recorder may help to eliminate these problems; however time must then be spent going back over the recordings and transcribing the interview.

### **3.7 The Questionnaire**

The questionnaire which is to be used to collect data for the research has been created utilising a combination of the strategies which were examined in the research studied during the literature review. In particular the strategies identified in this research focus on those questioned by Lim, Oo & Ling (2010) and Pheng & Hua (2002). The full questionnaire is presented in appendix A attached.

The questionnaire contains three sections; section one includes basic demographic questions which provide a background about the interviewee and the firm including annual turnover of the firm, job title & years of experience in the industry. Section two includes closed Likert Scale type responses about the importance of strategies to company survival during the economic downturn. Section three includes further open ended questions to identify reasons for the responses provided in section two.

There are a number of reasons why the wording of questions is so crucial to the successful data collection. The reliability and validity of the results is a key reason. Also, it is important that the questions are answered by the respondents and not ignored because they don't want to answer them. The questions must also answer the research question. It is vital that this is correct the first time as "It is difficult to go back to people to collect additional information" (De Vaus, 2002, p. 94)

To ensure each question was correctly phrased whilst building the questionnaire, the question wording checklist provided by De Vaus, 2002, P.97, was utilised:

1. Is the language simple?
2. Can the question be shortened?
3. Is the question double barrelled?
4. Is the question leading?
5. Is the question negative?
6. Is the respondent likely to have the necessary knowledge?
7. Will the words have the same meaning for everyone?
8. Is there are prestige bias?
9. Is the question ambiguous?
10. Is the question too precise?
11. Is the frame of reference for the question significantly clear?
12. Does the question artificially create opinions?
13. Is personal or impersonal wording preferable?
14. Is the question wording unnecessarily detailed or objectionable?
15. Does the question have dangling alternatives?
16. Does the question contain gratuitous qualifiers?
17. Is the question a 'dead giveaway'?

(De Vaus, 2002, P.97)

As mentioned above the first section of the questionnaire asks the interviewee for demographic information. This will provide background information about the interviewees. It will also provide possible explanations for the answers provided later in the questionnaire. The questions are set up in a simple tick box format where the interviewee ticks the box which most accurately describes themselves and their company. Data will be collected on experience, size of company, type of work the company undertakes and the location of the work.

Section two asks the interviewee to first identify if they have adopted each of the 30 strategies listed. Then they are asked to rate each strategy they had adopted in terms of it's importance to the survival of their company during the economic downturn. A 5 category Likert type scale was developed by the researcher, based on a similar scale by Mbachu &

Nkado (2004) to measure the response of the subcontractors for each strategy. The scale is from 1 – not important, 2 – semi-important, 3 – important, 4 – very important, to 5 – vitally important.

The previous research by Lim, Oo & Ling (2010) and Pheng & Hua (2002) simply asked if contractors had adopted a strategy or not, and then compared the number of contractors who adopted the strategy in their analysis. Lim, Oo & Ling (2010) went on to note that their research was limited by the fact that they had not asked for responses using a scale of importance. Their approach was valid because they had a larger sample of above 30 firms, however the addition of a Likert scale gives more information from a smaller sample of 8 to 10 companies which is more suitable for the limited sample size of this research. The limitation of this smaller sample size is the lack of generalisability as such a small sample size results in the inability to use mean scores with any real reliability or validity.

The strategies selected for this question have been predominantly selected from both Lim, Oo & Ling (2010) and Pheng & Hua (2002) based on their appropriateness for subcontractors as opposed to main contractors. A number of strategies which focus on subcontractors have also been included. The wording of the strategies had to be altered from the previous research to suit the subcontract market. It is recognized that this means that the results are not directly comparable with those from Lim, Oo & Ling (2010).

The third section of the questionnaire includes open ended questions which will be used to collect qualitative data for subsequent analysis. These questions are based on the responses to the strategies in question two provided by the interviewee. A more informal section of the interview will be conducted around these questions with the interviewee probing for more information on why these strategies are used by subcontractors to survive an economic downturn.

### **3.8 Sample**

The sample population for this research is the senior managers from Auckland construction services subcontracting businesses. These managers are ‘experts’ in the field which they are to be questioned on. This is supported by Bernard (2000), who explains that these experts enable the collection of ‘cultural data’, as opposed to ‘individual data’. Further to this cultural data requires non-probability sampling, as opposed to probability sampling (Bernard, 2000).

As there are various different trades within the services sector of the subcontracting construction market, which can be identified as strata, it is important to have an equal representation of each trade. As such, quota sampling will be utilised as the sampling method. Quota sampling is a non-probability sampling technique which enables different strata within a population to be proportionately represented in a sample (Bernard, 2000).

The sample of 8 subcontracting firms has been selected for the research. Of the 8 subcontracting firms there are two from each of the Plumbing, Mechanical Services, Fire Services & Electrical Services specialisations.

### **3.9 Data management**

The Interview data was recorded by the interviewer in writing, through the use of summary notes. An audio of the interview was also recorded using a Dictaphone and kept for the record of the researcher, for the purpose of checking the summary notes and interpretation of the responses by the respondents. A summary transcript of each interview in a matrix format was also produced. This was used for the easy access of this information for the researcher.

The interview data is coded in multiple ways. Firstly the names and company names of the interviewees were not recorded on either the summary notes or the tape, instead a coding system was used for example Sub 1, Sub 2. Only the researcher and supervisor know which subcontracting firms relate to which code. The data will be further manipulated to prevent recognition of respondents by mixing responses to questions between each subcontractor reference.

The data will be stored on the personal laptop of the researcher. Only the researcher and the supervisor will have access to this information.

## **3.10 Reliability and validity**

### **3.10.1 Reliability**

Research reliability relates to “whether or not you get the same answer by using an instrument to measure something more than once” (Bernard, 2000, p. 47).

Reliability is therefore concerned with the consistency of the research. If the same research is conducted using the same data sources at a different time will the same results be established? To increase the reliability of the research all of the interviews were conducted by the same researcher, using the same questionnaire on which to base the interview. All of the interviews were also undertaken in the participant’s workplace which kept the formality of the interviews consistent across all of the interviews.

### **3.10.2 Validity**

Validity in research relates to “the accuracy and trustworthiness of instruments, data and findings in research” (Bernard, 2000, p. 46). In other words validity is concerned with whether the methods of research and the subsequent data from that research are accurate (Denscombe, 2007).

Validity is broken into two different sectors;

- 1) Internal Validity – Is the research measuring what it has set out to?
- 2) External Validity – can the result be generalised?

In order to increase the internal validity of the research, the researcher has taken the following precautions:

- The interview questionnaire which formed the base of the interview was peer-reviewed and then pre-tested to ensure the correct questions were being asked to answer the research question, and that the questionnaire was effective.
- The interviewees were selected using a process that ensured that they had adequate experience and held appropriate positions in their selected firms to answer the questions and provide reliable data.
- The interviewees were all asked to respond to the questions based on their experiences between the time period between mid 2008 and the end of 2010 to ensure that there was clarity around the timeframe of the period in question.

The external validity of this research is not considered high. This is because the sample selection was not random or of large enough size to be generalisable to the wider population of services subcontractors. It is also limited by its geographical focus (focusing on the Auckland construction market). Therefore the results of this study cannot be generalised to other trades or areas outside of the Auckland market.

### **3.11 Research ethics**

Before any data collection for this research was undertaken, thorough consideration was made regarding the ethics of the research. The methodology of the research was then submitted as an application for ethics approval to the Unitec Institute of Technology. This ensured all parties involved in the research were adequately protected in all of the ethical issues involved.

Guillemin & Gillam (2004) argue that ethical research extends beyond just the approval of a research ethics committee. They define ethics in two dimensions. The first dimension is the procedural ethics, such as the formal process of submitting applications to a research committee. This simply touches the surface of how to deal with ethical matters in research. The second dimension is what is described as “Ethics in practice” (Guillemin & Gillam, 2004). This dimension includes “ethical moments”. For example if a respondent incriminates themselves in a response, is it right to provide this information to the authorities? When undertaking the research it was therefore important to consider the ethical ramifications of the research being undertaken at all times, not just when submitting the ethics application form.

A number of precautions were taken to before the research. These were continued throughout the research. One of the five basic principles of research ethics is the ability of participants to “be able to make a voluntary, informed decision to participate” (Bouma, 2000, p. 194). The participants were made aware of the purpose of the research, who would have access to the research, and were made fully aware that it was a completely voluntary exercise. With no pressure applied to them to participate. Research consent forms were also signed off by the participants at the time of the interview.

It was also important that no harm came to those who chose to participate, or their firms, that chose to participate as a result of the research. Therefore the decision was made to retain the

anonymity of the participants, and make them aware that only the researcher and their supervisor would know their true identities. Careful consideration was also made regarding the selection of the questions to ensure that participants were not forced to provide any confidential or commercially sensitive information to the researcher.

### **3.12 Summary**

In order to answer the research question “What are the survival strategies used by Auckland services subcontractors to survive the economic downturn?” the researcher has proposed the use of a series of semi-structured interviews of senior managers of services subcontractors in the Auckland construction market. The use of this method enables effective collection of qualitative data for analysis. This method also reflects the work from previous researchers which has been constructed on similar topics. The questionnaire, which will form the basis of the interview, has been prepared based on the work by two previous studies by Lim, Oo & Ling (2010) and Pheng & Hua (2002). This will enable comparison of the results between the studies. A Likert scale, which questions the importance of the strategies used, has been developed and will provide further in-depth information for comparison with previous research. Open-ended qualitative questions at the end of the questionnaire also provide the researcher with the ability to probe for further information on the topics covered by respondents. The validity, reliability and the ethics of the research were also considered. In the following chapter the data collected from these interviews will be presented and analysed.



## 4 DATA

### 4.1 Introduction

During the data collection stage eight participants from services subcontracting firms were interviewed. These interviewees can be further split into the specific trades their company worked in; two from each of the mechanical services, fire services, electrical services & plumbing services trades. The interviewees were reminded at the start of the interview that their responses should be based around their experiences during the period between mid 2008 and late 2010. The findings are presented in this chapter in the same categories as Lim et al. (2010) used, with the results from Lim, Oo & Ling (2010) and Pheng & Hua (2002) presented along side.

### 4.2 Demographic Data

The first section of the questionnaire sought demographic information about the respondents and their companies. In particular this focused on establishing the type and degree of experience of the respondent, and the size of the organization.

Referring to table 1, half of the participants are Managing Directors of their respective organizations. One respondent General Manager and two were estimators. One participant was classified under other. This participant was a director. All of these roles fitted within the aim of interviewing senior managers of the firms, to ensure the respondents are adequately knowledgeable about the topic in question.

Q2	Position in Company	n=8
	Managing Director	4
	Shareholder	0
	General Manager	1
	Estimator	2
	Quantity Surveyor	0
	Project Manager	0
	Other	1

Table 1: Respondent's position within the company

As table 2 below shows, the respondents were generally very experienced in the construction industry with five of the eight interviewees stating that they had been in the industry for between 26 to 30 years. The remaining three respondents had between 6 to 15 years experience in the industry.

<b>Q3</b>	<b>Experience in Construction</b>	<b>n=8</b>
	0-5 Years	0
	6-10 Years	2
	11-15 Years	1
	16-20 Years	0
	21-25 Years	0
	26-30 Years	5
	More than 31	0

*Table 2: Experience in the industry*

Referring to table 3 below, the annual turnover of the companies ranged from \$1m to over \$7m. None of the respondents had an annual turnover of less than \$1m. Two of the eight companies had an annual turnover of \$1m - less than \$3m. For three of the companies turnover was over \$3m but less than \$5m, and the remaining three companies had a turnover of over \$7m.

<b>Q4</b>	<b>Company Turnover</b>	<b>n=8</b>
	\$0 - less than \$1m	0
	\$1m - less than \$3m	2
	\$3m - less than \$5m	3
	\$5m - less than \$7m	0
	Over \$7m	3

*Table 3: Company Turnover*

Referring to table 4 below, there was quite a spread in the responses in terms of how many employees were directly employed by the company. The range of responses was from less than 5 employees to over 31 employees. Three of the respondents employed over 31 employees, the highest category. The smallest two firms employed less than 5 employees. These were both contractors who were in the mechanical services trade; and they noted that they both used only contract labour on site.

Q5	No. of Employees	n=8
	0-5 employees	2
	6-10 employees	1
	11-15 employees	0
	16-20 employees	1
	21-30 employees	1
	Over 31 employees	3

*Table 4: Number of employees*

All of the companies indicated that the tendered procurement structure as being the source of the majority of their work. Two of the companies also noted that there were two other structures they used equally to the tender structure, with both GMP and Design and Build used by these firms as a source of work in addition to the tender market.

On the whole the companies have been operating for a long period of time, with seven of the eight companies having been in operation for more than twenty-one years. Three of these ticked the box with the longest time, being 31 years. The one company that fell outside this pattern has been in operation for less than five years, however it is a new division of a company which has been operating for over 22 years.

None of the companies interviewed operated outside of the North Island. Four of the companies operated North Island wide, one operated in the upper North Island whilst the other three operated in the Auckland area only.

### **4.3 Strategy Utilisation Data**

Part of the second section of the questionnaire collected information on which strategies the respondents used. The questionnaire asked the respondents to record if they had utilised the strategy during the economic downturn (either yes or no). The data showing the utilisation of strategies adopted by the participants is shown in tables 5, 6 and 7 below. These tables are in the same format as those presented by Lim et al. (2010) in their previous study. Table 5 focuses on “Contract Related” strategies, table 6 focuses on the “Cost Control” strategies and table 7 focuses on the “Financial” related strategy.

A number of strategies used by Lim et al. (2010) were deemed to be not applicable to the subcontracting market and therefore were not used. As a result these strategies were replaced by three strategies in the contract related section. These three strategies were increasing the focus on forming relationships with main contractors, increasing time and expenditure on marketing and trying to break into new sources of work (i.e. different main contractors). These three strategies were targeted specifically for subcontractors and therefore it is no surprise that they were highly utilised by the participants. As they were not included in the original study by Lim et Al. (2010), these strategies have no percentage score from this study and this figure has subsequently been replaced with an asterisks (\*). There were also several strategies that were worded slightly differently between the two research papers in order to keep the strategy relevant to the participants. For example the strategy ‘forming joint ventures with other subcontractors’ was adapted from “forming joint ventures with other contractors” in the Lim et. Al. (2010) paper. The percentages used to display the data collected by this research in the tables below are simply for ease of comparison with the findings of Lim, Oo & Ling (2010). It is recognised that using percentages to assess the data for such as small sample is an inaccurate way of displaying the results.

Table 5 below shows the frequency of ‘Contract Related’ strategies adopted by participants. The two most utilized strategies in this category were ‘Increasing the focus on forming relationships with main contractors’ and ‘Trying to break into new sources of work (i.e. different main contractors)’ with all 8 of the firms interviewed adopting these strategies. The next two strategies, ‘Bidding for more projects that are within the firms resources and capabilities’ and ‘Specialising in a particular expertise’ were both utilised by 7 of the 8 respondents. ‘Undertaking short-term and fast track projects’ and ‘Increasing time/expenditure on marketing’ were utilised by 6 of the 8 respondents. There were also three of the strategies in this category that none of the participants utilised. They were ‘Acquiring projects from defunct companies’, ‘Attempting mergers or acquisitions of other firms’ and ‘Venturing into overseas markets’.

<b>Frequency of "Contract Related" strategies utilised by participants</b>	Frequency	Percentage	Lim et. Al. percentage
Strategy	(N=8)		
Increasing the focus on forming relationships with main contractors	8	100	*
Trying to break into new sources of work (I.e. different main contractors)	8	100	*
Bidding for more projects that are within the firms resources and capabilities	7	87.5	94
Specialising in a particular expertise	7	87.5	56
Undertaking short-term and fast track projects	6	75	79
Increasing time/expenditure on marketing	6	75	*
Setting limits on project size so that any failure of one project would not endanger the firm's operation	5	62.5	94
Targeting smaller than usual contracts	5	62.5	76
Entering into forward contracts with suppliers and subcontractors to protect the firm against cost escalation	5	62.5	91
Forming partnerships with main contractors	5	62.5	50
Forming partnerships with construction clients	5	62.5	50
Bidding for projects with tiny/zero profit margins	3	37.5	88
Subcontracting work from other subcontractors	2	25	53
Forming joint ventures with other subcontractors	2	25	65
Diversifying into other construction-related business	2	25	82
Diversifying into different non-construction related business	2	25	24
Bidding for projects below cost	1	12.5	26
Acquiring projects from defunct companies	0	0	29
Attempting mergers or acquisitions of other firms	0	0	24
Venturing into overseas markets	0	0	53

*Table 5: Frequency of "Contract Related" strategies adopted by participants*

Table 6 below shows the frequency of 'Cost Control' strategies utilised by the participants. The strategy of 'Implementing stricter financial management on company cash flow' was utilized by all 8 of the respondents, whilst 'Implementing stricter site management to reduce material and time wastage' was utilized by 7 of the 8 respondents. The remaining strategies under this category were all employment related and ranged from zero respondents to 5 respondents utilising them. The two strategies that were not utilised by any respondents were 'Cutting employees' salaries' and 'Converting permanent employees into temporary placements/contract work'.

<b>Frequency of "Cost Control" strategies utilised by participants</b>	Frequency	Percentage	Lim et. Al.
Strategy	(N=8)		percentage
Implementing stricter financial management on company cash flow	8	100	100
Implementing stricter site management to reduce material & time wastage	7	87.5	100
Employing on a contract basis	5	62.5	71
Freezing bonuses	5	62.5	50
Freezing salaries of employees	3	37.5	91
Laying off employees	3	37.5	76
Freezing staff recruitment	2	25	91
Cutting employees' salaries	0	0	62
Converting permanent employees into temporary placements/contract work	0	0	35

*Table 6: Frequency of "Cost Control" strategies adopted by participants*

Table 7 below shows how well the single "Financial" strategy was utilised by the participants. Two of the 8 participants utilized this strategy. The remainder of the strategies that were included in this category by Lim et. Al. (2010) were deemed to be irrelevant to the subcontracting market.

<b>Frequency of "Financial" strategies utilised by participants</b>	Frequency	Percentage	Lim et. Al.
Strategy	(N=8)		percentage
Creating uncommitted financial resources	2	25	82

*Table 7: Frequency of "Financial" strategies adopted by participants*

#### 4.4 Strategy ‘Importance’ Data

Ranking of strategies (Mean Rating of Importance)	Mean Rating
Strategy	
Increasing the focus on forming relationships with main contractors	4.63
Implementing stricter site management to reduce material & time wastage	4.38
Implementing stricter financial management on company cash flow	4.38
Specialising in a particular expertise	3.75
Trying to break into new sources of work (I.e. different main contractors)	3.50
Entering into forward contracts with suppliers and subcontractors to protect the firm against cost escalation	3.38
Forming partnerships with construction clients	3.25
Increasing time/expenditure on marketing	3.25
Bidding for more projects that are within the firms resources and capabilities	3.13
Forming partnerships with main contractors	3.13
Setting limits on project size so that any failure of one project would not endanger the firm’s operation	2.88
Employing on a contract basis	2.88
Undertaking short-term and fast track projects	2.75
Freezing bonuses	2.38
Targeting smaller than usual contracts	2.25
Freezing salaries of employees	2.13
Laying off employees	2.13
Creating uncommitted financial resources	1.75
Freezing staff recruitment	1.63
Bidding for projects with tiny/zero profit margins	1.50
Forming joint ventures with other subcontractors	1.50
Diversifying into different non-construction related business	1.50
Bidding for projects below cost	1.25
Subcontracting work from other subcontractors	1.25
Diversifying into other construction-related business	1.25
Acquiring projects from defunct companies	1.00
Attempting mergers or acquisitions of other firms	1.00
Venturing into overseas markets	1.00
Cutting employees’ salaries	1.00
Converting permanent employees into temporary placements/contract work	1.00

*Table 8: Ranking of Strategies in terms of Mean Ratings of Importance*

Table 8 shows the overall ranking of strategies in terms of their Mean Rating of Importance. ‘Increasing the focus on forming relationships with main contractor’s was the strategy’ with the highest rank in terms of its importance, with a MR of 4.625. The second and third placed strategies both had the same MR, of 4.375. These were ‘implementing stricter site

management to reduce material and time wastage’ and ‘implementing stricter financial management on company cash flow’. The five least important strategies were ‘attempting mergers or acquisitions of other firms’, ‘venturing into overseas markets’, ‘cutting employees’ salaries’ and ‘converting permanent employees into temporary placements/contract work.’

## **4.5 Summary**

Chapter 4 has presented data collected in the interviews. In particular it focused on the quantitative data collected from section two of the questionnaire. The results included information on the respondents’ demographic, which strategies were used by the respondents to survive the economic downturn and why strategies were important during this time. Tables were used to present this data throughout the chapter. The next chapter, chapter 5, will discuss & analyse the data presented in this chapter.



## **5 Discussion & Analysis**

### **5.1 Introduction**

Chapter 5 provides a discussion of the data presented in Chapter 4. The first set of data which will be discussed is the demographic information. This is followed by the various strategies, which are broken down into different sub-categories to ascertain the answer to the research question ‘What are the survival strategies used by services subcontractors to survive the economic downturn?’. In this chapter these findings are also compared to that of previous research, in particular the research of Lim, Oo & Ling (2010), which is the basis of this study.

### **5.2 Demographic Information**

Assessing the demographic information shown in the previous chapter it would appear that as a whole the participants were experienced individuals who all would be classed as “Senior Managers” or above in their roles. This level of management was required to ensure that the quality of data was accurate. The experience of the participants was high with 5 of the 8 participants having been in the industry for more than 26 years. This is somewhat similar to the demographic information collected on the experience of participants in the Lim, Oo and Ling (2010) research. The average working experience of their respondents was 24.8 years compared to that of the respondents in this study, which was 21.125 years. It is also worthy of note that 5 of the 8 participants also had some form of directorship in the company. This is a reflection of the small management structures of subcontracting firms. Three of the firms were also on the larger scale of subcontractors. These three firms all had an annual turnover of more than \$7million and more than 31 employees.

### **5.3 Strategies**

A total of thirty strategies were used in the questionnaire, with respondents asked to first indicate if their firm had utilised the strategy during the recession. These strategies were based on the research by Lim, Oo & Ling (2010) which focused on the strategies used by Main Contractors in Singapore during the Asian Financial Crisis.

If the participants indicated that they did use the strategy, a further question was asked regarding how important the strategy was (on a scale out of 5, 1 being “Not Important” 5 being “Extremely Important”). Then further questions were asked of the respondents as to why they thought these strategies were or were not important. The data collected is discussed and analysed under the following sub categories;

### 5.3.1 Project Size

*Strategies 1, 2 and 3 of the second section of the questionnaire asked for responses regarding strategies involving project sizes.*

The number of companies from the sample that adopted each of the three strategies in the project size category are shown in the first column of table 9 below. With a frequency of 7 out of 8 respondents the first strategy, ‘bidding for more projects that are within the firms’ resources & capabilities’ was highly utilised. However its mean rating of importance was only 3.125, indicating that the respondents didn’t see it as one of the more important strategies. The four respondents who utilised this strategy and rated it as either ‘Very Important’ or ‘Extremely Important’ stated various reasons why they thought this was the case. The most common reason was as a result of what several contractors described as their “Strike Rate”, that is the number of projects they secured in relation to the number of projects they priced. The contractors noted that during the economic downturn their “Strike Rate” reduced dramatically. Therefore to secure the same quantity of work, the firms had to price more projects. This is why they utilised and believed this strategy was so important. Table 5 in the previous chapter shows a comparison between the data collected by this research and that collected by Lim, Oo & Ling (2010). This strategy was highly utilised by participants in both studies, with 87.5% of participants in this study and 94% of the participants in the 2010 study utilising this strategy.

Strategy	Freq Utilised (n=8)	Mean Rating of Importance (MR)
1. Bidding for more projects that are within the firms’ resources and capabilities	7	3.125
2. Setting limits on project size so that any failure of one project would not endanger the firms operation	5	2.875
3. Targeting smaller than usual contracts	5	2.25

*Table 9: Results for project size strategies*

Table 10 below shows the different responses from each sub-trade to the first strategy. The respondents from the electrical trade in particular didn't believe that this was an important strategy as the mean rating for that strategy was the lowest possible, 1 (Not important). This can be compared to the plumbing trade, from which both respondents actively utilised this strategy and recorded the highest possible mean rating of 5 (extremely important). The other two trades both fully utilised the strategy however only found it to be between 3 and 3.5 on the importance scale.

<b>Different Sub-trade responses to Strategy 1 - Bidding for more projects that are within the firms resources &amp; capabilities</b>				
	<b>Electrical</b>	<b>Plumbing</b>	<b>Fire Protection</b>	<b>Mechanical</b>
Utilisation (n=8)	1	2	2	2
Mean Rating of importance	1	5	3	3.5

*Table 10: Different sub-trade responses to strategy 1*

The two other strategies under the project size heading, 'setting limits on project size so that any failure of one project would not endanger the firm's operation' and 'targeting smaller than usual contracts' were both used by 5 out of the 8 respondents. This is also shown in table 9 above. Their mean rating was also reflective of this lower utilisation as they scored 2.875 and 2.25 respectively. Both strategies had relatively mixed responses from the participants, with generally a 50% split between the respondents as to whether the strategy was important during the recession or not. Those who actively restricted the project size they would bid for stated reasons such as being "Careful not to have all of their eggs in one basket", or that they like to stick to the area of the market that they know and are comfortable with during these times. There was also a mixed combination of responses when it came to whether the participants targeted smaller than usual contracts with some respondents recording that they found that these contracts were either better than the bigger projects in terms of profitability or equally important as any otherwork that they picked up during this period. One participant found that in their trade there was more competition for the smaller jobs and they were therefore less attractive. This level of competition was as a result of smaller contractors coming over from an even slower housing market to find work in the small commercial sector.

### **5.3.2 Forward Agreements with suppliers and subcontractors**

*Strategy 4 of the second section of the questionnaire asked for responses about the strategy of entering into forward contracts with suppliers & subcontractors to protect the firm against cost escalation.*

The fourth strategy provided to the respondents in section two of the questionnaire was ‘entering into forward contracts with suppliers and subcontractors to protect the firm against cost escalation’. The strategy was adopted by 5 of the 8 respondents and had a mean rating of importance of 3.375. This placed it at the 5<sup>th</sup> most important strategy of the 30 strategies.

All but one of the respondents from the electrical, plumbing & fire services trades noted that this strategy was either 4 or 5 on their importance scale. However the overall mean rating of this strategy was lower in the mechanical services trade. The two contractors in this trade responded to this strategy as “not utilised” and 1 on the importance rating. This is possibly a result of the type of projects that this particular subtrade undertakes. The materials and requirements for this trade are project specific. As both of the participants from this trade noted, this combined with the fact that the majority of their work is tendered makes it difficult to predict their up-coming resource requirements. As shown in Table 5 in the last chapter, 91% of the participants in the Lim et al. (2010) study adopted this strategy. If the subcontractors from the mechanical services trade were removed from the assessment of this strategy the percentage of participants who adopted this strategy in this study would increase from 62.5% to 84%. This is a more comparable number between the two studies and explains why there is such a difference between the two studies for this strategy.

### **5.3.3 Bid Margin Strategies**

*Strategies 5 & 6 of the second section of the questionnaire asked for responses regarding strategies involving bid margin strategies.*

The respondents generally reacted negatively to the two strategies involving bidding projects at tiny margins or below cost. As shown in table 11 below, strategy 5, bidding for projects with tiny/zero profit margins was utilised by 3 of the 8 respondents, with a mean rating of

importance of 1.5. Strategy 6, bidding for projects at below costs, was adopted even less often by the respondents, with only one of the eight firms using it. The mean rating of importance was understandably lower at 1.25. These results are dramatically different from those shown in the Lim et al. (2010) study. As shown in Table 5 in the last chapter, the previous study reported that 88% of their 34 respondents utilised the strategy of bidding for projects with tiny/zero profit margins. This can be compared to the 37.5% or 3 out of the total of 8 sub-contractors who utilised the strategy in this study. There could be a number of reasons for these discrepancies, the most obvious one being that the economic downturn which the Lim et al. (2010) research was based on was much more severe than this studies. Their study reported that the economic recession lasted for eight years, in comparison to the recent recession in New Zealand, which lasted only a few quarters. It could also be because Main Contractors find they have more of an ability to gain back their margin positions, as there is more control over the entire project after the job has been won and therefore they are more likely to take the risk of bidding with lower margins.

The second strategy under this category, bidding for projects below costs, was even less utilised with only one subcontractor acknowledging that they had done this during the downturn. At 12.5% of the sample this is still substantially lower than the 26% utilisation recorded by Lim et al. (2010). Comments from the participants about this strategy focused on the point that if you are not making any money from the project then there is no point in doing it.

Strategy	Freq Utilised (n=8)	Mean Rating of Importance (MR)
5. Bidding for projects with tiny/zero profit margins	3	1.5
6. Bidding for projects below costs	1	1.25

*Table 11: Results of bid margin strategies*

### 5.3.4 Specialisation

*Strategy 7 and 8 of the second section of the questionnaire asked for responses regarding fast track projects and specialising in a particular expertise.*

Undertaking short-term and fast track projects was used by 6 of the 8 participants and had a mean rating of 2.75. As a result it was rated in the middle of the strategies in terms of importance, as shown in table 8 in the previous chapter. The strategy of specialising in a particular expertise had the 4<sup>th</sup> highest ranking mean value of importance of all strategies provided to respondents. Its mean rating was 3.75, whilst 7 of the 8 respondents utilised the strategy to help them survive the economic downturn. The strategy of specialisation was the one strategy that was adopted by a much higher percentage of participants than the previous study by Lim et al. (2010). While 56% of the respondents in their study adopted the strategy, 87.5%, or 7 of the 8, subcontracting firms utilised the strategy in this research. This is possibly because it is a lot easier to specialise as a subcontractor. For example, a number of the subcontractors focused on particular types of electrical projects, or mechanical projects depending on the systems used in them. One electrical contractor in particular focused on projects with building management systems and sustainable design features as they were experienced in these types of projects. It is also possible that as the downturn was more severe during the time period that was the subject of the study by Lim et al. (2010), the main contractors who participated in that project were picking up whatever work they could, as opposed to being selective in the projects they specialised in.

### 5.3.5 Relationships

Strategies 9 to 15 of the second section of the questionnaire asked for responses regarding strategies involving relationships with both other subcontractors and clients of subcontractors.

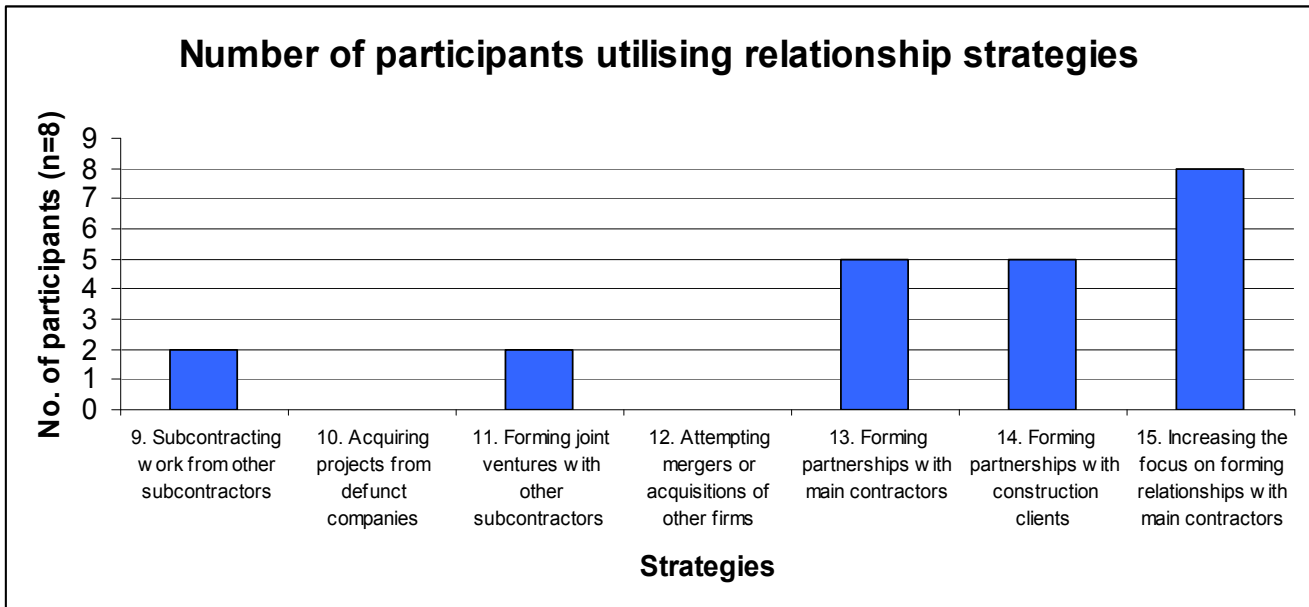


Figure 2: Respondents utilisation of relationship strategies

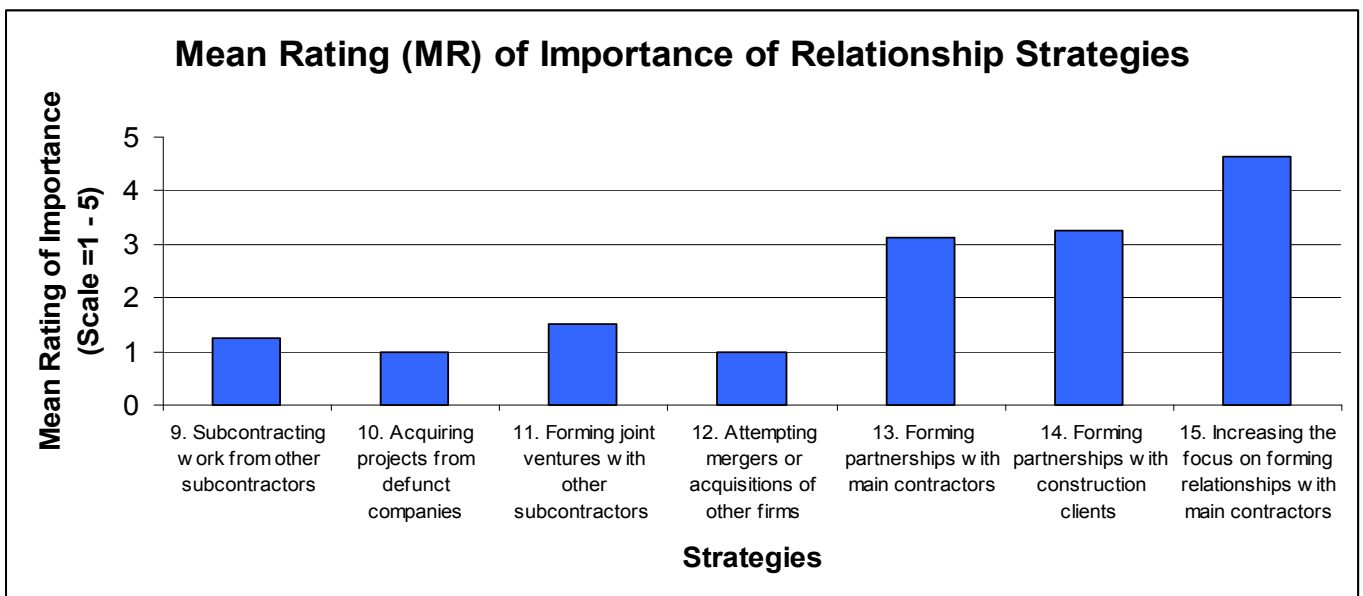


Figure 3: Mean Rating of Importance of relationship strategies

Figure 1 above shows the number of respondents who utilised each of the relationship strategies. Two of the strategies, acquiring projects from defunct companies and attempting mergers or acquisitions of other firms were not utilised at all. Therefore these two were equally the least utilised strategies in the study. Interestingly this is similar to the earlier study

by Lim et al. (2010), as shown in table 5 in the previous chapter, as in their study these were also two of the least utilised strategies with only 29% and 24% of their participants using these strategies. Possible reasons why projects were not acquired from defunct companies are that the services subcontractors were reluctant to pick up work from another company halfway through a project. The main reason for this is that they were concerned with the workmanship and systems already put in place and the problems that would occur trying to fix these to complete the project. Another factor could have been that there weren't the same number of companies which had become defunct because the economic downturn hasn't been as severe.

Both subcontracting work from other contractors and forming joint ventures with other subcontractors were adopted by only two of the eight respondents. Interestingly both of the contractors who utilised the strategy of forming joint ventures with other subcontractors were from the Fire Protection services trade. Both of these strategies were utilised twice as much by the main contractors in the study by Lim et al. (2010). This is possibly due to of the type of markets they are operating in. It is possibly a lot harder for subcontractors to subcontract work off other subcontractors because they are already so specialised that they cannot section off one area of work from their trade to package out to another subcontractor. The participants interviewed mentioned that if you did this the margins are extremely low and therefore this would have to be a last resort. Due to the low utilization of these strategies, they had a very low mean rating of importance.

Forming partnerships with main contractors & construction clients were both utilised by 5 of the 8 respondents. The Subcontractors interviewed had mixed feelings about forming partnerships with main contractors. Some mentioned it was really good to get in with the main contractors and try to secure work before pricing it through working together. A number of the contractors stated that they felt that both parties, main contractors and the subcontractors were better off by working together as they could both get what they wanted out of the partnership. This was offset by a couple of the participants stating that these types of partnerships never really worked in their trade as the main contractors are in such a competitive situation, particularly during a downturn, that they will often just accept the lowest price, or as they are in control try to make the partnership advantage them more than the subcontractor. This is also reflected in the literature found earlier in the research, particularly in the research by Dainty, Briscoe & Millett (2001) on supply chain alliances



between subcontractors and main contractor, the response from subcontractors was that main contractor's didn't fully comprehend the idea of partnering and the reasons main contractors undertook the practice was for their own good only (Dainty, et al., 2001). The subcontractors who utilised the strategy of forming partnerships with construction clients were generally from the mechanical, fire services & electrical services trades. This is possibly because these trades are more maintenance intensive than the plumbing trade. In fact all but one of the subcontractors from these trades utilised this strategy. The reason for doing so was that servicing and maintenance is such a large part of their business. This is particularly the case during the economic downturn, a number of the contractors stated that the contracting side of their businesses retracted, whilst the maintenance & upgrade side of their businesses were consistent or even increased output. In the same survey as mentioned above Dainty, et al. (2001) noted that some subcontractors had success in alliances with client organizations but believed that such relationships with main contractors were much more problematic.

Strategy number 15, increasing the focus on forming relationships with main contractors, was one of only three strategies that were adopted by all 8 respondents. This was one of the three strategies that were not included in the study by Lim et al. (2010) and therefore a comparison isn't possible. However this strategy had the highest mean rating of importance of all strategies in this research. With a rating of 4.65, all of the contractors rated this strategy at either 4, very important, or 5, extremely important, on the scale. Therefore it is not surprising that the response from a number of the participants was extremely positive when asked why this strategy was so important. One participant stated that "Its all about relationships" when referring to the survival of their business. The participants also noted that these relationships are not only a great source of information and new work, but once they are established they also help improve the profitability of projects. Once you have a relationship with a main contractor and you know how each other's business works, you can work together better and have less problems; problems which in turn cost each other money.

### **5.3.6 Marketing and new work sources**

*Questions 16 and 17 of the second section of the questionnaire asked for responses regarding strategies around marketing and new work sources.*

There were two strategies which the participants were asked to respond to regarding marketing and new work sources. The responses to these two strategies are shown in table 12 below. Strategy number 16, ‘increasing time/expenditure on marketing’ was utilised by 6 of the 8 firms and had a mean importance rating of 3.25. The second strategy in this category, marketing and new work sources was adopted by all 8 of the respondents. However, when considering this strategy and comparing it to the other two strategies which were utilised by all of the contractors, its mean rating of importance is relatively low, with a rating of only 3.5. The reason for this is the contractors all stated that during the downturn they attempted to break into new sources of work, in an attempt to increase the amount of work they priced and therefore that they could win. However a number of the contractors found that for the most part, the sources of work that they were trying to break into were already dominated by solid relationships with their opposition. Therefore the contractors were struggling to pick up any work from these new sources, as the work would be won by, or sometimes given to their opposition. As they didn’t actually pick up any new work from these sources, this strategy wasn’t a significant help to many of them to survive the recession This is why the strategy has such a low mean rating of importance.

A number of the subcontractors also increased their time and expenditure on marketing during the recession, with one subcontractor even going as far as launching a radio advertising campaign. The participants that did increase their marketing during this time stated it was very effective at increasing the brand awareness of their business. However the effectiveness of this marketing in terms of picking up work wasn’t rated as great . For the most part the participants stated that the time and money spent on marketing would be better spent on strengthening relationships.

Strategy	Freq Utilised (n=8)	Mean Rating of Importance (MR)
16. Increasing time/expenditure on marketing	6	3.25
17. Trying to break into new sources of work (i.e. different main contractors)	8	3.5

*Table 12: Results of marketing and new work source strategies*

### 5.3.7 Diversification

*Strategies 18-20 of the second section of the questionnaire asked for responses regarding diversification.*

The three diversification strategies which were included in the questionnaire were, on the whole, not well utilised or highly rated in terms of importance. This supports the data above regarding the strategy of ‘specialisation in a particular expertise’, which was adopted by the majority of the respondents and had a relatively high mean rating of importance. As shown in Table 13 below, the first strategy of diversification, ‘venturing into overseas markets’, was not adopted by any of the firms and therefore was rated as not important by any of the firms. The other two strategies in this category, ‘diversifying into other construction-related business’ and ‘diversifying into different non-construction related business’ were both adopted by two of the contractors. One contractor in particular utilised both of these strategies. However as a result of the low level of utilization neither of these strategies had a mean rating of importance of more than 1.5.

With reference to Table 5 in the previous chapter there was a large difference between the current research and that of Lim, et al. (2010) with regard to the utilization of the strategy ‘diversifying into other construction-related business’. In the previous research 82% of the participants utilised this strategy. However in the current research only 25%, 2 of the 8 participants utilised the strategy. It is possible that the reason why this is the case is that the services subcontractors are so specialised. As one of the participants noted, it is due to this specialisation that if they were to diversify into another construction related business, they would have to retrain their staff or hire new expertise. This is because all of their staff are trained for their current specialty i.e. their current trade. The main contractors who were participants in the Lim, Oo & Ling (2010) study would possibly have an easier task in diversifying into another area of construction.

The strategy of ‘venturing into overseas markets’ was not utilised by any of the contractors. This could possibly be attributed to the fact that the economic downturn, which is the subject of this study, wasn’t as severe as that in the previous study, and therefore there was enough work available in New Zealand for the survival of these companies without the need to move their business into overseas markets.

Strategy	Freq Utilised (n=8)	Mean Rating of Importance (MR)
18. Venturing into overseas markets	0	1
19. Diversifying into other construction-related business	2	1.25
20. Diversifying into different non-construction related business	2	1.5

*Table 13: Results of diversification strategies*

### 5.3.8 Cost reduction

*Questions 21 and 22 of the second section of the questionnaire asked for responses regarding cost reduction*

As shown on table 14 below, the strategies involving cost reduction were both highly utilised and viewed as very important by the respondents. The first strategy in this category is implementing stricter site management to reduce material & time wastage. This was utilised by 7 out of the 8 respondents. The second strategy was implementing stricter financial management on company cash flow. This strategy was adopted by all 8 of the firms interviewed. Both strategies also had relatively high mean ratings of importance at 4.375. This placed these strategies at second equal in terms of ranking of importance..

Strategy	Freq Utilised (n=8)	Mean Rating of Importance (MR)
Implementing stricter site management to reduce material and time wastage	7	4.375
Implementing stricter financial management on company cash flow	8	4.375

*Table 14: Results of cost reduction strategies*

As shown in Table 5 in the previous chapter, both of these strategies were also well utilised by the participants in the previous study. In the Lim, et al (2010) study 100% of the

participants adopted both of these strategies. This more recent study found very similar results with 8 of the 8 (100%) of participants utilising one of these strategies and 7 of the 8 (87.5%) of the participants utilising the other during the discussed timeframe. It is interesting to note that although there are a number of differences between the studies such as location, size of companies, focus on main contractors compared to subcontractors and the size of recession, these figures are still very similar. Stricter site management is something that many of the companies said they always try to achieve. However with the tighter margins during the downturn it became a more pressing issue. This is also something that the firms actually have day-to-day control over themselves (no matter how much work is on), as opposed to a number of the other strategies which are implemented as a result of external effects on their business, resulting from factors such as the economic conditions.

When it came to company cashflow there were a number of contractors who actively changed their rules around purchasing, often only allowing senior staff to purchase goods of a certain value, or approvals by directors before purchases could be made. There was also a lot of comment from the participants regarding stricter management of their inwards cashflow. In particular this involved checking that they were being paid the correct amount and on time. Also a number of companies implemented processes to ensure that the inwards cashflow wouldn't be held up by main contractors. The importance of this strategy is also reflected in the literature. Mutti & Hugh's (2002) research suggest that one of the major causes of construction firm failure is lack of financial control.

### 5.3.9 Employment

Strategies 23 to 29 of the second section of the questionnaire asked for responses regarding strategies around employment.

Figure 3 below shows the number of respondents who utilised the seven different strategies involving employment. None of the 8 respondents utilised the strategies of cutting employees or converting permanent employees into temporary placements or contract work. Two of the contractors froze recruitment, three of the contractors either froze salaries or laid off employees, whilst five of the eight participants noted that their firms employed on a contract basis and froze bonuses over the economic downturn.

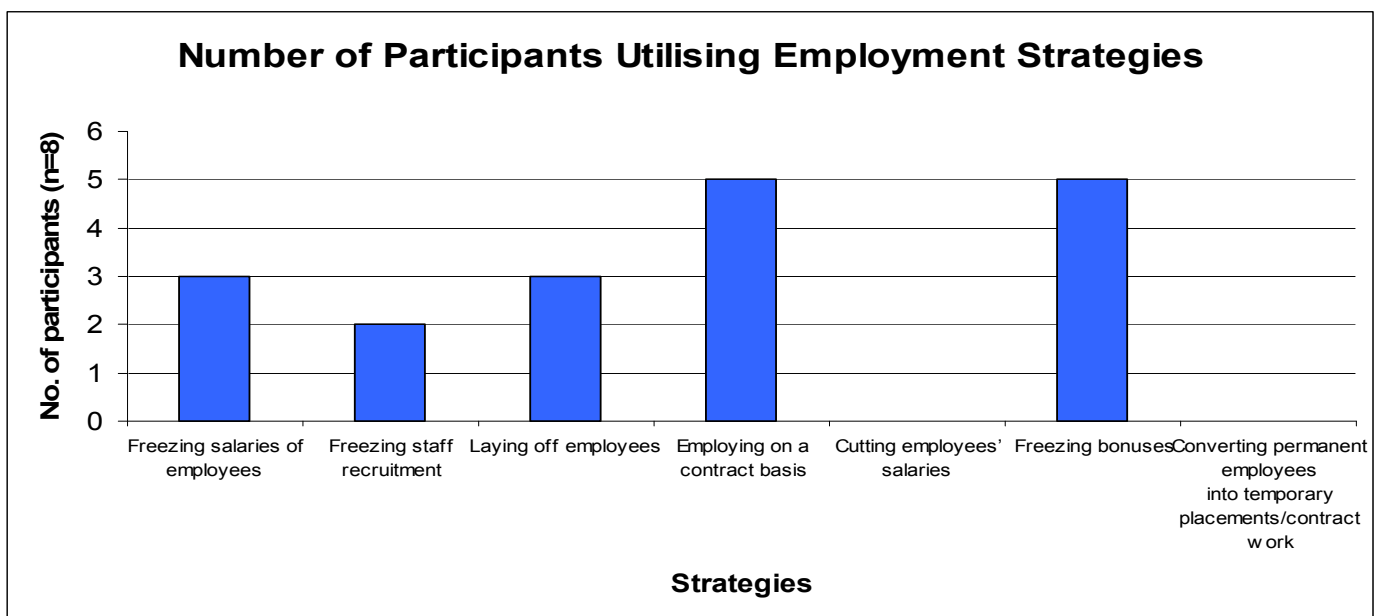


Figure 4: Number of participants utilising employment strategies

Generally the seven strategies related to employment were utilised less by the subcontractors who were the subject of this study than the main contractors participating in the study by Lim, et al. (2010).

The strategies of 'employing on a contract basis' and 'freezing bonuses during the downturn' were both utilised by 5 of the 8 (62.5%) of participants and, as shown in figure 3 above, were therefore the two most utilised employment strategies. Referring to table 6 in the previous chapter, this is comparable with the findings of Lim et al. (2010) who found that 71% of their participants employed on a contract basis during this time, and 50% of their participants froze employee bonuses during this period.

The largest difference between the studies is in the strategy of ‘freezing staff recruitment’. Only 2 of the 8 (25%) of the participants in this study utilised this strategy during the recession. However 31 of the 34 (91%) of the participants in Lim et al.’s (2010) research recorded that they had used it during their downturn. This could be attributed to the severity of the downturns. The economic recession in Singapore, which the Lim et al. (2010) paper was based on, was much more severe and the recessionary period lasted eight years, whereas New Zealand’s recessionary period only lasted a number of quarters. It could also be a result of the tighter employment structures that are run by subcontractors, when compared to main contractors. As shown in table 4 of the previous chapter, two of the subcontractors interviewed employed less than 5 employees. As their core staff is so small anyway, they are unlikely to have a staff recruitment program or plan at all, choosing instead to pick up contract workers when required.

As shown in figure 4 below the mean rating of importance of employment strategies as a whole was relatively low with no strategies achieving a mean rating of over 3. The highest mean rating of these strategies was employing on a contract basis which had a mean rating of 2.875. The next was freezing bonuses which had a mean rating of 2.375, whilst as with the utilisation frequency, freezing salaries and laying off employees had the exact same mean rating, of 2.125. Both of the strategies which were not utilised by the firms had a mean rating of 1 (the lowest possible).

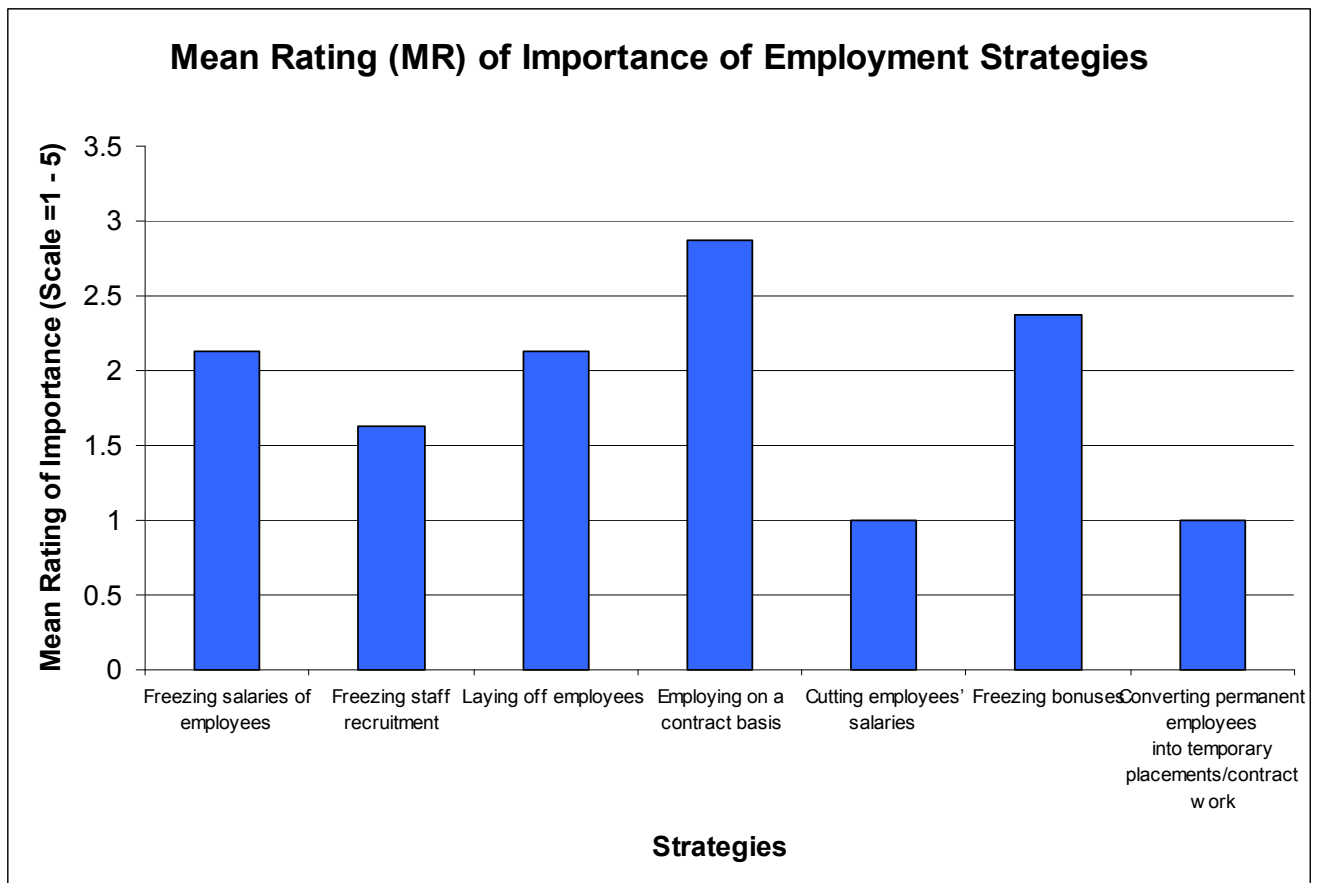


Figure 5: Mean Ratings of importance of employment strategies

There were a number of comments from the participants about the employment strategies. The most common comment was that the senior management thought communication to staff was of vital importance during this time. “In a recession communication with employees is the biggest thing.” In particular making sure that they are aware that, although times may be tough, that their jobs are safe was seen as important. This reflects the findings in the literature, Hillebrant et al. (1995) noted that one of the bigger issues with employment in the construction industry during economic downturns was moral. All the participants stated that they wouldn’t have been able to cut any of their employee’s salaries. The main reason for this is that the employees’ would just leave. Further to this a number of the firms stated that they didn’t freeze salaries or freeze bonuses during this period. They noted it was important to reward employees for good work; otherwise the employees wouldn’t work as hard. A couple of companies noted that employing on a contract basis was extremely important to their business, this is why it has the highest mean ranking of importance of all of the employment strategies as shown in figure 4 above. These were the businesses which had the smaller core



staff numbers of 0 to 5. Their reasoning for using such a strategy was to enable the company to adjust its size and capability depending on how much work they have.

### **5.3.10 Financial Resources**

*Strategy 30 of the second section of the questionnaire asked for responses regarding the strategy of creating uncommitted financial resources.*

The last strategy was ‘creating uncommitted financial resources’. Two of the eight respondents noted that they had adopted this strategy. Both respondents, who were from separate sub –trades, noted that they thought this strategy was ‘very important’ and therefore rated it 4/5 on the importance scale. However as there were only two respondents who believed this, the mean rating of importance was much lower at 1.75. With Reference to Table 7 in the previous chapter, the adoption of this strategy by the firms in the Lim, Oo & Ling study appear to be much higher with 82% of the firms using the strategy. This is compared to 25% or 2 of the 8 firms that utilised the strategy in the current study.

## **5.4 Summary**

This chapter has analysed and discussed the data found and presented earlier in chapter 4. Both qualitative and quantitative data was collected and analysis was undertaken under the sub-category headings of the different strategies. The analysis has provided answers to the research question ‘What are the strategies used by services subcontractors to survive the economic downturn?’. In particular the analysis has found that strategies based on relationships with main contractors and cost reduction were the most utilised by the participants. These were also selected as being the most important strategies. The least used and least important strategies included strategies involving relationships with other subcontractors, diversification and cutbacks to employment. Qualitative responses were used to analyse why these strategies were or were not utilised and their importance to the firms. The next chapter, chapter 6, will provide conclusions from this study.

## **6 Conclusion**

### **6.1 Introduction**

The following chapter concludes the research and summarises the findings of the research. The chapter goes on to discuss the limitations of the research and suggestions for future research on the topic.

### **6.2 The Research**

The literature review revealed that recessions and economic downturns have a proportionately large effect on the construction industry. Consequently firms in the industry have to make adjustments to survive such downturns. Many research papers regarding the effect of recessions on construction firms were found, and other papers were discovered on the subsequent changes to strategies of construction firms to survive these recessions. These papers, such as that by Lim, Oo and Ling (2010), focused on main contractors in the construction industry. As a result it was found that little research had been undertaken on the subcontracting industry and there was no previous research on the strategies used by the New Zealand subcontracting industry during these times. This research therefore focuses on this area of research by answering the question ‘What are the strategies used by services subcontractors to survive the economic downturn?’.

A series of semi-structured interviews with senior managers of subcontracting companies were conducted. a questionnaire was used in these interviews. This was developed by the researcher based on the information taken from the research by Lim, Oo and Ling (2010). The quantitative data collected from these interviews focused on whether the firms utilised the particular strategies listed. A further question was asked regarding how important the participants thought this strategy was to the survival of the business during this time. A further qualitative open-ended question asked for more in-depth information as to why the strategies were deemed to be important or not.

### 6.3 Key Findings

Analysis of the data collected in the research illustrated that the three most important strategies were ‘increasing the focus on forming relationships with main contractors’, ‘implementing stricter financial management on company cash flow’ and ‘implementing stricter site management to reduce material and time wastage’. This is slightly different from the most utilised strategies, which were ‘increasing the focus on forming relationships with main contractors’, ‘trying to break into new sources of work (i.e. different main contractors)’ and ‘implementing stricter site management to reduce material and time wastage’. It is very possible that the main reason a couple of these strategies was the most important and most utilised is because they were the most specific to the sub-trade section of the industry. The other two, regarding stricter management on site and stricter management of cash flow were similarly two of the most utilised strategies in the previous study by Lim, et al. (2010). Another similarity to this previous study was that the strategy ‘bidding for more projects that are within the firms resources and capabilities’ was highly utilised.

The more in-depth, qualitative responses to the strategies above found that the importance of relationships, particularly with main contractors (their source of work) is extremely important to the survival of subcontractors. This is because these relationships form the basis of securing projects which provide their income. This research found that out of all the strategies which focused on securing more work for the firm, ‘Increasing the focus on forming relationships with main contractors’ was deemed to be the most important. This is largely because this was the most effective strategy for securing work. The other most important strategies focused on cost control, ‘Implementing stricter financial management on company cash flow’ and ‘implementing stricter site management to reduce material and time wastage’ were deemed to be particularly important to the subcontractors as these were strategies which were within their day-to-day control.

## **6.4 Limitations**

The sample size of this research, being 8 participants, was comparatively small compared to the previous research. The effect of this smaller sample size is that the scores provided are not necessarily reliable.

This research was also based on previous research on main contractors in the construction industry. This was due to the lack of previous research on the topic with a focus on sub-trades. As a result some of the strategies used for this research were less relevant to the services sub-trades and more relevant to the main contracting sector of the industry. While these differences were minimised where possible, they still may have had an effect on the results.

## **6.5 Future Study**

There are a few areas of potential future research that have been highlighted by this work.

Some literature recorded overseas research into the effect of a recession on construction firms (in terms of profitability, employment and revenue). Further research could investigate such effects on subcontracting firms, or particularly New Zealand subcontracting firms.

The findings of the research show that there was little consideration given by firms attempting to reduce staff levels during the economic downturn. However it is well documented that the unemployment level increased dramatically during this time. Considering the significant impact of such a downturn on the construction industry, it would be interesting to investigate the effect that the recession actually had on employment in the industry. In particular, effects on the main sectors of the industry (i.e. subcontracting, main contracting, consulting) could be compared.

There were a number of strategies mentioned above which were rated the most important strategies to subcontractors during this time. Future research could explore how these strategies were implemented (i.e. how a firm goes about 'Increasing the focus on forming relationships with main contractors').

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## **7 APPENDIX**

# Questionnaire: Services subcontractors' strategies to survive the economic downturn

## Section 1: Demographic Information

1 What trade does your company specialise in?

- Electrical Services
- Plumbing Services
- Mechanical Services
- Fire Services
- Other

2 What position in this company do you hold?

- Managing Director
- Shareholder
- General manager
- Estimator
- Quantity Surveyor
- Project Manager
- Other

3 How long have you worked in the construction industry?

- 0-5 Years
- 6-10 Years
- 11-15 Years
- 16-20 Years
- 21-25 Years
- 26-30 Years
- More than 31 years

4 What is the approximate annual turnover of your company?

- \$0 - less than \$1m
- \$1m - less than \$3m
- \$3m - less than \$5m
- \$5m - less than \$7m
- Over \$7m

5 How many employees does your company employ?

- 0-5 employees
- 6-10 employees
- 11-15 employees
- 16-20 employees
- 21-30 employees
- Over 31 employees

6 What procurement structure is the source of the majority of your work?

- Tendered
- Negotiated
- GMP
- Design/Build

7 How many years has your company been operating?

- 0-5 Years
- 6-10 Years
- 11-15 Years
- 16-20 Years
- 21-25 Years
- 26-30 Years
- Over 31 Years

8 Where does your company operate?

- Auckland - Particular Suburbs
- Auckland Wide
- Upper North Island
- North Island Wide
- New Zealand Wide
- South Pacific
- Worldwide

**Section 2: Strategies used to survive the economic downturn**

Please first tick if your company has utilised each strategy during the period of economic downturn from mid 2008 to late 2010. Then, go back, and if you have ticked that the strategy was used tick a rating from the following scale in terms of the Importance of each strategy to the survival of your company during the same period of economic downturn.

		Has your company used this strategy?	1 Not Important	2 Slightly Important	3 Somewhat Important	4 Very Important	5 Extremely Important
1	Bidding for more projects that are within the firms resources and capabilities						
2	Setting limits on project size so that any failure of one project would not endanger the firm's operation						
3	Targeting smaller than usual contracts						
4	Entering into forward contracts with suppliers and subcontractors to protect the firm against cost escalation						
5	Bidding for projects with tiny/zero profit margins						
6	Bidding for projects below cost						
7	Undertaking short-term and fast track projects						
8	Specialising in a particular expertise						
9	Subcontracting work from other subcontractors						
10	Acquiring projects from defunct companies						
11	Forming joint ventures with other subcontractors						
12	Attempting mergers or acquisitions of other firms						
13	Forming partnerships with main contractors						
14	Forming partnerships with construction clients						
15	Increasing the focus on forming relationships with main contractors						
16	Increasing time/expenditure on marketing						
17	Trying to break into new sources of work (I.e. different main contractors)						
18	Venturing into overseas markets						
19	Diversifying into other construction-related business						
20	Diversifying into different non-construction related business						
21	Implementing stricter site management to reduce material & time wastage						
22	Implementing stricter financial management on company cash flow						
23	Freezing salaries of employees						
24	Freezing staff recruitment						
25	Laying off employees						
26	Employing on a contract basis						
27	Cutting employees' salaries						
28	Freezing bonuses						
29	Converting permanent employees into temporary placements/contract work						
30	Creating uncommitted financial resources						



**Section 3: Further Questioning**

1	<b>Why has your firm used the strategies which you have rated at either 4/5 on the Importance Scale? Why do you think they have been so important?</b>

2	<b>Why has your firm used the strategies which you have rated at either 1/2 on the Importance Scale? Why do you think they have not been so important?</b>

## **Participant information form**

My name is Bevan Scott. I am currently enrolled in the Bachelor of Construction degree in the Department of Construction at Unitec Institute of Technology and seek your help in meeting the requirements of an Industry Project which forms part of this degree.

### **About this research**

The aim of this research project is to identify the strategies employed by Services subcontractors to survive an economic downturn and to understand which of these strategies were important and why.

I request your participation in the following way: A face-to-face interview on the topic of strategies which subcontractors use to manage the recession. The information collected from these interviews will be based on your knowledge and experiences and will be used, in conjunction with data gathered from other subcontractors.

You were selected as a participant because of your knowledge and experience in the field of subcontracting. In particular your company is a good fit for the research, which will help to provide an even representative spread amounts the services trades.

### **Confidentiality**

Neither you nor your organisation will be identified in the project report. The data collected will be seen only by the researcher and supervisor of the project. All personally identifying features will be removed from any published material. Your participation and contribution will be strictly confidential.

You are free to ask me not to use any of the information you have given, and you can, if you wish, ask to see the report before it is submitted for examination.

The completed report may be accessed from the Unitec library for future reference. Data resulting from this project may be used to contribute to conference or academic journal papers based on this research

### **Further information**

I hope that you will agree to take part and that you will find your involvement interesting. If you have any queries about the research, you may contact me:

Bevan Scott  
Bevan@lawtons.co.nz  
027 667 9858

Or contact my supervisor at Unitec:  
Derek Thurnell  
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# The survival strategies of Singapore contractors in prolonged recession

Strategies of  
Singapore  
contractors

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## Abstract

**Purpose** – Contractors adopt various strategies to achieve their firms' objectives of continued existence and further development, and to guide the relationship between the firms and the business environment within which they operate. An economic recession drives firms to undertake unusual steps to survive within an environmental context. The purpose of this paper is to examine the survival strategies of Singapore contractors in the eight years of unprecedented recession in the industry from 1997 to 2005 are examined.

**Design/methodology/approach** – In total, 34 interviews were conducted with senior executives of large and medium-sized construction firms in Singapore to identify their survival strategies during the recession period.

**Findings** – Three categories of strategies are identified: contracting-related actions, cost-control related actions, and financial-related actions. The results show that most contractors opted to bid for more projects that are within their firms' resources and capabilities in contracting for jobs. To control cost, all contractors implemented stricter site management on material wastage, stricter financial management on firms' cash flow, stricter and procurement procedures. The majority of them froze salaries and stopped hiring. In order to remain solvent, most contractors set aside a sum of money from their reserves for unforeseen circumstances.

**Practical implications** – Contractors should learn how to stay adequately lean in managing their business in order to be flexible and responsive to changes within the business environment. The findings highlight the importance of effective cost, risk, relationship and resource management.

**Originality/value** – The findings provide valuable lessons to construction firms in preparing for volatile market conditions during a recession.

**Keywords** Recession, Management strategy, Singapore

**Paper type** Research paper



## Introduction

The economic cycles of boom and bust which may result from either internal or external shocks or both are not unusual for any country. As globalisation continues to dissolve boundaries across the world, more economies are increasingly subjected to external shocks that might trigger economic recessions, which may lead many



businesses to bankruptcy or liquidation. Taking an example of the 1989-1993 recession in the United Kingdom (UK), there were 15,051 business failures in 1990 and this increased to 21,827 in 1991 (British Chamber of Commerce, 1992). This means that one in every 38 active British businesses went into bankruptcy during the recession. Richardson *et al.* (1992) highlighted that even the big and cash-rich UK corporations in banking, motoring vehicles, air, defence and chemicals sectors struggled to survive economic downturns. In Singapore, there was a soar in the number of company cessations from 3,730 cases in 1997 to 5,409 cases in 1998, representing a 45 per cent increase (Department of Statistics, 1999) following the financial crisis in 1997 that triggered economic recessions within the Association of Southeast Asian Nations (ASEAN) member countries. For comparison purposes, it should be noted that the average number of company cessations in Singapore was 2,690 cases during the periods 1994-1996 (Department of Statistics, 1998, 1999).

Similar to other economic sectors, the construction industry is not spared from the economic cycles of boom and bust episodes. In Singapore, almost 97 per cent of contractors were badly hit by the 1997 Asian financial crisis (*The Contractor*, 1998). As a result, a sharp increase of 49 per cent in the number of construction firm cessations was recorded, i.e. from 205 cases in 1997 to 306 cases in 1998 (Department of Statistics, 1999). Many large-sized contractors (e.g. Econ Corporation, Neo Corporation and Wan Soon Construction) went into liquidation during the 1997-2005 recession (*The Business Times*, 2004; *The Straits Times*, 2006).

Contractors need to adopt various strategies in response to a recession to ensure their continued existence. Studies on contractors' responses to recessions have been carried out in different countries, as shown in Table I. Notwithstanding the respective industry settings in these studies, it can be seen that some common actions taken by contractors in response to recessions are:

- moving or diversifying into new market areas;
- implementing stricter financial management;
- building long term relationships with clients;
- submitting a lower tender price to secure projects;
- placing greater emphasis on marketing, and effective planning and management;
- minimising staff redundancies; and
- placing greater emphasis on core businesses.

Two studies were conducted within the context of the Singapore construction industry by the Singapore Contractors' Association Ltd (SCAL) in *The Contractor* (1998) and Low and Lim (2000) on the responses of Singapore contractors to the Asian financial crisis (Table I). However, their findings could only reflect the initial responses of Singapore contractors to the early wave of the 1997-2005 recession. They did not consider the strategies adopted by Singapore contractors in response to the prolonged 1997-2005 recession that lasted eight years, particularly where the deep recession occurred in 2003 when local construction demand plunged to its lowest point ever since 1991 (Department of Statistics, 2004). Nevertheless, it is acknowledged that their findings could be used to map the reformulation of Singapore contractors' responses throughout the long recession. This objective of this study is to identify the actions taken by Singapore contractors in response to the prolonged recession during 1997 to

Actions	US1	US2	UK1	UK2	NZ	SG1	SG2
Cutting bonuses and overtime				✓			✓
Developing a stable network of regular subcontracting parties				✓	✓		✓
Developing new relationships with clients		✓		✓	✓		✓
Explaining current difficulties to staff							✓
Focusing on competitive bidding for subcontracting work							✓
Freezing salaries							✓
Implementing stricter financial management				✓	✓		✓
Improving safety records	✓						
Increasing the amount of working capital	✓			✓			
Joint venturing with other firms to further explore business opportunities						✓	
Learning new skills to further explore business opportunities		✓					
Minimising staff redundancies				✓	✓	✓	
Moving or diversifying into new market areas or other lines of business	✓	✓		✓			
Placing greater emphasis on core businesses			✓	✓		✓	
Placing greater emphasis on employees' needs			✓				
Placing greater emphasis on marketing, and effective planning and management	✓			✓			✓
Placing greater focus on the long-term goals of a firm			✓				
Providing better contracting services (e.g. providing financial packages)				✓			
Seeking flexibility in resources, cost structure and financial structure	✓						
Submitting a lower tender price to secure projects				✓		✓	✓
Tightening of organisational structure				✓			
Trying new methods and technologies for improved productivity	✓						✓

**Table I.**

Summary of some common actions taken by contractors in response to a recession

2005. It provides valuable insights to construction firms in preparing for volatile market conditions during a recession.

**Research design and method**

A survey design was chosen over other research designs (e.g. case study, experimental design, archival research and historical research) due its ability to provide a relatively quick and efficient means of obtaining information concerning contractors' responses to the 1997-2005 recession from the targeted respondents. Data were collected from face-to-face semi-structured interviews where interviewees were requested: to answer questions, mainly guided by a list summarising different types of potential responses identified in the literature which they would adopt in a recession, and to justify the use of particular practices/actions as well as to highlight any practices/actions which were not incorporated in the list. The need is recognised to ensure the interviewees' institutional memories are reliable at the time of the interviews, i.e. between October and December 2007. The semi-structured interviews were thus started with a

discussion on cases of construction business failures and the industry's economic situations in an attempt to refresh the interviewees' memories on the 1997-2005 recession. Each interview took an average of 90 minutes. We believed that industry practitioners who are willing to spend time on non-rewarding academic studies will respond genuinely, since many stated they would do so. The selection of interviewees was restricted to senior management (such as managing directors and general managers) to uphold the reliability and validity of the data obtained. In this case, it should be noted that the identification of other possible practices/actions would not be feasible using a self-administered postal questionnaire survey, despite its ability to have wide coverage in a relatively quick manner.

### **Research sampling**

The large and medium-sized general building Singapore contractors we targeted are Groups A1, A2 and B1 contractors listed in the Building Construction Authority's (BCA) Contractor Registry (as of 13 June 2007). These three groups of contractors were categorised in accordance to their financial grades:

- A1 contractors – unlimited tendering limit with a minimum paid up capital of \$S15 million (m);
- A2 contractors – \$S65m tendering limit with a minimum paid up capital of \$S6.5; and
- B1 contractors – \$S30m tendering limit with a minimum paid up capital of \$S3m.

Through a pilot study, other groupings (i.e. B2, C1 and C2) were found to be unsuitable in this study because they are made up of small firms that tend to work as subcontractors to large contractors.

In an attempt to enhance the validity of this study, the sampling frame had undergone a filtering process. This involved a comparison of the list of contractors registered (i.e. A1, A2 and B1 contractors) in the BCA's Contractors Registry between 1997 and 2007. A total of 91 contractors who appeared in both lists were identified for the study. It is believed that these firms had adopted various strategies to tide over the 1997-2005 recession. All the 91 construction firms were contacted in order to increase the response rate. This process also reduced the problem of possible biases that arise from the sampling method.

### **Characteristics of respondents**

A total of 34 interviews were conducted with personnel of the targeted construction firms, consisting 28 local and six foreign firms with the firm ages ranging from 17 to 81 years old (based on 2008). Of these, 17 were from Group A1, nine were from Group A2 and the remaining eight were from Group B1. This represents a response rate of 37 per cent, which appears both representative and reasonable. It should be noted that no conscious effort was made to exclude the six foreign contractors in the sample involved because they are localised firms with independent profit centres, as noted in the Discussion.

All the interviewees were from senior management levels including managing directors, directors, general managers and senior contract managers who were key

decision makers in their organisations. From the discussion, it is noted that they had extensive working experience in the Singapore construction industry, ranging from 17 to 36 years. An average working experience of 24.8 years was obtained, indicating that most interviewees have at least 20 years' experience of working in the Singapore construction industry. Based on this information, their views and justification are deemed to be noteworthy and reliable.

### Results

From the interview findings, 33 actions taken to ride the eight-year recession period were identified. These were organized into three categories, following Hillebrandt *et al.* (1995):

- (1) contracting-related strategy;
- (2) cost-control related strategy; and
- (3) financial-related strategy (see Tables II-IV).

Most of the actions relate to contracting strategies. Among the 33 actions taken, four which relate to cost control were practised by all the interviewees. The following is a detailed discussion of the interview findings.

#### *Contracting-related actions*

Contracting-related actions are those approaches adopted by contractors in exploring every possible way of obtaining work to maintain their turnover (Hillebrandt *et al.*, 1995). Table II shows the 17 contracting-related actions taken by the interviewees in response to the 1997-2005 recession. The top two contracting-related actions adopted

Actions	Frequency <sup>a</sup>	Percentage
Bidding for more projects that are within the firm's resources and capabilities	32	94
Setting limits on project size so that any failure of one project would not endanger the firm's operation	32	94
Entering into forward contracts with suppliers and subcontractors to protect the firm against cost escalation	31	91
Bidding for projects with tiny/zero profit margins	30	88
Diversifying into other construction-related business	28	82
Undertaking short-term and fast track projects	27	79
Undertaking smaller contracts	26	76
Forming joint venture with other contractors	22	65
Specialising in a particular expertise	19	56
Subcontracting work from other contractors	18	53
Venturing into overseas markets	18	53
Forming partnership with clients	17	50
Putting equity into projects	12	35
Acquiring projects from defunct companies	10	29
Bidding for projects below cost	9	26
Adopting merger and acquisition	8	24
Diversifying into different non-construction related business	8	24

**Note:** <sup>a</sup>Total number of firms = 34

**Table II.**  
Contracting-related  
actions taken in response  
to the 1997-2005 recession

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**Table III.**  
Cost control-related  
actions taken in response  
to the 1997-2005 recession

Actions	Frequency <sup>a</sup>	Percentage
Implementing stricter site management to reduce material wastage	34	100
Implementing stricter financial management on company cash flow	34	100
Implementing stricter procurement procedures	34	100
Freezing salaries of employees	31	91
Freezing staff recruitment	31	91
Laying off employees	26	76
Employing foreign professionals on a contract basis	24	71
Cutting employees' salaries	24	62
Freezing bonuses	17	50
Converting permanent employees into temporary placements	12	35

**Note:** <sup>a</sup>Total number of firms = 34

**Table IV.**  
Financial-related actions  
taken in response to the  
1997-2005 recession

Actions	Frequency <sup>a</sup>	Percentage
Creating uncommitted financial resources	28	82
Negotiating for alternative loan services	25	74
Investing in machinery that has a high liquidity value	23	68
Investing surplus funds in financial investment	19	56
Investing into R&D to further explore business opportunities	18	53
Entering into security agreements with project owners and financial institutes	5	15

**Note:** <sup>a</sup>Total number of firms = 34

by the majority (94 per cent) of the companies interviewed are bidding for more projects that are within their firms' resources and capabilities, and setting size limitation on projects undertaken at which the failure of one project would not endanger their firms' operations. This means that the companies interviewed were reluctant to undertake projects that are too large for their size or beyond their experience range, or undertake contracts that are likely to stretch their available resources and capabilities. This view is shared by Odusote and Fellows (1992), who emphasised the importance of resource consideration in contractors' project selection decisions. Some interviewees related the severity of overstressing a firm's resources and capabilities to the liquidation of two large contractors, denoted as Company A and B, during the recession. In describing the business failure of Company A, one interviewee explicitly expressed that:

The business failure of Company A was a self-destruction case. They undertook excessive number of Design and Build projects simultaneously . . . in order to improve their book value without much consideration given to their resources and capabilities . . . and eventually they went into financial hardship and liquidated.

Following that, another interviewee pointed out that:

The failure of Company B was one of the reasons that dismissed our company's intention to venture abroad. At one time, they tendered and accepted two large overseas projects that involved the performance of civil engineering work around the coastline. Without having

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sufficient knowledge on the nature of project sites, they subsequently went into series of problems in designing and constructing the breakwaters . . . and went into financial hardship and eventually bankrupted.

The foregoing cases are in agreement with Smith's (1986) discussion on the danger of "over-trading" of work relating to a firm's resources and capabilities. He observed that "over-trading" could often present contractors the possibilities to increase their turnover, but it could also lead to disaster if contractors excessively overstretched their resources and capabilities.

The next common action (91 per cent) among the companies interviewed is to enter into forward contracts with their suppliers and subcontractors (e.g. concrete and reinforcement bars suppliers) to protect the firm against cost escalation from the period 1997-2004. However, the interviewees revealed that suppliers become reluctant to enter into long-term forward contracts since 2003-2004 owing to the price fluctuation of reinforcement bars and concrete in the Singapore construction industry.

With fewer projects available during the prolonged recession, the fierce competition in the construction market is reflected here, where 88 per cent of the companies interviewed bid for projects with tiny or zero profit margins. Their objective was to win some projects that enable them to maintain cash flow and to keep their employees as noted in the discussion, and indeed 26 per cent of them had bid below cost. This practice agrees with the findings of Hillebrandt *et al.* (1995) and Oo *et al.* (2007, 2008) that the bid pricing strategy of submitting a lower bid price with tiny or zero profit margins is common during recession periods. This group of interviewees recognised the importance of finding ways to reduce possible losses in projects that were priced below costs. They survived tiny or zero profit margins by:

- minimising the cost of rework by getting it right first time through allocating the right tasks to the right personnel;
- negotiating with preferred suppliers and subcontractors for lowest prices;
- implementing competitive bidding to obtain lowest possible pricing for subcontracting packages; and
- direct sourcing of construction materials from other countries in an attempt to lower their cost.

Some interviewees added that they strived to complete the projects at the earliest possible date because this allowed the committed resources to be available for new projects, and more importantly, this could possibly lead to profit-sharing for early completion between clients and themselves, and repeat business from satisfied clients. Interviewees also revealed that they made "decent profits" from projects that were priced at tiny or zero profit margins from the variation orders. In fact, actions such as "players" making money out of other "players" alleged mistakes, and "players" aiming to bid low and making a profit from penalty payment are common in construction (*cf.* Towill, 2001; Oo *et al.*, 2007).

Recognising the intense competition in the industry during the recession, 82 per cent of the companies interviewed had diversified into other construction-related businesses and services, including property development, property maintenance, mechanical and electrical works, road and infrastructure works, fabrication and supply of office and home furniture, supply of construction materials (e.g. sand and aggregates), and pharmaceutical works. This is in contrast to the SCAL's findings at the start of the

recession that diversifying into other construction-related businesses was least preferred among the contractors surveyed (*The Contractor*, 1998). It appears that the market conditions during the prolonged recession were too severe that contractors were forced to readjust their companies' strategies by diversifying into other construction-related businesses. In order to obtain sufficient turnover, 24 per cent of the companies interviewed also diversified into non construction-related business, namely:

- trading and agency handling;
- operation of hotels and resorts;
- manufacturing automobile products; and
- manufacturing household products.

This finding is in agreement with that of Ofori *et al.* (1999) that Singapore contractors were forced to diversify into non-construction related businesses (e.g. development and management of hotels and securities trading) owing to the limited construction demand in Singapore. In contrast to diversification, 56 per cent of the companies interviewed opted to operate within a narrower domain by specialising in a particular market sector, for example public and private housing construction. The main drivers for adopting this specialisation strategy are their established relationships with clients, and their core competences and established reputation in the respective market sector. Establishing relationships with clients is a key towards firms' competitiveness (*cf.* Hawk, 2006), and this is attested in this study, where 50 per cent of the firms interviewed had formed partnerships with clients during the 1997-2005 recession.

More than two thirds of the companies interviewed had concentrated on short-term and fast-track projects as well as smaller contracts during the prolonged recession. This suggests that in the recession, in order to obtain turnover, companies had bid for more as well as smaller contracts (*cf.* Hillebrandt *et al.*, 1995). Three interviewees specifically mentioned that short-term and fast-track projects (e.g. factory and industrial buildings construction) are less resource-intensive and, more importantly, these clients are typically concerned about the speed of construction, i.e. when they can start production, rather than the interior quality of the built facility. Indeed, Hillebrandt *et al.* (1995) pointed out that undertaking fast-track projects could improve a contractor's cash flow.

Next, 65 companies of the companies interviewed had formed joint ventures with other contractors. Their objectives were:

- to increase their chances of securing projects;
- to mitigate risks in major projects;
- to pre-qualify for bidding competition; and
- to rely on other contractors' expertise.

Other advantages of joint venturing noted in the discussion include:

- increased productivity;
- access to additional financing;
- enhanced research and development (R&D) opportunities; and
- access to new geographical markets.

Nevertheless, some interviewees highlighted that joint ventures between contractors were difficult to manage because of the complicated decision-making process, relationship issues and the need to resolve many conflicts. These difficulties are similar to those identified by Elmuti and Kathawala (2001) in their investigation on strategic alliances.

In terms of venturing into overseas markets given the slump in construction demand in Singapore, only 53 per cent of the companies interviewed had exported their services abroad during the 1997-2005 recession. The reasons given by those who had not ventured overseas included:

- past experience of financial loss in overseas projects;
- insufficient funding to explore overseas markets;
- insufficient knowledge of foreign markets;
- lack of competent personnel; and
- pessimistic outlook of foreign markets.

Ling and Kwok (2007) found that a high initial outlay of capital is required to improve contractors' capabilities to venture overseas due to the need to set up an office, deploy staff, purchase machines, and grease the bureaucratic machinery, build connections and establish relationships.

#### *Cost control-related actions*

Table III shows the ten cost-control related actions taken by the interviewees in response to the 1997-2005 recession. All the companies interviewed had adopted the three following cost control/reduction measures:

- (1) stricter site management to reduce material wastage;
- (2) stricter financial management on the company's cash flow; and
- (3) stricter procurement procedures.

They recognised the need to assume a more active role in managing their project sites and the company's cash flow and procurement procedures during the prolonged recession.

Some of the practices adopted by the companies interviewed to curb material wastages include:

- imposing wastage rates for construction materials on site;
- delegating responsibility of material inventory management to respective site managers;
- adopting the just-in-time delivery concept;
- implementing a profit-sharing scheme by rewarding employees for the amount of materials they save; and
- implementing materials recycling programmes.

These waste management practices identified are similar to those highlighted by Ekanayake and Ofori (2004) and Tam and Tam (2006).



Given that proper financial management is one of the keys to the survival of a construction firm, the identified financial cash flow management practices adopted by the companies interviewed are:

- establishing a project milestones monitoring system – i.e. comparing project cash flow with estimated project budget based on pre-determined progressive points or milestones;
- requiring project directors/managers to submit monthly progress reports;
- implementing a days sales outstanding (DSO) matrix system to measure the efficiency of a firm in converting receivables to cash; and
- implementing an unbilled receivable (UBR) system to monitor unbilled project receivables against project procurement expenses, where a high UBR index reflects a large amount of unclaimed payment.

Next, interviewees discussed the importance of imposing stricter procurement procedures, especially in the selection of subcontractors and suppliers. Similar to previous studies (e.g. Kale and Arditi, 2001; Zou and Lim, 2006), the majority of the companies interviewed apply the following criteria in their selection of subcontractors and suppliers:

- reliability;
- financial stability;
- current workload;
- past experience of similar projects;
- past working relationship; and
- price.

To facilitate the selection of subcontractors and suppliers, all companies interviewed maintain a list of their preferred subcontractors and suppliers, which will be updated periodically (i.e. 12 months, six months or on project completion) based on their firms' policies. Three interviewees specifically related the danger of failing to implement stricter procurement procedures to some negligence actions, for example collusion among employees, subcontractors and suppliers, and the gravest mistakes of employees in project cost estimating. The other two practices adopted by the companies interviewed were:

- (1) implementing stricter purchase orders system – purchase orders are to be endorsed by at least three parties (a site quantity surveyor, a project manager/director, a director from head office), and
- (2) requiring project managers/directors to review and reconfirm the approximate quantity of materials and amount of work required in respective projects.

Recognising the value of economies of scale, two companies interviewed adopted a central procurement system in which the general manager consolidated the total quantity of similar materials required in different projects and procured the required materials in bulk quantity from respective suppliers.

In the face of insufficient workload, the majority (91 per cent) of the companies interviewed were compelled to freeze their employees' salaries and stop recruiting.

Among these companies, 62 per cent of them also slashed their employees' salaries as a cost reduction measure. The findings regarding the percentages of firms freezing and slashing salaries are considerably higher than the corresponding 65 per cent and 26 per cent of firms reported in Low and Lim's (2000) study. These differences can partly be explained because of the duration of the recession, which lasted eight years, meaning more contractors were forced to freeze and slash salaries in an attempt to reduce their general overheads. However, interviewees added that it is vital for firms to share and explain difficulties to their staff before executing any cost-cutting or freezing exercise. This agrees with Low and Lim's (2000) findings that "explaining difficulties to staff in anticipation of harder times ahead" is one common action taken by Singapore contractors in response to the early wave of the 1997-2005 recession. The three companies interviewed that did not practise any recruitment and salary freezes were able to do so because they secured a few projects during the recession through their established reputation in the local industry and good relationship with clients. This further suggests that reputation and relationship are the key factors to increase firms' competitiveness (Hillebrandt *et al.*, 1995; Green *et al.*, 2008).

However, it was found that 76 per cent of the companies interviewed were compelled to lay off their employees during the prolonged recession, especially in 2002-2003, in order to reduce employment costs. Most interviewees insisted that this practice was their last resort, and only the underperformers were retrenched during their business restructuring processes. Again, the percentage of firms laying-off their employees is considerably higher than the 13 per cent of firms reported in Low and Lim (2000), which can be explained by the lagged impact of the prolonged recession.

To further reduce employment costs while overcoming short-term manpower shortages (i.e. professionals) due to unpredictable workloads, many companies interviewed employed foreign professionals on a renewable contract basis; contracts usually last for two to three years. This is consistent with Ofori and Debrah (1998), who reported that foreign professionals and technicians are often employed by Singapore construction firms based on fixed-term, but renewable, contracts that last three years. Most interviewees commented that foreign professionals typically fetch lower pay, but they are more diligent than their local counterparts. Also, 12 of the 34 companies interviewed converted some permanent staff into temporary placements, where staff would only work two or three days a week with a reduced salary, depending on the arrangement of individual firms. Added to this action, half of the companies interviewed stopped paying bonuses, particularly during the period 2001-2005, where the local construction demand slumped considerably. However, nearly 50 per cent of the remaining companies interviewed had shifted from a year-end bonus scheme to a performance-bonus scheme as a cost reduction measure.

#### *Financial-related actions*

Table IV shows the six financial-related actions taken by the interviewees in response to the 1997-2005 recession. The majority of the companies interviewed had set aside contingency funds from their companies' reserves. Some interviewees highlighted that their companies reserved at least three to six months of fixed operational costs (e.g. employees' salaries and office expenses) to mitigate the lagged impact of the recession on the business operation.

Given the considerably long recession period, 74 per cent of the companies interviewed opted for alternative loan services to finance their debts and to increase their working capital. This practice is in agreement with Hillebrandt *et al.*'s (1995) findings that borrowing money from banks to finance debts and increase working capital is common during a recession. The remaining companies, on the other hand, claimed that they operated within their working capital and adopted the "wait-and-see" mode because they did not want to overstrain their debt obligation. Indeed, a few interviewees pointed out that their companies did not negotiate for alternative loan services because they are "cash-rich" and have sufficient funds in response to any economic disturbance. These "cash-rich" firms possess similar characteristics, which include placing greater emphasis on investment risk management and crisis management in preparing their firms for bad times, and more interestingly, their firms are owned by "thrifty" and "meticulous" bosses. As remarked on by Hillebrandt *et al.* (1995), the culture, behaviour and ownership of firms determines the level of difficulties faced by contractors in a recession.

The third most common financial-related practice is related to construction machineries and office equipment. It can be seen that 68 per cent of the companies interviewed purchased only machineries and equipment that are "liquid" and essential in their routine operations, and leased the less essential machineries or equipment. This observation is consistent with Dulaimi and Hong (2002), who found that about 30 per cent of their respondents leased 50-70 per cent of their construction equipment. Clearly, buying construction machinery and equipment is one of the largest investments that could have significant effect on a company's cash flow, and thus greater emphasis should be given to comparing the cost-effectiveness between leasing and purchasing of machinery and equipment (Punwani, 1997; Clapp *et al.*, 2007). It is noted that the rest of the companies interviewed had either leased all machinery and equipment required (24 per cent of firms), or purchased various machinery and equipment and established subsidiaries involving the leasing of construction machinery (8 per cent of the firms).

Added to the list of financial-related responses, the majority of the companies interviewed invested in financial investments (e.g. real estate, bonds, forex and equity funds), and R&D to further explore business opportunities. The interviewees revealed that a sound financial investment portfolio supplements a company's income, and indeed investment profits have become the second source of the firms' income. Besides this, some interviewees pointed out that their companies had strategically taken the prolonged recession period as their business restructuring point through investment in R&D activities to further explore business opportunities. The major R&D efforts identified include:

- exploring the use of alternative construction materials;
- exploring the use of bio-fuel for various construction machineries;
- developing a proprietary scaffolding system;
- developing a proprietary water filtration system;
- developing proprietary construction systems (e.g. formwork systems and core wall construction); and
- exploring the pharmaceutical engineering and consultancy services.

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This indication of the appreciation of the importance of R&D by Singapore contractors is encouraging, since R&D efforts were found to be lacking in the industry based on the survey by Dulaimi and Tan (2001). Lastly, 15 per cent of the companies interviewed entered into “security agreements” with project clients and financial institutions in their attempt to minimise the possibility of default by their clients during the 1997-2005 recession. Bounded by the triangular contractual relationship, the financial institution will release projected progress payments directly to the contracting firm upon receipt of the payment certificate from the client’s representative.

### **Implications of the research findings**

The above findings have several managerial implications. First, they clearly attest that firms’ past relationship quality with clients and established reputation play important roles in dictating their ability to obtain sufficient jobs to tide over the recession (*cf.* Hawk, 2006; Green *et al.*, 2008). This is especially applicable in private sector contracting, where established relationships and the firm’s reputation could often present contractors with contracting opportunities to bid for projects when economic times are bad. Therefore, it is vital for contractors to engage themselves proactively and continuously in relationship and reputation management, regardless of whether times are good or bad (Wong and Logcher, 1986).

Next, contractors should learn how to stay adequately lean in managing their business in order to be flexible and responsive to changes within the business environment. It is suggested that contractors would need to be “disciplined aggressive” in their business venture and place greater emphasis on cost, risk and resource management. The results show that cost control initiative is one of the important attributes in contractors’ responses to the recession. Corresponding to this, it is imperative to emphasise that a firm’s cost control endeavour should not be considered as a reactive means, but rather a proactive response to any foreseen or unforeseen disturbance. Contractors should establish their cost control protocol, and monitor and review them regularly. In view of this, some interviewees mentioned that the trend of engaging or creating an additional role of a “company project cost auditor or officer” is gaining popularity in the Singapore construction industry.

The next issue to consider is risk and resource management. Contractors should learn from their counterparts who were forced out of the industry, mainly due to under-pricing projects, overlooking environmental influences and risks within their business environment, overstressing the firm’s resources and capabilities. They should be more prudent and vigilant against threats, bid rationally for projects, and expand business ventures within their limits of available resources and capabilities. Rather than venturing into unfamiliar business areas, contractors should go back to their fundamentals of business and stick to the basics (*cf.* Drucker, 1980). As such, when they are engaged in a cycle of building and developing their core competence and reputation within existing markets, they should plan strategically and iteratively in line with the business environment for opportunities and threats in potential markets. Upon identifying their target, they should familiarise themselves with it and invest incrementally in the target market.

However, it is important to note that implementation of the aforementioned practices does not automatically lead to a firm’s continued existence. In fact, it is the roles and behaviour of managers – in interpreting environmental trends, managing

organisational process and implementing responsive strategies – that contribute considerably to a firm's continued existence, theorized by the dynamic contingency theory (see Child, 1972; Miles and Snow, 1978). As a result, company owners should place greater emphasis to look after their managerial staff and maintain a lean group of core staff, rather than simply hiring people during good times and firing them when times are bad. Shankari (2008) reported that recruiting talented and experienced staff was one of the problems faced by Singapore contractors in 2006 to early 2008, when the Singapore construction industry experienced a boom. Also, Lansley *et al.* (1979) found that effective human resource management (e.g. considering better employees' welfare and high levels of employees' moral and job satisfaction) is a key factor that differentiates successful UK contractors from their counterparts, who were less successful in adapting to changing demands of the business environment.

### Conclusions

In studying Singapore contractors' responses to the 1997-2005 recession, 34 interviews were conducted with senior executives of large and medium-sized construction firms that survived the recession. The identified responses were grouped into three categories:

- (1) contracting-related actions;
- (2) cost-control related actions; and
- (3) financial-related actions.

The results show that the majority of the contractors took precautionary measures in contracting via bidding for more projects that are within the firm's resources and capabilities, and setting limits to the size of projects to be undertaken so that the failure of one project would not endanger the firm's operation. In response to a recession that lasted for eight years, all the Singapore contractors had implemented:

- stricter site management via material recycle programmes and just-in-time delivery concept;
- stricter financial management via monthly project progress claim reports and project milestones monitoring system;
- stricter procurement procedures via stringent purchasing procedures; and
- employment of foreign employees as cost control measures.

The results also show that most contractors froze their salary and recruitment plans. With regard to financial-related actions, the most commonly adopted measures are setting aside a sum of contingency funds from the company's reserves, and negotiating for alternative loan services. The other encouraging financial-related action taken is that more than 50 per cent of the companies interviewed placed greater emphasis on their R&D investments to further explore business opportunities during the recession. This indicates contractors' appreciation concerning the importance of R&D investment, which was previously found lacking in the Singapore construction industry.

There are few limitations to this study. One is the exclusion of small-sized Singapore contractors. It is acknowledged that small-sized contractors might have adopted different sets of strategies in response to the prolonged recession. Therefore, it

might be useful if an in-depth study can be conducted on small-sized contractors to identify their corresponding strategies. The next limitation is the qualitative nature of this study, whereby contractors' responses were categorised following Hillebrandt *et al.*'s (1995) framework, but not using a scale of several points to quantify the importance of the strategies identified. Nonetheless, the findings are informative in providing valuable insights on how Singapore construction firms responded, via different sets of strategies coupled with related practices, to a recession. In fact, the findings can be incorporated in a structured questionnaire to quantify the importance and the subsequent ranking of survival strategies adopted by construction firms. In this way, a factor analysis can be applied to categorise the survival strategies identified into different groupings corresponding to their respective environmental contexts. Lastly, the focus here is on Singapore contractors' responses to volatile market conditions during a prolonged economic recession in general, rather than mapping the changes of contractors' responses to specific crises (e.g. the Severe Acute Respiratory Syndrome outbreak in 2003) over the period 1997-2005. However, it is acknowledged that firms' strategies may change or differ over the time. Therefore, it is recommended that future research could explore and map the changes of contractors' responses according to specific crises.

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