

Developing Workforce Resourcing Best Practice for Subcontractors in Christchurch

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Abstract

The skills agenda has grown in prominence within the construction industry. Indeed, skill shortages have been recognised as a perennial problem the construction industry faces, especially after a major disaster. In the aftermath of the Christchurch earthquakes, small and medium construction companies were at the forefront of rebuilding efforts. While the survival of these companies was seen to be paramount, and extreme events were seen to be a threat to survival, there is a dearth of research centring on their resourcing capacity following a disaster. This research aims to develop workforce resourcing best practice guidelines for subcontractors in response to large disaster reconstruction demands. By using case study methods, this research identified the challenges faced by subcontracting businesses in resourcing Christchurch recovery projects; identified the workforce resourcing strategies adopted by subcontracting businesses in response to reconstruction demand; and developed a best practice guideline for subcontracting businesses in managing the workforce at the organisational and/or project level. This research offers a twofold contribution. First, it provides an overview of workforce resourcing practices in subcontracting businesses. This understanding has enabled the development of a more practical workforce resourcing guideline for subcontractors. Second, it promotes evidence-informed decision-making in subcontractors' workforce resourcing. Dynamics in workforce resourcing and their multifaceted interactions were explicitly depicted in this research. More importantly, this research provides a framework to guide policy development in producing a sustainable solution to skill shortages and establishing long-term national skill development initiatives. Taken together, this research derives a research agenda that maps under-explored areas relevant for further elaboration and future research. Prospective researchers can use the research results in identifying gaps and priority areas in relation to workforce resourcing.

Keywords: *Subcontracting, Christchurch earthquakes, skill shortages, workforce resourcing best practice guidelines*

Dedication

Kuan tinan kuh, Caroline Diah, inih aceh bere' kuan muh luk mikel sebayang kuan
kuh.

Iko bang terawe kuh anid kareb. Iko awa luk meruked bang niat kuh.

Kuan tepun kuh, ibu' delai, Abai Tuie idih ibu' decur, Munga Silo.

Repet kuh pale' ayud inih miek mare' awang niat kuan medueh, awa idih bere' luk
pelaba rayeh bang ulun kuh.

To my (late) mother, Caroline Diah, this thesis stands as a testament to your prayers
and encouragement.

Not a single day goes by without me thinking of you. I love you with all my heart.

To my (late) grandparents, Abai Tuie and Munga Silo,

Whom I dearly love, and I would like to share with them the joy of this milestone.

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List of Publications

Peer-Reviewed Conference Papers

- 1 Piri, I. S., Wilkinson, S., Chang, Y. (2015), Skills Shortages in the Christchurch Subcontracting Sector, ANDROID Residential Doctoral School Proceeding, 5th International Conference on Building Resilience, Newcastle, Australia, 15-17th July 2015.
- 2 Wilkinson, S, Piri, I. S. and Chang-Richards, Y (2017) Developing Resilience in Subcontracting Organisations during Disaster Recovery. In: Chan, P W (Ed.) and Neilson, C J (Ed.), Proceedings 33rd Annual ARCOM Conference, 4-6 September 2017, Fitzwilliam College, Cambridge, UK. Association of Researchers in Construction Management, 703-712.

Chapter 1

Introduction

1.1 Background

On September 4, 2010, a magnitude 7.1 earthquake struck the Canterbury region of New Zealand. The quake, known as the Darfield earthquake, occurred at a depth of 10.8 km, and the epicentre was 37 km west of the city of Christchurch, New Zealand. The quake caused extensive liquefaction in numerous parts of the Canterbury region, resulting in massive damage to buildings (i.e., brick and masonry buildings) and infrastructure (Gledhill et al., 2011). Although the catastrophic event recorded zero casualties, 100 people were injured, with two being critical (Gledhill et al., 2011). Following the Darfield event, aftershocks propagated to the south, southeast and east of the city of Christchurch through a set of separate but intersecting faults (Cubrinovski et al., 2011).

On February 22, 2011, Christchurch and surrounding districts were hit by a magnitude 6.3 earthquake, occurring towards the eastern fringe of the aftershock zone and struck approximately 6 km southeast of central Christchurch (Kaiser et al., 2012). The Christchurch earthquake was the deadliest in New Zealand since the 1931 magnitude 7.8 Hawkes Bay earthquake and the most expensive in New Zealand's recorded history (Kaiser et al., 2012). The destruction equated to 40 billion NZ dollars (27 billion U.S. dollars), approximately 20 per cent of the New Zealand gross domestic product (GDP) (Wood et al., 2016). The earthquake caused over 180 fatalities and the collapse of several buildings in the Christchurch central city, including the historic Christchurch Cathedral (Cubrinovski et al., 2011; Kaiser et al., 2012). More than 20,000 aftershocks have been recorded since the first Canterbury earthquake (see [Christchurch Quake Map](#)). The Canterbury 2010/2011 earthquakes are a disaster unprecedented in scale in New Zealand's history and have changed the region in profound ways (Stevenson et al., 2011; Potter et al., 2015; Stevenson et al., 2015).

The large-scale recovery in Christchurch has led to the establishment of new entities (i.e., Canterbury Earthquake Recovery Authority and Stronger Christchurch Infrastructure Recovery Team) to govern and coordinate the recovery efforts strategically. Despite this, efforts to rebuild Christchurch were faced with many challenges, one of which was the limited capacity of the construction sector in response to high demand (PwC, 2011; Chang-Richards et al., 2017). The issue of skill shortages surfaced soon after the earthquakes (Chang-Richards et al., 2014; 2015; 2016; Sun et al., 2021). The difficulty in resourcing skilled workers reflects ‘matching inefficiency’ between vacancies and workers (Wood et al., 2016). The employment rate in the Canterbury region rose by about 16 per cent following the earthquakes, exclusively accounted for by the construction industry (Potter et al., 2015; Wood et al., 2016).

Research on past disaster events has shown that in many cases, reconstruction projects likely suffer from resourcing pressures (Green et al., 2007; Chang et al., 2010; Chang et al., 2011; Chang-Richards et al., 2014). These included pressures such as limited access to construction resources (Steinberg, 2007; Kennedy et al., 2008; Lyons, 2009; Siriwardena et al., 2009; Chang et al., 2010; Arneson et al., 2016), fluctuation of material and labour costs (Jayasuriya and McCawley, 2008; Lyons, 2009; Ophiyandri et al., 2009; Chang et al., 2010, 2011), and skill shortages (Green et al., 2007; Steinberg, 2007; Kennedy et al., 2008; Lyons, 2009; Siriwardena et al., 2009; Chang et al., 2010, 2011; Bilau et al., 2015b; 2017). Such pressures, if not dealt with timely and properly, can result in cost overruns (Nazara and Resosudarmo, 2007; Kennedy et al., 2008; Ophiyandri et al., 2010), construction delays (Davidson et al., 2007; Johnson, 2007; Kennedy et al., 2008; Nakazato and Murao, 2007; Chang et al., 2012), productivity loss (Pathiraja and Tombesi, 2009) and poor workmanship (Lloyd-Jones, 2006; Johnson, 2007; Kennedy et al., 2008; Koria, 2009; Lyons, 2009; Siriwardena et al., 2009).

Stevenson et al. (2014) reported that organisational resourcefulness is a source for an organisation's competitive advantage. In the same vein, Chang-Richards et al. (2017) suggested three organisational core capabilities help construction companies capitalise on post-disaster reconstruction opportunities while facing challenges: disaster recovery know-how, adaptive capacity, and inter-organisational collaborative links. However, managing resources at the organisational or/and project level remains challenging,

particularly in the post-disaster situation. There is a lack of systematic understanding of how resourcing contributes to construction organisations' performance in a post-disaster environment (Chang et al., 2012a). In addition, only a few studies have been undertaken to investigate the links between resourcing capability and the success of post-disaster projects (Chang et al., 2010, 2012a).

Compared to business-as-usual, the need to 'build back fast' following a major disaster requires a more responsive workforce to meet key operational demands. Such a demand for skilled labour in an already chaotic and strained labour market creates a recruiting challenge for construction companies (Chang et al., 2012a, 2013; Piri et al., 2015). This issue was evident in major disaster recovery projects such as in Sri Lanka (Jayasuriya et al., 2006; Jayawardena et al., 2008), China (Chang et al., 2012a, Chang et al., 2012b; Wu et al., 2012), Indonesia (Chang et al., 2012b;), Australia (Chang-Richards et al., 2013) and New Zealand (Chang-Richards et al., 2017). By examining the reconstruction process in several countries, it was found that the pace of reconstruction can be influenced by organisational resourcing approaches (Chang et al., 2012a). The ability to respond effectively after a major disaster is governed by the organisation's capacity to conduct timely recruitment along with training and deployment of staff in the post-disaster environment (Da Silva, 2010).

1.2 Research problem

Skill shortages have been an inherent problem within the construction industry (MacKenzie et al., 2000; Loosemore et al., 2003; Clarke & Herrmann, 2007; Dainty et al., 2005; Dainty et al., 2007; Lobo & Wilkinson, 2007; Watson, 2012; Ho, 2016; Sing et al., 2016; Chang-Richards et al., 2017; Karimi et al., 2018; Kim et al., 2020; Welfare et al., 2021). The underlying causes of skill shortages have been well-researched in the construction management literature. Previous studies have identified several impediments to skills development in construction, namely: ageing population (Druker & White, 1996a; Atkinson & Hargreaves, 2014; Chan et al., 2020); fragmentation of the construction sector (Dainty et al., 2004a; 2005a; Alashwal & Hamzah, 2014; Ofori, 2015; Dainty et al., 2017); poor image of the construction sector (Dainty et al., 2000; Loosemore et al., 2003; Chan & Kaka, 2007; Clarke & Herrmann, 2007; Forde & MacKenzie, 2007;

Ginige et al., 2007; Swanson & Holton, 2009; Haupt & Harinarain, 2016); technological adoption (Agapiou et al., 1995; MacKenzie et al., 2000; Dainty et al., 2004; Chan & Dainty, 2007; Ofori, 2015); increased use of self-employment and subcontracting (Winch, 1998; Briscoe et al., 2000; Loosemore et al., 2003; Ofori, 2015; Bigelow et al., 2021); lack of workplace training (MacKenzie et al., 2000; Dainty et al., 2005; Chan & Dainty, 2007; Ayodele et al., 2020; Welfare et al., 2021); and reliance upon itinerant workforces (Briscoe et al., 2000; Haro & Kleiner, 2008; Moehler et al., 2008; Phua, 2012; Wilkinson et al., 2012; Atkinson & Hargreaves, 2014; Raidén et al., 2016).

In particular, the Christchurch construction sector has struggled with finding skilled workforces since the 2010/2011 earthquakes. Construction-related vacancies increased between 2011 and 2014, particularly in specialised roles (Ministry of Business, Innovation and Employment, 2016b). In 2014, many Christchurch construction businesses experienced difficulty sourcing skilled workforces, reflecting the changing focus from residential to commercial (Ministry of Business, Innovation and Employment, 2014). The strong demand for skilled workforces and limited supply pushed wages higher through competition for scarce workforces. Since the 2010 Darfield earthquake, wage rate growth has increased by approximately 17 per cent in Canterbury, compared with a 12.2 per cent increase for the rest of New Zealand (Ministry of Business, Innovation and Employment, 2016a).

1.2.1 Subcontracting in the New Zealand construction industry

The construction industry in New Zealand is the fifth-largest contributing sector to the economy (New Zealand Government Procurement, 2019). The New Zealand construction industry comprises residential and commercial buildings, horizontal infrastructure, and network services (The New Zealand Sector Report, 2013). Within New Zealand, it employs over 250,000 people and accounts for approximately ten per cent of gross domestic product (GDP). The primary drivers for construction industry growth in New Zealand are the rebuilding of Christchurch, Kaikōura, and the surrounding Canterbury region; Auckland housing; remedial weather-tightness works; and infrastructure demand.

In New Zealand, small and medium enterprises (SMEs) dominate the construction industry (PwC, 2011; PwC, 2016; Seadon & Tookey, 2019). As of May 2016, small enterprises made up 97 per cent of businesses in the industry (PwC, 2016). These businesses (i.e., small enterprises) employ less than 20 employees (1-19 employees) and strongly contribute to economic growth and employment (Allan & Yin, 2010; PwC, 2011; PwC, 2016). In 2018, small and medium-sized construction companies employed 80,900 employees (Ministry of Business, Innovation and Employment, 2018). The dominance of small and medium-sized businesses in construction directly impacts New Zealand construction productivity (Allan & Yin, 2010). These companies are also known as subcontracting businesses in New Zealand, specialising in carpentry, roofing, flooring, concrete work, plumbing, plastering, brickwork, and the like. Small subcontracting businesses have fewer than 20 employees, while medium-size subcontracting businesses have between 20 to 100 employees. A subcontractor is defined as any person who contracts with the Contractor to design, carry out, or supply part of the Contract Work¹ on behalf of the Contractor and includes a Nominated Subcontractor (Standards New Zealand, 2013). In this research, the term subcontracting business represents an entity that carries out specialist works included within the Contract or supplies materials or services required under the Contract on behalf of the Contractor.

The New Zealand construction industry has been epitomised by low productivity for the past thirty years (Curtis, 2018). The low productivity in the sector tends to paint a fairly bleak picture of skill development practices in the industry. In many instances, construction SMEs in New Zealand are often depicted as less likely to engage in training and development owing to their small size (PwC, 2011; PwC, 2016). Furthermore, SMEs are less flexible in aligning their business models with industry training requirements (BCITO, 2017). Instead, a relatively short-term approach to firms' investment in training is more prominent in construction SMEs (Piri et al., 2015; Chang-Richards et al., 2016).

The subcontracting sector has been most susceptible to the economic downturn (PwC, 2011; Chang-Richards et al., 2016; PwC, 2016), workflow fluctuations (Chang-Richards et al., 2016), and high staff turnover (PwC, 2011, PwC, 2016; BCITO, 2017). Critics

¹ NZS3910: 2013 defines Contract Works as the works including temporary works to be executed in accordance with the Contract.

rightly point to the vulnerability of subcontractors to governmental, legislative, inflationary, and wider external dynamics that can hamper business growth (Arditi et al., 2000; Schaufelberger, 2003; Kivrak & Arslan, 2008; Mahamid, 2012; Ruddock et al., 2014). In New Zealand, subcontracting business failures are associated with poor cash reserves, poor forward workflow, poor estimating, and inadequate governance (BDO, 2018). These characteristics form an interesting background to the major criticisms surrounding subcontractors' ability to invest in skills. It is against this background that this research was devised.

1.2.2 Skill shortages in the New Zealand subcontracting sector post-Christchurch earthquakes

When the Darfield earthquake struck Christchurch in 2010, the New Zealand construction industry was going through a period of low activity caused by the 2008 global financial crisis. However, the boom from the 2010/2011 Christchurch earthquakes illustrated a bouncing back cycle from the short-term job losses during the 2008/2009 global recession. The earthquakes created significant demand for construction workers, leading to an unprecedented boom in the construction industry (Wilkinson et al., 2015; Chang-Richards et al., 2017). Recent estimates of workforce demand showed that the New Zealand construction industry is short of approximately 58,000 construction workers (Ministry of Business, Innovation and Employment, 2019). In May 2019, a Construction and Infrastructure Skill Shortage List (CISSL) was published, which identified construction occupations as a critical shortage. The list consists of six main occupational groups: Construction, Engineering, Telecommunications, Trades, Transport, and ICT, Electronics and Telecommunications. There are 40 occupations on the skill shortage lists, with 95 per cent of the listed occupations Christchurch-based. Specific trades such as metal fabricators, welder, bricklayer, carpenter, joiner, floor finisher, glaziers, scaffolders, air-conditioning and refrigeration mechanics were among the occupations named on the list.

Wilkinson et al. (2016a) reported that the earthquakes provided a period of significant growth for construction contractors of all sizes. Their report showed that between 2010 and 2011, capacity building, innovation, and upskilling for growing business

opportunities became a focus for construction businesses. Most businesses went through a period of significant growth, and there were also new entrants to the market. For companies, this meant a period of training, recruitment, resource shortages, and developing ways of maintaining their staff in the face of external competition (PwC, 2011).

Some businesses had to focus on developing better working environments; others had to develop new systems to cope with growth. Between 2012 and 2013, with the continued demand for labour and associated cost inflation in the construction market (in the earthquake and the non-earthquake related construction markets), businesses focused on improving their efficiency, productivity, and capability in undertaking earthquake-related work (Wilkinson et al., 2015). The rising demand from the earthquake reconstruction had particularly affected subcontracting companies prone to cash flow issues (PwC, 2016; Chang-Richards et al., 2017). However, little attention was paid to these firms' survival strategies in the aftermath of earthquakes.

Following the Christchurch earthquakes, it was these construction SMEs (i.e., subcontracting businesses) were at the forefront of rebuilding efforts. Chang and Wilkinson (2012a) reported that subcontracting businesses felt pressure to stretch their resources across both earthquake-related jobs and business as usual projects. Specifically, their business growth was stifled by the regional skill shortages (Chang & Wilkinson, 2012a; Chang-Richards et al., 2015a; Chang-Richards et al., 2015b; Chang-Richards et al., 2015c), the limited stock of resources (Chang-Richards et al., 2015c), poor workforce planning practices (CESB, 2011; Chang-Richards et al., 2016), limited internal knowledge base (Chang-Richards et al., 2016), and poor financial management (Wilkinson et al., 2015; Chang-Richards et al., 2016). In many instances, subcontracting businesses preferred to operate within their boundaries and avoid the risk of recruiting more staff (PwC, 2016).

Furthermore, Chang and Wilkinson (2012a) reported that subcontracting businesses operating in post-disaster environments adopted an individualistic approach to workforce resourcing in responding to skill shortages. This presents a picture of a sector that does little planning to manage its future and raises questions about the potential for success of

a reactive approach in a labour-intensive industry. Moreover, the underlying factors constituting workforce resourcing, particularly in a post-disaster environment, are inadequately reported. Effective measures for managing human resources in reconstruction would facilitate reconstruction production (Bilau et al., 2017). Further studies, which take these measures into account, will need to be undertaken. Against this background, this research aims to develop best practice guidelines for construction subcontractors in enhancing their resourcing capability following large disaster events.

1.3 Research question and objectives

This research aims to address the following three research questions:

1. What were the challenges faced by subcontracting businesses in resourcing Christchurch recovery projects?
2. What were the workforce resourcing strategies adopted by subcontracting businesses in response to reconstruction demand?
3. What principles underpinned best practices for subcontracting businesses in managing the workforce at the organisational and/or project level?

The overarching research aim is to develop a set of guidelines of workforce resourcing best practice for subcontractors in response to large disaster reconstruction demands. The specific objectives are shown in *Table 1.1 below*:

Table 1.1 Research questions and research objectives

<i>Research question</i>	<i>Research objective</i>
What were the challenges faced by subcontracting businesses in resourcing Christchurch recovery projects?	To identify the challenges faced by subcontracting businesses in resourcing Christchurch recovery projects.
What were the workforce resourcing strategies adopted by subcontracting businesses in response to reconstruction demand?	To identify the workforce resourcing strategies adopted by subcontracting businesses in response to reconstruction demand.
What principles underpinned best practices for subcontracting businesses in managing the workforce at the organisational and/or project level?	To develop a best practice guideline for subcontracting businesses in managing the workforce at the organisational and/or project level.

1.4 Research scope

This research is focused on exploring best practices for workforce resourcing post-disaster reconstruction projects. In this research, workforce resourcing comprises four distinct but interrelated functions: workforce planning, workforce recruitment and selection, workforce retention and performance management, and workforce development. These resourcing practices are explored predominantly from the perspectives of small-and-medium-sized construction organisations in Christchurch. In the aftermath of the Christchurch earthquakes, such small and medium construction companies were at the forefront of rebuilding efforts. Business demographic coverage is therefore limited to small (businesses have fewer than 20 employees) and medium (businesses have more than 20 employees, less than 100) sized construction companies as per the firm size specified by the Ministry of Business, Innovation and Employment (MBIE), New Zealand. The subcontracting businesses must also meet the following criteria:

1. Subcontracting businesses based in Christchurch, New Zealand.
2. Subcontracting businesses that operated during the 2008/2009 global financial crisis and were involved in the boom generated by the 2010/2011 Christchurch earthquakes.
3. Subcontractors that were involved in the civil or commercial sector in Christchurch.

All non-construction related businesses and small and medium-sized construction businesses outside Christchurch, New Zealand, were excluded from business demography statistics.

1.5 Overview of research design

A case study approach was adopted with qualitative methods for data collection and analysis. Multiple case study organisations were investigated over a two-year period. In total, 24 interviews, with each spanning approximately 30 – 60 minutes, were undertaken between October 2014 and October 2015. Findings from the case study were validated in

a focus group discussion with ten subcontractors in October 2016. The interviews were transcribed and analysed using Leximancer, NVivo 12, and Vensim PLE software.

Data analysis procedures were derived based on Barrett and Sutrisna's (2009) methodological strategies. In particular, the analysis was performed at the case study level, cross-case level, and iterative level. Causal loop diagrams (CLD) showing the dynamics in workforce resourcing were developed and discussed in Chapter 10 of this thesis. By understanding these dynamics, a workforce resourcing best practice guideline was developed for subcontractors to build more resilient workforce resourcing systems. *Figure 1.1* shows the overarching research design, the details of which are provided in Chapter 3 of this thesis.

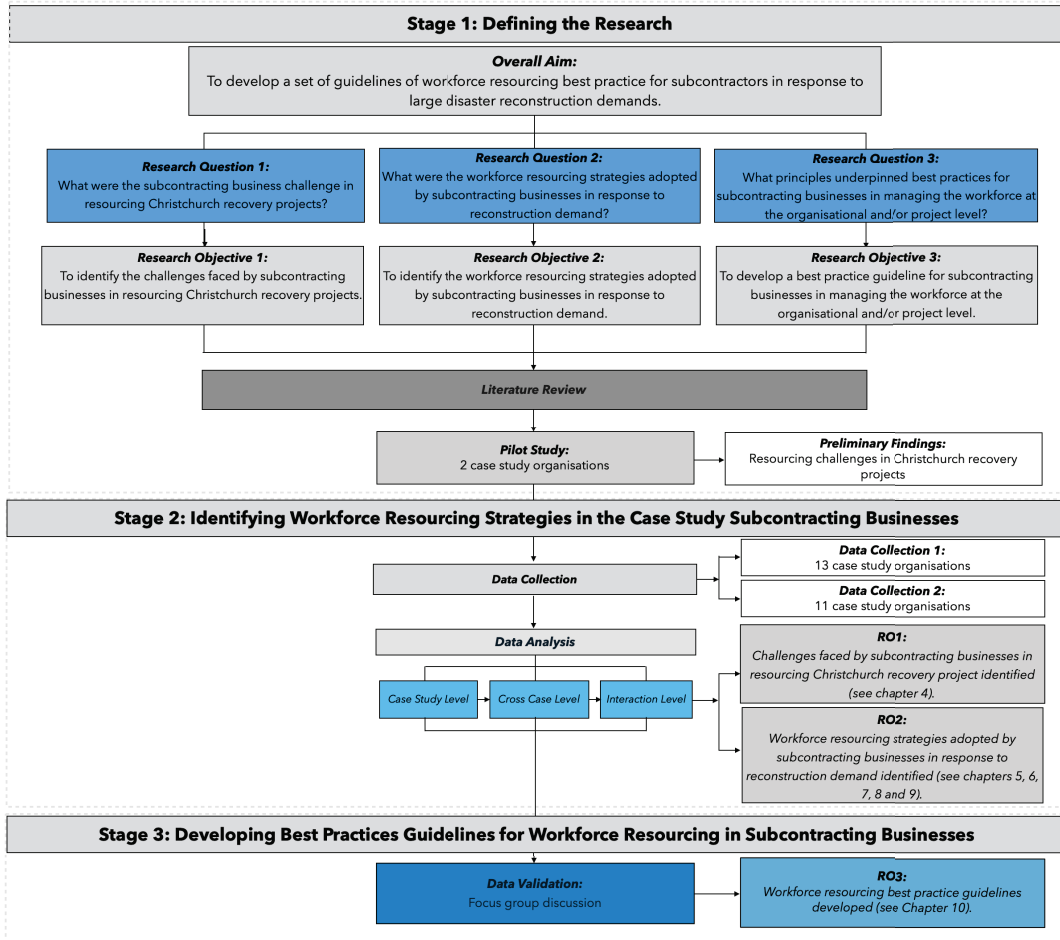


Figure 1.1 Research design process

1.6 Research significance

This research offers a twofold contribution. First, it provides an overview of workforce resourcing practices in subcontracting businesses. Specifically, this research offers a clearly defined workforce resourcing methodology to ensure all resourcing elements are given due consideration and occur effectively. Significantly, this understanding has enabled the development of a more actionable workforce resourcing guideline for subcontractors.

Second, this research promotes evidence-informed decision-making in subcontractors' workforce resourcing. Dynamics in workforce resourcing and their multifaceted interactions were explicitly depicted in this research. More importantly, this research provides a framework to guide policy development in producing a sustainable solution to skill shortages and establishing long-term national skill development initiatives.

Collectively, this research derives a research agenda that maps under-explored areas relevant for further elaboration and future research. Prospective researchers can use the research results to identify gaps and priority areas in workforce resourcing. Descriptive explanations of research significance and recommendations for future work are provided in Chapter 11 of this thesis.

1.7 Thesis structure

This thesis contains 11 chapters. These chapters were aligned to the research objectives, as shown in *Table 1.2*.

Table 1.2 Aligning research objectives to thesis chapter

<i>Research objective</i>	<i>Aligned chapter</i>
To identify the challenges faced by subcontracting businesses in resourcing Christchurch recovery projects.	Chapter 4
To identify the workforce resourcing strategies adopted by subcontracting businesses in response to reconstruction demand.	Chapters 5, 6, 7, 8, and 9
To develop a best practice guideline for subcontracting businesses in managing the workforce at the organisational and/or project level.	Chapters 10

Details of the chapters are as follows:

1. Chapter 1 of the thesis explains the background of the research. It also outlines the aim and objectives, along with the fundamental components of this research.
2. Chapter 2 of this thesis contains a literature review centring on resourcing for post-disaster reconstruction projects and the subcontractors' role in resourcing for construction projects. In this chapter, a critical review of workforce resourcing is presented, leading to the identification of four resourcing priorities in construction companies.
3. Chapter 3 of this thesis describes the research methods administered in the research. In particular, detailed descriptions of the selection of research method, research design strategy, data analysis procedures, and validation were provided in this chapter.
4. Chapter 4 of this thesis reveals the resourcing challenges in the case-study subcontracting businesses. In this chapter, resources in short supply and contributing factors to the shortages were thoroughly discussed. Accordingly, the interviewees' views on the actual resourcing challenges were captured in this chapter.
5. Chapter 5 of this thesis features factors affecting the workforce planning practices in the case study subcontracting businesses. The critical elements that constitute feasible workforce planning are discussed in this chapter.
6. Chapter 6 of this thesis presents the workforce planning strategies adopted by the investigated subcontractors. A two-year observation of the subcontractors' workforce planning is presented to understand the planning patterns over the years of responding to the earthquake rebuilding.
7. Chapter 7 of this thesis details the investigated subcontractors' workforce recruitment and selection practices for the Christchurch recovery projects. This chapter reports the subcontractors' experience in recruiting the right staff within the strained labour market in Christchurch.
8. Chapter 8 of this thesis presents the subcontractors' workforce retention practices in a sector encountering skill shortages and high rates of workforce transience. A diverse range of retention strategies used in the case study subcontracting businesses is discussed in this chapter.

9. Chapter 9 of this thesis comprises the subcontractors' workforce development strategies. This chapter also specifies the benefits of the workforce development initiatives to the performance of the case study subcontracting businesses.
10. Chapter 10 presents the interaction level analysis of chapters 4 to 9 of this thesis. In particular, this chapter identifies and thoroughly discusses causal factors that were deemed significant in workforce resourcing. Recommendations for workforce resourcing best practice guidelines are also provided in this chapter.
11. Chapter 11 of this thesis concludes the entire thesis by summarising the key findings and contributions of the research. Limitations and further research are also presented.

Chapter 2

Literature Review

2.1 Introduction

This chapter forms the theoretical background of the research. The chapter emerges from the discussion of disasters and their consequences on the built environment to the prevalence of skill shortages following a major disaster. The key takeaways of workforce resourcing in a post-disaster environment are further discussed based on four case studies. Following this, the discussion surrounding the challenges in building organisational resilience within small and medium-sized construction organisations is presented. This chapter also attempts to identify the resourcing priorities critical to surviving and remaining competitive. The resourcing priorities are discussed under the following themes: (1) workforce planning, (2) workforce recruitment and selection, (3) workforce retention and performance management, and (4) workforce development. Within these themes, key drivers of and barriers to workforce resourcing implementation in subcontracting businesses were explored.

2.2 Disasters occurrence and disaster risk reduction (DDR)

Between 1998-2017, climatological and geophysical disasters killed over 1 million people and left a further 4 billion injured, homeless, displaced and in need of emergency assistance (CRED, 2018). In 2019, 396 natural disasters were recorded in EM-DAT, accounting for over 100 billion US\$ of economic losses around the globe (CRED, 2020). It was reported that catastrophic events increased by approximately 16 per cent in 2019 compared to the previous decade's annual average (2009-2018). Despite the increase in the number of disasters, it is worth noting that the mortality rate and economic losses are trending downwards. Previous disasters were reported to be greater in terms of their impacts (e.g., the 2010 Haiti earthquake, 2015/2016 India drought, 2011 Japan earthquake and tsunami, etc.) than those taking place in 2019. Such data demonstrate that the human impact was

less severe than in previous years. The year 2019 is particularly marked by large wildfires (California, USA, South America, Amazonia, Australia) with estimated total damage and economic cost of 30 billion US\$. *Tables 2.1 and 2.2* show the top 5 disasters recorded in 2019, ranked by mortality and top 5 economic losses in 2019, respectively.

Table 2.1 2019 disasters: Top 5 mortality (Source: CRED, 2020)

<i>Country</i>	<i>Type of Disaster</i>	<i>Number of Death</i>
India	Flood	1900
France	Extreme Temperature (July)	868
Zimbabwe	Cyclone Idai	628
Mozambique	Cyclone Idai	603
France	Extreme Temperature (June)	567

Table 2.2 2019 disasters: Top 5 economic losses (Source: CRED, 2020)

<i>Country</i>	<i>Type of Disaster</i>	<i>Economic Losses (billion US\$)</i>
Japan	Tropical Cyclone Hagibis	17
China	Tropical Cyclone Lekima	10
India	Flood	10
USA	Flood	10
Japan	Typhoon Faxai	9

Asia accounted for 40 per cent of disaster events, with the deadliest event recorded in India following the excessive monsoon rain flood (CRED, 2020). This is followed by Africa, 23 per cent, the Americas, 20 per cent, Europe, 14 per cent and Oceania, 2.53 per cent. EM-DAT statistics revealed that developing countries tend to encounter more disasters than developed countries. The United States has experienced many disasters but is more resourceful in its disaster management system than developing countries (Yi & Yang, 2014). *Table 2.3* shows the top 5 human impact disasters in 2019.

Table 2.3 2019 disasters: Top 5 human impact (Source: CRED, 2020)

<i>Country</i>	<i>Type of Disaster</i>	<i>Total Affected (million)</i>
India	Cyclone Fani	20
Korea	Drought	10.1
Iran	Flood	10
Zimbabwe	Drought	7.6
Pakistan	Drought	4.7

The current approach to disaster risk reduction (DRR) extends beyond reliance on historical data, given that the climate is shifting rapidly (Rajkovich & Okour, 2019). To attain

sustainable disaster resilience, DRR should be incorporated into investment decisions (CRED, 2018). This also signals the need for investing in future-proofing disaster strategies with anticipatory capability (Silva et al., 2020). *Figures 2.1 to 2.8* thematically summarise 2019 disasters in comparison with the previous decade.

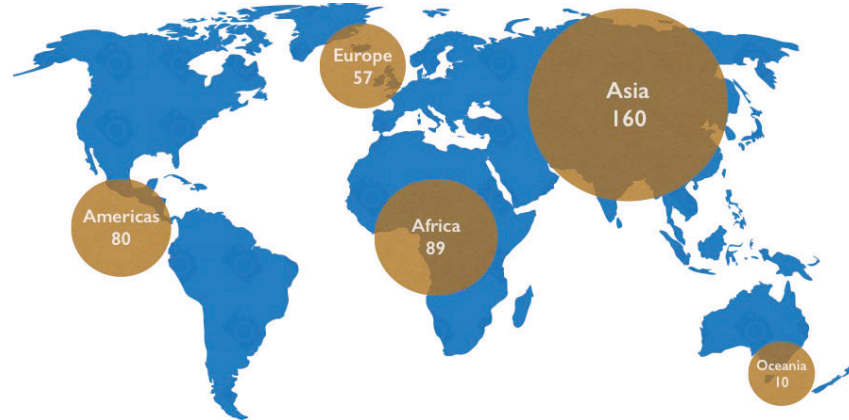


Figure 2.1 Number of disasters by continent (Adapted from CRED, 2020)

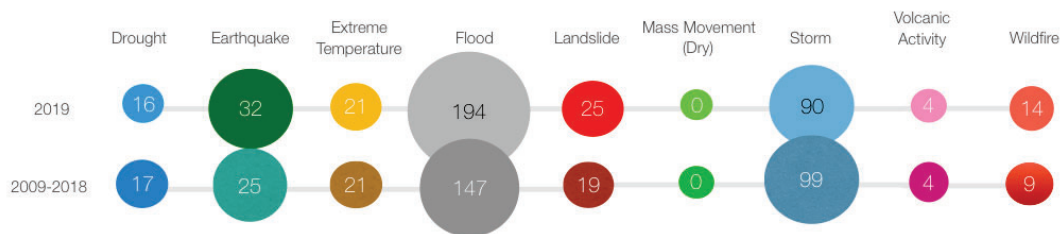


Figure 2.2 Number of disasters by continent: 2019 compared to 2009-2018 annual average (Adapted from CRED, 2020)

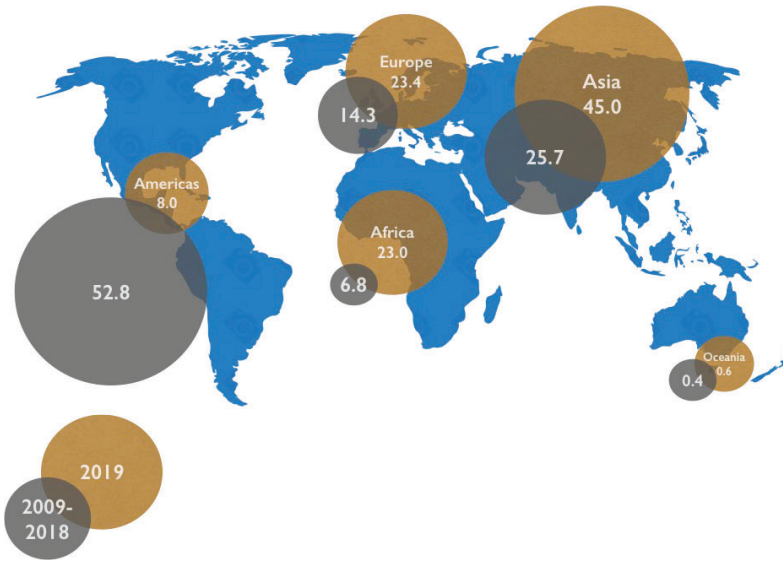


Figure 2.3 Share of deaths (%) by continent (Adapted from CRED, 2020)

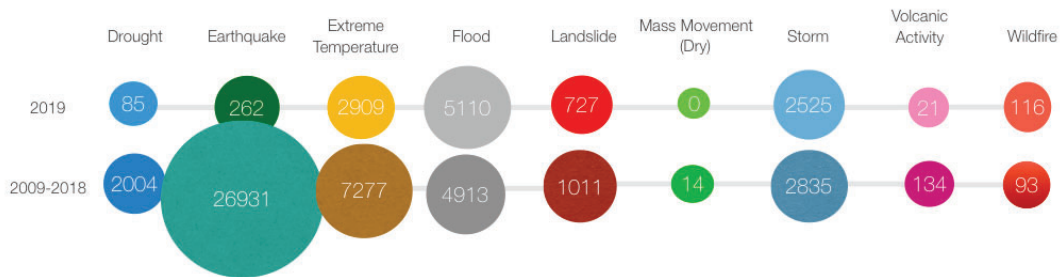


Figure 2.4 Share of deaths (%) by continent: 2019 compared to 2009-2018 annual average (Adapted from CRED, 2020)

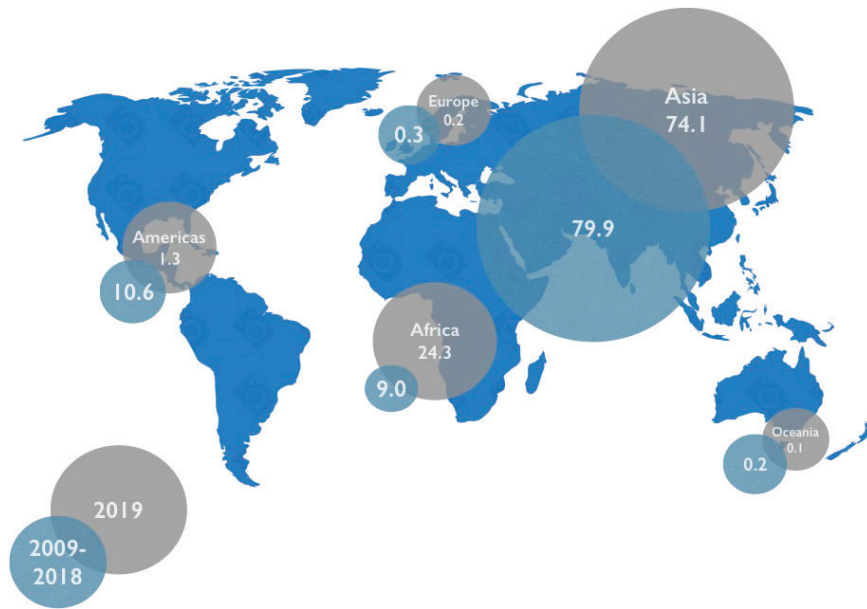


Figure 2.5 Share of affected (%) by continent (Adapted from CRED, 2020)

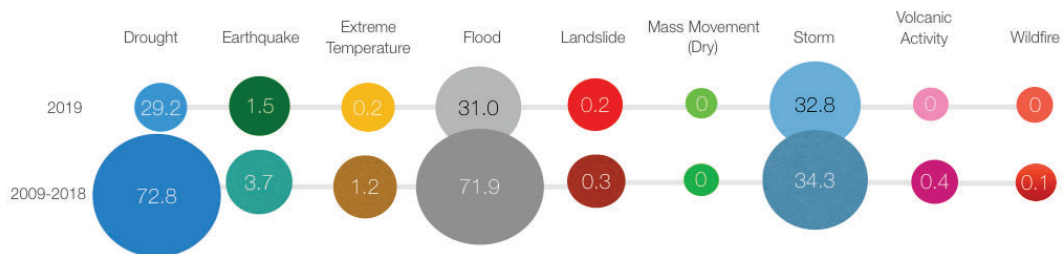


Figure 2.6 Number of affected (million) by disaster type: 2019 compared to 2009-2018 annual average (Adapted from CRED, 2020)

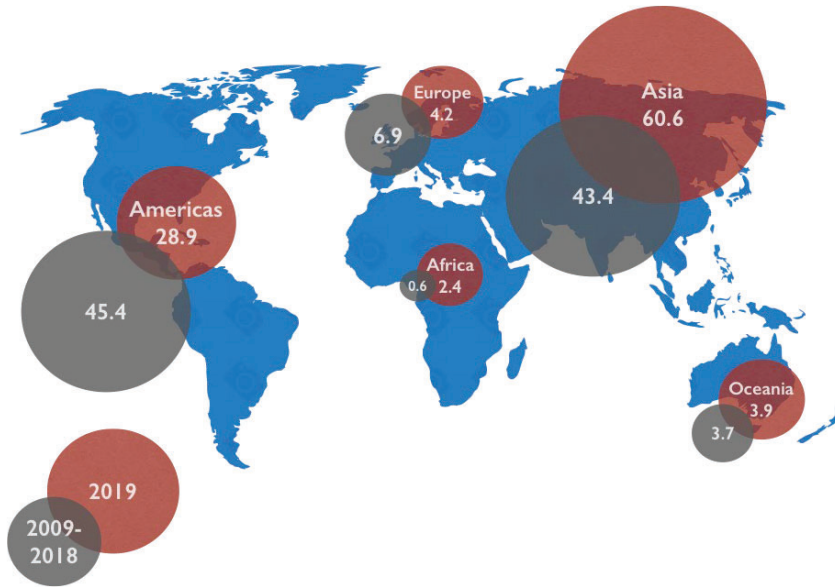


Figure 2.7 Number of affected (million) by disaster type: 2019 compared to 2009-2018 annual average (Adapted from CRED, 2020)

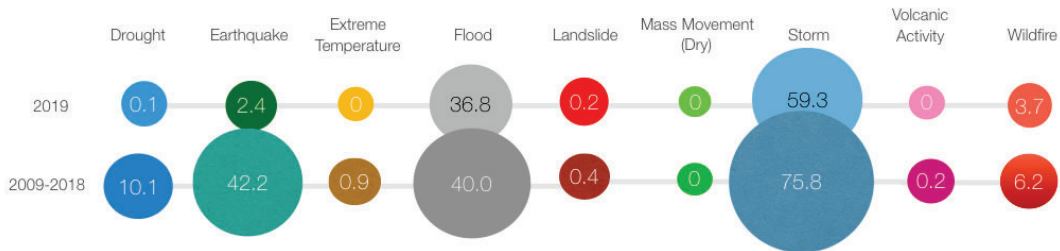


Figure 2.8 Economic losses (billion US\$) by disaster type: 2019 compared to 2009-2018 annual average (Adapted from CRED, 2020)

The devastating impact of climatological and geophysical disasters has brought disaster resiliency to the fore. Indeed, imparting climate change resilience into the post-disaster reconstruction environment has become a new focus in the disaster risk reduction (DRR) domain (Ismail et al., 2017). The conventional approach to DRR places greater emphasis solely on resilient development over corporate development programmes (Hay et al., 2018). Critics questions the ability of this ‘risk first’ approach to align risk projections with data, policy, planning, and management timeframes (USAID, 2014). It was evident that mismatch between the said executing drivers is quite commonplace.

Additionally, the information often featured non-sectorial and, hence, compromised the reliability and validity of this approach. This realisation has prompted a recent shift towards integrating risk and resilience into a ‘development first approach’ (Hay & Pratt, 2013; USAID, 2014; Selby & Jiwaji, 2016). The ‘development first’ approach enables resilience principles to be incorporated within existing sectoral programming. Under this ethos, resilient development is designed with the capacity to adjust (anticipatory capacity), ensuring climate vulnerability can be reduced and, simultaneously, improving the ultimate development outcomes (Hay et al., 2018). With the understanding that disasters will continue to be major impediments to sustainable development, Rajkovich and Okour (2019) emphasised the importance of addressing the interactions between all system components and the system’s response to climate change. More recently, Silva et al. (2020) suggested a holistic model in the enhancement of built environment resilience and reliability with specific emphasis on future-proofing disaster strategies.

The numerical dominance of subcontracting businesses makes them account for the productivity of the construction industry (Dainty et al., 2001; Wells, 2003; Dainty et al., 2005a; Dainty & Chan, 2011; Loosemore, 2014; Chalker & Loosemore, 2015). For instance, in the aftermath of the Christchurch earthquakes, small and medium construction companies were at the forefront of rebuilding efforts (Wilkinson et al., 2017). While the survival of these organisations was seen to be paramount, and extreme events were seen to be a threat to survival, the concerns of survival tended to take precedence over additional resilience activities. Core business and resilience were seen to compete for strategic priority and aligned resources. Therefore, resourcefulness is a key driver of, and a barrier to, SME resilience. [Section 2.4](#) of this chapter provides a thorough review of organisational resilience in construction businesses.

2.3 Disasters and the built environment

Past disasters have shaped the present stance of the built environment (Ramroth, 2007). Both natural and man-made disasters bring unprecedented destruction and significant loss in capital services (Olshansky et al., 2012; Stringfellow, 2014). In many instances, disasters expedite the usual cycle of normal depreciation and capital replacement (Olshansky et al., 2012). The massive physical destruction following a disaster can have profound ripple

effects on the affected communities. In particular, the greater the destruction loss, the more susceptible the community is to future hazards (Haigh & Amaratunga, 2011).

The growth in disasters has prompted greater interest in disaster preparedness, hazard mitigation and vulnerability reduction, and effective management of disasters (Dainty & Boshier, 2008; Haigh & Amaratunga, 2011). This understanding would facilitate a sound connection between the unforeseen disasters and the consequent revival or development of the built environment. In this light, the built environment professionals have a major role to play wherein logical and well-balanced solutions are to be institutionalised (Haigh et al., 2006; Lloyd-Jones, 2006; Dainty & Boshier, 2008; Haigh et al., 2008; Haigh & Amaratunga, 2008; Haigh & Amaratunga, 2010; Boshier et al., 2016).

The destructive force following a major disaster can be further exaggerated by poor reconstruction planning (Tserng et al., 2006; Ramroth, 2007; Kennedy et al., 2008; Lyons, 2009; Olshansky, 2005; Olshansky et al., 2008; Olshansky & Chang, 2009), insufficient funds (Wu & Lindell, 2004; Barenstein & Pittet, 2007; Green et al., 2007; Lyons, 2009; Olshansky, 2005; Olshansky et al., 2008; Ratnasooriya et al., 2007; Thiruppugazh, 2007), ineffective coordination and delivery of reconstruction works (Godschalk, 1999; McEntire et al., 2002; Birkland, 2006; Le Masurier et al., 2006; Chang et al., 2011), and inadequate resource availability (Rotimi et al., 2006; Davidson et al., 2007; Johnson, 2007; Ratnasooriya et al., 2007; Steinberg, 2007; Kennedy et al., 2008; Singh & Wilkinson, 2008; Zuo et al., 2008; Lyons, 2009; Siriwardena et al., 2009; Zuo et al., 2009; Chang et al., 2010a). Furthermore, Olshansky et al. (2006) exposed that delays in reconstruction were intensified by the non-existence of a comprehensive rebuilding strategy. Therefore, post-disaster reconstruction projects are far more complicated and disordered than pre-disaster construction projects (Alexander, 2004; Birkland, 2006; Davidson et al., 2007; Chang et al., 2011; Stringfellow, 2014). Olshansky et al. (2012) postulated that an integrative reinforcing strategy should be established to resist the devastating effects of disasters. This integrative strategy is a collective product of mutual understanding between built environment professionals of the reconstruction efforts. Parallel to this, Ramroth (2007) and Wilkinson et al. (2016) alluded that a successful reconstruction programme can be attained through strategic coordination between the involved teams to mitigate the effects of distress and uncertainties.

Consequently, post-disaster reconstruction projects demand a better understanding of the nature of post-disaster reconstruction stages if any real impact on its effectiveness is to emerge (Wilkinson et al., 2016a). Post-disaster reconstruction is characterised as one of the crucial phases in the recovery effort following a major disaster. Wilkinson et al. (2014) defined reconstruction as the physical regeneration of the built environment, which entails five main stages. These include (i) chaos, (ii) realisation, (iii) mobilisation, (iv) struggle, and (v) new normal. *Table 2.4* details the activities involved in the reconstruction stage.

Table 2:4 The five stages of reconstruction (adapted from Wilkinson et al., 2014)

<i>Reconstruction stage</i>	<i>Activities</i>
Chaos	This stage addresses the “ <i>What do we do?</i> ” question. It involves a comprehensive assessment of the effect of disasters on the built environment and community. This assessment forms the foundation for reconstruction planning and execution. At this stage, a rethink of land use is critical, involving activities such as land zoning, urban, and settlement design development. Chaos could take place given that an established assessment system is still underway. The assessment methods and protocols, therefore, determine the assessment outcomes.
Realisation	This stage is significantly linked to “ <i>The disaster’s impact is bigger than we thought.</i> ” It comprises initial remedying and rectifying efforts following the ‘chaos’ phase. These efforts are designed to address the immediate needs of the affected region. The extent of remedial works depends on the amount of physical destruction and its impact on the community. At this stage, a recovery proposal is initiated with approved interim funding and a newly formed recovery team.
Mobilisation	This stage is best described as “ <i>We’re getting on with it.</i> ” It marks the commencement of the recovery plan. This stage presents increased decision-making on repair works (i.e., building, residential, infrastructure repair) and urban development.
Struggle	This stage is described as “ <i>It’s really hard, it’s not going as planned.</i> ” At this stage, reconstruction challenges are inevitably taking form and hampering the progress of the reconstruction programme. Common issues faced include, but are not limited to, a weak governance system, inadequate building resources, limited funding, etc.
New normal	Defined as “ <i>This is how it is, there’s no going back</i> ”, this stage demonstrates the new architecture of the present. As an imitation of the pre-disaster environment is unlikely achievable, this stage thereby tests the acclimatisation ability of the affected communities and businesses. It demands greater community and business resiliency to progress in the new environment forwardly. In this stage, the affected community and businesses are prepared for any imaginary future crisis. Appropriate supports are provided to boost the individual and/or organisational coping confidence.

Findings from Wilkinson et al. (2014) showed that developing the reconstruction tasks (chaos, realisation, mobilisation, struggle, and new normal) is arduous. Long-term recovery is often hindered by numerous factors associated with mismanagement and lack of proper deployment of fiscal and human resources (Sutton & Haigh, 2011; Bilau et al., 2015b, 2017). This situation is further aggravated by the inability of construction organisations to

access professional assistance to bolster the local reconstruction process, along with disarray in relaying information (Lloyd-Jones, 2006). Therefore, most nations face an inefficacy in resourcing as a result of needing to 'build back fast' and in large quantities (Olshansky et al., 2012; Chang-Richard et al., 2013; Johnson & Olshansky, 2013). This is mostly due to the fact that prices for building materials tend to rise following a disaster and, thus, cause difficulty in material procurement (Chang et al., 2011). The increase in demand for skilled professionals and the inability of people to afford housing also adds to the already existing problems of post-disaster recovery (Wilkinson et al., 2016a).

Furthermore, the reconstruction process comprises residential repairs that consequently inundate individual builders and subcontractors since they are more accustomed to small repairs (Wilkinson et al., 2016a; 2016b). Therefore, it is expected that construction organisations would react idiosyncratically in a post-disaster environment leading to disharmony (Olshansky et al., 2012). Finally, the slow pace of post-disaster recovery is also a factor in the residents' unwillingness to embrace new infrastructure, which differs from pre-disaster (Olshansky et al., 2012; Moatty & Vinet, 2016). Despite the chaos in the event of a disaster, the recovery process can provide a beneficial platform wherein past mistakes can be identified and avoided, resulting in a potentially better condition than what was before. This process requires input from built environment professionals (Sutton & Haigh, 2011). As such, a great emphasis on leadership, early engagement of stakeholders, community participation, and bureaucratic transparency are positioned in the pursuit of effective recovery (Olshansky et al., 2012; Wilkinson et al., 2016b). Another interesting facet of the post-disaster environment is the possibility of reorganising and relocating capital facilities that have been rendered obsolete by the disaster itself (Olshansky et al., 2008; Olshansky et al., 2012). Therefore, it can be stated that, although disasters are detrimental to certain economic aspects, the reconstruction activities could potentially provide job opportunities (Venn, 2012). For instance, new organisations were created following major disasters in Louisiana, Manhattan, Aceh, and Haiti, which provided employment positions (Olshansky et al., 2012).

The aforementioned section highlights the possibilities for 'building back better' after a disaster, and the construction industry is the epicentre for initiating the same (Mannakkara & Wilkinson, 2012). A strong correlation exists between speed and reconstruction

development, which reflects the construction industry's resiliency (Haigh & Amaratunga, 2011). In most countries, the construction industry is dominated by subcontracting organisations that are small and medium-sized enterprises (SMEs) (Hinze & Tracey, 1994; Shash, 1998; Kumaraswamy & Matthews, 2000; Karim et al., 2006). The efficiency of post-disaster recovery can be increased through the comprehension of subcontractors' roles at various phases of the recovery process (Wilkinson et al., 2016b). However, Wilkinson et al. (2016b) argued that the involvement of subcontractors in the recovery process should be carefully monitored since these organisations can deter rebuilding activities both in the construction industry itself and disrupt the interconnectivity between other economies and markets.

Olshansky et al. (2012) provided an insight into the dynamics of subcontracting in the post-disaster environment. According to the authors, subcontractors having distributed assets can recover faster since the disaster would only affect a part of it. On the other hand, if an organisation's entire asset lies in the disaster zone, they need to be able to avail of resources and aid from other organisations to recover. This consequently would delay the overall process of the recovery. Hence, the possession of resilience in construction organisations is critical for ensuring a global benefit for the industries themselves, the entire construction industry, and other related organisations (Wilkinson et al., 2016b;2017).

2.3.1 Workforce resourcing issues following major disasters

The preceding discussion has revealed the impacts of disasters on the built environment. This includes greater magnitude in the construction demand to build back fast. Following this, factors contributing to the complexity of managing post-disaster reconstruction projects are discussed. This section discusses the emerging issues relating to people management in post-disaster reconstruction projects.

A distinctive pattern of workforce resourcing is portrayed in the post-disaster environment. Chang et al. (2012, 2013, and 2014) found that skill shortages are prevalent following a major disaster. Skill shortages appear to be positively linked to the upward shift in construction employment following a major disaster. The magnitude of the demand shock for skilled workers in a chaotic and strained labour market creates a recruiting crunch in

the construction industry (Chang et al., 2012, 2013; Piri et al., 2015). The same issue has been evident in major disaster reconstruction projects such as in Sri Lanka (Jayasuriya et al., 2006; Jayawardena et al., 2008), China (Chang et al., 2012a, Chang et al., 2012b; Wu et al., 2012), Indonesia (Chang et al., 2012b), Australia (Chang et al., 2013) and New Zealand (Chang-Richards et al., 2017). Additionally, there is a significant difference between natural disasters and other perturbations in the labour markets. The core of the labour market could potentially transform to accommodate economic restructuring as a result of both the disaster and/or the recovery process (Chang-Richards et al., 2017).

The reconstruction of a post-disaster environment is particularly characterised by disorganisation and complexities, which are also blended with uncertainties (Alexander, 2004; Birkland, 2006; Davidson et al., 2007; Chang et al., 2011; Stringfellow, 2014). This unstable situation creates a problem for the usual and conventional practice of workforce resourcing (Chang et al., 2011a, Chang et al., 2011b). The situation is worsened by the fact that there is an imbalance in the demand and supply of building materials and a lack of a skilled workforce (Stringfellow, 2014; Arneson et al., 2016). The labour shortages are primary factors of local construction organisations' inability to handle large-scale reconstruction processes (Chang et al., 2011; Bilau et al., 2015b). Moreover, the reconstruction process is afflicted by specific workforce-related problems (Le Masurier et al., 2006; Kennedy et al., 2008; Zuo et al., 2008; Jayasuriya & McCawley, 2008; Chang et al., 2011; Chang et al., 2013; Bilau et al., 2015b). Other than that, several factors, such as the depletion of high calibre employees, damage to buildings, and reduction in revenues, can directly impact the construction industry's performance (Craigie et al., 2012).

There is a strong necessity to bounce back to normal after a disaster (Johnson & Olshansky, 2013; Wilkinson et al., 2014). A new normal is created, and it usually leads to a very high demand for a workforce to repair and replace damaged houses, buildings, and other infrastructure (Chang et al., 2012; Olsen & Porter, 2013). Consequently, this situation forces construction organisations to utilise their human resources (Wilkinson et al., 2015). In particular, the sudden surge in construction growth rate drives the construction organisations to exercise their capabilities for extremely enhanced workforce utilisation. As a result, several adverse effects are generated, such as cost inflation, low quality of work, delays in project completion and overall, the construction industry struggles to adjust

to the expansion of markets (Ruddock et al., 2010; Ruddock et al., 2014). In this setting, the labour market fails to allocate the correct skills of job seekers to potential construction employers (Craigie et al., 2012).

Based on the inherent nature of workforce capabilities, the problem of skill shortages could start or deteriorate further after a major disaster (Moe & Pathranarakul, 2006; Jha et al., 2010; Chang et al., 2012). This phenomenon was observed in disaster-stricken countries such as China and Indonesia, where skill shortages occurred due to the high demand for workers in an already inadequate workforce (Chang et al., 2010, 2012). This situation necessitates adapting ideas and techniques that could alleviate skill shortages in a post-disaster environment. One method for eliminating skill shortages is through the implementation of effective workforce resourcing plans (Taylor, 2008; Raidén & Sempik, 2013). Imparting the necessary skills and appropriate training to the workforce at the organisation level can reduce the issue of skill shortages (Lobo & Wilkinson, 2008; Chang-Richard et al., 2016; 2017). Integrating skilled workers from other regions and countries could further reduce the risk of skill shortages in the post-disaster environment (Chang et al., 2010, 2011, 2012; Jha et al., 2010; Chang-Richards et al., 2013). Post-disaster projects also suffer from the adverse effects of the construction industry boom and bust phases. Boom cycles cause intense resource (materials and labour) competition and spiralling costs, whilst cost-cutting practices dominate during recessionary cycles (Allan et al., 2008). The following sections of this chapter unveil workforce resourcing challenges following a major disaster.

2.3.2 Key takeaways from past major disasters

A growing body of literature recognises resourcing challenges in post-disaster reconstruction projects. These studies (e.g., Chang et al., 2010, 2011, 2012; Chang-Richards et al., 2013, 2017; Sun et al., 2021) exhibited case-based research from different countries. The key disaster events reported in previous studies were mostly from developing countries (i.e., Sri Lanka, Indonesia, and China). *Table 2.5* presents post-disaster studies reporting the main challenges in resourcing for post-disaster reconstruction projects.

The following section of this chapter discusses resourcing challenges in the aftermath of major disasters. Four cases were reviewed with a specific emphasis on resourcing for recovery projects. These cases were selected based upon the following inclusion criteria:

1. Studies reporting resourcing elements following a major disaster, which include resource planning, resource allocation, resourcing challenges and critical factors affecting resourcing; and
2. Peer-reviewed journal articles published between 2000 and 2021.

Table 2.5 Workforce resourcing challenges in post-disaster reconstruction projects

Research topic	Author	Journal	Key finding
Post-tsunami reconstruction in Sri Lanka: Assessing the economic impact	Ruddock, L., Amaratunga, D., Wanigaratne, N., & Palliyaguru, R. (2010)	International Journal of Strategic Property Management	<ul style="list-style-type: none"> The impact of the tsunami necessitated a massive volume of resources for a quick recovery. The authors termed this situation as the ‘construction output shock’. A sudden boom following the tsunami has led to a construction cost increase in Sri Lanka. The cost increase was driven by higher wages for construction materials, labour, and plant. Unskilled labour prices showed the highest growth rate compared to the other two skill categories (i.e., semi-skilled labour and skilled labour). Small and heavy construction equipment was in high demand in the post-tsunami. This demand has caused initial price inflation as additional equipment imports were required to meet the reconstruction needs. Building materials showed a greater rate of increase in the aftermath of the tsunami, with bricks and cement prices recorded above the other building materials.
Interpreting resourcing bottlenecks of post-Wenchuan earthquake reconstruction in China	Chang, Y., Wilkinson, S., Potangaroa, R., & Seville, E. (2010)	International Journal of Strategic Property Management	<ul style="list-style-type: none"> After the earthquake, the shortages of workforce and construction materials were attributed to the economic crisis of 2008, hurried reconstruction efforts, disrupted transportation, ineffective market planning and retroactive local reconstruction organisations. Post-disaster construction resource procurement should be considered in preparing a reconstruction preparedness system that can prioritise rebuilding activities based on the availability of resources locally. The rebuilding efforts are efficient if jointly managed by the government and the construction stakeholders.
Resourcing challenges for post-disaster housing reconstruction: A comparative analysis	Chang, Y., Wilkinson, S., Potangaroa, R., & Seville, E. (2010)	Building Research & Information	<ul style="list-style-type: none"> The study presents a comparative analysis of resourcing challenges faced in the aftermath of major disasters in China, Indonesia, and Australia. Resource shortages were predominant during the peak of the rebuilding effort. In China, the shortages of building materials and labours have impeded the housing sector. In Indonesia, the upward shift in construction demand has impacted the cost of building materials and labours. In Australia, legislative changes have led to a massive increase in rebuilding cost. Furthermore, it was reported that registered builders were in short supply following the 2009 Victorian bushfires. Three resource-led mechanisms were discussed, which include government-driven, donor-driven, and market-driven. The authors highlighted (1) the Chinese government-led resourcing method occurred in the absence of long-term recovery considerations; (2) the Indonesian donor-led resourcing method was flawed with poor planning and procurement systems, while (3) the Australian market-led resourcing method depicted an over-reliance on the government facilitation for solutions.

<i>Research topic</i>	<i>Author</i>	<i>Journal</i>	<i>Key finding</i>
Resourcing for a resilient post-disaster reconstruction environment	Chang, Y., Wilkinson, S., Seville, E., & Potangaroa, R. (2010)	International Journal of Disaster Resilience in the Built Environment	<ul style="list-style-type: none"> The authors suggest that these resourcing mechanisms can be further enhanced through multi-stakeholder collaboration and the development of proper resourcing policies, plan, and tools. The creation of a resilient post-disaster built environment depends on (1) well-defined legislation for long-term recovery plans; (2) the participation of construction stakeholders along with the government in both pre-and post-rebuilding activities; (3) the ability of the construction market to support resourcing activities; and (4) a transportation network that facilitates easy access to resources through an effective logistical system. The authors have established that enhanced communication amongst construction stakeholders will create a collaborative disaster preparedness planning system.
An integrated approach: Managing resources for post-disaster reconstruction	Chang, Y., Wilkinson, S., Brunson, D., Seville, E., & Potangaroa, R. (2011).	Disasters	<ul style="list-style-type: none"> Resourcing challenges in terms of planning, preparedness, procurement, delivery, and resource alternatives were reported. Resources in short supply include building materials (i.e., bricks, aggregate, cement, steel) and labour. Specifically, the study details constraints faced in a post-disaster reconstruction scenario. The constraints are (1) legislative constraints in deployment and mobilising resources; (2) organisational resourcing constraints (i.e., preparedness, procurement); (3) production constraints (disaster-affected zones); (4) transportation and accessibility constraints (e.g. disrupted railroad lines with secondary hazards); and (5) sustainability constraints (environmental impacts of a particular building material). The authors recommended an integrative resourcing planning framework for residential projects following a major disaster. The framework includes providing disaster-related legislation and policies, increasing the construction industry production capacity, restructuring the construction market, transport infrastructure resilience, promoting sustainable management practices in post-disaster reconstruction/sustainable construction best practices.
Donor-driven resourcing procurement for post-disaster reconstruction: constraints and actions	Chang, Y., Wilkinson, S., Potangaroa, R., & Seville, E. (2011).	Habitat International	<ul style="list-style-type: none"> International aid-agencies (i.e., donor-driven resourcing) are the key factors for post-disaster reconstruction and rebuilding. In a post-disaster scenario, NGOs face resourcing challenges due to intra-aid agency competition for resources, ineffective transportation systems that lead to higher materials procurement costs, failure to collaborate with local communities and understand their housing needs, and inadequate support from local government. The authors recommended that NGOs should enhance their knowledge to aid speedy resource collection through a smooth supply chain system and beneficial collaboration with local stakeholders. The authors further advised that aid agencies should develop a working relationship with the local government and the affected community representatives to augment their rebuilding and procuring activities. Finally, the authors stated that intra-agency collaboration could effectively eliminate resourcing bottlenecks.

<i>Research topic</i>	<i>Author</i>	<i>Journal</i>	<i>Key finding</i>
Identifying factors affecting resource availability for post-disaster reconstruction: A case study in China	Chang, Y., Wilkinson, S., Potangaroa, R., & Seville, E. (2011)	Construction Management and Economics	<ul style="list-style-type: none"> The study identified three (3) main factors from a field survey in China, impeding an effective post-disaster rebuilding. These are project-related factors, skills of the contractors and external elements related to legislation, economic situation, and logistics. The authors found that ineffective project scheduling and planning can negatively affect reconstruction quality, aggravate resource shortages, and increase resource acquisition lead time. The authors also pointed out that resourcing managers must collaborate with construction stakeholders, who should be financially and technologically capable and possess significant industrial and social influence to procure resources during a disaster. The authors also conveyed that legislation should facilitate a coordinated rebuilding activity within an effective transportation system that can provide easy access to necessary resources. Post-disaster reconstruction can be affected by undesirable material production rate and price, governed by the current global economic situation. The authors recommended a planning scheme that considers the resourcing availability in the event of a disaster, including an effective transportation system and national economic management. Additionally, they also suggested that large construction companies should assist smaller organisations in honing their resource procurement activities.
Changes in resource need for post-disaster reconstruction: A longitudinal study in China	Chang, Y., Wilkinson, S., Seville, E., & Potangaroa, R. (2012).	Building Research & Information	<ul style="list-style-type: none"> The authors identified four (4) construction materials: brick, cement, aggregate, and steel, which is most required in a post-earthquake disaster environment. The authors found that cost fluctuations for local construction materials were a factor of governmental interventions to limit the costs inflations. On the other hand, the prices of external resources of aggregate and steel were governed by national economic strategies and the 2008 global economic crisis, respectively. The authors recommended that local agencies should closely monitor construction material price variations and develop a recovery plan keeping in mind the resourcing needs that might emerge after a disaster. Finally, the authors urged decision-makers in governmental agencies to provide incentives, although the type remained ambiguous, to companies involved in manufacturing non-local construction materials.
Managing resources in disaster recovery projects	Chang, Y., Wilkinson, S., Potangaroa, R., & Seville, E. (2012)	Engineering, Construction and Architectural Management	<ul style="list-style-type: none"> The authors identified the key factors that affect resourcing availability in the post-disaster reconstruction environment through case studies in China, Australia, and Indonesia. The authors found that issues related to resourcing for a post-disaster rebuilding activity can be disparate and are governed by the country's economy, culture, and political scenario. The authors also identified resourcing challenges that were prevalent in all the case-study countries. These were the skill of construction contractors and the existing legislation and governmental interference. In particular, China and Indonesia had longer resource acquisition lead times and

<i>Research topic</i>	<i>Author</i>	<i>Journal</i>	<i>Key finding</i>
Resourcing for post-disaster reconstruction: A comparative study of Indonesia and China	Chang, Y., Wilkinson, S., Potangaroa, R., & Seville, E. (2012)	Disaster Prevention & Management	<p>ineffective transportation system, whereas Australia and Indonesia experienced intra aid-agency competition for resources and stunted construction material production rates and capabilities.</p> <ul style="list-style-type: none"> The authors encourage a 'multi-stakeholder scheme to enable efficient housing resource procurement along with the help from governmental agencies. The study provides a comparative analysis of resourcing in Aceh, Indonesia and Wenchuan, China. Two distinct approaches to resourcing were identified in the investigated countries. These are donor-driven and contractor-driven resourcing. Despite the various mechanisms employed in project resourcing, the underlying problems of resourcing displayed similar features. The features are low levels of (1) recovery agencies' competency and capability; (2) integrated transportation and logistics systems; (3) disaster legislative and governance; and (4) construction market elasticity. Research findings pointed to the fact that resource availability is a prerequisite for disaster recovery. Better project resourcing can be achieved with a proper assessment of resourcing needs in a post-disaster environment. Effort in mapping the post-disaster resourcing requirements regionally and nationally is appropriate to make informed decision making. More importantly, resourcing plans should be designed as per the exogenous and endogenous factors that shape the disaster-affected areas. Finally, the authors recommended that the government review the legislative framework for recovery from disasters and partner with other stakeholders in building the resourcing capacity.
Resource challenges for housing reconstruction: A longitudinal study of the Australian bushfires	Chang-Richards, Y., Wilkinson, S., Potangaroa, R., & Seville, E. (2013)	Disaster Prevention & Management	<ul style="list-style-type: none"> The longitudinal case study has established that the construction industry resourcefulness is a prime determinant of the disaster recovery speed. Building materials became a shortage due to changes in the building code. New material development took place in compliance with the new building code and thus delayed the progress of the housing reconstruction. Labours were in short supply as a result of public infrastructure development outside the bushfire zones. The infrastructure stimulus packages were more attractive than the bushfire housing recovery, thereby absorbing much of the local labour capacity. Construction workers were apprehensive to take jobs within the bushfire zones owing to accommodation (rental) crunch. Additionally, construction workers were not properly subsidised and supported, thus discouraging them from returning to the affected region. The study highlighted the importance of partnership between the Australian government, construction stakeholders, and community in introducing and implementing (building) legislative requirements. The study also promotes a close collaboration between the government and construction actors in strategizing the long-term resourcing solutions.

<i>Research topic</i>	<i>Author</i>	<i>Journal</i>	<i>Key finding</i>
Effects of a major disaster on skills shortages in the construction industry: Lessons learned from New Zealand	Chang-Richards, Y., Wilkinson, S., Seville, E., & Brunson, D. (2017)	Engineering, Construction and Architectural Management	<ul style="list-style-type: none"> The study proffers a macro perspective of skill needs following the Christchurch earthquakes. Construction firms of various sizes (i.e., small, medium, large-sized companies) participated in the study enabling access to industry-level resourcing mechanisms. Findings showed the industry suffered from a technical skills shortage (i.e., structural and geotechnical engineers) in the initial phase of the disaster recovery. Hence, offshore skills (i.e., United States, Chile, and Italy) were imported to propagate the recovery objectives. Between 2012 and 2014, the demand for tradespeople rose. This increased demand has led to cost inflation for specific skills. Construction firms also faced increased pressure on housing the additional workforce. A long-term solution to skill shortages is the way forward, attained through a streamlined and transparent system of workflow information between the resourcing facilitators and implementers. Accordingly, targeted support for construction workers is needed, especially around the aspect of housing assistance, skill development, and work-life balance.
Improving human resource mobilisation for post-disaster recovery: A New Zealand case study	Sun, X., Chang-Richards, A. Y., Kleinsman, T., & Innes, A. (2021)	International Journal of Disaster Risk Reduction	<ul style="list-style-type: none"> The authors identified the role of human resources in the post-disaster reconstruction environment through two case studies of earthquakes in New Zealand. The authors found that for both the earthquakes recovery activities, the mobilisations techniques of human resources were analogous in nature. In essence, the deployment of human resources was dependent on the existing participation of the reconstruction organisations. The recovery activities of the subsequent earthquake capitalised on the expertise gained by the human resources in the previous disaster. However, the high rate of staff turnover in reconstruction organisations and the inability to identify relevant disaster recovery expertise created issues in allocating a proper reconstruction scheme. The authors highlighted the need to conserve recovery knowledge from one disaster to another. The authors recommended creating a database where the skills and availability of recovery experts can be easily viewed, and appropriate deployment actions can be taken in the event of a disaster. Additionally, the authors also urge that the lessons learnt during past recovery projects be enhanced and remain ready to be implemented for future crisis.

2.3.2.1 Reconstruction following the Sri Lanka tsunami

When the 2004 Indian Ocean tsunami occurred, the Sri Lankans were unprepared for such a catastrophic disaster (Jayasuriya et al., 2006; Ratnasooriya et al., 2007). Two-thirds of the coastal zones in Sri Lanka were severely affected, leading to massive infrastructure damages and social network disruption (Ratnasooriya et al., 2007). The destructions equated to USD900 million (Jayasuriya et al., 2006) and the recovery facilitation presented a challenge as comprehensive disaster planning was not in place (Lanka, S., 2005). Domestic cost inflation occurred because of the large inflow of international funds into the regional economy (Jayasuriya et al., 2006; Jayasuriya et al., 2008). This inflation then induced the Dutch disease², a phenomenon associated with the Sri Lankan construction boom, creating profitability struggles in other sectors (Jayasuriya et al., 2006; Jayasuriya et al., 2008; Rajasingham-Senanayake, 2009).

Accordingly, it was reported that construction labour and material costs have spiralled following the devastating tsunami strike (Lanka, S., 2005). In particular, the supply of sand and crushed aggregate became limited (Lanka, S., 2005), which in turn led to unabated sand mining in local rivers and seashores (Pereira & Ratnayake, 2013). Pilfering of sand was incessant in the aftermath of the tsunami, with some contractors illegally mining and misusing the mining permit granted by the Sri Lankan authorities (Pereira & Ratnayake, 2013).

The increased demand for rebuilding Sri Lanka had greatly affected the national construction labour wages (Jayasuriya et al., 2006; Jayawardena et al., 2008). Sourcing labour domestically was a challenge, particularly among labours with carpentry, masonry, bricklaying, plumbing and electrical skills (Jayasuriya et al., 2006; Jayawardena et al., 2008). The immediate need for skilled labour was fulfilled by paying higher wages, which in the long run anticipated to negatively affect the construction companies' profitability (Jayasuriya et al., 2006). The Sri Lankan Ministry of Finance (2005) also reported that local contractors were reluctant to engage in projects located in the north and east of Sri Lanka and areas controlled by the Liberation of Tigers of Tamil Eelam (LTTE). The Sri

² Dutch Disease in the Sri Lankan post-tsunami is reflected in the significant construction cost increase. Its occurrence is associated with the absorption of capital inflows into an economy (Jayasuriya et al., 2006).

Lankan government tried solving difficulties arising from the contractors' apprehensiveness through the offer of efficiency wages.³ Other than that, an open-door policy was introduced to encourage participation from international contractors and consultants in the reconstruction projects (Lanka, S., 2005).

Following the 2004 Indian Ocean Tsunami, labour casualisation dominates the Sri Lankans' construction industry, creating a temporary organisation structure. In particular, increased growth of 'baas' was manifested following the catastrophic Sri Lankan tsunami. The transitory builder team ('baas') consists of a contractor and handymen. Such an employment structure, formed in short and irregular periods, creates an informal sector characterised by lower business intelligence and maturity (Pathiraja & Tombesi, 2009). According to Ukwatta and Boyagoda (2000), labour casualisation in the Sri Lankan post-tsunami reconstruction projects can be associated with rural-urban migration. The migration involves the absorption of migrant workers from the low-productivity rural area into the high-productivity urban zone that encounters a constrained labour supply (Pathiraja & Tombesi, 2009). Owing to this fact, Ukwatta and Boyagoda (2000) further added that the regional migration was the epitome of self-employment dominance in the Sri Lanka post-tsunami situation.

Consequently, individualistic building practices played a significant part in self-employment operations, leading to productivity loss, labour exploitation, and low capital-labour ratio issues. Manipulative practices were made apparent by utilising squatter residents as informal labours for the reconstruction projects (Pathiraja & Tombesi, 2009). These labours experienced low wages, retained low socioeconomic positions, and were confined to the informal sector (Pathiraja & Tombesi, 2009).

2.3.2.2 Reconstruction following the Banda Aceh tsunami

On December 26, 2004, the devastating Indian Ocean Tsunami severely affected the Banda Aceh area of Indonesia. The tsunami devastated 1500 km of the coastline, causing ca. 167,000 fatalities. The tsunami inadvertently brought peace to the region afflicted by military conflicts. Damages were equivalent to US\$ 3.3 billion (Matsumaru et al., 2012).

³ Refer to Krueger and Summers (1988) to access information about efficiency wages.

Damages were equivalent to US\$ 3.3 billion (Matsumaru et al., 2012). The low-quality structures and poor maintenance aggravated the destruction in the Western and Northern coastal areas of Aceh (Jayasuriya & McCawley, 2010). The tsunami prompted the initiation of one of the largest post-disaster recovery and development endeavours undertaken in developing countries. For developing nations, such a large-scale reconstruction project is viewed as an opportunity to build safer societies, and the Indonesian government embarked on this reconstruction programme bolstered by financial promises from international donors.

The reconstruction programme was undertaken in three main phases where emergency rescue got the highest priority, followed by reconstruction of socio-economic infrastructures and, finally, restoration of the economy (BRR NAD-Nias, 2006). The reconstruction phase was faced with challenges that pertained to the ineffective coordination between different agencies active in the field; large construction companies were tendering most of the construction works; regional political conflicts were hindering the reconstruction, and the uncertainty in the realisation of promises made by international donors (Nazara & Resosudarmo, 2007). In light of the aforementioned concerns, the Indonesian government supported a reconstruction programme that was more coordinated and decentralised. This was done by the creation of the Aceh-Nias Rehabilitation and Reconstruction Board (BRR), which began its operation of rebuilding in 2005.

The collective budget commitment of the Indonesian government and international donors was US\$ 976 million. Although by the end of 2006, ca. 57000 houses were built, there was a significant shortfall (76 per cent) in the target amount. The shortfall of houses built was caused by unprecedented price escalations, which resulted from the post-disaster construction boom (Jayasuriya & McCawley, 2008). Furthermore, institutional and procedural bottlenecks hindered the expenditure of available funds. The building cost of a 36 square metre house had increased over initial estimates of US\$3,000 by 67 per cent in post-tsunami (end-2005). Cost increases were mainly driven by higher wages for construction labours and domestically sourced building materials. The rising labour cost was somewhat moderated by the migration of construction labours from outside Aceh following the establishment of peace (Nakazato et al., 2008). Therefore, the labour supply was more elastic than the building materials supply (see *Figure 2.9*). Nevertheless, the

reconstruction programme provided the victims with corporate housing in areas away from the coastal regions (Ochiai & Shaw, 2008). A previous study reported a general feeling of satisfaction among the relocated residents, although they were given no choice regarding their place of residence (Nakazato et al., 2008).

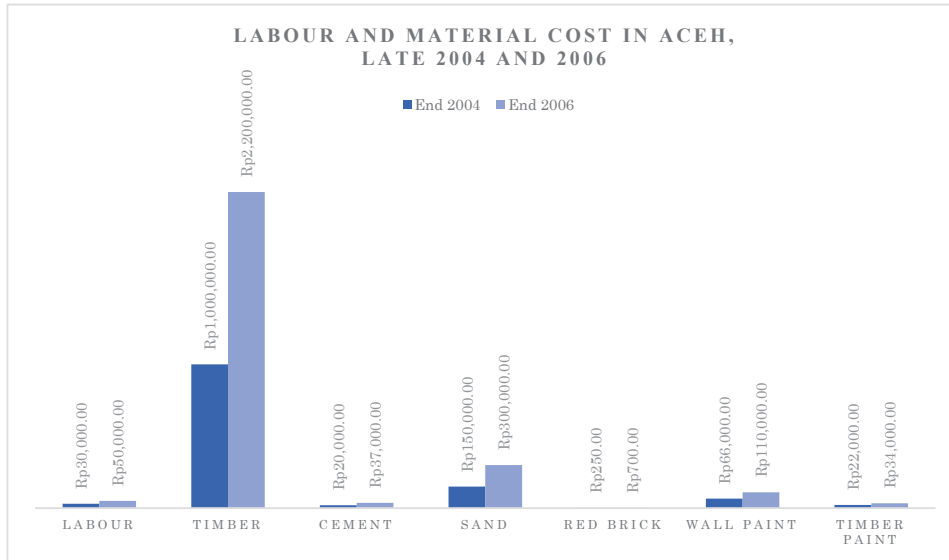


Figure 2.9 Labour and material cost in Aceh following the 2004 tsunami (adapted from Nazara and Resosudarmo, 2007)

Despite the progression of the reconstruction following the tsunami, the rebuilding process was met with numerous challenges. Shortages in the main building materials prompted construction market inflation. Logistical and environmental issues plagued the effective procurement of timber. There was a severe lack of collaborative resource procurement activities among the aid agencies and between the donor community and the local governmental institutions. Besides, the absence of project management and procurement skills and lack of information systems for resource scheduling and management within NGOs were prevalent. All these factors together constrained the rate of the rebuilding measures taken in the aftermath of the Aceh tsunami.

2.3.2.3 Reconstruction following the Wenchuan earthquakes

A devastating earthquake affected the Sichuan province in May 2008 that led to the deaths of ca. 70,000 people, with ca. 18,000 more listed as missing (Ge et al., 2010). The

earthquake rendered 4.8 million people homeless and accounted for a monetary loss of ca. USD 70 billion (State Council of the PRC, 2008). Owing to China's political system, a centralised reconstruction approach was devised that enabled the transmittance of technology and funds to the affected areas. The central government of China created a budget of ca. USD 147 billion for rebuilding purposes that lasted for three years. The central government led the reconstruction programme, which included setting up rules and regulations for the recovery. Given the majority of federal revenue is controlled by the government, the local NGOs had financial and political constraints, which reduced their participation in the reconstruction programme (Huang et al., 2011). Nevertheless, the post-disaster reconstruction was much more efficient than what was conducted in Sri Lanka and Indonesia. Within just three years, the centralised Chinese government concluded the rebuilding process that fostered both economic and social growth (Dunford & Li, 2011).

The reconstruction programme consisted of two approaches: the counterpart assistance programme and the sustainable development approach that all stakeholders adopted. The rebuilding process had six primary goals: providing a house for every family; a job for at least one member of the family; social welfare for victims; restoration of social infrastructure; developing the economy of earthquake-stricken areas; and ecological developments (Zuo, 2010). The counterpart assistance approach enabled the development of the affected areas through aid from other developed and unaffected regions. In particular, 20 developed provinces provided financial, materials and human resource support to eighteen earthquake-affected provinces. This approach was critical in the rebuilding efforts of the Wenchuan earthquakes. The success of the counterpart assistance programme was linked to the prompt allocation of resources, national-level coordination, and technology transfer in the afflicted regions (Xu et al., 2014). The sustainable development approach of the reconstruction plan made it mandatory for the stakeholders to consider the preservation of nature, culture, and heritage of the region. In particular, the contractors and subcontractors were encouraged to recycle their building materials and industrial solid wastes and develop new environment-friendly construction techniques. However, due to time constraints, sustainable development received less attention than the counterpart assistance approach.

To conclude, post-disaster, the Chinese government adopted a comprehensive and non-structural approach to reconstruction, focusing on the heavily damaged regions. The rebuilding developed both temporary and permanent housing in rural and urban areas along with efforts that recovered businesses in the affected regions. Although the reconstruction programme was effective on a short-term basis, the long-term sustainable development in the post-disaster areas was ignored (Ge et al., 2010).

2.3.2.4 Recovery following the Victoria bushfires

The state of Victoria in Australia experienced one of its worst natural disasters as wild bushfires adversely affected 78 communities causing 173 casualties and devastating 430,000 hectares of land and 2000 properties (Mannakkara et al., 2014). The bushfires were detrimental to numerous timbers, agriculture, horticultural, cattle, and wool industries. Apart from household regions, the bushfires destroyed national parks, cultural sites, and business premises. Although the fatalities were much less in number compared to the disasters in Sri Lanka, Indonesia, and China, the extensive damage to the state and personal properties had long-lasting economic and psychological effects.

The reconstruction programme was initiated by the creation of the Victorian Bushfire Reconstruction and Recovery Authority (VBRRA) which was tasked to act as a chaperone for effective rebuilding. The VBRRA invested ca. USD 60 million for the entire reconstruction efforts (Chang et al., 2010). As a part of the reconstruction programme, new building codes were established to ensure that the building of new houses adhered to improved fire safety regulations. However, the implementation of such a risk reduction approach caused unintended consequences. There was a price escalation due to the fire-resistant building materials not being available in the market and inadequate research conducted on their fire retarding behaviour (Chang-Richards et al., 2013).

Nevertheless, the combined effort of VBRRA and the Department of Human Services (DHS) was able to relocate the victims to temporary housing. The VBRRA also provided social recovery platforms through an integrated community-centred approach. This included case manager service, counselling, and economic recovery support services. However, some studies reported that the economic recovery was not efficient since the

incentives for the re-establishment of businesses were not attractive, discouraging people from returning to the affected regions (Mannakkara et al., 2014). Furthermore, the inclusion of various stakeholders by VBRRRA in the reconstruction programme fostered a disorganised environment resulting from inefficient coordination and communication. The procurement of skilled workers to aid the recovery was problematic due to the lack of proper logistics and accommodation. Moreover, the abundance of work in the metropolitan areas dissuaded the workers from divulging construction-related projects in the fire zones (Chang-Richards et al., 2013). The recovery steps that were undertaken after the bushfires presented an opportunity to observe the weaknesses in the reconstruction programme and allow their betterment for future disasters.

Table 2.6 Disasters, resourcing challenges, and mitigation measures

<i>Countries and major disasters</i>	<i>Direct economic loss (US\$)</i>	<i>Resourcing challenges</i>	<i>Mitigation measures/resourcing strategies</i>	<i>Authors</i>
Sri Lanka: 2004 Indian Ocean Tsunami	US\$900 million	Cost inflation and Dutch disease. Skill shortages: local contractors, skilled labour. Material shortages: sand, crushed aggregates.	International contractors and consultants. Construction skills training. Expansion of material supply capacity.	Sri Lanka Post-Tsunami Reconstruction Report, 2005; Jayasuriya et al., 2006; Jayawardena et al., 2008; Pereira and Ratnayake, 2013
Indonesia: 2004 Indian Ocean Tsunami	US\$4.45 billion	Material price escalations (50 – 200% increase): timber, cement, sand, red bricks, etc. Skill shortages: house building specialists, qualified construction labours. Material shortages: timber.	Price agreements. Labour import from Sumatra and Java. Wood-free construction.	Nazara and Resosudarmo, 2007; Jayasuriya and McCawley, 2008; Masyrafah et al., 2008; Matsumaru et al., 2012
China: 2008 Wechuan Earthquakes	US\$147 billion	Construction cost inflation and profiteering. Skill and material shortages.	Chinese government interventions including price control and market regulatory interventions. Expansion of construction material manufacturing facilities. Introductory to new building materials (environment-friendly, energy saving and seismic-resistant building materials). Improved transportation networks. Legislative implementation.	Chang et al., 2010; Dunford and Li, 2011; Huang et al. 2011; Xu et al. 2014
Australia: 2009 Victorian Bush Fires	US\$60 million	Building materials price escalation. Shortages of material and labour supply.		Chang et al. 2010; Chang-Richards et al. 2013; Mannakkara et al. 2014

2.4 Resilience of construction organisations

The degree of catastrophic events causing significant disruption in the lives of humans is increasing (Cavallo et al., 2013; Shabnam, 2014; Wang et al., 2017). These disruptions include natural disasters (floods, earthquakes, hurricanes, etc.), infrastructure collapse, economic depressions, fuel shortages, terrorist activities, and viral outbreaks (CRED, 2020). In 2021, catastrophic events increased by approximately 21 per cent compared to the 2001 – 2020 annual average (CRED, 2021). The aforementioned disruptive events negatively affect organisations of all sizes by imparting strategic uncertainty (Dyason, 2022). This, in turn, hinders the propagation of normal business and jeopardises the survivability of an organisation.

One sector that is at the forefront of disaster-related recovery activities is the construction industry (Sapeciay et al., 2017). Construction organisations are pivotal in spearheading the rebuilding phase by providing resources that are coordinated coherently and efficiently. Therefore, the construction industry is directly responsible for the revitalisation of both communities and the country's economy following a disaster (Bosher et al., 2016). This very fact firmly grounds the importance of resilience in construction organisations, which is also linked to community resilience because the ability to respond and recover from extreme events is significantly enhanced. Although there are numerous definitions of 'resiliency' spanning many academic fields (see Hollnagel, 2014), in an organisational context, it is the recognition of appropriate resources and capabilities by an organisation that enable it to anticipate, prepare and respond to, and eventually recover from, extreme events and perturbations (Lee et al., 2013).

Resilient organisations integrate expertise, resources, and networking into their operation regardless of their situation. The organisational resilience ethos includes situational awareness, management of key vulnerabilities and adaptive capacities (McManus et al., 2008). In 2013, Lee, Vargo, and Seville developed a new model of organisational resilience, made up of a two-factor structure known as planning and adaptive capacity. This model enables organisations to employ a two-pronged approach by identifying which approach they inherently favour and leveraging those strengths while addressing

potential organisational weaknesses (Lee et al., 2013). Therefore, the core of resiliency is nested in the intrinsic ability of an organisation to adjust its functions prior to, during, or following disturbances, ensuring sustained operations under both expected and unexpected conditions. In this light, resilience, as discussed in this section, refers to an organisation's ability to respond pre-emptively to a new normal.

According to Wilkinson et al. (2016b), construction organisations in New Zealand contribute up to ten per cent of the gross domestic product, thereby forming a significant driver for the economy. However, disaster preparedness is not uniform throughout the construction industry. On the one hand, large construction organisations are generally well-positioned to handle post-disaster environments due to a relative abundance of resources and greater exposure to disaster management practices. On the other hand, small and medium-sized enterprises (SMEs) are the worst hit because of the absence of resilience practices, localised nature of business and lack of exposure to disaster management practices. Additionally, there is a dearth of research regarding construction SMEs' planning and response behaviour to extreme events. In a study by Sapeciay et al. (2017), construction companies were interviewed, and the authors reported that a significant proportion of organisations (i.e., 62 per cent), mainly comprised of subcontractors, completely lacked the practice of disaster resilience within their organisations.

Furthermore, the authors indicated that SMEs had neither any investment related to enhancing organisational resilience nor any knowledge regarding the various aspects of resilience. In other words, SMEs do not possess the information regarding the beneficial effects of organisational resiliency and the ill effects of the inability to cope with disasters. However, Sapeciay et al. (2017) elucidated that leadership was considered the most important resilient indicator in construction SMEs. The authors also stressed the importance of intervention by government and local agencies to bring forth legislative changes regarding the improvement of business resilience.

The importance of leadership in the construction industry in facilitating business resilience has also been corroborated by another study (Wilkinson et al., 2016b). The authors recognise the construction industry, in general, and SMEs, in particular, as the

'key stakeholders' for disaster recovery activities. They presented a list of methods that SMEs can adopt to enhance their business resilience. They suggested that SMEs should be educated regarding their crucial role in post-disaster recovery; imparted with disaster-management training; adopt a resiliency management tool; invoke strong leadership skills within SMEs and collaboration amongst various companies; be flexible towards change and comprehend post-disaster situations.

Despite the disadvantage of having resource constraints and, consequently, low business resilience than larger organisations, SMEs can have some inherent properties that positively affect their disaster preparedness. SMEs have low bureaucracy, fast decision-making and communication of strategies, and the potential to learn rapidly (Vossen, 1998). Additionally, most SMEs operate in a market full of uncertainties (Tserng et al., 2011). Although they are detrimental to the survival rate of SMEs, the facts mentioned above inadvertently grant flexibility and increased responsiveness.

A study by Sullivan-Taylor and Branicki (2011) observed that focus groups consisting of SMEs lacked resourcefulness, which is the inability of managers to allocate resources, set priorities and take action to nullify the effects of disasters. The authors also observed that the managers of SMEs were incapable of operating their business efficiently during disturbances. Finally, the SME managers did not possess the ability to take appropriate actions to impart disaster preparedness. Interestingly, the authors reported that some SME managers could take rapid decisions during extreme events owing to their organisational flexibility. However, SMEs must increase their capabilities to impart resilience by being pre-emptive and tactical towards adopting effective disaster management practices.

Such organisational capabilities could be improved gradually to reach a level of maturity, where dealing with disasters becomes effortless and uncomplicated. A study by Adeniyi et al. (2018) developed a maturity model for SMEs by identifying the required organisational capabilities to be resilient to disruptions by flooding. The capability maturity model had five levels, which can be utilised by other subcontracting companies and researchers as a master plan to enhance the flood resiliency of an organisation. However, care must be taken in adopting resiliency strategies prepared by different sectors and/or organisations within the same sector because resiliency guidance

documents are seldom comprehensive, can lead to maladaptation, and one size does not fit all (Sullivan-Taylor & Branicki, 2011; Rajkovich & Okour, 2019). Therefore, Burnard and Bhamra (2011) developed a resiliency response framework that construction organisations can universally adopt. *Figure 2.10* shows the model developed by the authors.

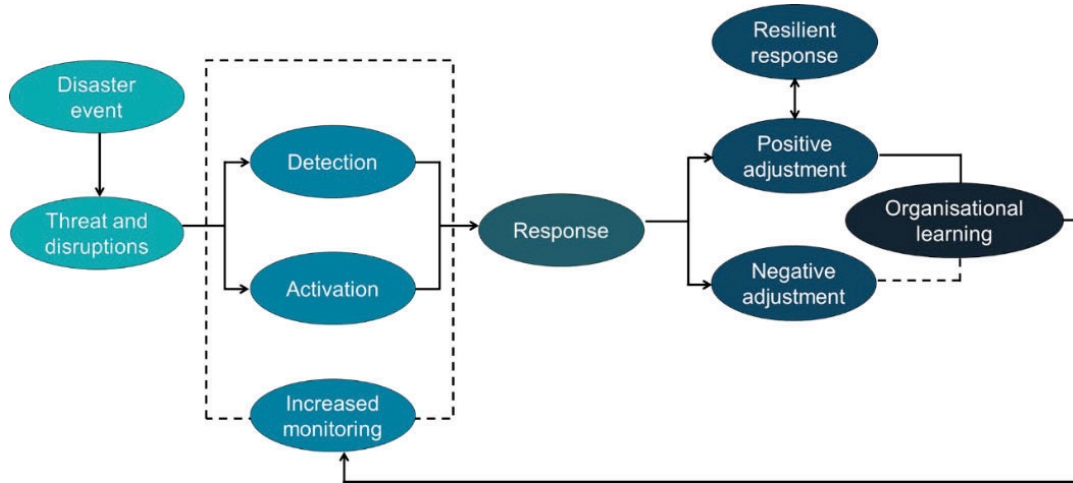


Figure 2.10 Resilience response model (Adapted from Burnard and Bhamra, 2011)

The study reveals that SMEs should embrace 'strategic resilience' by continually enhancing organisational capabilities and resources while generating new ones. This will ensure that companies are positively adjusted to disturbances, creating a better bouncing back ability, and fostering a competitive advantage over other businesses. In a similar study, Hollnagel (2014) proposed that an organisation's resiliency can be increased and/or imparted by its ability to anticipate, monitor, learn, and respond to perturbations. The study establishes a connection as to how these four abilities are dependent on each other (*Figure 2.11*) and that they must be able to handle disruptions both within and outside the company. SMEs must be abreast of organisational functioning rather than be aware of the structure. This will ensure that SMEs can be resilient both during expected and unexpected situations.

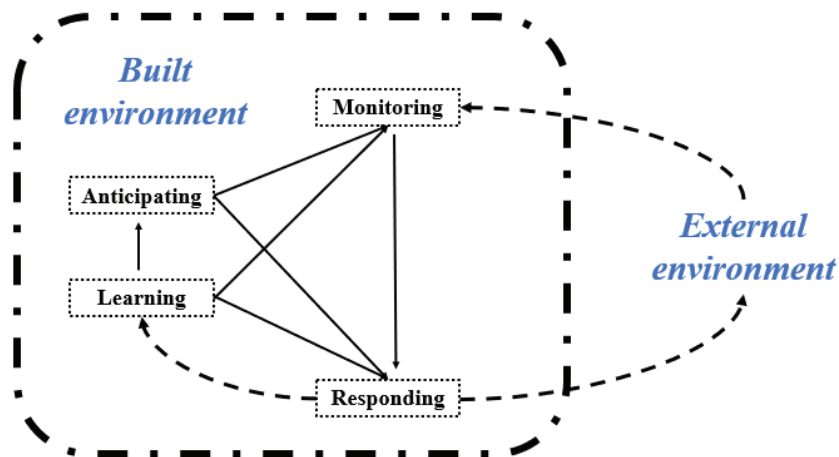


Figure 2.11 The relationship amidst the abilities for resilience (Adapted from Hollnagel, 2014)

Taken together, findings suggest a role for construction SMEs in promoting organisational resilience. Construction organisations, especially SMEs, must become proactive in their approach to dealing with disasters, which will concurrently bestow organisational resiliency.

2.5 Human resource management (HRM) in construction

The construction industry remains one of the most people-reliant industrial sectors (Loosemore et al., 2003; Dainty et al., 2007; Raja et al., 2013; Hossein et al., 2018; Hussain et al., 2020; Kim et al., 2020; Manoharan et al., 2021; Rajhans & Bhavsar, 2022). It is an industry characterised by fragmentation, a competitive market, non-standard employment practices, and low productivity. The emergence of non-standard employment (i.e., subcontracting) is argued to be detrimental to the performance and future development of the construction industry (Well, 2003; Dainty et al., 2005; Forde & MacKenzie, 2007; Bigelow et al., 2021). The practice of directly employing the workforce has been considerably reduced following the extensive utilisation of subcontracting, leading to a structural change in most construction organisations (Bresnen et al., 1985; Winch, 1994; Loosemore et al., 2003; McGrath-Champ & Rosewarne, 2009; Ofori, 2015; Ho, 2016). Investment in skills development is often hampered by the task-oriented culture of construction and the traditional short-term boom and bust cycle (Loosemore et al., 2003; Dainty & Chan, 2011; Hossein et al., 2018). Previous research

has established that the short-termism approach to skills development and reliance on subcontracting leads to the recurring issues of skill shortages (Agapiou et al., 1995; Forde & MacKenzie; 2004; Dainty et al., 2005; Chan & Dainty, 2007; Oyegoke et al., 2009; Ho, 2016; Bigelow et al., 2021).

The poor adoption of HRM in construction is extensively documented (Bresnen et al., 1985; Huang et al., 1996; Maloney, 1997; Brandenburg et al., 2006; Raidén et al., 2001; Raidén et al., 2006; Raja et al., 2013; Srour et al., 2017). HRM in the construction industry has been given the least priority (Raja et al., 2013; Rajhans & Bhavsar, 2022), and construction employees are often viewed as a factor in minimising monetary outlays (Druker & White, 1996a; Druker et al., 1996; Ness & Green, 2013; Alzahrani & Emsley, 2013). Many construction companies overlook the relevance of the workforce as part of their business survival strategy, creating potential implications for the organisations' competitiveness and productivity (Druker et al., 1996; Ruddock et al., 2014).

The regressive approach to HRM (Maloney, 1997; Raidén et al., 2006; Raja et al., 2013; Srour et al., 2017) is brought about by the idiosyncratic nature of the construction projects (Druker & White, 1996a; Loosemore et al., 2003; Loosemore et al., 2013), the temporality of projects (Raidén et al., 2003; Huemann et al., 2007; Raja et al., 2013), heterogeneity in project deliveries (Wilkinson et al., 2012) and the workforce mobility (Raidén et al., 2006; Moehler et al., 2008; Wilkinson et al., 2012). Adaptive HRM is, therefore, synonymous with the construction industry, exemplifying the practices of flexibly utilising the workforce's role to yield maximum return (Thörnqvist & Woolfson, 2012; Wilkinson et al., 2012). Equally, the seasonal demand for construction projects drives most construction organisations to adopt a flexible workforce to cope with construction demand peaks and troughs (Green & May, 2003; McGrath-Champ & Rosewarne, 2009; Johnstone & Wilkinson, 2013).

2.5.1 The need for effective HRM functions in construction companies

The pronounced skills crisis in the construction industry calls for a better understanding of the interplay between the industry's employment and HRM practices within construction organisations (Dainty et al., 2004; Raja et al., 2013; Rajhans & Bhavsar,

2022). Most construction organisations practice a more mechanistic approach to HRM (Alzahrani & Emsley, 2013). Indeed, the high levels of informal management approaches limit the extent to which HRM is practised in the industry (Maloney, 1997; Brandenburg et al., 2006; Haro & Kleiner, 2008; Raidén et al., 2006; Raja et al., 2013). Taylor (2008) added that most employers are short-sighted and do not realise the long-term benefits of proper workforce resourcing. This ignorance has led to poor implementation of strategic human resource management functions in construction organisations (Raidén et al., 2004; Brandenburg et al., 2006). Despite the aforementioned challenges, very few studies have been conducted that put forward some potential approaches for effective workforce resourcing in construction (Raidén et al., 2016).

Several efforts can be made to lessen staffing issues in construction. One of the efforts is to improve the public image of the construction industry (Dainty et al., 2000; Loosemore et al., 2003; Chan & Kaka, 2007; Ginige et al., 2007; Swanson & Holton, 2009; Haupt & Harinarain, 2016). This effort would increase the public's perception of the construction industry. Additionally, construction companies should explore unique recruitment and retention strategies (Clarke & Herrmann, 2007; Lobo & Wilkinson, 2008; Sedighi & Loosemore, 2012; Morello et al., 2018; Bigelow et al., 2021; Welfare et al., 2021). Staffing procedures can be made more efficient by adapting to the dynamics of the current trend in demographics (Ho, 2016; Bigelow et al., 2021). This would mean construction companies are providing attractive working conditions to non-conventional candidates such as ethnic minorities and women (Morello et al., 2018). Increasing the labour wages has been the conventional response strategy to skill shortages, yet there is little evidence to suggest this is practical in the event of a massive skills demand (Mackenzie et al., 2000; Ho, 2016).

Additionally, Lobo and Wilkinson (2008) suggested diversified recruitment and reinvigorating vocational education and training to remedy skill shortages. Some construction companies have also turned to international recruitment in the face of skill shortages (Fellini et al., 2007; Krings et al., 2011; Caro et al., 2015; Ho, 2016). This method (i.e., international recruitment) broadens the business ventures of the concerned company. Furthermore, recruiting well-trained employees could significantly curtail the need for training as it offers a more qualified workforce pool (Oviedo-Haito et al., 2014).

A more in-depth comprehension of such resourcing approach could beneficially affect the construction industry. This resourcing procedure would align with the current economy, required skills, and education.

The mainstream construction management literature reported the universal relevance of workforce resourcing predominantly in large construction organisations (e.g., Dainty et al., 2000; Raidén et al., 2001; Raidén et al., 2002; Raidén et al., 2003; Loosemore et al., 2003; Raidén et al., 2005a; Raidén et al., 2005b; Dainty et al., 2005a; Dainty et al., 2005b; Raidén et al., 2006). However, empirical research focussing specifically on workforce resourcing approaches adopted in construction SMEs remains limited and equivocal. Previous research (e.g., Shash, 1998; Dainty et al., 2001; Asgari et al., 2014) has established that despite the significant number of subcontractors in the construction industry, there is a dearth of research centring on their resourcing capacity in delivering construction projects. A more detailed account of subcontractors' roles in construction is given in the following section.

2.5.1.1 Subcontracting in construction

Subcontracting is an integral part of the construction industry (Lai, 2000; Edward, 2003; Loosemore & Andonaki, 2007; Hartmann & Caerteling, 2010; Dainty & Loosemore, 2013). Subcontractors play a significant role in construction projects (El-Mashaleh, 2011; Loosemore, 2014; Gao & Low, 2015), where they execute approximately 90 per cent of the construction production (Hinze & Tracey, 1994; Shash, 1998; Kumaraswamy & Matthews, 2000; Karim et al., 2006; Loosemore & Andonaki, 2007; Loosemore, 2014). The growth in subcontracting and specialisation has led to the proliferation of small and medium-sized firms in the construction industry (Loosemore et al., 2003; Dainty & Chan, 2011; Akintan & Morledge, 2013). In the UK, self-employment in construction has been rising rapidly as a result of a political agenda of de-unionisation, a philosophy that 'small is beautiful', and favourable tax reforms (Loosemore et al., 2003).

Similarly, the New Zealand construction industry employs large numbers of self-employed workers and sole operator businesses (PwC, 2011; PwC, 2016; Seadon & Tookey, 2019). The dominance of small and medium-sized businesses in construction

directly impacts New Zealand construction productivity (Allan & Yin, 2010; Seadon & Tookey, 2019). The perpetuation of subcontracting in construction has also led to a fragmentary approach to work (Dainty & Chan, 2011; Akintan & Morledge, 2013). These companies (i.e., subcontractors) operate in subordinate functions to principal contractors (Loosemore et al., 2003; Loosemore, 2014; Chalker & Loosemore, 2015). Under this arrangement, large construction companies (i.e., principal contractors) function as 'system integrators' with minimal involvement in the project execution (Dainty & Chan, 2011).

Principal contractors perceive subcontracting as a strategic approach to flexibility (Forde & MacKenzie, 2007; Forde et al., 2009; Johnstone & Wilkinson, 2013; Ofori, 2015). Subcontracting allows construction companies (i.e., principal contractors) to respond flexibly to irregular construction workflows (Loosemore & Andonaki, 2007; Ofori, 2015). In this respect, subcontracting facilitates specialism free from bureaucratic regulations. Subcontracting also increases an organisation's ability to control employment expenditures (Constantino et al., 2001; Forde & MacKenzie, 2007; Marchington et al., 2012; Choudhry et al., 2012).

Asamoah et al. (2019) found that the demand for construction is determined exogenously. Their findings were underpinned by 50 scholarly publications, exposing 59 exogenous economic factors in construction. These included GDP, inflation, interest rate, consumer price index, exchange rate, unemployment, employment, crude oil price, producer price index, money supply, population, real house prices, labour cost, and monetary policy. Seidu et al. (2021) reported that subcontractors are more susceptible to unexpected exogenous shocks, leading to increased business closure. Subcontractors who employ the vast majority of workers in the construction industry must remain flexible and maintain a lean hierarchical organisation to survive (Oviedo-Haito et al., 2014).

Furthermore, the short-term and itinerant nature of construction work requires multiple flexibilities in employment (Winch, 1994; Dainty et al., 2000; Green & May, 2003; Huemann et al., 2007; McGrath-Champ & Rosewarne, 2009; Ness & Green, 2013, Raja et al., 2013; Ruddock et al., 2014). In this respect, employment in construction is mostly informal and anarchic (Storey, 2014). These ingrained employment practices and time-honoured delivery structures have inevitably demanded a mobile workforce (Briscoe et

al., 2000; Clarke & Gribbling, 2008; Haro & Kleiner, 2008; Moehler et al., 2008; Phua, 2012; Wilkinson et al., 2012; Atkinson & Hargreaves, 2014; Raidén et al., 2016). The pursuit of functional and numerical flexibility in most construction organisations tends to limit the extent of direct employment (Loosemore et al., 2003; Raidén et al., 2004; Forde & MacKenzie, 2007). For this reason, self-employment and subcontracting have become prevalent in the construction industry.

The preponderance of subcontracting businesses in construction directly impacts construction industry productivity (Dainty et al., 2001; Well, 2003; Loosemore, 2014; Ofori, 2015; Seadon & Tookey, 2019). A flexible approach to staffing has led to significant structural changes in the construction industry (Bresnen et al., 1985; Winch, 1994; Druker et al., 1996; Loosemore et al., 2003; McGrath-Champ & Rosewarne, 2009; Ofori, 2015). Companies that turn to non-standard forms of employment are no longer obliged to provide training and development in the workplace (MacKenzie et al., 2000; Forde & MacKenzie, 2007; Johnstone & Wilkinson, 2013). Such an arrangement devolves the responsibility for skills development to subcontractors (Dainty & Chan, 2011). However, the subcontractors' lack of business stability (Chang-Richards et al., 2016), limited stock of resources (Dundon & Wilkinson, 2009; 2018; Ng & Tang, 2009), poor project management skills (Ng & Tang, 2009) and lack of business knowledge (Arditi et al., 2010) form an interesting background to the major criticisms surrounding their ability to build workforce capacity. Subcontractors are also often plagued by hierarchical conflicts emanating from the upper tiers' control (i.e., principal contractor) (Grugulis et al., 2003; Akintan & Morledge, 2013; Chalker & Loosemore, 2015).

2.5.1.2 Human resource management: A boon or a bane for subcontracting businesses?

Human capabilities have been associated with organisational performance. Giménez et al. (2019) found that human capabilities can positively impact the performance of construction companies. These capabilities (i.e., collective skills, abilities, and organisational expertise) are prime determinants of organisational competencies and competitiveness. These results match those observed in earlier studies. Earlier, Manley et al. (2009) found that employee strategies are central to organisational competitiveness.

Their findings suggest that management's proactive attitude towards empowering employees is a major source of competitive advantage.

Similarly, studies by Turner (2002) and Ng et al. (2009; 2018) also point to the workforce as a significant enabler to long-term organisational success. These findings further support the idea of human resources as a sustained competitive advantage owing to their value, rareness, inimitability, and not-substitutability. Therefore, human resource functions in construction organisations govern their success or failure (Marchington & Wilkinson, 2012; Sing et al., 2014; Sing et al., 2016; Halpin et al., 2017).

Previous studies (e.g., Tansey et al., 2013; Oviedo-Haito et al., 2014; Ruddock et al., 2014; Aghimien et al., 2018) have shown organisational survival of construction companies in the face of crises hinges upon the availability of human resources. Chew et al. (2008) conducted a specific study on construction SMEs, looking into their core capability and competitive strategy. The authors highlighted the importance of developing organisational resources (i.e., financial, physical, human, and technological) into core capabilities. These capabilities are the enabler for organisational profitability and a sustainable competitive advantage. Indeed, the people element (i.e., entrepreneurial, managerial, and technical skills) has been emphasised as one of the critical dimensions in measuring organisational core capability and competitive strategy. Likewise, Oviedo-Haito et al. (2014) believed that human capital is a survival factor for subcontracting organisations operating in crises. Greater focus on workforce flexibility and adaptability was prevalent to meet the fluctuating demands in construction. In this view, it is worth noting that human capital strengthens the competitive positions of construction companies that can exploit it (Turner, 2002; Ericsson et al., 2005; Ng & Tang, 2009; Ng et al., 2018).

The organisation's capability to simultaneously adapt to the fluctuating business environment and create viable relationships with its surroundings also determines its success (Seville et al., 2008). Knowledge of the business environment is equally important in enabling construction organisations to capitalise on business opportunities and minimise potential setbacks (Maloney, 1997; Ruddock et al., 2014). Following this, the situation awareness ethos emerges as a mechanism for building a more resilient

business. Organisational situation awareness enables better management of business turbulence and seizing the right opportunities in adversarial events (Seville et al., 2006; McManus et al., 2008; Vargo & Seville, 2011; Lee et al., 2013). Identifying business opportunities and threats serve as the fundamental input in developing organisational workforce planning (Wu & Issa, 2014). This workforce planning must be responsive to exogenous and endogenous factors in construction. Integrating business strategy with organisational core competencies is an important driving factor of workforce planning responsiveness (Raidén et al., 2016). Therefore, organisational resourcefulness is central to the effective implementation of workforce planning. However, how construction SMEs respond to crises and accordingly plan their staffing within the context of resource scarcity (constraints related to finance, human, and technological resources) remains to be elucidated.

Subcontracting businesses stand in stark contrast to the high rate of implementing formal HRM in larger organisations. Informal practices are more likely to occur in their businesses' operations due to resource constraints (Dundon & Wilkinson, 2009; 2018; Ng & Tang, 2009; Belsito & Reutzel, 2019; 2020). Subcontracting businesses are inevitably prone to external business interferences, particularly to construction market fluctuation and turbulences in the economic cycle (Yik & Lai, 2008; Ng & Tang, 2009). As a result, liquidation and non-performance were often reported in construction SMEs (Russell et al., 1991; Shaikh, 1999; Schaufelberger, 2003). Arditi et al. (2000) indicate that most subcontracting businesses are not well equipped with business knowledge, thus jeopardising their business growth. Business failures are also attributable to defective managerial skills in an organisation and stunted business maturity (Abidali & Harris, 1995; Schaufelberger, 2003; Kivrak & Arslan, 2008; Mahamid, 2012). These harsh realities somewhat have retained the informal status of workforce resourcing in construction SMEs, thereby needing empirical evidence to determine if formalisation is necessary.

2.5.1.3 Subcontractors' workforce resourcing in post-disaster projects

Following the Christchurch earthquakes, subcontracting businesses were at the forefront of rebuilding efforts. Chang et al. (2011; 2012) reported that these companies experienced

a structural change in their business operation due to the derived demand from the post-earthquake reconstruction. Fierce competition over skilled resources was predominant in Christchurch post-earthquakes (Chang-Richards et al., 2013). The same issue has been evident in major disaster reconstruction projects such as in Sri Lanka (Jayasuriya et al., 2006; Jayawardena et al., 2008), China (Chang et al., 2012a, Chang et al., 2012b; Wu et al., 2012), Indonesia (Chang et al., 2012b), Australia (Chang-Richards et al., 2013) and New Zealand (Chang-Richards et al., 2017). It was also observed that construction SMEs prioritised recruitment and resourcing to survive in their business (Chang-Richards et al., 2012, 2013). Construction SMEs also focus on establishing staff retention mechanisms, including attractive remuneration, good working conditions, and proper support for work-life balance (Wilkinson & Chang-Richards, 2016).

Piri et al. (2015) found that subcontractors dealt with opportunities in Christchurch post-earthquakes as they presented themselves. Their findings showed that a reactive approach to workforce resourcing seems dominant in construction SMEs. Efforts to explain the spontaneity are often couched in the view that subcontracting businesses are characterised by resource constraints, poor cash reserves, poor forward workflow, flawed project estimating, and inadequate governance (Chang-Richards et al., 2016; Wilkinson & Chang-Richards, 2016). This presents a picture of a sector that does little planning to manage its future and raises questions about the potential for success of such an approach (i.e., reactive approach) in a labour-intensive industry. Moreover, the underlying factors constituting workforce resourcing, particularly in a post-disaster environment, are inadequately reported. Further studies, which take these variables into account, will need to be undertaken.

The Sendai Framework for Disaster Risk Reduction 2015-2030 places great attention on the roles of micro, small, and medium-sized businesses in incorporating disaster risk preparedness into their business models and operations. This is stipulated as follows:

“Business, professional associations and private sector financial institutions, including financial regulators and accounting bodies, as well as philanthropic foundations, to integrate disaster risk management, including business continuity, into business models and practices through disaster-risk-informed investments, especially in micro, small and medium-sized enterprises; engage in awareness-raising and training for their employees and customers; engage in and support

research and innovation, as well as technological development for disaster risk management; share and disseminate knowledge, practices and non-sensitive data; and actively participate, as appropriate and under the guidance of the public sector, in the development of normative frameworks and technical standards.”

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Organisations, regardless of size, are encouraged to integrate risk and resilience into a ‘development first approach’ (Hay et al., 2018). The principle enshrined within the recommendation is to enable business continuity before, during, and after a disaster. This can be achieved by defining the organisational resiliency indicators (Pathiraja & Tombesi, 2009) and identifying the organisational business maturity level (Chang-Richards et al., 2017). According to Pathiraja and Tombesi (2009), resiliency indicators for construction companies working in a rapidly changing environment include:

1. Greater financial flexibility;
2. Greater usage of construction technology;
3. Greater risk allowance strategies and preparedness for future risks;
4. Greater adaptability to social circumstances;
5. Greater opportunities for workforce learning and development; and
6. Greater industry networks.

For construction SMEs operating in post-disaster reconstruction, it is imperative to define the organisational business maturity level and develop a strong workforce base (Chang-Richards et al., 2016; 2017). This business maturity exhibits the organisation’s operational capacity and the effectiveness of HRM practices. Accordingly, Olshansky et al. (2012) highlighted that creating a decision-making framework is required to increase the anticipatory capacity of an organisation. An enhanced anticipatory capacity is significantly linked to the organisation’s ability to respond to the changing environment, foresee future events with their associated consequences, and formulate remedial actions in response (Seville et al., 2008; Vargo & Seville, 2011). McManus et al. (2008) added that this anticipatory capacity is enabled by the existence of organisational competencies, which include the workforce. In this respect, human capital is perceived as a significant enabler for organisational resilience. Bilau et al. (2017) suggested four courses of action

that companies can adopt to resource the workforce in a post-disaster environment. These are:

1. Conducting assessment on the need for human resources in order to meet the reconstruction demands;
2. Developing a realistic human resource planning;
3. Establishing pragmatic recruitment and alternative recruitment approaches; and
4. Providing opportunities for capacity development.

Regardless of the measures applied in workforce resourcing, the workforce's capacities must be developed to ensure they are adequately skilled to meet the emerging demands for post-disaster reconstruction (Bilau et al., 2017). Therefore, appropriate training should be provided to develop the workforce's requisite skills and competencies (Chang-Richards et al., 2016; 2017). In order to deliver the purported benefits of workforce resourcing, Piri et al. (2015) suggested that the workforce resourcing activities should be explicitly aligned with the organisational long-term strategic objectives. The discussion above has led to the identification of four workforce resourcing priorities in a post-disaster environment. The priorities will be thematically discussed in subsequent sections as follows:

1. Workforce planning;
2. Workforce recruitment and selection;
3. Workforce retention and performance management; and
4. Workforce development.

2.6 Workforce planning in construction: To accept or reject?

Workforce planning is the process of analysing, forecasting, and planning workforce supply and demand in an organisation (Iles, 2001; Dainty et al., 2009; Raidén et al., 2016). According to Sing et al. (2014), it is required to foster equilibrium between demand and the available supply of labour. Workforce planning involves monitoring and managing the ebb and flow of the organisation's skills. The planning encompasses workforce supply projection, demand analysis, and interventions designed to solve potential mismatches (Loosemore et al., 2003; Kispal-Vitai et al., 2009; Sing et al., 2014; Sing et al., 2016).

Consequently, the incorporation of a long-term element in workforce planning amplifies its function as an integral component of strategic human resource management (SHRM) (Dainty et al., 2000; Raidén et al., 2002; Raidén et al., 2003; Loosemore et al., 2003; Taylor, 2005; Dainty et al., 2005; Raidén et al., 2006; Dainty et al., 2009).

Previous studies showed that effective workforce planning has been advantageous in driving better organisational performance (Ferris et al., 1990; Wu & Issa, 2014), increasing strategic organisational flexibility (Loosemore et al., 2003; Raidén et al., 2008) and enhancing an organisation's ability in managing business turbulences (Raidén et al., 2008). In addition, workforce planning can serve as a technical system that permits greater predictability and stability to organisational staffing (Kispal-Vitai et al., 2009). Effective workforce planning also facilitates strategic staffing and planning for future workforce requirements (Loosemore et al., 2003; Kispal-Vitai et al., 2009). With these features, remedial actions are in place to meet future workforce requirements, and organisations are well-equipped to allow continuous growth (Ng et al., 2001; Brandenburg et al., 2006; Marchington & Wilkinson, 2012).

In the construction industry, criticism was made about the lack of attention being paid by subcontracting businesses to proper workforce planning and development. Subcontractors are inevitably imbued with the legislative, inflationary, and business cycle impacts (Tserng et al., 2011; Ness & Green, 2013). Other factors such as lack of business stability (Chang-Richards et al., 2016), limited access to capital resources (Dundon & Wilkinson, 2009; 2018; Ng & Tang, 2009), poor project management skills (Ng & Tang, 2009) and lack of sufficient knowledge to manage a business (Arditi et al., 2010); all affect the subcontractors' awareness and ability to manage human resources. Workforce resourcing functions in many construction companies rarely align with organisational aspirations (Marchington & Wilkinson, 2002; Brandenburg et al., 2006; Raidén et al., 2008; Chan & Marchington, 2012; Raidén & Sempik, 2013). Resourcing priorities are often dictated by the perceived changes in the market, which are complex for these companies to predict. This has led to inaccuracies in workforce planning which discourage subcontractors from effectively managing workforce requirements (Sing et al., 2014).

Furthermore, Raja et al. (2013) stated that workforce planning is perceived as an auxiliary activity in most construction businesses. The often-reluctant attitude towards proper workforce planning can lead to unintended economic consequences for construction companies. For instance, companies may face skill shortages and staff fatigue on prolonged projects or multi-role demands if no additional human resources are planned (Rau & Hyland, 2002; Lingard & Francis, 2004; Dainty et al., 2005; Lingard & Turner, 2015; 2017). On the other hand, companies may have to lay off employees when the construction market is slowing down and struggle to acquire skilled labour when the construction boom hits (Green & May, 2003; McGrath-Champ & Rosewarne, 2009; Ness & Green, 2013; Raidén et al., 2016).

In many cases, subcontracting businesses are less competitive than larger construction organisations, specifically in human resource management (Dainty et al., 2005; Dundon & Wilkinson, 2009; 2018; Ng & Tang, 2009). Furthermore, a vicious cycle has been observed that the more reluctant an organisation is towards proper workforce planning and development, the less competitive it will be, and vice versa (Marchington & Wilkinson, 2012; Raidén et al., 2016). Adherence to proper resource planning has been shown to speed up project delivery by 45 per cent and project cost savings of approximately 7 per cent (Thomas et al., 2003). Fast project completion indicates optimal workforce productivity, which is attainable through a sufficient pool of appropriately skilled workers (Cox et al., 2006; Ng & Tang, 2009). Therefore, increasing the awareness of subcontracting businesses on the significance of workforce planning and improving their knowledge in accommodating this practice into action is of paramount importance.

2.6.1 Factors impeding workforce planning implementation in subcontracting businesses

Workforce planning is an essential element of HRM, which encompasses the activities of staffing, performance management, administration, and change management (Taylor, 2008; Raidén et al., 2016). Pilbeam and Corbridge (2006) state that workforce planning underpins an organisation's core value and guides its staffing decisions. Taylor (2008) has laid out four workforce resourcing objectives to ensure practical resourcing functions. The objectives are staffing, performance management, human resource administration,

and change management. *Figure 2.12* details the key objectives of workforce planning and briefly describes each component of the objectives.

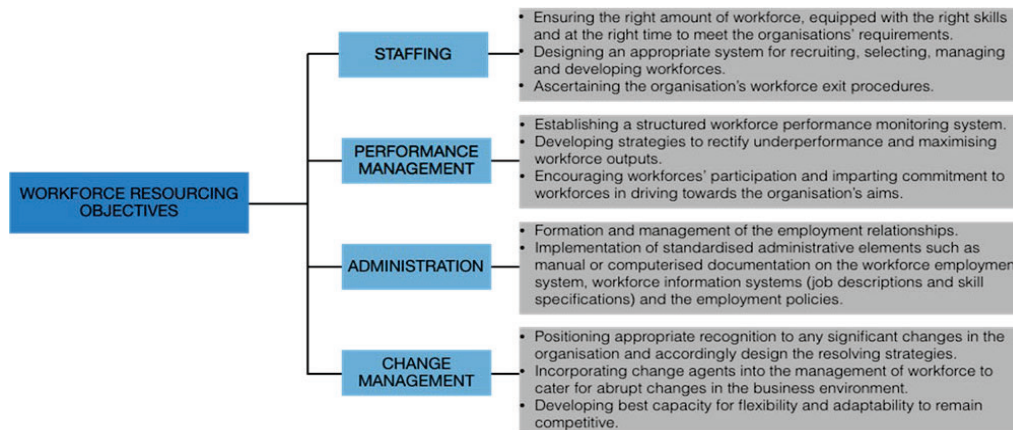


Figure 2.12 Workforce resourcing objectives (Adapted from Taylor, 2008 and Raidén et al., 2016)

Construction organisations, however, present a distinctive setting for workforce planning to take place, given their susceptibility to construction market interferences and casual practices in managing the workforce (Ng & Tang, 2009; Dundon & Wilkinson, 2009; 2018; Wilkinson et al., 2012). The temporality of construction projects and cyclical changes in demands significantly influence the organisations' workforce planning practices (Hindle, 1993; Torrington & Hall, 1995; Maloney, 1997; Dainty et al., 2005; Dainty et al., 2005; Ness & Green, 2013; Wilkinson & Chang-Richards, 2016). Hua (2012) indicates that the cyclical and residual effects emerging from uncertainties in the construction market often led to informal practice towards workforce planning. Evidence shows that failure to account for these external factors in the organisational workforce plan could jeopardise the organisations' performance, profitability and business survival (Sambasivan & Soon, 2007; Ng & Tang, 2009; Hua, 2012; Mahamid, 2012). Therefore, Dyer and Ericksen (2007) and Taylor (2008) had called for adaptable workforce planning with a focus on workforce scalability to retain maximum future flexibility.

Another factor that may explain why workforce planning often receives little attention from construction subcontractors lies within the nature of the construction works. The temporality of construction projects, for instance, signals that construction jobs are also

transient (Laufer et al., 1999; Loosemore et al., 2003; Raidén et al., 2006; Moehler et al., 2008; Wilkinson et al., 2012; Raidén et al., 2016). Additionally, the short timeline between contract award and project execution makes workforce planning more difficult (Loosemore et al., 2003; Raidén et al., 2016). Loosemore et al. (2003) further explained that the pressures to execute projects promptly often lead to ignorance of the long-term staffing needs. For businesses to survive, the priority is on winning contracts for the next project and, subsequently, dealing with the staffing issues, rather than planning for staffing in advance (Druker et al., 1996; Thursfield, 2001; Green & May, 2003; Brandenburg et al., 2006; Grugulis, 2007; McGrath-Champ & Rosewarne, 2009; Thörnqvist & Woolfson, 2012; Ness & Green, 2013). Accordingly, refusal of a structured workforce planning system could also be attributed to the additional cost of its implementation (Druker & White, 1996a; Druker et al., 1996; Wilkinson et al., 2012; Alzahrani & Emsley, 2013; Ness & Green, 2013). Its exclusion is acknowledged as a cost-saving alternative to the organisations' capital expenditures (Torrington & Hall, 1995; Raidén et al., 2003; Dainty et al., 2005; Raja et al., 2013).

The emerging culture of mobility among the workforce in the construction industry makes most construction companies apprehensive about implementing proper workforce planning and development programmes (Loosemore et al., 2003; Ness & Green, 2013). Dainty et al. (2007) also added that the chaotic nature of construction projects demands skill flexibility to cope with the inevitable changes throughout the project cycle (i.e., project-related, client-related, design-related, contractor-related, external pressures). Such changes induced uncertainties in the final staffing forecast; hence, constant revisions are needed to make it feasible (Taylor, 2008; Sing et al., 2014). This particular factor supports the claim by Ness and Green (2013) regarding the reluctance towards workforce planning practices in many construction organisations.

Huemann et al. (2007) found that most businesses operating in a volatile environment prefer the 'managing by projects' approach. This preference emphasises the importance of workforce flexibility to ensure the peaks and troughs in demand can be successfully met (Green & May, 2003; Wilkinson et al., 2012; Ness & Green, 2013; Raja et al., 2013). While workforce flexibility enables organisations to respond effectively to the changing business environment, Raja et al. (2013) argued that pursuing workforce flexibility in the

short term could be detrimental to the organisations' long-term strategic objectives. The authors revealed a high possibility of compromising future employment requirements due to the organisations' fixed focus on the current market situation. In some instances, the anticipated flexibility cannot cope with future demand within the industry (Green & May, 2003; Ness & Green, 2013). This is because some construction organisations fall prey to inaccurate forecasting, and as a consequence, employee recruitment tends to be done at times of troughs rather than peaks (Green & May, 2003; McGrath-Champ & Rosewarne, 2009; Wilkinson et al., 2012). Therefore, greater discipline to plan and forecast workforce requirements is needed in construction organisations, and cost-benefit analysis should be undertaken when making resourcing decisions.

A solid human capital enables organisational growth and long-term success (Turner, 2002; Cox et al., 2006; Ng & Tang, 2009; Oviedo-Haito et al., 2013; Aghimien et al., 2018). However, it was reported that finding a high calibre workforce is often challenging for organisations operating in the construction industry (Loosemore et al., 2003; Dainty et al., 2005). Marchington and Wilkinson (2012) indicated that a successful business is determined by the organisation's ability to attract a skilled workforce and retain and develop its top talents. Additionally, considerable evidence suggests that proactive recruitment, selection, and retention system underpins an organisation's internal efficiencies (Khoong, 1996; Yankov & Kleiner, 2001; Loosemore et al., 2003; Lobo & Wilkinson, 2008; Raidén et al., 2016).

Raidén et al. (2009;2016) posited that an enhanced strategic approach is needed to combine human resource management practice, organisational structure, culture, and the workforce's needs. However, attaining this synergistic integration is challenging, given that construction businesses, regardless of their sizes, are prone to both external and internal pressures (Ng & Tang, 2009; Mahamid, 2012). Accordingly, the volatile environment that the construction industry presents drives most construction organisations to plan their workforce needs on an ad-hoc basis (Brandenburg et al., 2006; Taylor, 2008; Dundon & Wilkinson, 2009). As such, large-sized construction organisations retained their competitiveness by swapping resources between projects, while the small and medium-size construction organisations find it more difficult, leading

to profitability loss and the risk of bankruptcy (Hua, 2012). *Table 2.7* outlines the inhibiting factors to strategic workforce planning in construction businesses.

Table 2.7 Inhibiting factors to strategic workforce planning in the construction businesses

<i>Inhibiting factors</i>	<i>Authors</i>	<i>Shared domains</i>
Complexity and dynamism of the construction industry	Loosemore et al., 2003; Turner et al., 2003; Raidén et al., 2003; Lingard and Francis, 2004; Ng and Tang, 2009; Hua, 2012; Wilkinson et al., 2012; Raidén et al., 2016	External pressures
Chaotic nature of the construction projects	Green and May, 2003; Loosemore et al., 2003; Lingard and Francis, 2004; Dainty et al., 2007; Sun and Meng, 2009; Marchington et al., 2010; Raidén et al., 2016	External pressures
Changes in legislative and regulatory systems	Sun and Meng, 2009; Tserng et al., 2011	External pressures
Susceptibility to economic fluctuations	Ng et al., 2001; Sun and Meng, 2009; Ng and Tang, 2009; Tserng et al., 2011; Ness and Green, 2013	External pressures
Ephemeral organisation structure	Turner et al., 2003; Huemann et al., 2007; Wilkinson et al., 2012; Chan and Marchington, 2012; Raja et al., 2013;	External pressures
Temporary employment	Loosemore et al., 2003; Raidén et al., 2006; Moehler et al., 2008; Phua, 2012; Wilkinson et al., 2012; Raidén et al., 2016	External pressures
Limited pool of skilled labour	MacKenzie et al., 2000; Loosemore et al., 2003; Dainty et al., 2004; Dainty et al., 2005; Chan and Dainty, 2007; Lobo and Wilkinson, 2008; Piri et al., 2015; Chang-Richards et al., 2015a; Chang-Richards et al., 2016; Chang-Richards et al., 2017	External pressures
Cyclical demands for construction projects	Gruneberg and Ive, 2000; Green and May, 2003; McGrath-Champ and Rosewarne, 2009; Ng & Tang, 2009; Tserng et al., 2011; Wilkinson et al., 2012; Ness and Green, 2013; Raja et al., 2013; Chang-Richards et al., 2015a; Wilkinson & Chang-Richards, 2016	External pressures
Competitive tendering process	Palaneeswaran and Kumaraswamy, 2001; Loosemore et al., 2003; Arditi and Chotibhongs, 2005; Yik et al., 2006; Thörnqvist and Woolfson, 2012; Ness and Green, 2013; Sang and Powell, 2013	Internal pressures
Defective managerial skills (project management skills)	Arditi et al., 2000; Schaufelberger, 2003; Sun and Meng, 2009; Ng and Tang, 2009	Internal pressures
Inadequate business knowledge	Sun and Meng, 2009; Ng & Tang, 2009; Chang-Richards et al., 2016	Internal pressures
Informal practice of human resource management in SMEs	Green and May, 2003; Barrett and Mayson, 2007; Dundon and Wilkinson, 2009	Internal pressures
Fragile business stability	Sun and Meng, 2009; Ng & Tang, 2009; Chang-Richards et al., 2017	Internal pressures
Limited access to capital resources	Dundon and Wilkinson, 2009; Ng & Tang, 2009; Chang-Richards et al., 2016	Internal pressures

Consequently, the concept of organisational flexibility gained traction as a result of the increased volatility and competition in the construction business environment (Dainty et al., 2000; Green & May, 2003; McGrath-Champ & Rosewarne, 2009; Ness & Green, 2013, Raja et al., 2013; Ruddock et al., 2014). The need for organisational flexibility is apparent in creating an organisation capable of responding to change in an effective and

timely manner (Volberda, 1996; Loosemore et al., 2003; Raidén et al., 2008). To ensure its effectiveness, the organisational flexibility, represented in the functional and numerical form, has to be reflected in the organisation's strategic business plan (Ruddock et al., 2014). Although organisational flexibility can resolve the immediate skills issues, an over-reliance on this approach impedes the implementation of structured workforce planning (Ness & Green, 2013). Taylor (2008), therefore, suggested that a planned approach to long-term workforce planning should be established at the organisational level. This plan requires organisations to build an agile and scalable workforce to meet future business demands.

2.7 Recruitment challenges in construction organisations

Recruitment, in general, focuses on the attraction and identification of competent applicants for a specific position within an organisation (Ployhart et al., 2006; Searle, 2009; Raidén & Sempik, 2013). Recruitment in an organisation begins by attracting potential candidates internally or externally and ends when an application is made (Searle, 2009). Akin to other industries, the construction industry faces challenges acquiring a workforce constituted of potential employees (Chih et al., 2016; Welfare et al., 2021). The construction industry retains a low number of applicants (Mackenzie et al., 2000; Clarke & Herrmann, 2007; Sedighi & Loosemore, 2012; Kim et al., 2020; Bigelow et al., 2021), leading to a limited supply of skilled labours in the industry (Ho, 2016; Bigelow et al., 2021; Welfare et al., 2021) and competitive competition between the hiring employers (Clarke & Herrmann, 2007; Chang-Richards et al., 2017). In addition, getting the best match to comply with the employers' requirements is often problematic (Loosemore et al., 2003; Ho, 2016; Welfare et al., 2021). In this situation, employers encounter difficulties identifying a particular skill set to fill the advertised positions.

The increase in recruitment difficulties is symptomatic of the construction industry's poor public image (Dainty et al., 2000; Loosemore et al., 2003; Chan & Kaka, 2007; Clarke & Herrmann, 2007; Forde & MacKenzie, 2007; Ginige et al., 2007; Swanson & Holton, 2009; Haupt & Harinarain, 2016). Indeed, the construction industry has an image synonymous with stress, uncertainties, and high cost fostering a chaotic, dirty, and dangerous working environment (Debrah & Ofori, 1997; Dubois & Gadde, 2002;

Loosemore et al., 2003; Nawaz Khan et al., 2020; Welfare et al., 2021). These perceptions have contributed to the declining popularity of construction careers (Dubois & Gadde, 2002; Dainty et al., 2003; Welfare et al., 2021). Entrance into the construction labour market has also declined (Mackenzie et al., 2000; Sedighi & Loosemore, 2012; Kim et al., 2020), inferring that the pronounced recruitment challenges can be linked to the shortages of specific trades and professional occupations in the industry (Yankov & Kleiner, 2001; Dainty et al., 2005; Lobo & Wilkinson, 2007; Welfare et al., 2021). In many instances, employers offer attractive incentives to procure the right skills for their organisation. This was observed in the UK, where the skill for quantity surveying became scarce owing to the fact that the number of construction graduates plummeted (Egan, 2002; Dainty et al., 2003; Loosemore et al., 2003). As a consequence, the concerned construction organisations had to offer higher than usual salaries and attractive career-development packages to meet their organisational goals (Loosemore et al., 2003).

Accordingly, the construction industry's recruitment difficulties typically point to the contextual factors affecting the industry (Forde & MacKenzie, 2007; Raja et al., 2013). These include legal obligations, monetary conditions, labour market regulations, health and safety compliance, along with high utilisation of subcontract arrangements (Clarke & Herrmann, 2007; Forde & MacKenzie, 2007; Green, 2013). Indeed, the practice of direct employment is diminishing and has been replaced with greater reliance on specialist or labour-only subcontractors (Loosemore et al., 2003; Raidén et al., 2004; Forde & MacKenzie, 2007; Ness, 2010; Chan & Marchington, 2012; Ness & Green, 2013). As such, subcontracting arrangements have become prevalent in the construction industry. Most construction companies view subcontracting as a quick fix and strategic approach to flexibility (Winch, 1998; Chan & Cooper, 2006; Forde & MacKenzie, 2007; Forde et al., 2009; Johnstone & Wilkinson, 2013; Ofori, 2015). This shift shows an emerging paradigm for resolving skill shortages with a short-term focus.

Companies that turn to non-standard forms of employment are no longer obliged to provide skills development initiatives (MacKenzie et al., 2000; Forde & MacKenzie, 2007; Johnstone & Wilkinson, 2013). Such an arrangement enables the concerned companies to cut back on skills development and recruitment in the face of skill shortages (McGrath-Champ & Rosewarne, 2009; Kispal-Vitai & Wood, 2009). As a result, savings

on wages and non-wages labour costs can be achieved (Forde & MacKenzie, 2007; Marchington et al., 2012; Choudhry et al., 2012). Additionally, reliance on subcontracting is often gravitated around its ability to provide specialised services and short-term indenture, specifically in meeting abrupt changes in the construction demands (Forde & MacKenzie, 2007; Choudhry et al., 2012; Raja et al., 2013; Ho, 2016). With this arrangement, companies are able to respond flexibly to irregular workflows, which eventually create competitive advantages for the organisation (Winch, 1998; Dainty et al., 2005; Kispal-Vitai & Wood, 2009; Raidén et al., 2016).

Despite the increasing prevalence of subcontracting in the construction industry, this approach has been criticised on the grounds that it discourages investment in training and skill development (MacKenzie et al., 2000; Dainty et al., 2005; Dainty & Chan, 2011; Johnstone & Wilkinson, 2013; Welfare et al., 2021). For most construction employers, it is the volatility the construction industry engenders that renders investment in training and skill development problematic (Debrah & Ofori, 1997; Johnstone & Wilkinson, 2013; Raja et al., 2013; Ho, 2016). Consequently, the employers' focus is directed towards achieving numerical flexibility (Ness & Green, 2013), which has led to eroding considerations on longer-term employment (Loosemore et al., 2003; Raja et al., 2013). Other evidence indicates that the extensive utilisation of subcontract arrangements could be detrimental to the performance and future development of the construction industry (Well, 2003; Dainty et al., 2005; Forde & MacKenzie, 2007; McGrath-Champ & Rosewarne, 2009). In particular, the numerical dominance of subcontracting businesses makes them accountable for the construction industry's productivity (Dainty et al., 2001; Wells, 2003; Dainty et al., 2005; Loosemore & Andonaki, 2007; Dainty & Chan, 2011; Loosemore, 2014). The declining significance of direct employers in larger organisations also cast greater responsibilities on the subcontractors in attracting, selecting, and developing skills (Loosemore et al., 2003; McGrath-Champ & Rosewarne, 2009; Ness, 2010).

2.7.1 Workforce recruitment in construction organisations

Informal recruitment is predominant in the construction industry (Bresnen et al., 1985; Drunker & White, 1996; Clarke & Herrmann, 2007; Storey, 2014). Preference for a more

informal approach to recruitment has been laid at the door of its simplistic features (Raidén et al., 2004; Clarke & Herrmann, 2007; Collings & Wood, 2009). Employment within construction is based mainly on word-of-mouth referrals and personal networks (Fellini et al., 2007; Lockyer & Scholarios, 2007; Raidén et al., 2009; Raidén et al., 2016; Clarke et al., 2017). Previous studies have established that the more informal the forms of recruitment, the more social networks are required as a reliable means of exclusion (Dainty et al. 2000; Royal Holloway 2002; Clarke & Herrmann 2007). Furthermore, the job description is often ambiguous (Lockyer & Scholarios, 2007; Ness, 2010a). In addition, most construction companies' recruitment includes an informal provisional period for the employees wherein they must prove their worthiness, without which they would be let go (Chan, 2007; Ness, 2010a; Dainty & Chan, 2011).

The lack of formal recruitment systems in the construction industry also negatively affects vocational education and training institutions (Chan et al., 2008). Due to the lack of available internships, young candidates strive to achieve a construction degree without practical or on-site experience (Clarke & Gribbling, 2008). On the other hand, candidates possessing personal contact with potential employers lack theoretical knowledge (Ness, 2010a). When manual work is concerned, the candidate's educational qualifications become completely irrelevant when evaluating their skills (Rooke & Seymour, 2002; Clarke & Hermann, 2007). Ness (2010a) added that some construction companies might not even require candidates to submit their background qualifications evidence.

Interestingly, a candidate's ability to perform specific jobs may not even be considered relevant if he/she cannot adhere to the social/cultural norms, behaviour, and outlook (Ness, 2010a). Therefore, identities such as gender and ethnicity are essential when a candidate is assessed for suitability. As a consequence, recruitment and termination of employees may not always be a prerogative of the senior managers but a decision of the co-workers (Druker et al., 1996; Clarke & Hermann, 2007; Ness, 2010b). In the instances where candidates lack qualification evidence, employees' selection is based on family history and personal networks within a particular ethnicity and local community (Lockyer & Scholarios, 2007; Ness, 2010a).

This problem of informal recruitment is further aggravated by the emergence of subcontracting and self-employment in the construction industry (McGrath-Champ & Rosewarne, 2009; Dainty & Chan, 2011; Ofori, 2015). Subcontracting businesses foster a more casual employment relationship than a structured one since staff members are expendable if they do not fulfil their tasks (Loosemore & Andonaki, 2007; Ofori, 2015). Therefore, recruiting the ‘right’ person for the job becomes less important, making this process emergent and contingent (Lockyer & Scholarios, 2007; Ness, 2010a; Welfare et al., 2021). An organised and systematic procedure for recruitment mainly comprises four steps: deciding if filling the vacancy is required; analysis of the job; producing a job description; and specification of the person (Raidén & Sempik, 2013). However, this procedure is currently not practised among small construction companies (Clarke & Herrmann, 2007). Indeed, informal routes to recruitment continue to predominate in construction SMEs.

Word of mouth or personal acquaintance comes into play in evaluating the skills of prospective employees within the subcontracting sector (Dainty et al., 2005a; Raidén et al., 2009; Ness, 2010a). Some companies poached employees from rival organisations using comparatively higher wage rates (MacKenzie et al., 2000; Dainty et al., 2005; Chan et al., 2008; Tutt et al., 2013; Chang-Richards et al., 2017). This method comes to the fore as most construction companies prefer recruiting candidates who are already trained and experienced. Construction companies avoid selecting inexperienced employees because these jobs lack a proper description since they are subjected to evolution (Ness, 2010a). In other words, there is flexibility and ambiguity in the type of tasks assigned, and, as a result, they are somewhat at the discretion of the employer (Lockyer & Scholarios, 2007). It is, therefore, difficult for inexperienced employees to grasp and comprehend the tasks.

According to Welfare et al. (2021), the recurring issue of skill shortages forces construction organisations to fill positions without proper screening and training on required skills. This approach leads to the inclusion of entirely new staff in important projects with little or no background in the organisation itself. This situation can be exacerbated by project teams external to the organisation (Raidén et al., 2016). In an ongoing project, the reorganisation of staff teams is not conducive to the organisation’s performance. Therefore, business harmony must exist between the newly appointed staff

and the employer. However, Raidén et al. (2016) highlighted that achieving this mentioned-above accord has proven to be extremely difficult. From the above discussions, it can be deduced that the poor image and reputation of the construction industry is the primary barrier to implementing formal recruitment.

2.7.2 Selection criteria in construction organisations

The recruitment process is followed by the selection wherein candidates unfit for the particular position are discarded. Selection concerns the assessment and identification of the suitability of such applicants from the external (or internal) pool of applicants (Searle, 2009; Raidén & Sempik, 2013). The selection process is developed to bring down the number of suitable candidates to be effectively managed (Ployhart et al., 2006). However, it is to be kept in mind that the evolution of a successful candidate to a capable employee requires significant skill, endeavour, and assiduity.

Despite the possibility of gaining efficiency in the selection of employees, most construction employers possess tunnel vision wherein they strive to satisfy their immediate organisational goals. Gao and Low (2015) found that construction employers tends to value hard skills and disregards the soft skills of prospective candidates. This procedure, consequently, overlooks the needs and ambitions of the workforce. In addition, most of the organisational decisions are taken by senior management, thereby promoting a very biased decision-making process (Raidén et al., 2016). It is impossible for senior management to comprehend the various attributes of the employees since there is a high staff turnover in the present market. The instinctual process of decision-making is counterproductive for the entire organisation.

The selection process from a pool of potential candidates is highly important as this requires identifying personnel who are compatible with the majority of the organisation's characteristics. However, the selection process, usually, is a gamble since the hired candidate might or might not aid the current and future needs of the organisation (Ness, 2010a). Despite this, various techniques, such as interviewing, peer assessment, personality tests, etc., gauge the candidate's compatibility with organisational aspirations (Loosemore et al., 2003; Ling et al., 2018). The selection process can be made more

impactful by concurrently enhancing the newly hired staff's quality and broadening the abilities of current employees (Raidén & Sempik, 2013; Raidén et al., 2016). These selection processes would guarantee the retention of the most suitable candidate, which would enhance the performance of the firm itself.

The selection process in most construction companies lacks a proper structure since there is a mismatch between employee skills and job requirements. This practice propagates the vicious cycle of selection issues and skill shortages (Lockyer & Scholarios, 2007; Welfare et al., 2021). The construction industry faces difficulties satisfying its short-term goals since sometimes, the project is portrayed as precarious, tedious, and conservative (Lingard, 2013). These project characteristics discourage specific groups of qualified employees, such as women and ethnic minorities, from involving themselves in the particular project (Dainty et al., 2000; Lockyer & Scholarios, 2007; Morello et al., 2018). The intake of casual employees is governed by the current financial situation of the construction organisation. The selection is usually conducted based on word-of-mouth of the current workers; however, aptitude tests for the selection may also be performed. The whole selection system is very informal since managers do not usually delve into the workforce selection process.

Owing to the fact that the selection process is devoid of any standardised techniques and is mostly informal, construction companies often fail to maintain a gender balance among their recruits (Greed, 2001; Agapiou, 2002; Morello et al., 2018). The fluctuating workload incurs changes in the companies' recruitment needs which are related to the number of employees and the type of skills required. This problem can somewhat be avoided by creating tailor-made staff teams for a particular project (Raidén et al., 2004). Loosemore et al. (2003) highlighted that companies that are unattractive to the public would fail to procure qualified individuals to meet their staffing needs.

The educated and skilful workforce would always be inclined towards organisations that offer lucrative salaries, safe working conditions, and promise bright future careers. Numerous studies (e.g., Casper & Buffardi, 2004; Thompson & Aspinwall, 2009; Chan et al., 2020) attribute an organisation's ability to recruit new staff to a supportive work-life balance environment. Therefore, construction organisations should consider

integrating proper work-life strategies into their strategic organisational objectives (Lingard, 2013; Clarke et al., 2017; Chan et al., 2020).

The role of intuition in recruitment is quite commonplace. Intuitive ability is involuntary, garnered through experience, expressing itself quickly as physical feelings. Managers often condone the tools and techniques of staff recruitment while putting emphasis on their ability to judge people (Raidén et al., 2009). They use this intuition to predict the candidate's performance and personality along with his/her compatibility in the firm's environment. This intuitive decision-making is based on an ill-defined assessment that leads to the selection of candidates. In an environment where fast and efficient hiring is necessary, organisational decision-makers rely on the intuition of the human judges (Klimoski & Jones, 2008). Nevertheless, participants are equivocal about the efficacy and advantages of intuition in recruitment, and quantitative analysis of individual differences is yet to be made (Raidén & Sempik, 2013; Miles & Sadler-Smith, 2014).

Past research revealed that personal inclinations, limited resources, and a lack of organised approaches are the main reasons intuition is applied in recruitment. Owing to the possibility of bias and limitations, intuition must be used prudently. Intuition could be used in conjunction with structured and organised processes that are non-intuition based (Miles & Sadler-Smith, 2014).

2.7.3 Recruitment and selection process in small and medium-sized construction companies

The production process in the construction industry is fragmented in nature (Dainty et al., 2017), where small and medium-sized companies thrive (Loosemore, 2014). This fragmentation of labour tasks creates two distinct groups: large organisations that generally act as principal contractors and small and medium-sized companies that act as subcontractors (Choudhry et al., 2012). This fragmentation makes most projects structured to be autonomous entities (Haro & Kleiner, 2008), leading to a transient workforce (Moehler et al., 2008; Phua, 2012; Wilkinson et al., 2012; Raidén et al., 2016). Such an employment structure is formed in a short and irregular period of time-aims which ensures operational functionality. In this respect, the informal recruitment and

selection practices are preponderating within the construction industry. The dynamics of small construction companies are such that they rely on the local economy (Tserng et al., 2011; Ness & Green, 2013). This reliance makes them susceptible to market and social changes, and, as a result, they come in and out of existence. Construction SMEs also encounter difficulties sourcing a workforce since the project's type and location face regular alterations (Kidd et al., 2004; Dainty et al., 2005a; Clarke & Herrmann, 2007).

The ability to conduct proper selection and employ a large number of employees usually rests with large organisations (Lockyer & Scholarios, 2007; Raidén & Sempik, 2013). These companies can apply appropriate selection tests and seek out relevant biographical information about the candidates. In particular, large organisations typically have a dedicated HRM department that enables the execution of strategic staffing selections (Druker, 2013). Large organisations also enjoy enhanced visibility, which allows them to employ advanced, sophisticated, and unbiased selection processes (Raidén & Sempik, 2013). Adherence to the formal approaches to recruitment and selection allows these companies to engage the rightly qualified staff and, hence, their positive performance, in turn, provides high returns on the staffing investment (Loosemore et al., 2003). Proponents of the 'deficit model'⁴ perceive this structured staffing system in a large organisation as an ideal template to be replicated in SMEs (Wapshott & Mallett, 2015). This model (i.e., deficit model) also views organisations that operate predominantly based upon casual human resource management systems as deficient. Such expositions encourage a deeper investigation into the effectiveness of informal staffing techniques in subcontracting organisations.

From the above discussions, it is evident that in the construction industry, the types of workforce change based on different types of jobs and organisations. This fragmentation determines the various employment processes adopted by different sizes of firms. However, the intuitive knowledge of local industry networks seems to be the dominating factor in staff selection. This is attributed to uncertainties in the business environment (Tserng et al., 2011; Hua, 2012) and transient employment schemes (Lockyer &

⁴ The deficit model regards the formal human resource management systems of a large organisation as benchmarks for superior human resource functions. Organisations without these procedures and policies are interpreted as deficient (Behrends, 2007).

Scholarios, 2007).

2.8 Workforce retention practices in construction companies

Skill shortages have been a recurring issue in the construction industry (MacKenzie et al., 2000; Loosemore et al., 2003; Clarke & Herrmann, 2007; Dainty et al., 2005; Dainty et al., 2007; Lobo & Wilkinson, 2007; Watson, 2012; Ho, 2016; Sing et al., 2016; Chang-Richards et al., 2017; Karimi et al., 2018; Kim et al., 2020; Welfare et al., 2021). As a result, construction employers are tempted to hire staff from other organisations, which leads to increases in staff salaries and, eventually, the overall cost of the construction (Dainty et al., 2000; MacKenzie et al., 2000; Ho, 2016). This ‘cross hiring’ activity, termed ‘poaching’, is becoming more and more prevalent in environments of high workforce demand and scarce supply (Chang-Richards et al., 2017). Owing to the fear of trained employees being poached by rival organisations, the concerned companies disregard the idea of training new staff (Loosemore et al., 2003; Raidén et al., 2006; Chan & Marchington, 2012; Storey, 2014). This is undesirable since it is causing an absence of training culture in the construction industry (Abdel-Wahab, 2012; Storey, 2014). In many instances, construction companies tend to hire skilled employees who can contribute to the project immediately (Dainty et al., 2005a; Welfare et al., 2021). Nevertheless, most companies fail to procure and preserve skilled employees due to the long working hours (Haynes & Love, 2004; Sang & Powell, 2013) and rigid job schedules (Lingard et al., 2007; Lingard, 2013) prevailing in the industry. A quality and competent workforce possessing acute technical know-how cannot be substituted. Most construction organisations realise that their workforces are their primary and most valuable resources (Richbell & Wood, 2009; Chan & Marchington, 2012). Due to this, construction organisations deem the attraction and retention of skilled staff a critical aspect of the organisational core capability (Yankov & Kleiner, 2001; Chew et al., 2008; Oviedo-Haito et al., 2014; Chih et al., 2016).

A company’s competitive advantage lies in the successful retention of its skilled workforce, the loss of which would be hugely detrimental to the organisational goals (Richbell & Wood, 2009; Marchington & Wilkinson, 2012; Chan & Marchington, 2012; Chih et al., 2016; Welfare et al., 2021). The strategic human resource planning adopted

by most construction companies perceives staff turnover to be an essential aspect of conserving their competitive advantage (Brandenburg et al., 2006; Chih et al., 2016; Raidén et al., 2016; Ayodele et al., 2020). Therefore, staff retention is a major challenge for the construction industry. However, there exists a trend wherein skilled workforces move between different jobs without expressing any allegiance to a particular organisation (Chan & Kaka, 2007; Chang-Richards et al., 2013; Storey, 2014; Chang-Richards et al., 2017). This phenomenon is exceptionally unfavourable for a company that commits to the investment in staff training (Chan & Marchington, 2012; Chih et al., 2016). Hence, the monetary investment associated with training an individual, wherein they become productive and produce profits, becomes insignificant (Dainty et al., 2000; Loosemore et al., 2003). The successful preservation of a company's competitive advantage is brought about by dedicated efforts to fulfil its workforce requirements (Raidén et al., 2004; Raidén & Dainty, 2006b; Marchington & Wilkinson, 2012; Chih et al., 2016; Raidén et al., 2016). This is related to the offering of competitive salaries (Dainty et al., 2000; Loosemore et al., 2003; Ho, 2016; Welfare et al., 2021), a safe work environment (Lingard, 2013) and the possibility of a rewarding career (Druker, 2013). Indeed, the lack of a skilled workforce and higher demand for specific skills have led to an upsurge in remuneration (Ho, 2016). As a result, this could potentially lead to escalating construction costs as labour markets become more competitive (Ho, 2016; Chan et al., 2020; Kim et al., 2020). In addition, the long-term commitment of staff cannot be guaranteed by increased salary levels, although this is one of the most traditionally practised methods for retention (Mackenzie et al., 2000; Dainty et al., 2000; Loosemore et al., 2003; Ho, 2016; Welfare et al., 2021).

In light of the problems associated with traditional retention strategies, construction organisations are now implementing human resource policies to counter the issues of skill shortages (Clarke & Herrmann, 2007; Lobo & Wilkinson, 2008; Sedighi & Loosemore, 2012; Morello et al., 2018; Bigelow et al., 2021; Welfare et al., 2021). Enhanced teamwork, innovation, and decision-making can be facilitated by job rotation, where staff are kept mobilised between various types of responsibilities and projects (Clarke & Herrmann, 2007; Bigelow et al., 2021; Welfare et al., 2021). This arrangement would enhance employee performance leading to higher productivity, output, and profit (Welfare et al., 2021). Furthermore, vetting new employees and providing robust training

could foster efficient staff retention (Ho, 2016). Kim et al. (2020) found that increasing the training rate in the workplace led to increased employee retention. Employers must also understand and fulfil employees' psychological contracts to retain skilled workers (Chih et al., 2016).

2.8.1 Workforce retention practices in small and medium-sized construction companies

Small and medium-sized construction companies also suffer from skill shortages. Indeed, small companies tend to report more workforce resourcing problems than large-sized organisations (Carroll et al., 1999; Marlow, 2006; Barrett & Mayson, 2007; Marlow et al., 2010; Wapshott & Mallett, 2015; Atkinson & Storey, 2016; Adla & Gallego-Roquelaure, 2019; Adla et al., 2019). In many instances, informal practices dominate the business operation (Lai et al., 2016; Adla & Gallego-Roquelaure, 2019). Small companies also tend to invest less in skill development and rely heavily on external recruitment for raising organisational competence (Atkinson & Storey, 2016). Small companies often experience a liability of smallness which result in limitations with respect to human resource acquisition (Belsito & Reutzler, 2019; 2020).

In a study by Bilau et al. (2015a), numerous strategies were applied to minimise employee turnover. This includes stringent selection procedures, introducing staff training, available pensions for long-serving employees, provision for the use of quality vehicles, and the possibility of obtaining bonuses. Most construction companies perceived that the cost of workforce turnover is higher than the investment to retain qualified ones (Dainty et al., 2005b). However, large and small companies adopt somewhat different strategies to attempt retention. Large companies favour bespoke training and development programmes, potential career development, and rewards for performance (Raidén et al., 2004b). They also gain stronger staff fidelity through systems providing bonuses and sharing of profits. Although the retention techniques used by smaller companies are more improvised, some possess advanced systems wherein the staff could benefit from bonuses based on the overall profit of the company and the individual's performance. In some instances, the bonuses provided by the small organisations were significant enough to enable staff to hold shares and be company partners (Dainty et al., 2005a).

From the above discussions, it can be seen that both large and small companies have given considerable effort to enable effective retention of staff. The issue of skill shortage was given priority by the companies who strived hard to attain their employees' loyalty. In particular, the smaller organisations attempted to satisfy the psychological contract and the monetary needs of their employees (Dainty et al., 2004b). Establishing a reciprocal relationship between the employer and the employee enables the psychological contract where both parties commit to their promises and responsibilities to each other (Guest & Conway, 2002; Chih et al., 2016). Hence, the management of staff relationships would see a paradigm shift owing to the change in the nature and strategies of the hiring companies (Dainty et al., 2004b).

2.8.2 Performance management practices in construction organisations

According to Armstrong (2017), performance management is a systematic process for improving organisational performance. It aims to develop the performance of individuals and teams by understanding and managing performance within an agreed framework of planned goals, standards, and competency requirements (Audenaert et al., 2021; Van der Meij et al., 2021). Establishing the performance criteria is key in performance management. These criteria are achieved through continual, monitored, and supported processes.

In construction, performance appraisals are often undertaken in isolation and by measuring progress against performance criteria (Loosemore et al., 2003). Perhaps unsurprisingly, given the subjectivity in appraisals, performance management is a contested area of workforce resourcing (Raidén & Sempik, 2013). In specific, performance appraisal remains a subjective process that relies on the appraiser's knowledge and experience. Employees do not always view performance appraisals as helpful in helping them improve their job performance (Belsito & Reutzler, 2019). Their findings showed that the performance appraisal feedback fails to guide employee development. Employees may not feel it is in their best interests to be open and honest about aspects of their job they have struggled with, specifically if the appraisal system is associated with career advancement and/or pay awards (Raidén & Sempik, 2013). Drawing upon this logic, Belsito and Reutzler (2019; 2020) suggested that when

employees deem the enactment of performance management to be consistent with their interests, then the personnel (i.e., line manager, appraiser of performance) responsible for implementing the performance management process are perceived competent in the eyes of the employee.

Furthermore, informal routes to performance appraisal in small and medium-sized construction companies continue to predominate (Belsito & Reutzler, 2019). The high reliance on informal human resource management practices is often associated with resource scarcity in construction SMEs (Chang-Richards et al., 2016; Wilkinson & Chang-Richards, 2016). Specifically, construction SMEs often experience limitations with respect to their ability to attract, develop, and retain employees (Kidd et al., 2004; Dainty et al., 2005a; Clarke & Herrmann, 2007). Nevertheless, Raidén and Sempik (2013) provide a positive account of the 360-degree appraisal in construction. This appraisal tool solicits and elicits feedback from several sources: line managers, peers, subordinates, suppliers, customers, and the like. Proponents of the 360-degree appraisal say that it provides a more meaningful review and allows a more rounded picture of the individual to emerge (Raidén & Sempik, 2013). More importantly, this approach is applauded on the grounds that it is less subject to the vagaries of personal relationships. Such expositions have highlighted that significant efforts must be directed to generate, evidence, and support organisational commitments to performance management and explore how commitment to performance management can be harnessed to bring positive change to the appraisal system in construction SMEs.

2.8.3 Reward management in construction companies

Reward management is one of the key levers in the delivery of strategic human resource management. Reward management is concerned with the formulation and implementation of strategies that aim to reward employees fairly, equitably and consistently in accordance with their value to the organisation (Armstrong & Murlis, 2007; Armstrong, 2010). The strategic aim of reward management is to develop, implement, and maintain the reward systems (i.e., policies, processes, and practices) required to support the achievement of the organisation's business goals (Armstrong, 2010). It is worth noting that reward systems cover financial (e.g., contingent pay and

benefits) and non-financial rewards (e.g., recognition, learning and development, work environment) purposely designed to drive a high-performance culture that supports the improvement of organisational performance.

According to Armstrong and Murlis (2007), reward management could be made effective by tailoring a compensation system that bestows security for employees and provides incentives for their valuable contributions. The authors also assert that the system should be affordable for the employer and balance extrinsic and intrinsic rewards. More importantly, the system should harbour a sense of satisfaction among the employees wherein they would be able to observe the consequences of their loyalty and, consequently, provide them with opportunities to enhance their performances. In construction, the cost of labour is one of the determining factors in a successful tender (Thörnqvist & Woolfson, 2012; Druker, 2013). In specific, all labour costs are accounted for in detail when a tender is offered, whether the wages are high or low (Thörnqvist & Woolfson, 2012). A raise in workers' compensation would push up the construction cost and squeeze contract margins (Ho, 2016).

The prior studies are in favour of the positive consequence of a reward system on construction employees' job satisfaction (Marzuki et al., 2012; Tam & Zeng, 2014; Ling et al., 2018; Alzubi et al., 2020). This includes but is not limited to extrinsic rewards: salary, commission payments, bonuses, working conditions, pensions and intrinsic rewards: personal growth, feelings of accomplishment, respect from superiors, autonomy, and skill and/or competence development. Surprisingly, most construction companies solely base their reward system on monetary benefits (Loosemore et al., 2003; Ho, 2016; Johari & Jha, 2020), although this approach may, in the long run, cast a greater financial burden on the hiring companies (Druker, 2013). In this lens, employee acquisition is predominantly determined by the pay scales and/or the ability of an organisation to offer competitive wages and benefits (Ho, 2016).

The reward system in most construction companies is predominantly a response to and a reflection of the environment within which they operate (i.e., construction boom, construction bust, etc.). The current reward management system prevalent in construction organisations may not be adequate to meet the challenges of the modern construction

business. Hence, there is scope for a more long-sighted and holistic approach to managing rewards in construction companies, specifically the construction SMEs. This requires the investment in proactive employee recruitment, selection, retention, and skill development to amplify the performance of the employee.

2.9 Workforce development in construction organisations

The increasingly dynamic business environment in the construction industry casts greater attention on organisational human resource to remain competitive (Turner, 2002; Loosemore et al., 2003; Brandenburg et al., 2006; Wright & McMahan, 2011; Swanson, 2022). According to Armstrong (2011), a firm's competitiveness can be enhanced by strategising appropriate learning approaches and learning cultures in its business model. This includes developing the firm's intellectual capital to ensure the requisite attitude, knowledge, and skills remain applicable throughout the business lifecycle (Garavan et al., 1999; Loosemore et al., 2003; Armstrong, 2011). Many scholars (e.g., Garavan et al., 1995; Harrison, 2009) describe this process as human resource development (HRD), which later emerges into strategic learning and development to suit modern business requirements.

The core of HRD lies in the provision of learning and growth opportunities for the employees (Armstrong & Taylor, 2020). It ensures that employees are encouraged to learn and grow in their roles (Armstrong, 2011). When appropriately designed, the HRD strategies can drive an organisation towards its business goals and improve organisational performance (Huselid, 1995; King et al., 2004; O'Donnell et al., 2006; Raidén & Dainty, 2006b; Wilkinson et al., 2012). Indeed, HRD is a process of altering the employees' skills and behaviours in alignment with the organisational strategy (Chan & Marchington, 2012). Therefore, HRD forms a part of organisational core competence (Swart et al., 2005).

In modern business, HRD is conceived as instrumental in securing organisation success (Loosemore et al., 2003; O'Donnell et al., 2006; Raidén & Dainty, 2006b; Chan & Marchington, 2012) and sustaining competitive advantages (Barney & Clark, 2007; Raidén et al., 2016; Legge, 2020). This perception adopts the 'resource-based view

(RBV) of the firm', which implies training contributes to an improved project and organisational performance (Dainty et al., 2007; Dainty & Loosemore, 2012; Marchington & Wilkinson, 2012; Aragon & Valle, 2013; Marchington et al., 2016). According to this perspective, human capital exerts the greatest influence over organisational performance (Turner, 2002; Loosemore et al., 2003; Cox et al., 2006; Ng & Tang, 2009; Marchington et al., 2016). Therefore, employees are an organisation's primary source of competitive advantage (Dainty & Chan, 2011). In creating competitive advantage, Seville et al. (2006) alluded that organisations must be capable of generating swift, creative, and innovative responses to the fast-changing environment. Consequently, organisations should develop internal efficiencies (assets, capabilities, organisational processes, experiences) that enhance their people to create specific competencies (Raidén et al., 2016). By developing core competencies and dynamic capabilities, organisational agility can be manifested, enabling organisations to respond to the dynamic market within which they operate (Dainty et al., 2000; Seville et al., 2006; Davis & Walker, 2009; Dainty & Chan, 2011).

Numerous studies have attempted to explain the impacts of HRD on organisational performance (e.g., Mabey & Gooderham, 2005; Mabey & Ramirez, 2005; Katou, 2009; Aragon & Valle, 2013). Findings from these studies align with Armstrong and Taylor (2020), indicating that training contributes to improved organisational (individual, team, corporate) performance, operational flexibility, and employees' competency. Loosemore et al. (2003) echoed a similar view in the construction context, with a specific emphasis on attaining a strong company reputation through learning and development practices. They attributed company success to continuous efforts of training and development. In essence, the routinisation of this practice strengthens the company's reputation (Loosemore et al., 2003). This positive public image makes the company more desirable to prospective employees and more likely to have higher employee productivity, job satisfaction and lower turnover rates (Dainty et al., 2000; Loosemore et al., 2003; Chan & Kaka, 2007b; Swanson & Holton, 2009).

Previous research has established that organisations that prioritise the enactment of HRD experience enhanced organisational performance and greater staff retention (Loosemore et al., 2003; Raidén et al., 2004; Marchington & Wilkinson, 2012; Chan & Marchington,

2012). This also means that HRD acts as a retention mechanism for remedying skill shortages that doggedly afflicted the construction industry (Dainty et al., 2000; Loosemore et al., 2003). The advantages of HRD are further reinforced by the study of Jashapara (2003), where the author found a direct correlation between training and organisational performance. The author stated that owing to the prevalent intra-organisational competition, the learning aspect of HRD should be focused on productivity and revolutionising skills, which would, in turn, guarantee a competitive advantage. Indeed, organisations that invest in training and development perform better than those not (Swanson & Holton, 2009; Marchington & Wilkinson, 2012; Marchington et al., 2016). Of relevance to this, Tabasi et al. (2012) examined the effects of training and motivation practices in Iranian construction companies. The study concluded that training and motivation practices could positively produce higher organisational productivity. Loosemore et al. (2003) supported this view, indicating a positive association between training practices and organisational performance. However, Legge (2020) has strongly contested this claim, asserting that the HRD-performance link is simply a manifestation of assumption and is catalogued with expectancy bias. Most investigations into HRD-performance links are represented statistically, thereby resulting in the generalisation of the research findings (Chan & Kaka, 2007; Legge, 2020). In many instances, subjective indicators are used to measure the training return (Guest et al., 2003; Guest, 2011).

Similarly, Ness and Green (2013) also disputed the account that learning and development are directly proportional to organisational performance. They revealed that the causality is tested in a hypothetical manner. This exposure explains the common claim of a lack of empirical foundation to prove the positive outcomes of training on organisational performance (Garavan et al., 2000; Bartlett, 2001; Katou, 2009). Indeed, the results of most investigations are susceptible to the Hawthorne effect (Ness & Green, 2013). Therefore, these results demonstrated a weak link between HRD and organisational performance. This realisation highlights the need for a more scientific approach to measuring the link between HRD and organisation performance.

In the construction industry, much of the criticism has been directed towards the low uptake of HRD practices (Chan & Dainty, 2007; Forde & MacKenzie, 2007; Chan & Marchington, 2012). Research on HRD in construction has been specific to large-sized

organisations (Dainty et al., 2000; Raidén & Dainty, 2006b; Chan & Kaka, 2007; Dainty & Chan, 2011; Chan & Marchington, 2012). Little research has been carried out on HRD enactment in subcontracting businesses, despite their major contributions to the construction industry's employment (Dainty et al., 2005; Dainty & Chan, 2011; Ness & Green, 2013). Large construction organisations are epitomised by structured development practices (King et al., 2004), whereas the smaller ones are typified by an absence of formality (Hill, 2002a, 2002b). As small organisations are not large organisations in miniature, Westhead and Storey (1996) eloquently state that it is critical to consider the companies' specific characteristics, particularly during the pre-enactment of HRD. Such a perspective raises the need to design HRD architectures suiting the traits of construction SMEs (Hill & Stewart, 2000).

Accordingly, Egbu et al. (2003) pointed out that the dearth of training programmes and mismanagement of knowledge assets in small and medium-sized construction enterprises (SMEs) could impede their business growth. Their study found that construction SMEs rarely liaise with educational institutes and training providers. The collaboration between companies and local educational institutes is encouraged to enhance the quality and appropriateness of the new employees. This collaboration could be the first step in allowing the young candidates to channel their job choices into the domestic labour market (Storey, 2014). Marchington and Wilkinson (2012) indicated that larger organisations also curtail training to accommodate small profit margins and lack control over the subcontractors that they employ. Construction companies (of all sizes) should realise the importance of training since it is the lynchpin for enhanced organisational performance. These companies should devise innovative training opportunities that enable employees to function in productive systems (Loosemore et al., 2003; Raidén & Dainty, 2004; Raidén et al., 2004b).

HRD activities should begin when an employee joins an organisation and continue throughout their length of employment (Werner, 2021). HRD serves a strategic role by assuring the competence of employees to meet organisational performance demands (Swanson, 2022). In order to deliver the purported benefits that HRD brings, all training efforts need to be explicitly embedded within the long-term plan and strategies of the

organisation (Werner, 2021). Chan and Marchington (2012) have set forth a set of principles that guide the HRD in construction. They contend that effective HRD practices:

1. Acknowledge the importance of employee relations - Conflict in the workplace is inevitable; therefore, steps to remedy any form of workplace conflict should be planned. Asymmetrical power relationships can lessen the benefits of HRD.
2. Acknowledge the inter-organisational dynamics in a construction project - In reality, construction projects are conducted by collaboration between several construction organisations. Hence, HRD strategies should consider the inter-organisational dynamics prevalent in the construction industry. There is a dearth of HRD strategies extending beyond one organisation since intra-organisational plans are usually insufficient (Dainty & Chan, 2011).
3. Acknowledge the institutional dynamics of an organisation - Understanding the emergent patterns in environmental governance and their influences on an organisation. These institutional changes should be examined from different perspectives, enabling a proper formation of organisational HRD approaches.

From the aforementioned discussion, it is clear that inter-personal/organisational and institutional dynamics affect the creation and implementation of HRD strategies (Dainty & Chan, 2011; Chan & Marchington, 2012) and thus need to be examined more in-depth to enable effective HRD practices (Marchington & Vincent, 2004). In order to guarantee employee dedication and devotion, employers must recognise their staff's expectations (Raidén & Dainty, 2006b; Raidén, 2016). Furthermore, Dainty et al. (2000) suggested that employees' developmental programmes should be tailor-made as per organisational requirements. This approach would allow them to recognise their capabilities and accordingly create a human resource development programme that amplifies these skills to benefit the organisation (Raidén & Dainty, 2006b). To achieve this, a clear career management process aligned with the organisational strategic agenda should be actualised (Dainty et al., 2000; Chan & Marchington, 2012). Its implementation allows staff to reach the zenith of their potential to benefit the organisation holistically (Dainty et al., 2000; Egbu et al., 2003). In addition, employee expectations should be further explored by aligning them with organisational goals and business management strategies (Dainty et al., 2000; Dainty & Chan, 2011; Chan & Marchington, 2012; Raidén et al., 2016). This

enrichment of workforce capability would, in turn, bolster the survival and sustainability of the organisation (Barney, 2007; Chan & Marchington, 2012). Therefore, HRD strategies could be implemented to balance internal operation and the external environment, attain organisational goals (Huselid, 1995), and maintain a continuous competitive advantage over other firms (Barney, 2007). Additionally, HRD would warrant rewarding career prospects for employees and, concurrently, optimise the organisation's workforce potential (Dainty & Chan, 2011; Chan & Marchington, 2012).

2.9.1 Underlying factors impeding the adoption of workforce development in construction

The construction industry represents the epitome of casualism (Bresnen et al., 1985; Well, 2007; Chan & Räisänen, 2009). Casualisation in construction occurs predominantly in the management of people, which includes but is not limited to workforce recruitment (e.g., Clarke & Herrmann, 2007; Storey, 2014), selection (e.g., Fellini et al., 2007; Lockyer & Scholarios, 2007; Ness & Green, 2013), retention (e.g., Mackenzie et al., 2000; Dainty et al., 2000; Loosemore et al., 2003), training and development (e.g., Chan & Dainty, 2007; Forde & MacKenzie, 2007; Chan & Marchington, 2012) practices. Such practices demonstrate strong adhocracy cultures in the construction industry (Dainty et al., 2000; Green & May, 2003; Raja et al., 2013). The widespread adoption of competitive tendering (Thörnqvist & Woolfson, 2012; Raja et al., 2013; Ness & Green, 2013; Sang & Powell, 2013), low-cost business models (Marchington et al., 2012), and numerical flexibility (Winch, 1998; Torrington et al., 2002; McGrath-Champ & Rosewarne, 2009; Green, 2013; Ness & Green, 2013; Ruddock et al., 2014) in construction companies has led to the anarchical arrangements of human resource processes (Marchington et al., 2012).

The dynamic and complex setting that construction projects present makes training and development arduous (Loosemore et al., 2003; Raidén & Dainty, 2006b). The development of employees within construction companies has been severely impeded owing to the informal and idiosyncratic nature of HRM systems (Dainty et al., 2000; Green & May, 2003; Raja et al., 2013). In particular, short-term projects in various locations coupled with competitive tendering pose a problem for the effective

management of human resources (Ness & Green, 2013). In such a scenario, the amount, type, time, and situation of a particular job are ever-changing. In addition, the large 'project to firm size' ratio leads to unstable income and numerous risks. All these have a substantial pernicious effect on HRM practices.

Owing to the high cost of training and fear of 'poaching', many construction companies are reluctant to commit to HRD programmes (Loosemore et al., 2003; Dainty et al., 2005; Forde & MacKenzie, 2007; Chan & Marchington, 2012; Storey, 2014). Furthermore, the construction industry's short-term focus on HRD hinders most employers from realising the long-term benefits of individual staff career development and organisational succession planning (Raidén & Dainty, 2006b). As a result, employees are attracted to other new organisations that promise to fulfil their developmental aspirations causing the old firm to have ineffective succession management (Dainty et al., 2000). Moreover, employers perceive staff training as an expensive option since the 'learn-on-the-job' culture is rampant (Loosemore et al., 2003). The male-dominated construction industry views traditional classroom training as an unproductive and feminine activity (Agapiou, 2002; Loosemore et al., 2003; Ness & Green, 2013). Therefore, it is evident that sufficient training is rarely viewed as the main component of corporate strategy or an issue of importance by construction companies (Storey, 2014).

The temporality that typifies the project-based nature of construction means it is difficult for construction companies to specify HRD practices in a structured manner (Chan & Marchington, 2012). In many instances, the attainment of production goals takes precedence over training programmes, and, as such, companies postpone or abandon learning and development activities (Druker et al., 1996; Thursfield, 2001; Green & May, 2003; Brandenburg et al., 2006; Grugulis, 2007; McGrath-Champ & Rosewarne, 2009; Thörnqvist & Woolfson; 2012; Ness & Green, 2013). Accordingly, staff are considered commodities and mere resources by employers to fulfil their organisational goals at minimum cost (Druker & White, 1996a; Druker & White, 1996b; Druker et al., 1996; Ness & Green, 2013). This 'hard' system approach to HRM makes their disbelief in HRD more apparent (Druker et al., 1996). The under-reliance on HRD also stems from the engineering philosophy that prioritises technologies much more than the personnel (Kululanga et al., 1999; Brandenburg et al., 2006; Emuze & Smallwood, 2017).

Employers and employees view the reasons for creating a productive workplace differently. The employers focus on the technical aspect of the project progression and planning, whereas the employees attribute sufficient training and development to productivity (Chan & Kaka, 2007a; Alzahrani & Emsley, 2013).

Ness and Green (2013) stated that the strategic approaches for HRM cease to exist when the workloads cannot be predicted far into the future, and firms remain unwilling to conduct training and development. Contractors find it challenging to balance the investment required for training and development simultaneously and to remain competitive, particularly during boom periods (Ness & Green, 2013). Contractors are more focused on fulfilling the short-term goals of getting contracts than satisfying the firm's long-term needs (Ness, 2010). One of the reasons for ignoring HRD programmes is the dependence of construction companies on self-employment and subcontracting for production (Loosemore et al., 2003; Raidén et al., 2004; Forde & MacKenzie, 2007; Briscoe et al., 2010; Chan & Marchington, 2012). Consequently, this dependency has made larger organisations lose importance as direct employers (MacKenzie et al., 2000; Dainty et al., 2005). Many construction companies remain unwilling to invest in employees' training and development, only for them to be taken away by other firms (Dainty et al., 2005; Abdel-Wahab, 2012; Storey, 2014). However, if the company can establish that it is dedicated to its employees' career development, the poached staff may return (McGrath-Champ & Rosewarne, 2009).

The threat of staff poaching has led to companies relying on incentives in the form of higher remuneration and better perks (Mackenzie et al., 2000; Ho, 2016). This retention strategy is considered a better option than withstanding the cost associated with recruiting and training new staff (Dainty et al., 2000; Loosemore et al., 2003). Employee training is often considered an overhead that is expendable when profits plummet (Ness & Green, 2013). Due to these, training is rarely considered an investment in human capital that could lead to long-term organisational success and create a competitive advantage (Garavan et al., 1999; Storey, 2014). Organisations must adopt approaches for rewarding and developing their workforce to retain their skilled employees and counter staff poaching simultaneously (Druker & White 1996b; Druker, 2013). This could be achieved by being sensitive to the staff's career needs and expectations, both in formal and informal

aspects (Dainty et al., 2000). From the abovementioned discussions, the reasons for the difficulty in implementing an effective HRD practice in the construction industry can be summarised as follows:

1. The competitive nature of the construction labour market (Dainty et al., 2000);
2. Companies have an in-built dependence on self-employment and subcontractors, thereby allowing small organisations to retain productive capability (Dainty et al., 2005; Chan et al., 2010);
3. The economic instability of the companies renders the established HRM strategies irrelevant (Bresnen et al., 1985; Huang et al., 1996; Dainty et al., 2000; Dainty & Chan, 2011); and
4. HRD activities are hindered by the intrinsic inconsistency in construction projects and their locations, autonomous managers at the project level and the need to respond to sudden perturbations (Druker & White, 1996a; Ness & Marchington, 2013).

2.9.2 Workforce development practices in construction companies

Some construction companies conduct formal training of their staff through training providers, distance-learning programmes or external mentoring to enable them to get professional qualifications from, for example, the Chartered Institute of Building (CIOB) and Royal Institute of Chartered Surveyors (RICS) (Loosemore et al., 2003; Raidén & Dainty, 2006b). Informal training is also quite commonplace, encompassing mentoring, coaching, and collaborative work, inherently embedded in day-to-day work activities (Detsimas et al., 2016). Informal training is characterised as non-institutional, experiential and multiepisodic learning at the workplace (Pejoska et al., 2016). Nonetheless, formal and informal training should provide opportunities for employees to learn job-related skills, change attitudes, and help people acquire knowledge (Loosemore et al., 2003). Interestingly, construction employees favoured informal training over formal ones, and they perceived that workplace training improved their job performance (Detsimas et al., 2016).

One unobtrusive training method in construction is mentoring. In mentoring, a supervisor is formally authorised to train an employee (Nkomo et al., 2016; 2017). This approach enables the employee to seek encouragement, guidance, and backing from the supervisor (Raidén & Dainty, 2006b). Viewed through this lens, mentoring is thought to engender collaborative, participative learning and strong social bonds between individual members of staff. Nkomo et al. (2018) found positive associations between mentoring and an employee's perception of recognition, supportive environment, enjoyment and benefits. In specific, employees who form informal relationships with mentors experience greater job satisfaction and commitment to their organisation.

According to Borg and Scott-Young (2020), construction graduates often experience negative feelings (e.g., stress and pressure) when transitioning into the construction workforce. Job shadowing and induction are particularly useful for assimilating new recruits to ensure they are familiar with company policies and practices (Raidén & Dainty, 2006b; Manoharan et al., 2021). Formalised performance management enhances the employability of employees and contributes to companies' long-term success (Belsito & Reutzel, 2019; 2020). This method could be more logical and coherent such that it would allow the employees to exploit opportunities to further their careers and goals. Son and Kim (2016) suggested developing sound promotional/career-success policies for equal opportunities and supportive training programmes to influence behaviour and alter attitudes. The training opportunities should be more formalised to facilitate tacit knowledge sharing (Hwang, 2020). Finally, the resourcing policies should be made more transparent to drive job satisfaction (Ling et al., 2018).

Past research has shown that the UK government's actions to regulate the construction industry's labour market stimulated investment in staff training and development. The Construction Industry Training Board (CITB) takes higher levy payments from companies that do not engage in HRM practices (Dainty et al., 2005a). These initiatives have somewhat bolstered the formal practice of HRM in companies. For example, formal recognition of staff skills and their health and safety were provided by the Construction Skills Certification Scheme (CSCS) initiated during the mid-1990s. The Investors in People (IiP) standard also encouraged construction companies to invest in staff training and development. However, construction companies did not respond well to this

initiative, indicating that employers consider HRM practices secondary activities (Dainty et al., 2005a). Debates about skills training focus too narrowly on the supply of skills, and not on skill demand or its use in the workplace. When the supply and demand for skills are not well-matched, the outcome is over- or under-qualification, neither representing a well-functioning market (Killip, 2020). Resolving this matter requires the active participation of construction companies in determining the HRD agenda that needs to be promoted if the industry is to move from the 'skill-supply' perspectives into the new paradigm driven by sustainable development.

2.10 Summary

This chapter presents a fully referenced review centring on workforce resourcing in the post-disaster environment and HRM practices in construction. Research relating to resourcing for post-disaster reconstruction projects is still emerging (Yi & Yang, 2014), thereby encouraging a more in-depth investigation into the resourcing capacity of the construction SMEs. It has to be noted that considerable resources and research have been directed into studying HRM in large construction organisations. Given the prominent role that subcontractors play in the construction industry, attention should be paid to improving their core competency and business sustainability by having effective workforce resourcing initiatives in place. Consequently, the mechanics of workforce resourcing in construction SMEs were identified as follows: workforce planning, workforce recruitment and selection; workforce retention and performance management; and workforce development. The next chapter describes the procedures and methods used to investigate workforce resourcing practices in Christchurch subcontracting businesses.

Chapter 3

Research Methodology

3.1 Introduction

This chapter presents the research design and research methods adopted in this study. The chapter begins with an overview of the research methodology with a detailed description of the case-based study approach. This research is exploratory in nature and is anchored in interpretivistic research philosophies. Therefore, arriving at an appropriate sample size is of paramount importance to ensure the sample represents the population under investigation. Following this, steps taken to design the research process are described, which linked the research question with the research methods. The various stages of the research design process are also explained at this point. In addition, an array of methods (i.e., interviews and focus group discussions), which were used to collect data, are introduced and explained. Subsequently, the various data analysis methods used in this research were explained. This chapter then discusses the qualitative research method application through the lens of its strengths and limitations. Finally, ethical considerations incorporated in the research are presented, specifying compliance with the institutional standards for conducting research with human participants.

3.2 Research methodology

3.2.1 Case study

Recent trends to ‘build back better’ have led to a proliferation of studies that prioritise a more people-centred approach to disaster management. The issue of workforce resourcing has grown in prominence following major disasters (Moe & Pathranarakul, 2006; Jha et al., 2010; Chang et al., 2012). Surprisingly, despite their numerical dominance in the construction industry, scant attention has been directed towards documenting the resourcing mechanisms adopted by subcontracting businesses. To

understand resourcing patterns in small and medium-sized construction companies, a phenomenological study was conducted with subcontracting businesses in Christchurch. This research approach uses the comprehension of a studied phenomenon to capture and extend the current knowledge. The empirical investigation of an existing phenomenon is defined as a case study. A case study reveals and illustrates the unknown aspects of a contemporary phenomenon or principle through a systematic analysis of its related contextual conditions (Yin, 2017). Qualitative case studies are a well-established approach for investigating a contemporary phenomenon, involving the exploration of empirical realities with limited theoretical coverage (Darke et al., 1998; Rowley, 2002; Yin, 2003).

Case studies in complex construction projects have been observed to provide investigators with universal specific insights and information into real-life events (Barrett & Sutrisna, 2009). According to Yin (2017), a particular case study can constitute single or multiple cases that undergo numerous amounts of analysis. In this respect, the number of cases studied is directly proportional to the robustness of the research. However, the selection of the cases to be studied must be made to yield comparable results (i.e., literal replication) or to produce conflicting outcomes resulting from expected reasons (i.e., theoretical replications) (Rowley, 2012). A case study can take the form of a cross-case analysis wherein results (similarities and variances in studied cases) from multiple cases are evaluated to present a harmonised outcome (Miles & Huberman, 1994).

This research begins with a practice-oriented phenomena query. Such a query can be appropriately resolved through reasoning, evidence, and/or method. According to Markusen (2015), phenomenon-driven research is significant and aimed at exploring causality, explanation, and description. In the current study, the main research question is:

“What are the best practice resourcing approaches for subcontractors in a post-disaster environment?”

3.2.1.1 Comparative case study

13 case study subcontracting businesses participated in this research. This research combines elements of cross-case comparison with some degree of temporal comparison. Such a design generates rich inferential leverage (Bennett & Elman, 2007; Flyvbjerg, 2011). By presenting qualitative research evidence from Christchurch, New Zealand, this research provides an insight into the workforce resourcing strategies in the case study subcontracting businesses. Access to the subcontracting businesses was secured by developing a relationship with the New Zealand Specialist Trade Contractors Federation and Civil Contractors New Zealand (Canterbury Branch). The selection criteria were made based on the subcontractors' (voluntary) participation, size of the subcontracting businesses and subcontractors' resourcing experience for disaster recovery projects.

In October 2014, interviews were conducted with 13 Christchurch-based subcontracting businesses. In October 2015, these subcontractors were again approached, with 11 agreeing to participate in the research. Discussions were held with key personnel of the chosen subcontracting businesses. This approach allows a better understanding of the depth of the phenomenon under investigation within a strained post-disaster environment. Moreover, the comparative case study ensures that emerging themes between the investigation periods are appropriately captured.

With this set of information, 'within- and across-case' analytic processes can occur in a more inductive manner. 'Within-case' analysis contributed to the identification of major themes relating to resourcing challenges in the investigated subcontracting businesses. Meanwhile, across-case analysis established particular dynamics that shaped the major themes individually. The core factors and the associated relationships within the individual themes are presented in the form of causal loop diagrams. These diagrams are then aggregated into a workforce resourcing causal loop diagram, displaying the interaction within the numerous elements of the studied phenomenon. Details on the analytic strategies and processes are provided in section 3.4 of this chapter.

3.2.2 Case study selection sampling

To address the overarching research question, the determining factors for case study approaches laid out by Creswell (2016) and Yin (2017) were taken into the research design consideration. In particular, the case study approach was determined based on the following criterion: research aim, research problem, unit of analysis, data collection methods, data analysis, and the nature of the research (i.e., interpretivism, constructivism, etc.). *Table 3.1* presents the determinants for using a case study approach.

Table 3.1 Determining factors for case-study approach (Adapted and modified from Creswell, 2016; Yin, 2017)

<i>Determinant</i>	<i>Description</i>
Aim	Developing in-depth descriptions and analysis of multiple cases.
Nature of problem	Required in-depth understanding of a phenomenon through multiple cases.
Unit of analysis	Detailed investigation of subcontracting businesses with specified criteria/characteristics.
Data collection	Literature and report review; interviews, focus group discussion.
Data analysis	Cross-case synthesis, explanation building.
Nature of report	Comparative and chronologically descriptive narratives.

Resourcing in construction is often imperilled by specific phenomena. Previous research cites incidents such as natural hazards (e.g., Chang et al., 2010; Karunasena & Rameezdeen, 2010; Chang-Richards et al., 2017; Zhao et al., 2017) and financial crises (e.g., You & Zi, 2007; Chan, 2010; Nistorescu & Ploscaru, 2010; O'Farrell, 2010; Kapelko et al., 2014; Oviedo-Haito, 2014; Parke & Warren, 2014; Kapelko et al., 2015) as pertinent to resourcing challenges. Indeed, resourcing challenges have been in a constant state of flux, with interacting factors consistently evolving within the construction industry (Chang et al., 2012a; 2012b; Chang-Richards et al., 2013; 2014; 2016; 2017). To understand the interactions between these causes, resourcing patterns in this research were studied over a specified period. This research, therefore, can be classified as phenomenon-driven research with interdependent causes.

According to Markusen (2015), phenomenon-driven research generally involves issues or cases (also referred to as 'problems') that are significant in nature, and the research is designed to explore causality and explanation using experiential methods. This orthodoxy is primarily devoted to the pursuit of understanding interactions between variables

involved within a system. In a similar vein, Verweij and Gerrits (2013) proposed the use of a method that depicts the overarching combination of independent variables that leads to multiple causal routes. Such a consideration has been incorporated into the research design where the identified workforce resourcing dynamics and their interactions were depicted in causal loop diagrams (see chapters 6, 7, 8 and 9). These interactions were developed using Vensim PLE software. The nature of such research allows it to correlate and explain the relationships between multiple factors (Hancock & Algozzine, 2006; Saunders et al., 2009). Research questions were formed to guide the research design, see *Table 3.2*.

Table 3.2 Research questions and research objectives

<i>Research question</i>	<i>Research objective</i>
What were the subcontracting business challenges in resourcing Christchurch recovery projects?	To identify the challenges faced by subcontracting businesses in resourcing Christchurch recovery projects.
What were the workforce resourcing strategies adopted by subcontracting businesses in response to reconstruction demand?	To identify the workforce resourcing strategies adopted by subcontracting businesses in response to reconstruction demand.
What were the best practice approaches for subcontracting businesses in managing workforce at the organisational and/or project level?	To develop best practice approaches for subcontracting businesses in managing workforce at the organisational and/or project level.

In this research, cases were purposively selected with an entrenched adherence to information-oriented selection criteria. Numerous qualitative synthesists state that comprehensive and detailed analysis of carefully selected studies holds more prominence than that of a large number of studies that are frivolously analysed (Booth, 2001; Jones, 2004; Pawson et al., 2005; Bondas & Hall, 2007). This purposeful selection sampling strategy requires liaising with informants to detect cases that hold potential for useful information (Suri, 2011). According to Patton (2002), a purposeful sampling strategy produces a more comprehensive insight into a particular phenomenon. In the same vein, Bennett and Elman (2007) asserted that purposeful sampling generates considerable inferential leverage. Selecting cases in the purposive approach strengthens the rigorousness of the research findings (Sutrisna & Barrett, 2007). To achieve the credibility of this sampling strategy, theoretically informative cases are selected. Bennett (2004) suggested that the selection criteria include cases with large within-case variance, cases about which competing theories make opposite and unique predictions, cases that

are well-matched for controlled comparisons, outlier cases, and cases whose results can be replicated.

Suri (2011) stated that a positive link exists between a purposive sampling approach and data saturation. Sutrisna and Barrett (2007; 2009) supported this view, exposing that a better selection of cases leads to an expeditious achievement of data saturation. Data saturation is derived from a coherent and rigorous process of data condensation and interpretation that accounts for all aspects of the phenomenon under investigation (Morse et al., 2002; Hyde, 2003). At this milestone, the data categories are well established with no emergence of new insights (Bowen, 2008). Similarly, it was found in this research that no new data emerged after the ninth interview. Therefore, this sample size (n=13) was deemed satisfactory and indicates data saturation is achieved. A profile of the interviewees is included, as shown in *Table 3.3*.

Table 3.3 Profile of interviewees

<i>Code</i>	<i>Nature of business</i>	<i>Number of employees</i>	<i>Designation</i>
S1	Roofing, plastering, painting subcontractor	35	Managing director
S2	Civil construction and drainage work	30	Site superintendent
S3	General civil subcontractor	20	Operations manager
S4	General earthwork and civil subcontractor	50	Contracting manager
S5	Building services installation	18	General manager
S6	Civil construction subcontractors	100	Contracting manager
S7	Steel and mesh specialist	60	General manager
S8	Commercial buildings and residential builder	65	Director
S9	Civil contracting and drainage subcontractor	50	Operations manager
S10	Civil earthworks and civil construction subcontractor	36	Managing director
S11	Building façade specialist	85	General manager
S12	Drainage subcontractors	8	Contract manager
S13	Geotechnical and civil construction specialist	100	General manager

The sample group investigated in this research consisted of small to medium-sized subcontracting organisations. The criteria for selecting the participants were set out as follows:

1. Small and medium-sized subcontracting businesses with the number of employees ranging from 1 to 100.
2. Subcontractors that operated during the 2008/2009 global financial crisis and were involved in the boom generated by the 2010/2011 Christchurch earthquakes.

3. Subcontractors that were involved in the civil or commercial sector in Christchurch.

3.2.2.1 Research participants and recruitment

Qualitative research focuses on smaller groups of expert practitioners to ensure optimum data with in-depth details (Borrego et al., 2009). Mason (2010) identified the guiding principles for choosing the sample size as the concept of expertise and eventual data saturation. The estimation of the required sample size for qualitative research should consider factors such as the nature of the research questions, the time and resource availability, and the population characteristics from which the sample is required (Saunders et al., 2009; Sarandakos, 2012). The following were the protocols adhered to in the recruitment of participants:

1. Pilot study conducted in 2014

The Stronger Christchurch Infrastructure Rebuild (SCIRT)⁵ management was approached in March 2014. This relationship enabled the identification of the prospective participants' information. This procedure can be specified as referral sampling⁶ (also called snowball sampling, chain sampling, or chain-referral sampling), in which prospective respondents were approached through 'referral chains'. An individually addressed email was sent to the SCIRT delivery teams with an invitation to participate in the research. Two out of five delivery teams agreed to participate in this research. The pilot study was conducted in May 2014 and aimed at testing the feasibility of the research project. *Figure 3.1* shows the SCIRT delivery team structure, and *Table 3.4* provides the details of the research participants in the pilot study.

⁵ The Stronger Christchurch Infrastructure Rebuild Team (SCIRT) was formed in response to the 22 February 2011 earthquake to undertake the repair and rebuild of earthquake-damaged horizontal infrastructure (Office of the Auditor-General, 2013). The SCIRT alliance consists of partnerships between three owner participants (also known as three public entities) and five non-owner participants.

⁶ Referral sampling is a recruitment strategy involving a research participant in recruiting additional credible participants (Longhurst, 2009).

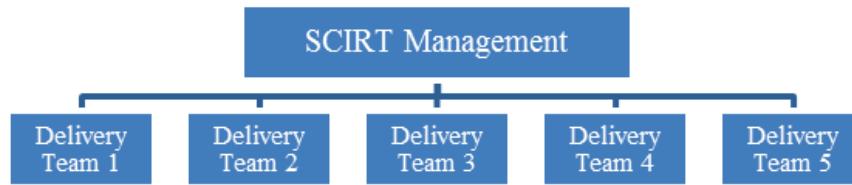


Figure 3.1 The Stronger Christchurch Infrastructure Rebuild Team (SCIRT)

Table 3.4 Profiles of research participants in the pilot study

<i>Data collection schedule</i>	<i>Code</i>	<i>Nature of business</i>	<i>Designation</i>
May 2014	PSC1	Infrastructure construction company	Recruitment and training coordinator
	PSC2	Infrastructure construction company	ECI and procurement manager

2. Case study investigations conducted in 2014 and 2015

Only ‘information-rich cases for study in-depth’ were chosen in this research. This was achieved through a relationship with the New Zealand Specialist Trade Contractors Federation (NZSTCF) and Civil Contractor New Zealand, Canterbury Branch (CCNZ). The connection with these two Christchurch-based organisations enabled the outreach of populations related to the research topic. In this respect, these organisations act as gatekeeper, which then lead to potential participants. This procedure minimises the possible bias arising from selecting a sample based on convenience. These organisations provided subcontractors’ contacts through their existing database, and invitations to participate in the research were sent through email. Following this, emails were sent to prospective participants, with 13 agreeing to participate in this research.

The background of those agreed participants was thoroughly checked to ensure it aligned with the research requirements. The nomination of participants also strictly followed Charmaz and Smith’s (2003) recommendations in which selection is made predominantly based on participants’ level of expertise (i.e., participants have knowledge of the research topic). In this research, an appropriate sample comprises participants who operate small and medium-sized construction

companies and are involved in the Christchurch recovery projects (civil or commercial sector). The selection of information-rich case studies ensures adequate saturation of data categories and attainment of optimal quality information (Morse et al., 2002; Mason, 2010).

Bennett and Elman (2007) indicated that large sample size studies are not always beneficial for qualitative purposes. Boddy (2016) stated that the determination of sample sizes in qualitative research is contextual and partially dependent upon the scientific paradigm (e.g., constructionism, interpretivism, positivism, subjectivism, etc.) under which investigation is taking place. The strategy to focus on a small sample size aligns with the research intent to capture richer data. Since this research does not attempt to find a large-scale generalisation of the outcome; therefore, this sample size was deemed satisfactory.

Repeated interviews were conducted in 2015, with 11 out of 13 subcontractors agreeing to participate in the research. Returning to interview key participants for a second time was oriented towards eliciting data to expand the depth of the phenomenon under investigation and addressing gaps in the emerging analysis. *Table 3.5* details the profiles of the case study participants/interviewees.

Table 3.5 Case study organisations

<i>Data collection schedule</i>	<i>Code</i>	<i>Nature of business</i>	<i>Number of employees</i>	<i>Designation</i>
October 2014	S1	Roofing, plastering, painting subcontractor	35	Managing director
	S2	Civil construction and drainage work	30	Site superintendent
	S3	General civil subcontractor	20	Operations manager
	S4	General earthwork and civil subcontractor	50	Contracting manager
	S5	Building services installation	18	General manager
	S6	Civil construction subcontractors	100	Contracting manager
	S7	Steel and mesh specialist	60	General manager
	S8	Commercial buildings and residential builder	65	Director
	S9	Civil contracting and drainage subcontractor	50	Operations manager
	S10	Civil earthworks and civil construction subcontractor	36	Managing director
	S11	Building façade specialist	85	General manager

	S12	Drainage subcontractors	8	Contract manager
	S13	Geotechnical and civil construction specialist	100	General manager
October 2015	S1	Roofing, plastering, painting subcontractor	35	Managing director
	S2	Civil construction and drainage work	30	Site superintendent
	S4	General earthwork and civil subcontractor	50	Contracting manager
	S6	Civil construction subcontractors	100	Contracting manager
	S7	Steel and mesh specialist	60	General manager
	S8	Commercial buildings and residential builder	65	Director
	S9	Civil contracting and drainage subcontractor	50	Operations manager
	S10	Civil earthworks and civil construction subcontractor	36	Managing director
	S11	Building façade specialist	85	General manager
	S12	Drainage subcontractors	8	Contract manager
	S13	Geotechnical and civil construction specialist	100	General manager

3. Focus group discussion conducted in 2016

A focus group discussion was initiated with a view to pinpointing the fit and relevance of findings from the case study investigations. Participant recruitment processes were guided by the same principles employed in the 2014/2015 case study investigation. The guiding principles in selecting focus group participants are summarised in *Table 3.6* below:

Table 3.6 The guiding principle for selecting focus group participants

<i>Guiding principles</i>	<i>Description</i>
Aim	Data validation purposes
Selection of participants	Purposive sampling and utilisation of mediators/gatekeepers for accessing participants
Primary target audience	Practitioners in the subcontracting sector of small and medium-sized companies
Research outputs	Emerging findings/themes from the case-study data, relevance of workforce resourcing guidelines

Many scholars hold the view that the concept of expertise is dominant in the selection of qualitative research participants (e.g., Borrego et al., 2009; Mason, 2010; Flyvbjerg, 2011). The focus group sample was selected from the New Zealand Specialist Trade Contractors Federation (NZSTCF) and Civil Contractor New Zealand, Canterbury Branch (CCNZ) membership database. This sample

was screened to meet the selection criteria of the research project (i.e., participants' experience, organisation's size, and nature of business). Participants' selection is strictly made in a non-random manner to ensure the sample is representative of the population under investigation. Therefore, invitations to participate in the research were only sent to participants with matching predetermined criteria. The focus group discussion was conducted in 2016, with the participation of ten practitioners from the Christchurch subcontracting sector. *Table 3.7* details the profiles of research participants.

Table 3.7 Profile of focus group participants

<i>Data Collection schedule</i>	<i>Interviewee code</i>	<i>Nature of business</i>	<i>Designation</i>
October 2016	FG1	Roofing specialist	Director
	FG2	Roofing specialist	Director
	FG3	Scaffolding specialist	Director
	FG4	Residential specialist	Director
	FG5	Commercial specialist	Managing Director
	FG6	Commercial specialist	Director
	FG7	Residential and light commercial specialist	Managing Director
	FG8	Residential specialist	Director
	FG9	Commercial builder	Director
	FG10	Commercial specialist	Director

3.2.3 Research design process

This research is anchored in interpretivistic research philosophies with adherence to social science methodologies and constructionist approaches to social enquiries within the subcontracting sector. In particular, a more subjective perspective of reality is dominant in this research. This research, therefore, lies in the realm of multiple case study design to ensure that rich and multi-faceted information can be obtained. Research questions were formed to guide the research design, and their links with research methods are shown in *Table 3.8*.

Table 3.8 Linking research questions with research methods

<i>Research questions</i>	<i>Research methods</i>
What were the subcontracting business challenges in resourcing Christchurch recovery projects?	Case study, interviews, literature review
What were the workforce resourcing strategies adopted by subcontracting businesses in response to reconstruction demand?	Case study, interviews, literature review
What were the best practice approaches for subcontracting businesses in managing workforce at the organisational and/or project level?	Case study, interviews, literature review, focus group

By understanding the linkage between the research questions and methods, three stages of the research process are drawn. *Figure 3.2* shows the research design process to develop the best practice guidelines for workforce resourcing in subcontracting businesses. The process is thematically discussed as follows:

1. Stage 1: Defining the research and pilot study;
2. Stage 2: Data collection to identify workforce resourcing strategies in the case study subcontracting businesses; and
3. Stage 3: Analysis of case studies to develop best practice guidelines for workforce resourcing in subcontracting businesses.

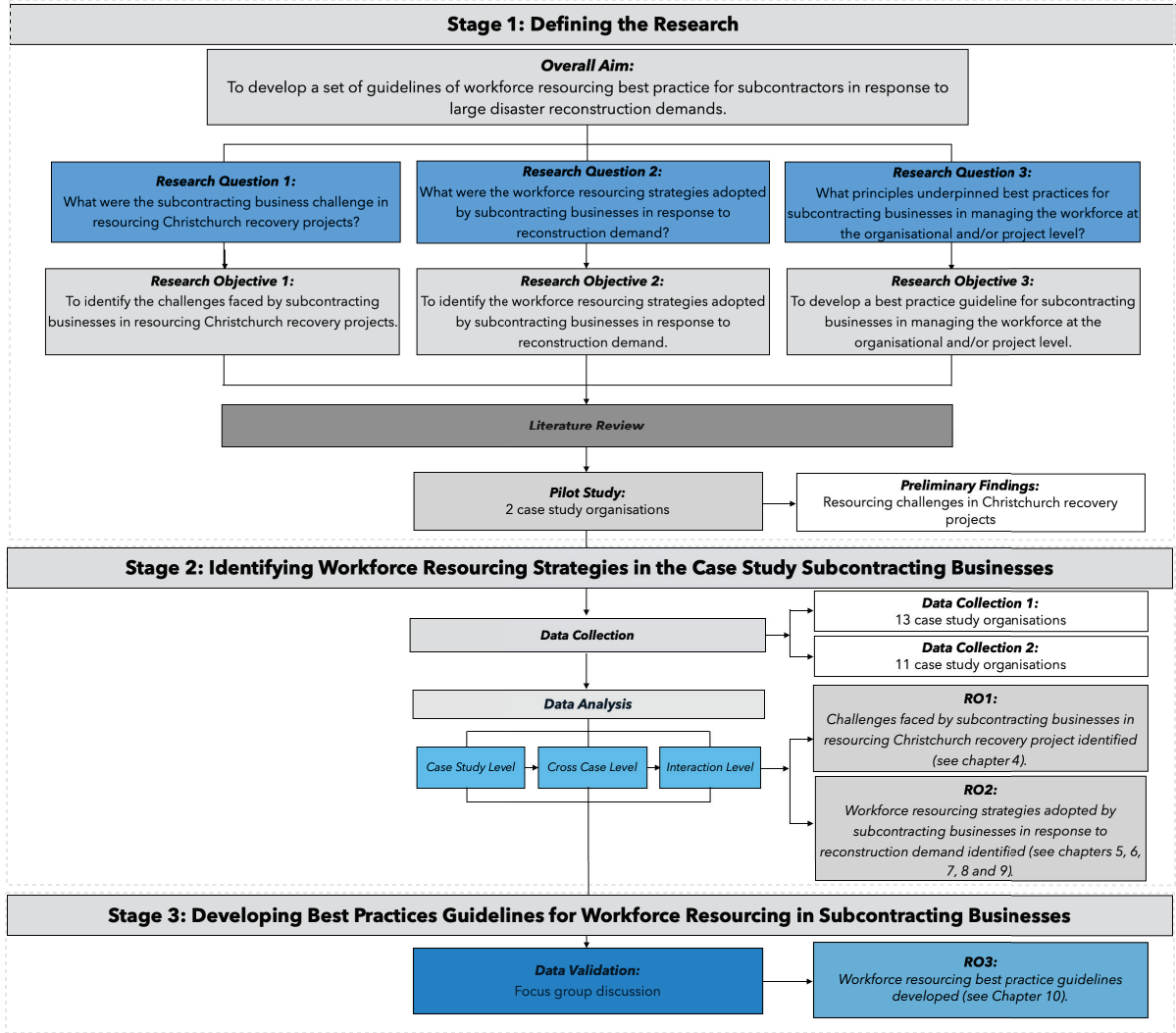


Figure 3.2 Research design process

3.2.3.1 Stage 1: Defining the research

This stage forms the theoretical background of the research. As such, desktop research was initiated in the early stage of the research. Reports on “Resourcing the Canterbury Rebuild” were reviewed to capture the resourcing patterns in rebuilding Christchurch. This review covers the investigation of the rebuild skill availability (Boiser et al., 2011; Chang et al., 2012a), persistent resourcing bottlenecks (Chang et al., 2012a; Chang et al., 2012b; Chang-Richards et al., 2013a), accommodation provision (Chang-Richards et al., 2013b; Chang-Richards et al., 2014a) and industry responses in relation to resource shortages (Chang-Richards et al., 2014b). In addition, published reports from New Zealand government agencies such as the Ministry of Business, Innovation and Employment (MBIE), Christchurch City Council (CCC), and Stronger Christchurch Infrastructure Rebuild Team (SCIRT) were reviewed to understand the context in which government initiatives were attempting to transform the sector.

A critical literature review was undertaken in Chapter 2 of this thesis, focussing on the workforce resourcing elements in construction and post-disaster environments. In specific, Chapter 2 comprises three main concepts. The first part revolves around disasters, their impacts and workforce resourcing following a major disaster. The second part focuses on approaches to human resource management (HRM) in construction and its adoption in subcontracting businesses. The third part of the literature review explains the four components of workforce resourcing: workforce planning, recruitment and selection, retention and performance management, and workforce development. These components of workforce resourcing were discussed further in terms of their specific attributes and adoption in the subcontracting sector. The aforementioned theories were systematically integrated into the analysis (see [Chapter 10](#)), resulting in a workforce resourcing dynamics causal loop diagram and best practice recommendations.

A pilot study was conducted following this document analysis. The pilot study had two aims: (1) to determine the feasibility of the proposed research and (2) to test the proposed research design process. This small-scale investigation into the Christchurch construction industry was administered in May 2014. Two out of five SCIRT contractors took part in

the pilot study, and their participation highlighted the opportunities and challenges following the 2010/2011 Christchurch earthquakes.

3.2.3.2 Stage 2: Data collection to identify workforce resourcing strategies in case study subcontracting businesses

The pilot study showed that skills shortages were prevalent following the Christchurch earthquakes. Skill shortages were rising due to the massive demand for skilled labour and constraints in supply capacity. Following the pilot study, 13 case study organisations were investigated. Findings from the investigation exposed the dominant model used in sourcing workforces as flawed. A short-termism approach to people management (i.e., workforce planning, recruitment and selection, and development) was predominant in all the case study organisations. Research findings also indicated that building materials could be procured locally. Indeed, minimal issues were experienced in procuring materials for the recovery projects.

Nevertheless, research participants have highlighted the importance of material scheduling, particularly when resourcing for simultaneous projects. In such a scenario, project prioritisation was developed to ensure that the strategic allocation of resources could be achieved. Further investigations were conducted a year later with the same group of participants to evaluate the resource challenges and subcontractors' resourcing strategies over different lengths of time. Therefore, this research combines elements of cross-case comparisons with periodic comparisons. Chapters 4, 5, 6, 7, 8, and 9 of this thesis thematically explain the resourcing strategies adopted in the case study organisations.

3.2.3.3 Stage 3: Cross-case analysis to develop best practice approaches for workforce resourcing in subcontracting businesses

Experience from the investigated subcontracting businesses provides a significant impetus to the development of workforce resourcing best practices. Data retrieved from the interviews and focus group discussion was analysed using appropriate software (i.e.,

Leximancer, NVivo 12, and Vensim PLE) to capture workforce resourcing dynamics within the investigated companies. Following this, a causal loop diagram (CLD) was developed to better understand the dynamics between multiple interactions in workforce resourcing. A detailed interpretation of the CLD is provided in Chapter 10 of this thesis. Subsequently, the best practice guidelines for workforce resourcing were established based on the main components of people management strategies adopted in subcontracting businesses. Focus group interviews were then initiated to validate these research findings. Ten Christchurch-based subcontractors participated in the focus group discussion.

3.3 Data collection methods

As explained in an earlier section of this chapter, this research attempts to explore the behaviour of ‘multiple bounded systems’⁷ over a specific time period through in-depth data collection. This research employed the following data collection methods:

1. Interviews; and
2. Focus group

3.3.1 Interviews

In this research, multiple case studies were investigated to understand resourcing strategies in small and medium-sized construction companies. A pilot study was conducted with two representatives from the SCIRT delivery team. In-depth interviews were conducted with subcontracting organisations that were involved in the Christchurch reconstruction projects. Following the case study investigation, interviews were also conducted with a Christchurch-based recruitment agency and one main contractor to obtain information that permits logical deductions of the industry input pertaining to workforce resourcing. *Table 3.9* details the profiles of research participants. Access to data used in this research was provided by research participants as per confidentiality provisions of the University of Auckland Human Participation Ethics Committee requirements (reference number 7520). The interviews with subcontractors were

⁷ A ‘bounded system’ (for one case) refers to the case/phenomenon/subject/system under study (Creswell, 2016).

conducted in two consecutive years, 2014 and 2015 with the same group of subcontractors.

Table 3.9 Profiles of interviewees

<i>Interviewee code</i>	<i>Nature of business</i>	<i>Number of employees</i>	<i>Designation</i>
Contractors			
PSC1	Infrastructure construction company	Over 3500	Recruitment and training coordinator
PSC2	Infrastructure construction company	Over 5000	ECI and procurement manager
Subcontractors			
S1	Roofing, plastering, painting subcontractor	35	Managing director
S2	Civil construction and drainage work	30	Site superintendent
S3	General civil subcontractor	20	Operations manager
S4	General earthwork and civil subcontractor	50	Contracting manager
S5	Building services installation	18	General manager
S6	Civil construction subcontractors	100	Contracting manager
S7	Steel and mesh specialist	60	General manager
S8	Commercial buildings and residential builder	65	Director
S9	Civil contracting and drainage subcontractor	50	Operations manager
S10	Civil earthworks and civil construction subcontractor	36	Managing director
S11	Building façade specialist	85	General manager
S12	Drainage subcontractors	8	Contract manager
S13	Geotechnical and civil construction specialist	100	General manager
Contractor			
C1	Tier 2 contractor	150	Executive director
Recruitment Agency			
RA1	Construction and engineering recruiter	NA	Manager

3.3.2 Focus group

In October 2016, ten subcontractors participated in a focus group. Building business resilience was the key topic in the discussion. This focus group discussion was initiated to not only supplement the interview data collected in 2014 and 2015 but also validate the research findings. Invitations were sent prior to the selection of participants for the focus group. A purposive approach to selecting participants was adopted to ensure rigour, relevance, and pragmatic outcomes. *Table 3.10* details the profile of the research participants.

Table 3.10 Profile of focus group participants

<i>Data collection schedule</i>	<i>Code</i>	<i>Nature of business</i>	<i>Designation</i>
October 2016	FG1	Roofing specialist	Director
	FG2	Roofing specialist	Director
	FG3	Scaffolding specialist	Director
	FG4	Residential specialist	Director
	FG5	Commercial specialist	Managing Director
	FG6	Commercial specialist	Director
	FG7	Residential and light commercial specialist	Managing Director
	FG8	Residential specialist	Director
	FG9	Commercial builder	Director
	FG10	Commercial specialist	Director

3.4 Data analysis methods

The case-study design, analysis, and data interpretations were made with an entrenched adherence to Yin’s (2017) interpretative research paradigm. This approach exemplifies analytical principles in which patterns within datasets are thematically identified, analysed, and reported. This thematic synthesis involves detailed descriptions and organisation of the collected data, providing a holistic insight into the research topic (Yearworth & White, 2013). In particular, thematic synthesis recognises the recurrent theme prevalent within the dataset (Cruzes & Dybå, 2011a; 2011b). This method can be both superficial (i.e., describing the identified themes) and meticulous (i.e., describing the relationship between various themes) (Pope et al., 2007). Data analysis procedures in this research were derived based on Barrett and Sutrisna's (2009) methodological strategies. In particular, the analysis was performed at the case study, cross-case, and interaction levels.

In this research, all interviews were verbatim transcribed and analysed using Leximancer, NVivo 12, and Vensim PLE. Research data is predominantly held and analysed by the application of NVivo 12. Open and axial coding was performed using NVivo 12. The relationships between categories captured during the axial coding stage are further analysed using the in-built NVivo matrix coding query system. This process helps to elicit possible causal relationships in developing causal loop diagrams (CLDs). Causal loop

diagramming improves ‘dynamic sensibility’⁸ of grounded theory in the process of qualitative data analysis (Yearworth & White, 2013). This capability (i.e., dynamic sensibility) illustrates the dynamic behaviour of a system in the form of causal relationships and feedback loops (Yearworth, 2014).

Each causal relationship or link is assigned a polarity, either positive (+) or negative (-), to denote the causal influences between the variables. Variables linked with a positive (+) sign indicate a positive relationship between the variables, whereby an increase in the causal variable leads to an increase in the effect variable, or a decrease in the causal variable leads to a decrease in the effect variable, all else being equal. In contrast, variables linked with a negative (-) sign indicate a negative relationship between the variables, whereby an increase in the causal variable leads to a decrease in the effect variable, or a decrease in the causal variable leads to an increase in the effect variable, all else being equal. Feedback loops are either (positive) reinforcing or (negative) balancing loops. Reinforcing loops (represented with an R) reinforce the effect on any variable within the causal loop by returning a change in the same direction as the initial one. Balancing loops (represented with a B) balance the change in any variable within the causal loop by returning a change opposite to the initial one.

Vensim PLE software is used as a tool in producing the CLDs. The CLDs, including the polarity of the causal links, were carefully developed from the information (i.e., empirical data) and relationships captured in the axial coding stage. The CLDs developed in this research are not intended to provide a simulation model of workforce resourcing. Instead, the CLDs present the dynamic behaviour between the elements of workforce resourcing captured in this research. This approach aids in identifying the structure of the relationships between a set of system elements (i.e., resourcing functions). With this information, systemic interventions to resourcing problems can be devised. Additionally, this approach also offers a holistic evaluation of the individual workforce resourcing functions along with their interactions.

⁸ Dynamic sensibility is the capability of theorising about the dynamic behaviour of elements or variables within a system using feedback loops (Yearworth & White, 2013). The feedback loop can either be positive (reinforcing) or negative (balancing) (Yearworth, 2014).

A CLD showing the dynamics in workforce resourcing was developed and is discussed in Chapter 10 of this thesis. The integrated qualitative model consists of eight reinforcing and four balancing loops (see *Table 10.1*). Each loop is iteratively built based on the central issues (i.e., skill shortages) reported by the case study subcontracting businesses. Reducing skill shortages through proper workforce resourcing is the central goal of the system illustrated in the qualitative model (see *Figure 10.1*). By understanding these variables, a workforce resourcing best practice guideline was developed to provide subcontractors with a pre-emptive approach to building resilient workforce resourcing systems. The following section details the data analysis strategies adopted in this research.

3.4.1 Data analysis procedures

Data analysis procedures are derived based on methodological strategies by Barrett and Sutrisna (2009). They introduced three layers of data processing strategy. This strategy is guided by the grounded theory methodology, which places greater emphasis on theory development through continuous interaction between data analysis and data collection approaches.

3.4.1.1 Case study analysis

In this research, multi-cases were investigated within a two-year investigation period. A total of 24 transcriptions were produced prior to the commencement of data analysis. At this initial stage (also known as the open coding stage), these transcriptions were analysed based on ‘word-by-word’ or ‘textual chunks of data’. According to Gunne-Jones (2009), this approach enables the development of key concepts critical to the research domain. The emerging issues faced by the investigated subcontractors in resourcing post-disaster reconstruction were categorised into individual nodes. These nodes were carefully reviewed to ensure their relevance to the context of the research. Leximancer and NVivo 12 software was used to process data at this open coding stage. Resources in short supply, along with their contributing factors, were identified at this stage. Resourcing strategies were also captured in this initial coding process. Descriptive narratives were established and are detailed in Chapter 4 of this thesis. In particular, resources in short supply following the Christchurch earthquakes were defined and discussed.

3.4.1.2 Cross-case analysis

Upon identifying the key concepts relating to workforce resourcing in the case study organisations, causal loop diagrams were developed based on four themes. The themes are workforce planning (see Figure 6.6), workforce recruitment and selection (see Figure 7.4), workforce retention and performance management (see Figure 8.1), and workforce development (see Figure 9.1). These CLDs were developed based on comparative case study findings. This comparative analysis involved merging similar concepts from individual concept maps and maintaining the links between the concepts. Descriptive narratives were established and are detailed in chapters 5, 6, 7, 8, and 9. This process enabled the formation of refined themes that subsequently led to the identification of workforce resourcing best practices. The workforce resourcing best practices are thoroughly discussed in [Chapter 10](#).

3.4.1.3 Iterative analysis

The research initially determined and analysed the causal factors deemed significant in workforce resourcing. Following this, the interaction of these causal factors within the evolving environment was clarified. According to Sutrisna and Setiawan (2016), interaction analysis transforms raw data into an insight or finding of the research. The interaction analysis process led to the formation of a workforce resourcing best practice guideline suitable for subcontracting businesses. Details of this guideline are provided in Chapter 10 (see [section 10.3](#)) of this thesis.

3.5 Reflection on research methods design, reliability, and applicability

This research has adopted the qualitative case study approach. In this research, multiple cases were investigated over three years (i.e., case studies and focus group discussions). Interviews were conducted to achieve an explicit dialectical synthesis between the empirical realities and theoretical entities. This exploration mode offered a unique idiographic approach to a contemporary phenomenon. Following this, the sample size was determined according to a set of criteria. A three-layer analysis was performed involving the case study level, cross-case level, and iterative level.

According to Ménacère (2016), research design directly affects the reliability of the research result. To enhance research reliability, the researchers must tailor the research method to the nature of the study. In particular, the researcher should be aware of the influence of their philosophical stance (i.e., axiology, epistemology, ontology, etc.) on the design of their research methodology. This research is anchored on interpretivistic research philosophies. Within these philosophies, reality and knowledge are socially constructed. This research offers a case of reality pluralistic with a significant reliance on specific individuals' knowledge and experiences (i.e., subcontracting businesses resourcing practices). This approach aims to generate reasoning from specific observations to general principles in pursuit of establishing a legitimate relationship (Love et al., 2002).

This inductive process has been the core approach in analysing the data collected in this research, enabling a more in-depth understanding of the phenomenon under study. One of the downsides of this approach is that it involves a great deal of effort and time. The processing of data, for instance, requires multiple analytical procedures, methods, or tools for precision. The recruitment of research participants also requires proper planning and industry networking. A relationship was formed with the Stronger Christchurch Infrastructure Rebuild Team (SCIRT) and the New Zealand Specialist Trade Contractors Federation and Civil Contractors New Zealand (Canterbury Branch). Although the relationship was established with prospective participants at the early stage of the research, several months were required to get available slots for interviews. The same

participants were followed over two years, which also increases the temporal and financial demands associated with this particular approach.

This research chose to focus on a smaller sample size as it does not attempt to find large-scale generalisation. According to Byrne and Ragin (2020), it is impossible to create a universal law of generalisation for theory-building purposes. The authors advocate using a comparative case study to understand themes and causation in a phenomenon under investigation. However, this must occur with adherence to predetermined scoping requirements. The selection of case studies and the scope of the study were critically addressed when designing this research. This is particularly important as the scope of the study sets empirical and theoretical limits on the extent of the generalisation to be achieved from the results of the study. Therefore, the research methodology informs the design of empirical work and the extent of generalisation, among other decisions.

Another major challenge brought about by this case-based study is the difficulty ascertaining data saturation. It can be deduced that a researcher has a lack of controls owing to data subjectivity. Therefore, a researcher should be familiar with the sampling procedure or strategies to ensure the reliability of research results (Goulding, 2002). This approach provides a more in-depth insight into the knowledge (Flyvbjerg, 2011; Yin, 2017); however, generally, bigger sample sets are required to expand the breadth of knowledge in relation to the phenomenon being studied (i.e., quantitative research approach, mixed-method research approach) (Meredith, 1998).

In this research, literature review (e.g., resourcing in the post-disaster environment, people management in construction, etc.) remains essential in understanding the theoretical context of the emerging findings from the data. However, this theoretical understanding should not constrain the emergence of new theories or/and knowledge from the investigations (i.e., case study interviews, focus group discussions, etc.). Therefore, this approach offers a route for theory generation with entrenched adherence to inductive analysis. In a qualitative case study approach, knowledge of social processes takes precedence over statistical representativeness (Bennett & Elman, 2007). In this light, statistical significance is always ambiguous (Flyvbjerg, 2011). The strengths and limitations of a qualitative case study approach are summarised in *Table 3.11*.

Table 3.11 Strengths and limitations of a qualitative case study approach

<i>Strengths</i>	<i>Limitations</i>
Depth of information	Small sample size owing to access and/or time
High conceptual validity	Weak understanding of phenomenon occurrence in a population of study (i.e., the spread of a phenomenon under study)
Understanding of context and process along with the causality between variables within phenomenon under study	Selection bias may overstate or understate relations
High mechanism for developing new theories	Need multiple analytical procedures, methods, or tools to ensure precision
Relevance	Statistical significance is always either unknown or unclear
Reliability	Lack of controls, dependent upon data saturation

3.6 Ethical considerations

This research was conducted in adherence to the ethical requirements set by the University of Auckland, New Zealand. Ethics approval was obtained on 19 October 2011 and is valid for three years (reference number 7520). An amendment to the ethics approval document was made to accommodate the need for further collection of data. The amended document was approved on 11 June 2015, with a three-year validity. The ethics approval documents (i.e., Participant Information Sheet and Consent Form) are attached in Appendix A.

3.7 Summary

This chapter discussed the research methods employed in this research. This research is firmly rooted in the constructivist tradition. It has shown an entrenched adherence to the qualitative case study approach, utilising data collection methods such as interviews and a focus group discussion to explore contemporary issues following the devastating Canterbury 2010/2011 earthquakes. Data analysis protocols were guided by the grounded theory methodology through three analytic processes known as the ‘case study level’, ‘cross-case level’, and ‘iterative level’. Reflection is included to highlight lessons learned.

Chapter 4

Critical Skills for Rebuilding Christchurch

4.1 Introduction

This chapter presents the resourcing challenges faced by Christchurch subcontracting businesses following the 2010/2011 earthquakes. In the aftermath of the Canterbury earthquakes, subcontractors were at the forefront of rebuilding efforts. Therefore, their capability and resource capacity were pivotal to the rebuild success. Drawing primarily upon case study research from 13 subcontracting businesses in Christchurch, this chapter discusses resources in short supply, along with their contributing factors. It also details the types of skill shortages in the subcontracting sector and the workforce resourcing strategies adopted by the case study organisations to overcome skill shortages. Interviews with participating subcontractors drew a wide range of views about the prospect of workforce resourcing in a post-earthquake scenario. The subcontractors' opinions were collated and analysed using a text analytics tool known as Leximancer (<https://info.leximancer.com/>). The key findings from this investigation are presented in the following thematic headings:

1. Resource shortages faced by the case study organisations;
2. Contributing factors to resource shortages in the Christchurch subcontracting sector; and
3. Subcontractors' response to skill shortages.

4.2 Resource shortages faced by the case study organisations

Figure 4.1 shows the major themes relating to resource shortages based on the interviews with the case study subcontracting businesses. A direct connection was evident between

labour, demand, skill shortages, tradesperson, experience, and local talent pool. The tightening of the labour market has been evenly felt by the investigated subcontractors involved in the recovery projects. From the interviews, frequent references to skill shortages inferring an exhausted talent pool in the Christchurch construction industry. For example, one interviewee, S11, said:

“Labour is a problem with the increased workload. The workload is getting bigger even now from last year so yes, getting labour in place is a priority, and it’s not easy.”

S11

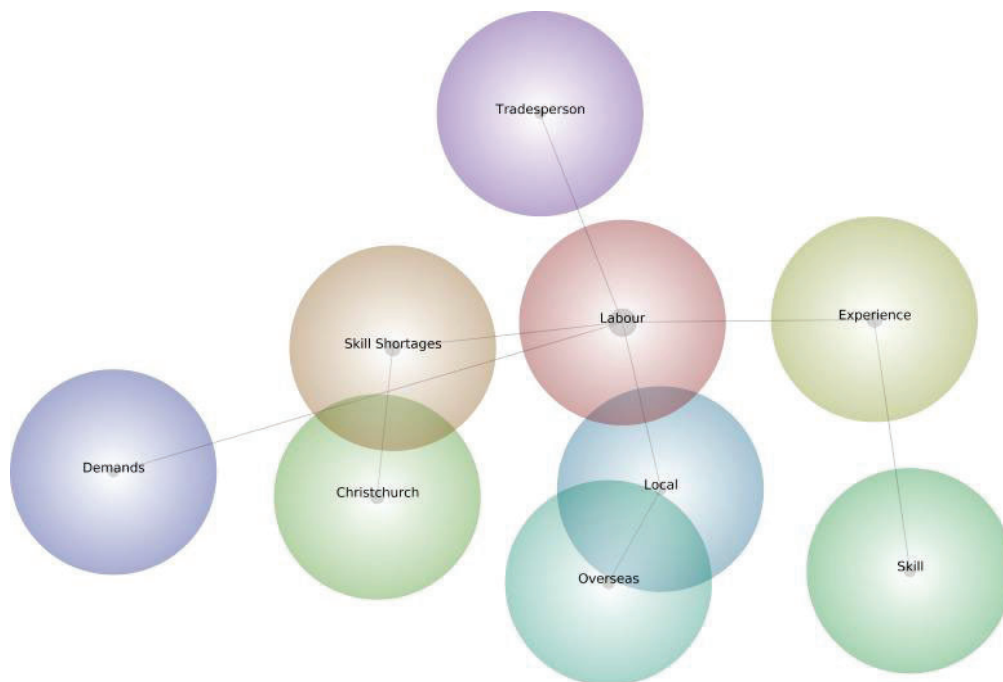


Figure 4.1 Leximancer analysis on resource shortages in the case study organisations

From March 2011 to March 2015, construction employment grew by 89.9 per cent following the peak in Christchurch reconstruction activity (Ministry of Business, Innovation and Employment, 2016). This derived demand for construction-related jobs substantially impacts the subcontracting businesses in Christchurch. Commenting on the surging demand for skilled workers, one of the interviewees, S7, said:

“Demand for these people (skilled labour) is high and therefore they are free to come and go as they please, like within other businesses,

etc. So, you've got to work hard to retain them and you've got to be very flexible with how you tackle the problem."

S7

The findings also revealed that the increased demand for skilled construction workers had plagued the investigated subcontractors with employee turnover. Talking about this issue, an interviewee, S13, said:

"One of the difficulties is they're a bit transient; they don't stay. They try to move around for more money. Some of them are just here for a short time so they try to use the opportunity of getting a job and they agree on a rate for the work. Then, they immediately want more and then they go to another contractor and maybe they get more, maybe they don't, but they just move around."

S13

General agreement on the consequences of the workforce's mobility was retrieved from the investigated subcontractors. The workforce departures have restricted the investigated subcontracting businesses from taking up workloads. Therefore, this situation calls for structured workforce employment and retention strategy to combat the 'early-departure' workforce trend. Integrating behavioural intervention and workforce motivation into the workforce resourcing system has been seen as crucial in keeping a long-tenured workforce.

4.3 The contributing factors to resource shortages in the Christchurch subcontracting sector

The contributing factors to labour shortages within the case study subcontracting businesses are presented in *Figure 4.2*. From the analysis, labour shortages emerged in conjunction with the massive demand for rebuilding Christchurch, workforce fluidity across the industry and the monetary-driven employment trend in Christchurch. It is important to make specific the contributory factors surrounding the subcontractors' resourcing capacity, particularly in equipping the businesses with strategic interventions focussing on workforce planning.

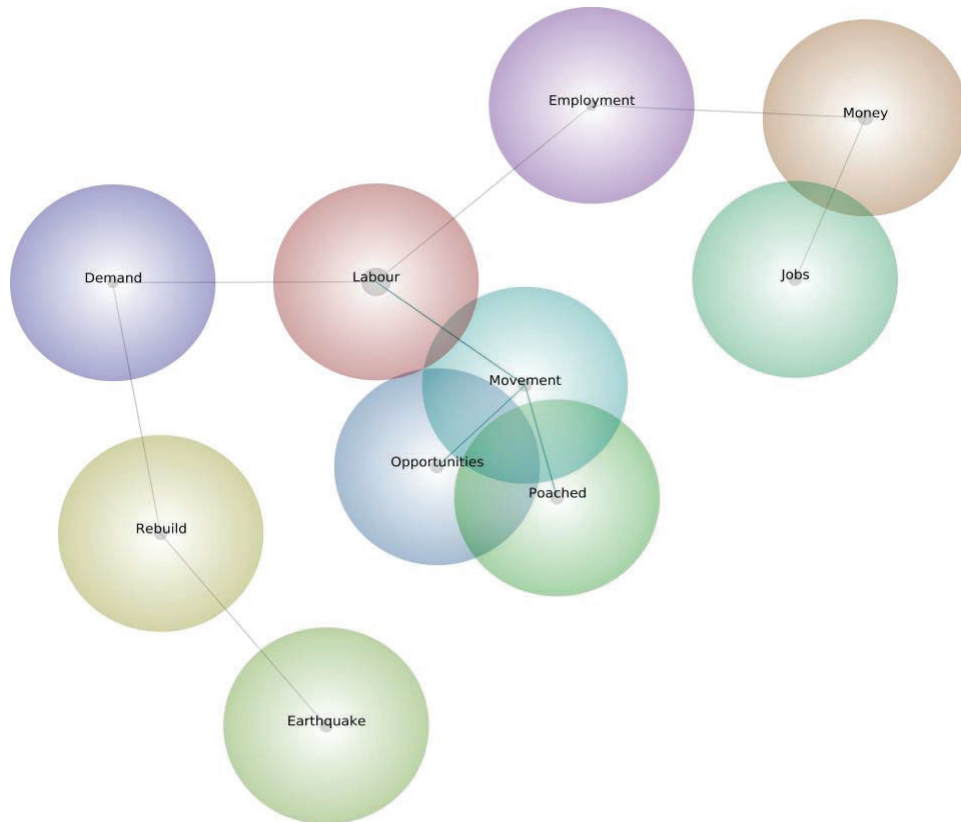


Figure 4.2 Leximancer analysis on the contributing factors to labour shortages in the case study organisations

The majority of the interviewed subcontractors viewed the scarcity of workers as the primary factor impeding their business performance. One of the interviewees, S11, noted:

“If we don’t get the people; we won’t be able to do the work. We’ve got time to do it; it’s just going to make it very hard to get the people. But what we’ve also got to look at when we’re bringing people; is to get the number of people that we need to get. We have to look at bringing some people in from overseas, because of the experience and because it takes too long to train, even though we’re still continuing the training, to increase the numbers required of experienced people we need.”

S11

Essentially, the interviewed subcontractors recognised their employees as drivers for productivity improvement and achieving a sustained organisational competitive advantage. For instance, interviewee S3 commented:

“We don’t want it to be a negative in our tendering processes. We still want to be able to price the jobs on the basis that we will have the people, but with the same token, we are actively always looking to try and hold the people we think can fill those roles.”

S3

This notion indicates that organisational performance correlates to the quality, suitability, and capability of the workforce. The interest in improving these criteria is the impetus for forging an enhanced effort to incorporate workforce planning systems into the subcontracting businesses’ decisions.

4.4 Subcontractors’ response to skill shortages

This section presents the subcontractors’ resourcing response to the skill shortages in the Christchurch post-quake situation. Findings from the 2014/2015 investigations showed the interviewed subcontractors adopt a strategic behaviour in managing their workforces. In this respect, a great emphasis was made on attaining safe staffing levels. This exposure has prompted the idea of investigating dynamics that govern workforce resourcing practices in small and medium-sized construction businesses. To better understand the workforce resourcing dynamics, the following priorities are brought to the fore:

1. Skills availability;
2. Workforce recruitment and retention; and
3. Workforce training and development.

4.4.1 Skills availability

The labour market volatility coupled with fluctuating workflows within the subcontracting sector place greater challenges in sourcing specific skills. The Ministry of Business, Innovation, and Employment (2014) forecasted work to be at a peak in December 2016, with the reconstruction work requiring 38,000 construction workers. Consistent demand for specific roles was reported in 2014 within the subcontracting organisations in Christchurch (Chang-Richards et al., 2014).

The two-year investigations in 2014/2015 revealed that sourcing labour domestically was a challenge, particularly among trades with carpentry, drain laying, painting, plastering, and pipe laying skills. As of August 2017, 58 per cent of the roles listed in the Canterbury Skill Shortage list were of the skilled trade (e.g., bricklayer, carpenter, drain layer, plasterer, and plumber) group. This is followed by demand in other construction-related occupations (e.g., building surveyor, construction project manager, project builder, and surveyor) and engineering professions (e.g., civil engineers, structural engineers, electrical engineers, engineering draughtsperson and engineering technicians) which account for approximately 20 per cent respectively (Canterbury Skill Shortages List, 2017).

The low job-filling rate serves as an indicator that reflects the tight labour market situation in Christchurch. High dependency on skilled labour and the paucity of a qualified workforce has restricted the subcontractors' accessibility to reconstruction opportunities. The majority of the interviewees encountered difficulties in attracting potential employees to fill specific roles in their organisations. The interviewees agreed that a continuous effort to recruit and retain specific trades had become a necessity. The list of job vacancies across case study organisations is tabulated and presented in *Table 4.1*.

Table 4.1 Job vacancies in the case study organisations (2014/2015)

Trades		S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
Carpenter														
2014		✓							✓					
2015		✓							✓					
Designer and draftsman														
2014												✓		
2015												✓		
Digger driver														
2014											✓			
2015											✓			
Drain layer														
2014				✓						✓				
2015				✓						✓				
Drainage operator														
2014							✓						✓	
2015							✓						✓	
Drainage foreman														
2014							✓							
2015							✓							
Machine operator														
2014													✓	
2015													✓	
Painter														
2014														
2015														
Pipe layer														
2014													✓	
2015													✓	
Plasterer														
2014														
2015														
Project manager														
2014														✓

2015						
Site engineer						
2014		✓	✓			
2015		✓	✓			
Site supervisor						
2014	✓					✓
2015	✓					✓
Site staff installer						
2014		✓				✓
2015		✓				✓
Skilled asphalt operator						
2014		✓				
2015		✓				
Technical roles						
2014		✓			✓	
2015		✓			✓	
Truck driver						
2014		✓				✓
2015		✓				✓

4.4.2 Workforce recruitment and retention strategies

The interviewed employers favoured a more informal approach to recruiting employees. It was observed that the practice of ‘hiring the known’ predominates in the investigated companies. Indeed, most employers prioritise local hires to fill their positions. The majority of interviewees view local hiring as an economical approach to staffing. In contrast, hiring migrant workers is costly, and the immigration complexity adds further challenges to its execution. Accordingly, interviewed employers recruit locally with the intention to retain employees for the long haul.

Given the strain on the Christchurch labour market, 77 per cent of the interviewed employers have had to invest in international hiring. Albeit expensive, this hiring strategy serves as an effective short-term solution to the skill crisis. *Table 4.2* shows migrant workers’ employment across all 13 case study organisations. Strategies adopted to recruit and retain the workforce are thoroughly discussed in [Chapter 7](#) and [Chapter 8](#) of this thesis.

Table 4.2 Migrant workers in the case study organisations

<i>Countries</i>	<i>S1</i>	<i>S2</i>	<i>S3</i>	<i>S4</i>	<i>S5</i>	<i>S6</i>	<i>S7</i>	<i>S8</i>	<i>S9</i>	<i>S10</i>	<i>S11</i>	<i>S12</i>	<i>S13</i>
Australia	√				√		√						
China						√				√			
Czech Republic	√												
France										√			
Germany										√			
Ireland	√		√			√		√		√		√	√
England	√		√			√		√			√		√
Philippines	√		√		√			√		√	√		√
Scotland													√
South Africa											√		
United State					√								

In all cases, interviewed employers agreed that providing meaningful skills and career development opportunities can help retain employees. More importantly, this approach ensures that skills are relevant throughout the business operation. In essence, employees’ career aspirations and needs are embedded in the organisational retention strategy. The psychological contract⁹ is one of the key retainers used in the investigated companies.

⁹ The psychological contract refers to the mutual reciprocity of commitments, obligations and/or expectations between employers and employees (Guest & Conway, 2002).

This non-contractual agreement involves a two-way exchange of commitments, obligations, and expectations between employers and employees. Dainty and Loosemore (2013) found that a positive link exists between psychological contracts, employment relationships, and workforce productivity. The interviewed employers perceive this approach as a catalyst to engendering employees' trust, loyalty, and support. In this respect, these employers provide employees with developmental opportunities (i.e., training and development), a collaborative working environment, constructive feedback, and recognition of contribution to the company.

The interviewed employers also encourage their employees to diversify in terms of work operations. Experience from the case study organisations shows that these intrinsic rewards raise employee satisfaction, leading to higher employee retention. In order to maintain organisational performance, a fair reward and compensation system is employed in all investigated companies. Detailed descriptions of the subcontractors' workforce retention practices are discussed in [Chapter 8](#) of this thesis.

4.4.3 Workforce training and development strategies

The sector's buoyant labour market has driven the investigated subcontracting businesses to conduct a more proactive developmental strategy. Following the Christchurch earthquakes, demand for specific skills remains erratic, and the cyclical nature of the construction industry complicates the staffing endeavour. Findings from the case study investigation suggest that consistency in training and development enables subcontractors to safeguard the sustainability of their skilled workforce. It was highlighted in the interviews that employees are the drivers for productivity improvement and remaining competitive in the business. To preserve the relevance of employees' competency, the investigated subcontracting businesses demonstrate a robust effort in upskilling existing staff, training new entrants, initiating apprenticeship schemes and enhancing mentoring practices among the workforces. Details on the training and development initiatives are provided in [Chapter 9](#) of this thesis.

4.5 Workforce resourcing outlook: A subcontractor's perspective

The subcontractors' opinions on the anticipated problems in the subcontracting sector were collected in the interview. The interviewed employers expressed concerns about the apparent issue of skilled labour shortages. The limited availability of skilled labour in the Christchurch construction industry following the 2010/2011 earthquakes has indeed generated challenges in sourcing local workers. This situation has led to a recruiting crisis in the Christchurch subcontracting sector. In the interview, the employers anticipated that skills issues would most likely remain for the next 12 to 24 months. The following excerpts from interview data represent the main concerns raised by most subcontractors.

"It will be labour, everything else is ok it will be labour, labour problem. And labour problem, is the worst. Ongoing."

S2

"Labour resource will be problematic. Getting the right quality labour, because labour is scarcity, the economic drive is for wage-prices to increase trades because there are less number of trades in the country."

S5

"Labour will be problematic in the coming six months. It all depends on how quickly the government release the anchor projects. If they stay there a little bit, release one every year or every eighteen months, it could be okay."

S13

The investigated companies also expressed concerns about the emergence of staff poaching within the industry. One subcontractor, S11, anticipated staff poaching to increase in response to the construction boom.

"In general, it's going to get tougher because a lot of other jobs are coming on and probably the biggest risk in the next six months is our staff being poached."

"After those six months, which we will be working through in the preceding six months, is where in about nine, ten-month time we need to start increasing our site staff numbers again from where they are"

now. So, we will be actively looking for people over the next six months.”

S11

The fear of losing quality staff resulted in the interviewed employers using monetary incentives as a key retainer. As the industry suffered from acute skill shortages, wages were pushed higher by competition for scarce workers. Indeed, following the earthquakes, construction workers in Christchurch were paid higher (construction wage and salary rates) compared with the rest of New Zealand (Ministry of Employment, Innovation and Employment, 2018). However, with this business strategy, profit margins may fluctuate downward in response to diminishing job opportunities. On this, one of the interviewed employers, S7, explicitly stated:

“I think wages will become a problem in about 12 months’ time because some companies will get very desperate to get things done and they will pay the money. There will be good money to be made; there will be rates on jobs, margins will be bigger, so therefore you can pay more, and companies will gobble up good people with large salary payments. I think the problem will happen in five to ten years when it quietens down and when your margins get squeezed again and that’s when you have got people stuck with high wage bills. Those people who are on the high wage bills will be living a lifestyle relative to that wage bill and all of a sudden, they’ll be made redundant and all of a sudden that will have a huge impact, like they will default on their mortgage payment, they’ll default on HP payments or whatever. I think that will be a problem.”

S7

Other than that, the inconsistency of workflow presents a challenge to the case study organisations. As a result, most subcontractors are apprehensive about expanding organisational resources in an uncertain business environment. Additionally, the majority of the interviewed employers agreed that transparency in project management increases the likelihood of project success. In this respect, better resource planning can be done at the organisational and project level. For example, interviewee S4 said:

“The biggest problem is having confidence in the workflow because we have seen in the last six months that it dips and peaks pretty quick depending on what SCIRT or the local government or private developers are doing. It dipped quite badly for us and for a lot of

people through winter and not just because it was winter, it was because they pulled a whole lot of projects and now, they are re-letting parts of them again. The workflow is not consistent, so it makes you apprehensive about growing or employing too much new staff when you can't guarantee the work."

S4

A number of interviewees attributed resourcing pressures to productivity loss. According to the interviewees, this loss results predominantly from a reduction in an organisation's ability to execute its primary proposition. The following quotes from interviewees S2, S3, S5, and S12 point to the ripple effects of resourcing pressures.

"The impact is production, and if you're not doing your production you're not keeping up with the programme. If you're not keeping up with your programme, you're losing money."

S2

"The impact of labour shortages is productivity, having to go back and do rework where guys have made muck ups and not being able to get to do work because we can't resource it."

S3

"Well, the impacts are pressures on wages, pressures on health and safety, pressure on the technical ability to finish the job on time or programme issue."

S5

"...you will be restricted in what jobs you are handed; of what you can and can't do."

S12

The magnitude of resourcing challenges in rebuilding Christchurch casts a greater need to develop proper workforce planning in combating the regional skills crisis. Equipping the subcontractors with a systematic workforce strategy optimises the organisations' resources and enhances their competitiveness in surviving the volatile business environment. It is against this background that this research was devised.

4.6 Subcontractors' workforce planning framework

Most interviewees repeatedly cited the skilled labour shortage, confirming the existence of skill shortages within the Christchurch subcontracting sector. The mismatch of workforce supply and demand creates intensified competition among subcontracting organisations in Christchurch. Additionally, building back fast requires a more expandable workforce to meet key operational demands. Under this scenario, systematic workforce planning is greatly desired. Research findings showed that skill availability, proactive recruitment and retention, and skill development practices are important driving factors of organisational workforce resourcing. These three elements have been illustrated in all 13 case study organisations as mechanisms to strengthen the competitiveness of the organisations, motivate employees' commitment and enhance the organisations' performance.

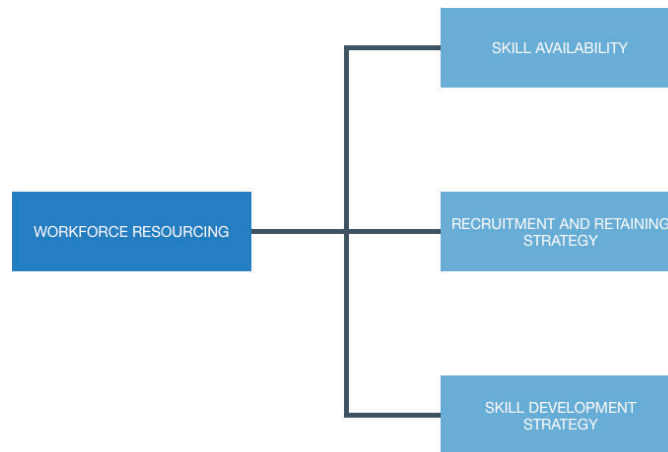


Figure 4.3 Workforce resourcing priorities

Employees' recruitment, retention and skill development were key topics for interviewees and became priorities in all the investigated subcontracting organisations. This finding is in line with Raidén et al. (2009, 2016), who discovered the importance of equipping organisations with a balanced human resource through an appropriate means of recruitment, retention, career progression, and training schemes. The majority of the interviewees agreed that the labour market fluctuations created a challenge for them to meet the workforce requirements. Therefore, an enhanced understanding of the competing factors that shape the local labour market is needed to circumvent the

consequences of skill shortages. *Figure 4.4* summarises the response strategy to skill shortages employed in the investigated subcontracting organisations.

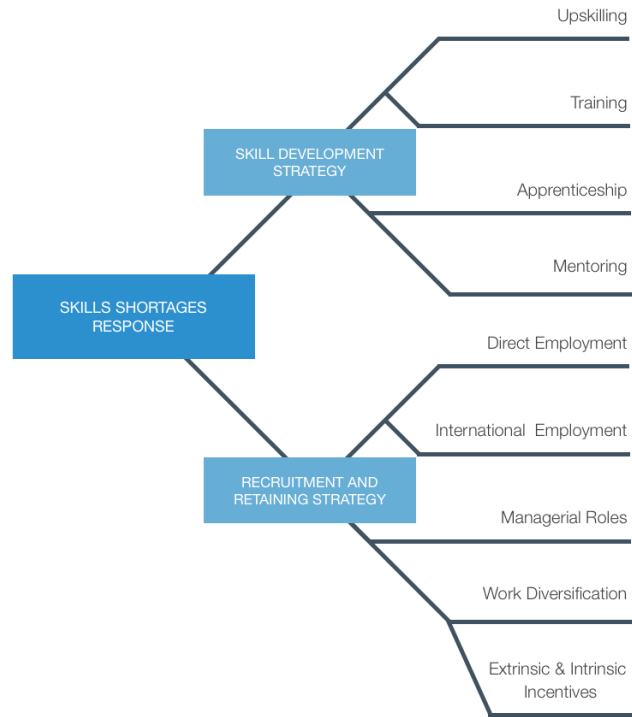


Figure 4.4 Subcontractors’ skill shortages response

The findings also show that the strategies implemented by the case study organisations are of an ad-hoc nature. The preference for casual arrangements is not surprising, as the inclination towards arbitrary, ad-hoc and individualistic workforce management within construction organisations has been evident in previous studies (Cardon & Steven, 2004; Brandenburg et al., 2006; Lobo & Wilkinson, 2008). Thus, while an ad-hoc solution is reliable at curtailing immediate issues concerning skill shortages, little evidence has shown the formulation of long-term planning of workforce resourcing in subcontracting organisations. A subcontractors' workforce planning framework is suggested as a solution to be incorporated into the subcontracting organisational strategic planning decisions. The framework enables subcontractors to maximise resource utilisation efficiently, classify a precise workforce need, enhance the workforce career development, and attain better visibility on future employment. *Figure 4.5* displays the proposed framework aimed at refining the subcontractors’ workforce resourcing processes.

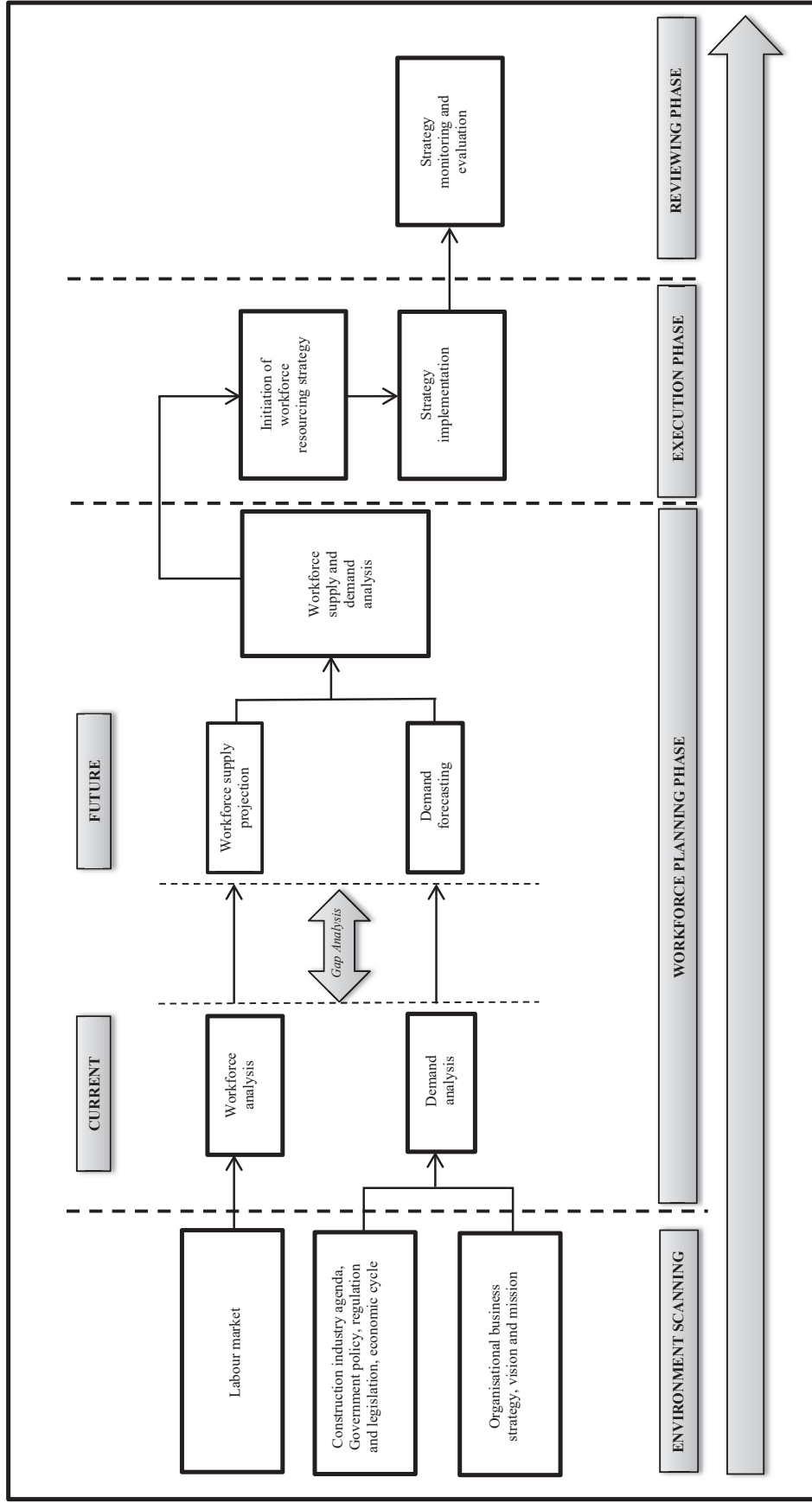


Figure 4.5 The proposed subcontractors' workforce planning framework

4.7 Summary

The rising demand for Canterbury rebuilds has exposed shortfalls across all skill levels in construction. Specifically, demand for tradespeople (i.e., bricklayer, carpenter, drain layer, plasterer, and plumber) continued to increase as the Canterbury rebuild gathered pace. Participating subcontractors allocate their resources flexibly to multiple projects in response to the derived demand. Other than that, the investigated companies set several resourcing priorities. These priorities include building adaptable workforce capacity, strategizing recruitment and retention and honing workforce development plans. For subcontractors to gain maximum advantages from these priorities, systematic workforce planning should be established and implemented. The critical elements constituting workforce planning best practices will be further discussed in the next chapter (Chapter 5). Understanding the subcontractors' skill shortages response should enable the establishment of a collaborative strategy between government agencies (e.g., Ministry of Business, Innovation and Employment, New Zealand Building Industry Federation, Immigration New Zealand, Building Research Association of New Zealand), tertiary institutions (e.g. private training establishments, Te Pūkenga, universities) and training providers (e.g. The Building and Construction Industry Training Organisation, New Zealand Certified Builders, The Skills Organisation New Zealand) in the planning of long-term national skill development initiatives.

Chapter 5

Subcontractors' Workforce Planning Elements

5.1 Introduction

Workforce planning in most construction businesses is often associated with strategic business orientation and growth projection. Insufficient construction intelligence, combined with the cyclical nature of construction demand, and project uncertainties, can pose challenges to proper workforce planning and resourcing. Based on in-depth case studies with subcontractors in Christchurch, factors that affect the way workforce planning is undertaken in these businesses were identified. Following this, the factors were ranked based on the interviewees' citations. Subsequently, the workforce planning practices across the case study subcontracting businesses were compared. Four themes emerge from the comparison and are thematically discussed in the later section of this chapter. The results are presented and discussed under two main headings as follows:

1. Factors affecting workforce planning considerations/practices; and
2. Critical elements that constitute workforce planning best practice.

5.2 Factors affecting workforce planning considerations

The volatile environment that the construction industry presents drives most subcontracting businesses to plan their workforce arbitrarily. In light of the prevailing business uncertainties, it is important to understand the interdependency between the environmental influences and the organisation's corporate aspirations. Research findings show that knowledge of the business-resourcing environment allows subcontractors to develop effective workforce stock management and better workforce forecasting based on their project's needs. *Table 5.1* details the factors affecting the implementation of workforce planning in the case study subcontracting businesses.

Table 5.1 Factors affecting workforce planning implementation in the case study subcontracting businesses

Rank	Factors	Citation	Percentage
External Factors			
1	Limited availability of skills	13/13	100
2	Cyclical demands for construction projects	11/13	85
3	Increased competition among contracting companies	9/13	69
Internal Factors			
1	Skilled labour shortages in post-earthquakes situation	13/13	100
2	Difficulty in project forecasting	12/13	92
3	High rates of workforce transience	10/13	77
4	Inadequate knowledge of business and project management	5/13	39

5.2.1 External factors

5.2.1.1 Limited availability of skills

The limited availability of skills in the Christchurch construction industry following the 2010/2011 earthquakes has generated challenges in sourcing labour domestically to meet the reconstruction demands. The contributing factor relating to the labour shortages has been expounded by one of the interviewees, S5, as the following quote illustrates:

“Fundamentally it’s because of the rebuild. Because of the earthquake we had three years ago they’re trying to rebuild a whole city with the resources we’ve got. That’s why the shortage has happened, and because they’re trying to build it in a short period of time. If we’re only going to build one building a year, we’d have plenty of labour, plenty of time and no problem. But because they’re doing it in a condensed period time is impact a factor.”

S5

A similar view has been reiterated across all the case study subcontracting businesses, predominantly on the difficulty in getting high calibre people within the sector. Eventually, this situation led to salary rises in roles that are difficult to fill. For example, one interviewee, S8, said:

“Getting the right quality of labour. Because labour is a scarcity, the economic drive is for wage prices to increase for tradesmen because there are only a number of qualified tradesmen in the country.”

S8

Other interviewees (S1, S2, S3, S4, S6, S7, S8, S9, S10, S11, S12, and S13) exposed that the industry lacks skilled labour and, as a consequence, companies have to invest a huge amount of money in training their new and existing employees. Commenting on the inexperienced demographics in construction, one of the interviewees, S6, said:

“Just that a lot of the guys that are coming in now are less experienced that you would expect them to be or you would want them to be. That’s something that you can’t fix overnight; you’ve got to train people and that’s why we are spending hundreds of thousands training people so that they will be good for either us or another company in the future. At the moment compared to what it was ten years ago there is a lot less experience around in the crews.”

S6

The existence of skill shortages complicates the workforce planning implementation in the case study subcontracting businesses. As such, the interviewed subcontractors favoured a more flexible approach to workforce resourcing. This includes the employment of migrant construction workers as an immediate response to the demand in the industry. In particular, migrants from the Philippines were preferred by most of the construction companies in Christchurch, followed by imported skills from Great Britain, Ireland, and India (Ministry of Business, Innovation and Employment, 2016).

5.2.1.2 Cyclical nature of construction demand

The notoriously cyclical nature of construction demand made it difficult for the interviewed subcontractors to formalise workforce planning. The cyclical demand for construction projects has been ranked as the second most influential inhibiting factor for proper workforce planning, agreed by 85 per cent of the investigated subcontractors. One interviewee, S11, specifically expressed:

“Christchurch is a special case. Because it was an earthquake, because it was a natural disaster, it’s a special case and there’s so much work that has to be done over a period of time. It’s not like an economic boom cycle where you get work and then it goes back down again in a cycle. This is a one off in our area so we’re trying to take from all other areas of the country to manage this plus the other areas of the country are building and having their cycles. All of a sudden you’re going to get where people aren’t going to move around a lot.”

S11

The large-scale reconstruction in Christchurch following the 2010/2011 earthquakes has generated substantial demand for construction employment. The Ministry of Business, Innovation and Employment of New Zealand (2016) reported that the employment of 30,000 construction workers was estimated, as of September 2016, to meet the demand for the Christchurch reconstruction projects. Consequently, the government anticipated that a gradual decrease in the construction employment demand would take place from mid-2017 until late-2021. The peaks and dips in construction project demands coupled with thousands of aftershocks following the main earthquakes remain the real source of the subcontractors' concern in dismissing a strategic workforce planning practice. The rebuild boom illustrates a bouncing back cycle from the short-term job loss during the 2008/2009 global recession. On this, one of the interviewees, S6, stated that:

“Prior to the earthquake most of the companies around Christchurch were losing money because there was no work, so it's better than it was.”

S6

The strong employment growth following the Canterbury earthquakes has directly affected labour costs in the Christchurch construction industry. For instance, the wage rates in the Canterbury region have increased by 17.5 per cent since September 2010 (Ministry of Business, Innovation, and Employment, 2018). The escalation in labour cost can be associated with substantial pressure on the regional labour market, which has led to competition among contracting companies, particularly around workforce employment. In turn, the success of the employment mechanism is dictated by the companies' ability to offer attractive remuneration packages. This situation makes most construction subcontracting companies vulnerable to losing good staff, and staff poaching is becoming prominent in the industry.

5.2.1.3 Increased competition among contracting companies

Sixty-nine per cent of the investigated subcontractors agreed that the growing number of contracting companies in the Christchurch construction industry further hindered the implementation of a tactical workforce planning practice. Surveys by Statistics New Zealand (2012) have revealed that construction-related businesses made up 63.2 per cent of businesses in Christchurch following the earthquakes. The sudden burst of entrepreneurship in construction following the Canterbury earthquakes implies a competitive business environment

as these companies compete for similar projects and skillsets with the existing (local) subcontracting businesses.

Accordingly, the magnitude of demand increase has attracted offshore companies to Christchurch. The increasing number of contracting companies, according to interviewee S5, creates ripple effects on the subcontracting sector in Christchurch. In particular, a quote-driven market becomes apparent, leading to poor workmanship, productivity loss, and low profitability in the long run.

“We’re seeing a lot of Australian companies coming into the market because the economy is slowing down in Australia, but the result of that happening, you’ll get increased competition which will drive prices down, but it will be to the detriment of the companies that have been here for 50 years who have built up a business. So, it makes the market very price-driven rather than quality-driven or competency-driven I guess the word is.”

S5

Regionally, the subcontractors’ margins have trended upwards following the 2010/2011 Canterbury earthquakes (Ministry of Business, Innovation and Employment, 2016). However, this trend was ephemeral, and the subcontractors’ margin was gradually squeezed, particularly with the growing market competition and workflow fluctuations. Interviewee S6 explicitly indicated that most subcontractors tend to quote for jobs at the expense of business margin.

“It is pretty competitive now; there is not much margin in jobs. People think contractors are getting rich but they’re not. We’re working on a zero to sort of five percent margin. I talk to other people around the place and they’re doing worse; some are doing better and some are doing the same. There’s not much margin in it.”

S6

5.2.2 Internal factors

5.2.2.1 Skilled labour shortages

A longitudinal study by Chang et al. (e.g., 2012a; 2012b) and Chang-Richards et al. (e.g., 2013a; 2013b) has exposed that demand for professional skills grew rapidly at the initial stage of the Christchurch recovery. This trend has shifted following the massive development in the

central business district (CBD) of Christchurch. In 2014/2015, the need for trade skills, which were a scarce resource, surfaced. One interviewee, S1, commented:

“In generally it’s shortness with a lot of trades but I think good builders are probably the hardest thing to come by at the moment.”

S1

In all cases, the interviewed employers expressed their dismay at the scarcity of workers with the necessary skills. Without sufficiently skilled labour, work productivity deteriorates, creating further concerns about workmanship.

5.2.2.2 Difficulty in project forecasting

Ninety-two per cent of those who were interviewed indicated that difficulty in forecasting projects is one of the impeding factors in executing proper workforce planning. In particular, some companies fail to envisage the extent of the growth cycles in the construction industry. These companies invest in expanding their businesses and attempting to hire additional staff to take advantage of the increased opportunities during a boom period. On this, interviewee S8 elaborated:

“So initially there was a bit of a floodgate until it opened a bit and there was a lot of movement around and then things sort of slowed down a wee bit. Everyone thought it was going to boom straight away but it didn’t.”

S8

The investigated companies perceive themselves as the core of the construction industry. However, small and medium-sized construction companies find it challenging to initiate a project per the planned programme. According to interviewee S9, the reason being is that projects are sourced from different clients and main contractors. Poor communication emanated from upper tiers’ control often results in misinterpretation of project information and project delays.

“For guys like us, the small and medium size businesses, they’re the ones that do all the work. We are actually the ones that carry all the resource. The resource is within SME’s, that’s where the men are and that’s where the machines are. So that’s where the resource is but the projects come from the client or from CERA or the government, they come through a project management office and then possibly even through another large

contractor. So, there is potentially two layers between us. In order to programme out the work there is too many levels to get through. If you don't break out those levels and you are able to say, "Here's the programme, you're telling us that you are committed on this job for that long, that's great, but if I have priced a job and said I'm going to do this but I have also priced a job for this guy over here, if they're not talking they don't know; I might do this job or I might do that job and they'll go, "Yeah that's alright we've got a contractor for our work," and then all of a sudden I go to them, "Sorry I'm not going to do your job because I got one with better rates over here." So, I leave and then he is left without a contractor and then he poaches a contractor off somebody else."

S9

On the other side of the spectrum (as opposed to the scarcity of the workforce), inaccurate forecasting causes different problems for the investigated construction companies. The investigated companies find it challenging to have a proper 'system, structure, and support' for managing the additional work. In order to perpetuate business growth during a sudden surge in the workforce, companies should evaluate the current workforce architecture to place the right people in the right positions and strategically perform future skills planning. In one case, interviewee S10 said:

"We might tender 20 or 30 projects and hear nothing for three or four months and then all of a sudden you get job after job after job. We are in that at the moment; every time the phone rings, "You have got the job." Which is good but creates another problem now of trying to manage it."

S10

The interviewed companies also struggle to forecast the amount and the type of work available at a particular time. As a result, these companies prioritise specific projects that they see potential in enhancing their organisational performance. However, this optimism bias causes short-sightedness in the companies, as they inefficiently and unevenly apply their capital expenditure and, thus, cannot invest in workforce planning functions. In many instances, the pursuit of productivity takes precedence over proper workforce planning practices. The following excerpts from interviewees S9 and S13 represent the concerns raised by a majority of the interviewees:

The challenge for the industry is the workflow. I don't know how you manage that but we have seen it out of the SCIRT model where work comes in big gluts – all of a sudden there is all this work so everybody is busy and

nobody can get a subcontractor and everybody is trying to get people, but then all of a sudden there's six months where there is no work, or the work dropped right off. It's the up and down of the workflow. Everybody will scream that there's not enough resource when all of a sudden there's heaps of work, but then all of a sudden there will be a gap between projects for a few months. Then they're actually letting guys go. That will happen, I guarantee it. So up and down."

S9

"It is very difficult. It's very difficult to predict the volumes that you can have a reasonable stab at. It's very difficult to predict the type of work because at the moment the infrastructure work in SCIRT is going down, it's diminishing. So, what we're trying to do is our company essentially has two legs, we have the infrastructure leg and we have the foundations and geotechnical works, so we're trying to push the geotechnical works forward because we know that the infrastructure drainage works is starting to go.

Because all the new work is being done at the moment there won't be any what they call capital expenditure for a few years, because they're doing all the work now and they're going to get to here and do a little bit more for five or ten years until they find a need to spend more money on the system."

S13

According to interviewee S11, some construction companies have also miscalculated the availability of projects during growth periods, and, consequently, the bust cycles have caused such companies to struggle to get jobs.

"Lots of people have come in anticipation of a building time in Christchurch, but the building time is never going to be here; but what it is doing is it's depressing the prices. The market is very, very price-driven, there is really not a lot of discrimination in the market; it's about the quality of work that people do or the long-term durability, and the like."

S11

5.2.2.3 High rates of workforce transience

The interviewed companies realise the importance of staff retention in relation to overall organisational performance. Therefore, these companies are taking numerous measures (e.g., providing incentives and developmental opportunities) that should reduce staff turnover and increase employee output concurrently.

In one case, the participant, S7, explicitly stated:

“Demand for these people is high and therefore they are free to come and go as they please, like within other businesses etc. So, you have got to work hard to retain them and you have got to be very flexible with how you tackle the problem.”

S7

There was consensus among the interviewed companies regarding the transitory nature of the workforce. It was evident that better opportunities attract workers to specific organisations, but the short period between the workforce's job transitions negatively affects organisational performance. This behaviour also deters companies from investing in workforce planning and development. Talking about this issue, an interviewee, S13, said:

“One of the difficulties is they're a bit transient; they don't stay. They try to manoeuvre around for more money. Some of them are just here for a short time so they try to use the opportunity of getting a job and they agree a rate for the work. Then they immediately want more and then they go to another contractor and maybe they get more, maybe they don't, but they just move around.”

S13

5.2.2.4 Inadequate knowledge of business and project management

Most New Zealand SMEs are operating in the absence of specialist staff at the management level (BCITO, 2013). The scale of business and rapidly changing business environment make this option feasible, especially for employers operating in the construction industry. Some interviewed companies admitted to having accepted projects during a growth period even though they lacked the knowledge, infrastructure, and skilled workforce to deliver it to the conclusion. One interviewee, S9, commented:

“The risk is unsustainable growth and we're able to recognise some growth patterns in taking on certain jobs that were outside sensible capabilities.”

S9

During a construction boom, these companies tend to acquire as many projects as possible to inflate their business interests. However, they face difficulties completing projects timely

because of improper workforce architecture and lack of resources. The companies cannot allocate skilled workers for the entirety of a particular project, which severely hinders organisational performance improvement. On this, interviewee S11 elaborated:

“The problem we’re finding with all jobs at the moment is the time between acceptance and when they want the job. They’re expecting everything to be run really fast and they don’t give a lot of people a lot of time. Everyone has got more than one project going at once, they’ve always got two, three, four, or five projects going at once and people haven’t got the resources to have people solely on that particular project from start to finish in procurement.”

S11

Interviewed employers stated that poor project estimation had led some companies to run at a loss. The overabundance of subcontractors has facilitated underestimation of their worth and, as a result, hampers their organisational performance. Such a scenario can be symptomatic of fragile businesses with low margins and poor business management. These issues have also brought the need to create robust and reliable costing systems to the fore. On this, one of the interviewees, S10, stated:

“Rates. The rates are low. And, that is probably the hardest thing. There is so much competition in the main contractor side of things that for them to win the job, they have to grind down the subcontractor, which is us, to get the cheapest rate they can to win the job. It is just, I guess the toughest thing at the moment is the price war.

There are too many guys out there that have not got the work, so they are doing it for nothing. But they probably do not know that they are doing it for nothing. They don’t cost it. Because, they have come along and thought, okay, I was working for someone as a foreman. Now, I have got my own small business and they don’t probably know their true costs.

Yes. And, that is the biggest problem I can see at the moment. There are too many guys that do not know how to run a business, that are running one. So, they don’t actually know what it costs to do a job. All they will say is, “What’s the other guy doing it for? I’ll do it for ten percent less.” Now, that is the new price. There is a lot of that; that goes on.”

S10

The case study companies realised that the presence of unskilled businesspersons in the construction industry, which increases the possibility of bankruptcy, has a cascading effect on the lowest level of the workforce chain. There would, therefore, seem to be a definite need for

business process re-engineering in subcontracting businesses. This realisation calls for the need to invest in innovative systems to future-proofing small and medium-sized construction companies. For example, interviewee S5 commented:

“It’s the flow on effect, I think. If a painter was taken on to do a quoted job and then they went bankrupt midway or before they started the job; that client would then have to go and get another price and someone else to do it. It may not be as cheap. Their suppliers don’t get paid and then the flow-on effect goes on and on. But you can take that scenario right up to main contractors as well. There are a lot of building companies started up after the earthquakes who aren’t very well run.

Just because there’s a lot of work doesn’t mean people are good business people. Or just because they’re busy doesn’t mean they are making any money. We have seen that quite a lot. There has been a lot of building firms and subcontractors go into liquidation or go bankrupt over the last few years because they are not capable of managing it. That affects everyone across the industry. It affects all the subcontractors who don’t get paid; all the employees who don’t get paid and all their families and the suppliers who don’t get paid for their materials. Ultimately that affects the whole greater construction industry or the consumer because they need to build in that cost into recover it somehow.”

S5

According to interviewee S8, construction companies must have a robust system, structure, and support to endure and thrive in current market conditions. A competitive advantage can be gained by effectively evaluating the current workforce's size, understanding the cost of hiring and retaining workers, and comprehending future skill requirements.

“It is a matter of managing cash flow and debt. So, having really good financial advice is really important. Growth. I think growth is okay, but it needs to be managed really carefully. It’s a really hard thing. In a climate like this it’s really easy to get big. There’s a lot of work but at some stage there is a cost with the growth.

Then you need to be prepared that if things do slow down; I don’t think you should be growing using debt. Just taking on massive debt to grow, to be bigger. If you can do it out of cash flow, it’s a big help.”

S8

Some companies run at the expense of business margin. In particular, these companies operate on unidirectional cash flow (i.e., negative cash flow), leading to liquidation or bankruptcy. Interviewee S10 put it as follows:

“Because the margins are down, the only way for the businesses to work well is cash flow. A lot of them work on cash flow. Which is a bad way to run a business. But that is what they tend to be doing, is cash flowing them.”

S10

Findings from the investigation also exposed the existence of parochialism in the Christchurch construction industry. For overseas companies, entering the Christchurch market was difficult due to unfamiliarity with local conditions and the sector’s parochialism. The interviewed employers indicated that business psychology in Christchurch suffers from tunnel vision wherein companies are dissuaded from expansion. Parochialism occurs mainly because Christchurch subcontractors are apprehensive about the bust after the current boom in the construction market. This parochial or isolationist attitude can be a threat to an organisation’s success. Commenting on parochialism in construction, interviewees S10 and S11 said:

“There’s an old saying, “Auckland people will say what car do you drive? Wellington it was who do you work for? Christchurch, what school did you go to?” So it’s a real old who are you, where do you come from, who are your parents and what school did you go to? It seems to be a very old school network that is intertwined from old boy’s networks or old girl’s networks you can say as well. It’s really hard to break into it. Christchurch people don’t want to let anything go to an outside, and by outside it’s anything north of Cheviot. And so I will deal with you because my dad went to school with your dad at Boy’s High or Christ College.”

S10

“For people to come into Christchurch and start up a new business would be hard. Christchurch is very parochial and it’s hard to break in. I think you’ll find that it will just level out and then that will be it and it will stay but that will be quite high, probably the level that it is now will be the level. It will go up from here and then come back to maybe what it is now or slightly above and then that will be the level because of the resources. A lot of them are private businesses and they won’t want to get any bigger than they are because it’s too hard - there’s a limit to how big you’re going to get because as we’ve said it’s only going to be ten years and then it’s going to go down here. When the rebuild is finished it’s going to be a big drop.”

S11

5.3 Critical elements that constitute workforce planning best practice

Flexibility in an organisation represents the organisation's ability to accommodate any changes in the external and/or internal business environment. Greater flexibility enables an organisation to expand and contract flexibly to retain its competitiveness in a turbulent business environment. Flexibility in construction may exist in numerous forms, including numerical, functional, structural, financial, and skill (Ness & Green, 2013). Research findings show that the dominant flexibility approach is made by utilising a high proportion of the organisation's labour capacity. In this respect, organisations must strategically adjust their labour inputs to fluctuations in construction demands.

According to Raidén et al. (2016), organisations with higher flexibility are likely to be efficient in generating responses to fast-changing circumstances. Indeed, a strong correlation exists between flexibility and workforce management, which, in turn, determines an organisation's competitive advantage (Sparrow & Marchington, 1998; Turner, 2002; Ericsson et al., 2005; Ng & Tang, 2009; Ng et al., 2018). Therefore, it is worth noting that flexibility is becoming more central to achieving an organisation's competitive advantage. The ability to acclimatise promptly to construction market fluctuations is most desirable in the modern business environment. One of the interviewed subcontractors, S9, has explicitly cited organisational agility as pivotal in sustaining business success.

“Resilient and agile as well. Agility is important because there are opportunities all the time. If our core business is trucks and diggers; what else can you do with a truck and a digger? You can dig something over here, but you can dig something over there as well in different markets. So, it is looking for that and planning for that and being able to move on opportunities when you see them.”

S9

The research findings established that organisations characterised by agility are likely to thrive. Indeed, adaptability and agility features drive an organisation towards its strategic goals. Additionally, the integration of these factors (i.e., business agility, adaptability, and corporate strategy) equips organisations with the capacity to shift, flex, and adjust in a highly dynamic market.

Strengthening the business and people management process relies heavily on internal organisational strength. One of the interviewed subcontractors, S8, indicated that:

“...but ultimately I think it’s having a really close eye on the management of the business. That’s across all areas including human resource as well.”

S8

The modern business environment considers human resources a determinant for long-term organisational success and the true source of competitive advantage (Turner, 2002; Brandenburg et al., 2006; Ng et al., 2009; 2018; Marchington & Wilkinson, 2012; Sing et al., 2014; Sing et al., 2016; Halpin et al., 2017). Therefore, a thorough analysis of the organisation’s internal strengths enhances its robustness in dealing with external and internal challenges. It is essential to identify the factors influencing the subcontractors’ workforce planning, particularly in sustaining superior business performance. The following section of this chapter specifies the critical elements that constitute workforce planning best practices. The elements are:

1. Employment growth decisions,
2. Identification of critical skills,
3. Workforce performance management, and
4. Workforce development opportunities.

5.3.1 Employment growth decisions

The clarity in workforce growth is essential to forecasting future skills requirements. This process encompasses evaluating the organisations’ workforce architecture, staffing structures, employment strategies, and procedures. In attaining balanced business growth, it is imperative to establish the employment priorities, taking into account the size of workforce expansion, the cost of employment and future skill planning. In one case, the interviewee, S13, explained:

“The problem with people is if you employ the people too early it’s like surfing and trying to catch the wave, if you go too soon you miss the wave but the problem is if we employ a heap of people now in anticipation of a lot of work, we have to pay them and we maybe can’t earn enough money because there isn’t enough work to put them on so it can be quite an overhead burden. So, what you’re really trying to do is sort of bring people on as the work comes in so as to keep your overhead balanced.”

S13

Fluctuation in the workflow appears to be an influencing factor in determining workforce growth. Therefore, the investigated subcontracting businesses displayed a cautious approach to workforce expansion. Indeed, most interviewed organisations have focused on hiring more local staff to create a sustainable workforce. For example, interviewees S4 and S5 said:

“The workflow is not consistent so it makes you apprehensive about growing or employing too much new staff when you can’t guarantee the work.”

S4

“We look at sustainability for the next one, two, three, five or ten years. We’re not looking to get big and then shrink by 50 percent when the rebuild is finished; we are looking to slowly grow and maintain our workforce. We are not looking to make redundancies or get rid of half our staff later on. We try and keep local because those guys are likely to be here in the long term.”

S5

There exists a direct connection between staffing decisions and the organisation’s prospective projects. In many instances, staffing is primarily adaptive based on the short-term operational needs of the organisation. One of the interviewees, S9, commented:

“We will only undertake as much work as we have skilled resource. So we won’t overcommit, that’s a bad business decision. The business could if we chose to, we could price and win more work than we have people and that would be a bad idea, so we understand that our limitations are around people. We are a service provider so our greatest resources are people but it’s also our greatest limitation.”

S9

A thorough identification of prospective projects allows subcontractors to determine accurate workforce size. As over-committing in workforce employment is risky to the businesses, subcontractors need to be more selective about future projects. As one interviewee, S1, put it:

“There are so many vacant lots in the city so at some point this will keep going for another three to five years. So, there is going to be work there for this time. It is just a matter of picking which jobs we do. But looking further on from that, there are other opportunities that we are looking at, so we have got to look into the future but not get too caught up on it at this stage. But we are looking further ahead.”

S1

5.3.2 Identification of critical skills

The skill shortages in most of the case study subcontracting businesses stemmed from the excessive demand for reconstruction works and new development in the CBD of Christchurch. For instance, one interviewee, S8, said:

“It is difficult to find someone of suitable qualification and experience. So yes, we have definitely found there has been a large influx of well-trained people to the city but obviously the demand is quite high as well; so trying to attract people across is quite difficult, especially for a private enterprise like us when we are often competing against some of the bigger multi-national and national companies.”

S8

Determining the need for critical skills within subcontracting businesses facilitates subcontractors in locating appropriate skills to drive organisational growth and accelerate their business performance. This process involves ascertaining positions to fill or retain and decisions related to the workforce’s functional flexibility. Identifying critical skills allows subcontractors to close the organisations’ productivity gap, performed through a detailed assessment of the availability of skills in their businesses.

One subcontractor, S13, stated that if work demand outstrips the organisations’ workforce supply, skill utilisation might take precedence over workforce planning programmes.

“If needed we have to fill the gap with maybe a worker who is not entirely the best person for the role and provide them with the support to enable them to do the job.”

One of the reasons it’s difficult to have a strategy is because when you’re a contractor like we are and many others like us, you have no guarantee of work.”

S13

5.3.3 Workforce performance management

Obtaining an optimum performance standard from the workforce was a high priority for the interviewed subcontracting businesses. In order to maintain workforce performance, subcontractors are obliged to demonstrate commitment to evaluating their workers' level of competency.

One interviewee, S7, commented:

“We review regularly with what we call performance reviews to make sure that they are meeting their training targets.”

S7

The development evaluation involves an individual’s assessment of work efficiency, skill and capability, which then facilitates subcontractors in identifying the organisations’ workforce capacity (workforce strengths and weaknesses) and formulating action plans for continuous improvement. In essence, the one-to-one assessment allows subcontractors to make informed workforce judgements based on their potential, knowledge, needs, personal goals and expected performance. These judgements serve as determinant inputs in commencing a performance management initiative focusing on a longer-term result. Essentially, performance standards are developed as tools to measure workforce efficiency and quality of work. Strategic performance management initiatives must support current workforce requirements and be practical enough to cater to future workforce requirements and changing business needs.

5.3.4 Workforce development opportunities

The interviewees were in agreement on the importance of workforce development and positioned training provision as one of the standard procedures embedded in their workforce development strategy. This view was echoed by interviewees S8 and S11, asserting:

“You’ve just got to keep training, bring the people on, and train them. You’re just trying to check their level of competency.”

S8

“We’ve provided everyone with training sessions here; not only showing them how to do what we want them to do but why we want them to do it, the reasons behind it and the importance of the processes that are needed to be done.”

S11

Building and sustaining workforce competency requires recognition of the workforce's potential, needs, personal goals and career aspirations. By understanding workforce requirements, companies can design appropriate training programmes to enhance workforce performance. This approach was practised in all cases; as one interviewee, S6, put it:

“At the moment, we’re doing assessment of all our staff to find out their levels and then assess what training is needed.”

S6

The inception of organisational career management occurs by analysing the workforce’s capability and understanding their career needs. This is followed by evaluating the workforce’s potential and providing them with continuous support through constructive performance feedback and career progression opportunities. For example, one interviewee, S8, reported:

“We constantly are working with our employees/sub-ordinates improving them and offering them feedback and review.”

S8

Accordingly, one of the interviewees, S11, indicated that adherence to this practice benefits the organisation in attaining a higher level of employee job satisfaction, leading to increased organisational performance and greater employee retention.

“The more experienced we can make them the more productivity we’ll get out of them and the better they’ll feel because they’ll be able to do more and they’ll be able to feel as if they are achieving more each day than just standing around watching someone else do it and handing him a screwdriver or a drill or anything. They can actually get in and help and be part of the team. Not everyone is going to be a rocket scientist, but you’ve got to find the level of each person and give them as much support as possible. Some of the other guys, we’re looking at sending them on supervisor courses at polytechnic to give them some outside tertiary training as well.”

S11

In addition, the majority of the interviewees agreed that mentoring programmes and increasing job autonomy could encourage the fullest contribution from the workers. One interviewee, S7, commented:

We’ve got site managers on each site and then we’ve got leading hands under the site managers, so we try and build teams up so that the team moves around as opposed to individuals so you get a group of three of our people that work well together so we’ll move that group around so that they are happy and they’re confident in each other’s abilities so that they can go as a group, a team, and do the work.”

S7

5.4 Subcontractors' workforce planning

Research findings indicate that workforce planning in the case study organisations is rudimentary in nature. Inclination towards a more contemporary (situational) approach to people management is manifested. This preference implies weak execution of structured workforce planning within the investigated organisations. The lack of a formal workforce planning system is more prominent in smaller businesses than in other investigated organisations in this research.

The outcome across the 13 case study organisations demonstrates the architecture of workforce planning in subcontracting businesses operating in the Christchurch post-quake situation. It addresses the following queries - (1) what are the factors impeding the implementation of workforce planning in subcontracting businesses? and (2) what are the critical elements constituting workforce planning?

This research also highlights the external and internal influences affecting staffing decisions within the investigated organisations. The dynamics of the Christchurch construction market that influence the subcontractors' resourcing capability are detailed and demonstrated in the next chapter (*Figure 6.3*). Factorising these dynamics into the subcontractors' resourcing decisions offers greater organisational credibility in managing human capital. As construction projects progress, the resourcing challenges are simultaneously increasing; leading to the redundancy of effective workforce planning (Dainty et al., 2005; Taylor, 2008; Chang et al., 2015). In many instances, most of the investigated subcontractors have actively practised workforce utilisation as an ad-hoc solution to meet the organisations' staffing requirements. Although workforce utilisation can alleviate the adverse effects of the organisations' skills issues, its reliance over a long-term period could strain the organisations' ability to cope with business expansions.

Workforce planning is adopted in subcontracting businesses to determine the organisations' existing workforce capacity and future workforce requirements. Its implementation enables subcontractors to devise remedial actions to the shortfalls or the surfeits of skills within their organisations. Fluctuations in the labour market 'supply and demand' equation are uncontrollable elements for businesses operating in an inherently unstable environment (Ng & Tang, 2009; Ng et al., 2018). In ensuring sustained business continuity, it is essential to design

business processes that can progress with abrupt changes in the business environment. In modern business, organisations reap the benefit of business longevity and financial success by enhancing their business processes, organisational flexibility and agility (Seville et al., 2008).

Understanding the subcontracting businesses' approach to workforce planning provides indicative information on the organisations' internal strengths. Subsequently, a strategic intervention focussing on innovative workforce management can be designed to improve overall organisational performance. This research suggests two procedural assessments to develop a resilient workforce base. These include (i) assessment of the current workforce requirements and (ii) assessment of the future workforce requirements. These assessments facilitate subcontractors in redefining the organisations' implicit workforce planning programme by integrating long-term elements. Accordingly, improved decision-making can be reached, leading to a better understanding of staffing requirements and greater clarity on the workforce planning horizons (strategically or tactically). The positive impacts are more pronounced if an integrative system of workforce planning and the organisations' strategic business planning are formulated to manage hypothetical future events and consequences. This realisation creates the impetus for generating practical workforce planning for subcontracting businesses.

The hallmark of this research is the formulation of a workforce planning best practice for small and medium-sized subcontracting businesses. Research findings showed that workforce planning in the investigated subcontracting businesses is dependent on the workforce inventory process, workforce forecasting and detailed assessments of the workforce supply and demand inputs. The workforce planning best practice guideline is further explained in Chapter 11 of this thesis. This guideline helps subcontractors prioritise specific business influences and reveal the organisations' productivity gaps, thereby enabling subcontractors to strategise flexible staffing and employment mechanisms to meet the organisations' workforce requirements.

5.5 Summary

Experience from the investigated subcontracting businesses provides an important lesson on the limit of workforce planning within the sector. This individualistic approach to workforce planning is typically associated with the volatile business climate, uncertainties in future project prospects, and resource constraints inherent in the subcontracting businesses. The growing intensity of competition in the external construction business environment has focused

on effective people management to generate a sustained competitive advantage. Therefore, subcontractors need to understand the interplay between the environmental scenarios and their strategic business plan. Knowledge of the environmental pressures facilitates the investigated subcontractors in understanding their business environment pattern, identifying the industry's opportunities and threats, and, most importantly, developing the organisations' strategic action plan in responding to the changing environment.

Results featured in this chapter also revealed that the organisations' internal attributes play a significant role in enabling a strategic workforce plan to emerge. These attributes provide the foundation on which the workforce forecasting can be based. Following this, the current and future workforce requirements can be analysed. This analysis enables subcontractors to develop a workforce base to deliver organisational objectives.

As informal organisational benefits deteriorate over time, specifically with the expansion of the business size and project complexity, strategic implementation of workforce planning is becoming necessary (Loan-Clarke et al., 1999). This research supports this view by providing workforce planning best practices for subcontractors to guide decisions in building a resilient workforce base. A workforce resource planning best practice guideline has been developed and is presented in [Chapter 10](#). The following chapter moves on to consider the workforce planning strategies within which small and medium-sized construction companies operate.

Chapter 6

Strategizing Subcontractors' Workforce Planning

6.1 Introduction

The previous chapter explained the factors to consider in ensuring the practical implementation of workforce planning within subcontracting organisations. Following this, the subcontractors' workforce planning strategies were identified and discussed. Based on a two-year observation, the pattern of workforce resourcing across the case study subcontracting businesses is discussed in this chapter. The large-scale reconstruction in Christchurch following the 2010/11 earthquakes has generated substantial construction employment demand. Given that subcontractors compose up to 90 per cent of the site job in most construction projects, subcontractors exert a strong influence in sourcing workforces and, thus, on the outcome of the reconstruction projects. Based on case studies of subcontracting organisations involved in the reconstruction of Christchurch city, this chapter analyses the workforce planning strategies adopted in small and medium-sized construction businesses. Dynamics in workforce planning were presented using a causal loop diagram (CLD), demonstrating the interactions between factors in workforce planning. Subsequently, an integrative system of workforce planning and business model was proposed for small and medium-sized construction companies. The system aims to assist subcontractors in strategizing their workforce needs and sustaining competitiveness in a complex and uncertain construction market. Results highlighted in this study include the subcontractors' initiatives in ensuring sustainable success for their businesses. Research findings are thematically discussed under two main headings as follows:

1. Subcontractors' workforce planning strategies; and
2. Dynamics in workforce planning.

6.2 Subcontractors' workforce planning strategies

This research showed that greater emphasis was placed on attaining strategic alignment of the organisational workforce requirements and business strategy. Indeed, this strategic integration determines their workforce planning practices. The organisational workforce requirements comprise the following priorities:

1. Performing workforce supply and demand analysis;
2. Defining the workforce size;
3. Ascertaining retention and replacement strategy;
4. Specifying the underlying approaches to employment; and
5. Promoting workforce development.

Research results showed that the investigated companies adopt strategic behaviour in developing the organisational business plan. In particular, the business strategy articulates short to medium-range planning, which includes:

1. Strengthening core business;
2. Diversifying in terms of business operation;
3. Forming partnerships; and
4. Improving organisational procurement and tendering efficiency.

Efforts in attaining strategic alignment are couched within the view of producing organisational competencies that drive the success of business operations. Therefore, agility and responsiveness are the catalysts that reinforce the organisational core competencies. The investigated companies indicated that this approach to workforce planning had benefited them in terms of better staffing management and improved organisational performance. *Table 6.1* details the workforce planning strategies adopted in the case study subcontracting businesses.

Table 6.1 Workforce planning strategies in the case study subcontracting businesses

WORKFORCE PLANNING STRATEGIES	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
Workforce Skill Requirements													
Perform Workforce Supply and Demand Analysis													
<i>Assessment on the current workforce need</i>													
Characterise the workforce demographic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Determine the current workforce availability	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Specify the current workforce skills and attributes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Allocate workforce career development opportunities (based on the workforce current needs)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<i>Projection of the future workforce need</i>													
Define the employment growth to achieve	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Close productivity gap through employment, skill retention or skill utilisation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Establish a structured workforce performance management	-	-	-	-	✓	✓	✓	✓	✓	-	✓	-	✓
Continuous support for workforce career development (based on the workforce future needs)	-	-	-	-	✓	✓	✓	✓	✓	-	✓	-	✓
Define the Organisation Workforce Size													
Concise decision on the workforce size (expansion, remained stagnant, or consolidation).	-	-	-	-	✓	✓	✓	✓	✓	-	✓	-	✓
Ascertain Retention Strategy and Turnover Size													
Offer a good balance of extrinsic and intrinsic motivations	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Maintain a minimal turnover size	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Specify Underlying Approaches to Employment													
Establish a workforce resourcing route and detail the resourcing priorities	✓	-	-	-	✓	✓	✓	✓	✓	-	✓	-	✓
Define the Replacement Strategy and Turnover Size													
Skill transferability initiatives among workforces	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Flexible working hours for ageing workforce	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Promote Workforce Development													
Intrinsically motivate workforce in capacity building	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Design route to increasing workforce performance	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	-	✓
Business Strategy													
Strengthening Core Business													
Focus on the core business	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Business Diversification													
Grow in adjacent opportunities or non-construction business	-	-	-	-	✓	-	-	✓	✓	✓	✓	✓	✓
Outsourcing													
Sublet works to trade specialist when necessary	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Active Tendering													
Retain proactive bidding system and strategic relationships with clients or/and main contractors.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Figure 6.1 demonstrates the workforce planning essentials in the case study subcontracting businesses. Two fundamental planning elements have been discovered from the interviews. These comprise:

- i. Workforce skill requirements, and
- ii. Business strategy.



Figure 6.1 Subcontractor workforce planning strategies

Workforce skill requirements are composed of six sub-components. These include:

- a. *Workforce supply and demand analysis*: Subcontractors’ assessment of the current workforce needs and the future workforce requirement projection.
- b. *Workforce size expansion*: Subcontractors’ decision on the size of the workforce on the basis of long-termism.
- c. *Workforce retention strategy and turnover size*: Subcontractors’ judgement on the workforce retention initiatives and the expected turnover size.
- d. *Workforce employment strategy*: Subcontractors’ characterisation of the workforce resourcing priorities and employment procedures.
- e. *Workforce replacement strategy*: Subcontractors’ remedial actions in dealing with the workforce departure, termination, retirement, and redundancy.
- f. *Workforce development*: Subcontractors’ commitment to affording workforces with opportunities to advance in their careers.

The business strategies identified in the case study subcontracting businesses are:

- a. *Strengthening core business*: Subcontractors' decisions on positioning business in the preferred market.
- b. *Business diversification*: Subcontractors' growth expansion in adjacent opportunities and/or non-construction business.
- c. *Outsourcing*: Subcontractors' alternative in subletting portions of the works to trade specialists.
- d. *Active tendering*: Subcontractors' manifestation of proactive bidding system and strategic relationships with clients or/and main contractors.

6.3 Dynamics in workforce planning

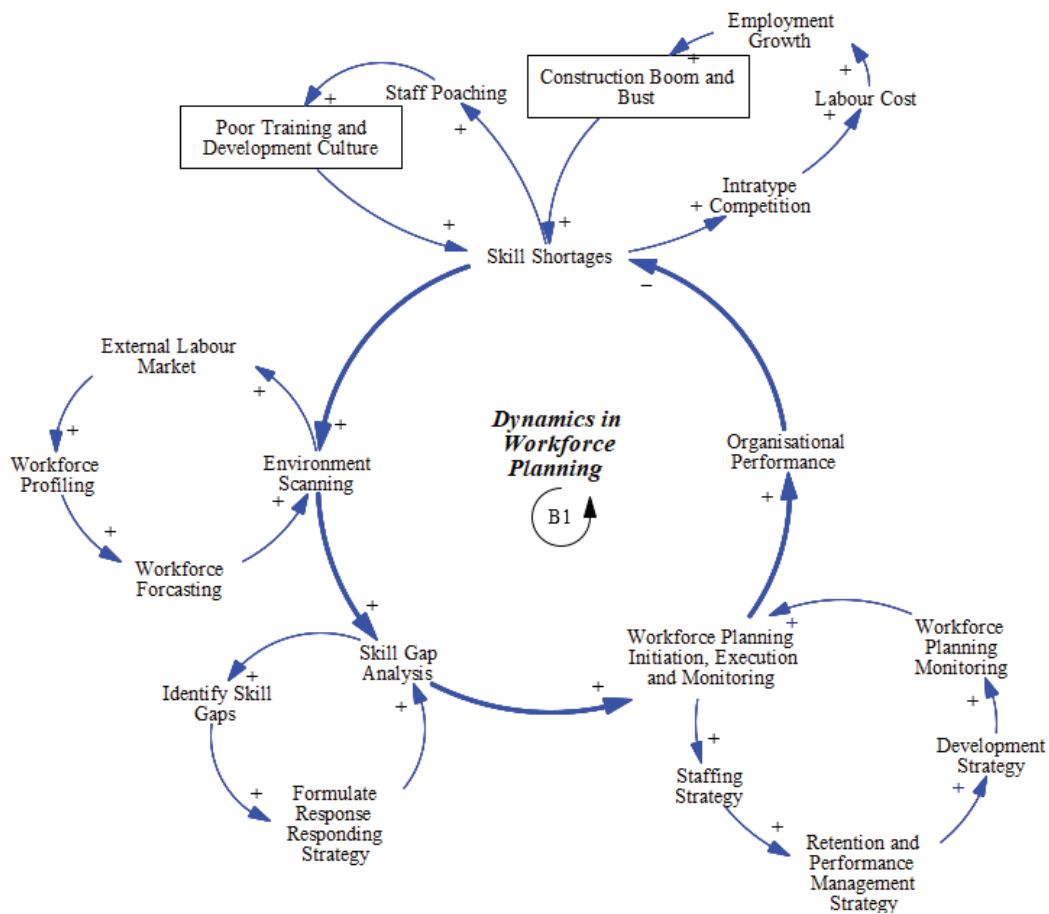


Figure 6.2: Dynamics in workforce planning

Table 6.2 Loop in workforce planning

<i>Loop</i>	<i>Description</i>
B1	Skill Shortages-Environment Scanning-Skill Gap Analysis-Workforce Planning Initiation, Execution and Monitoring-Organisational Performance-Skill Shortages

Figure 6.2 shows the influential factors in workforce planning and the interactions between the factors. The causal loop diagramming leads to the identification of balancing loop B1, as described in Table 6.2. Staff poaching exists in the construction industry as a result of skill shortages. The practice of poaching is becoming more prominent in the construction industry, leaving most construction companies susceptible to losing skilled workforces to their rivals. Indeed, staff poaching is a by-product of the poor training and development culture in the construction industry. This phenomenon is exaggerated by the employers' aversion towards investment in workforce training and development. The perpetual issue of skill shortages also causes a contest between the construction companies to attract skilled workforces. This competition increases the labour cost and affects regional employment growth. The same has been reported by Jayasuriya et al. (2006) following the Sri Lanka tsunami. Therefore, efficiency wages were offered to attract and retain skilled workforces. This trend signals a construction boom period characterised by resource pressures, spiralling costs and short-term workload issues (Allan et al., 2008). The notoriously cyclical nature of construction demand creates a boom and bust in the building industry (Wilkinson & Chang-Richards, 2016). Such a situation epitomises a flexible labour market which often results in skills mismatch (Craigie et al., 2012). In New Zealand, this boom-and-bust cycle is one of the contributing factors leading to skill shortages in the construction industry (Saravanaperumal, 2008; Ministry of Business, Innovation and Employment, 2018).

Loop R1 shows a virtuous cycle of workforce planning and organisational performance suiting small and medium-sized construction companies. Workforce planning is indispensable in the creation of a firm's competitive advantage (Raidén & Sempik, 2013). Proper workforce planning prepares organisations to reactively 'fight for survival' and develop a contingency plan to meet future business needs (Taylor, 2008). To achieve this, construction employers must procure the right person, with the right skills, at the right time. Managerial judgements and contingency strategies are the two critical elements in workforce planning (Taylor, 2008). Such expositions cast greater responsibilities on

employers in strategizing an adaptable business plan. However, the high reliance on managerial judgements is also flawed by human errors owing to organisational politics and bias (Raidén & Sempik, 2013).

In workforce planning, environmental scanning is performed to study construction market dynamics. Through this procedure, subcontractors can strategize their resourcing decisions and prioritise their resourcing needs. Environmental scanning provides subcontractors with the labour market trends along with the opportunities and shifts in the construction business environment. Accordingly, scoping the environment is particularly important in ensuring appropriate data are sourced suiting the business directions. Following this, results from the scan are analysed and later form the foundation of the organisation's contingency plan. Findings from the case studies demonstrate that the investigated subcontracting businesses favoured a more passive approach to environmental scanning. This scan is conducted casually, and its reliability depends greatly on management judgement (and experience). Therefore, the manager or employer's industry knowledge is critical in determining the accuracy of the scan. Indeed, the accuracy of the scan can be further improved by incorporating a robust system for assessing external and internal forces influencing the business environment.

Environmental scanning identifies skill sets that employers are competing for, the regional labour wage, compliance policies, and the current market trends. These external influencing factors, when systematically assessed, facilitate organisations in achieving better staffing decisions. Other than that, there exist several attributes influencing the staffing results. These include the organisations' maturity level (Chang-Richards et al., 2017), organisations' situational awareness (Seville et al., 2008; Vargo & Seville, 2011) and continuous adaptive capacity (Seville et al., 2008). When these attributes are in effect, early warnings can be signalled in the creation of a strong workforce base.

The first step in building a strong organisational workforce base is profiling the current workforce structure. As such, a workforce inventory can be created, outlining the staff's core skills, work experience, and knowledge. This profiling throws light on the company's internal strengths, which in turn aids in the resourcing decisions that can lead to enhanced business performance. Information gleaned from the current workforce profiling is then

used to create the organisation's future workforce profile. This profiling allows subcontractors to design an ideal workforce capacity to suit their future business needs. Resourcing priorities can be strategised following the assessment of the current and future workforce profiles. Next, risk factors (e.g., ageism, skills shortages, recruitment and retention issues) in workforce resourcing are identified and incorporated into the resourcing decisions. To ensure the profile outcome is delivering its objectives, the workforce profile should be aligned with the organisation's strategic intent. The current and future workforce profiles are then used to forecast the organisation's future workforce requirements. Workforce forecasting is done by assessing the future workforce requirements against the current workforce availability. A better forecast can be achieved by ascertaining the forecast timeline (i.e., short-term or long-term), organisational human capital, financial strength and projects in the pipeline. By collating this information, subcontractors would be able to attain better insight into their actual staffing needs. Additionally, numerous qualitative and quantitative methods (e.g., Delphi technique, judgemental method, managerial judgement, scenario analysis) can be employed to conduct the workforce forecasting (Raidén & Sempik, 2013).

A skills-gap analysis is conducted following the workforce forecasting. This analysis is done to measure the disparity between the future workforce needs and the current workforce availability. Shaping a future-proof workforce is critical to business sustainability. Workforce future-proofing is brought about by imparting agility into the current workforce to meet future business demands. This agility should be reflected in the organisational human capital, staffing system and management. To support 'agile' growth, producing an accurate workforce forecast is paramount. This realisation calls for the need to invest in predictive intelligence in making informed staffing decisions. When the productivity gaps have been identified, response strategies can be planned accordingly. The response strategies envelop methods that guarantee the maximum utilisation of the existing resources, detect potential skill gaps in the business and perform an accurate demand and supply analysis.

The results of the skills gap analysis positively impact the workforce planning initiation, execution and monitoring. The initiation of workforce planning occurs when the staffing planning decisions are integrated with the organisational strategic plan of the construction

companies. This is conducted through a well-defined staffing strategy that identifies the staffing expectations to be met. Following this, the companies focus on their retention and performance management strategies to reduce staff turnover and subsequently enhance employee output. The organisations adopt development strategies to ensure staff advance in their careers. The developmental programme includes staff training, mentoring, work diversification, and apprenticeship. The factors mentioned above drive workforce planning monitoring, along with implementation. Workforce planning strategies are implemented through an execution plan that describes the business goals to be achieved within a specific period, the deliverables and the monitoring methods applied. The monitoring method determines the practicality, achievements, and outputs of the implemented workforce planning strategies. The subcontracting businesses monitor the planning process by examining the workforce performance against their objectives and alter the planning strategies accordingly to warrant the heightening of organisation performance. A better organisational performance would curb the ill effects of skill shortages in the construction industry.

6.4 Integrative system of workforce planning and business strategy

Results featured in this chapter have revealed many instances of short-termism and a spontaneity approach to workforce planning in the case study organisations. It was found that more than 60 per cent of the case-study subcontracting businesses are operating in the absence of formal human resource management (HRM) structure. As workforce planning is a subset of the HRM practice, evidence from this research implies the investigated subcontracting businesses are performing an individualistic approach in addressing their skill requirements.

Given the susceptibility of the subcontracting businesses to the construction market fluctuations, it is, therefore, important for the subcontractors to understand the interplay between the environmental scenarios and their organisation's strategic planning. Knowledge of the business environmental forces afforded the investigated subcontractors with their business environment pattern, identification of the industry's opportunities and threats and, most importantly, the development of the organisations' strategic action plan in responding to the changing environment. Essentially, sensitivity to the labour market

fluctuations facilitates subcontractors to establish workable measures in reducing the impacts of skill shortages. In order to build a resilient business performance, it is critical to establish organisational performance imperatives that are in accordance with the organisation’s vision, goal, and growth plans. *Figure 6.3* exhibits the interdependency of the subcontractors’ business environment, workforce planning strategies, project resourcing and organisational outcomes applied in rationalising the basis of the workforce planning imperatives.

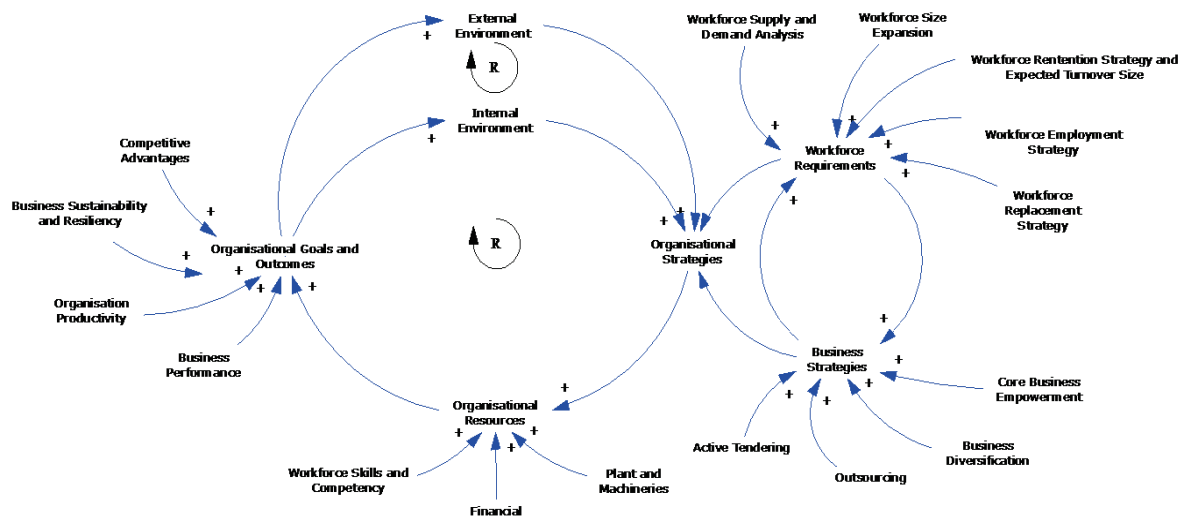


Figure 6.3 The interdependency of business environment, workforce planning strategies, project resourcing and organisational outcomes in the subcontracting businesses

The need to sustain competitive advantage makes it germane to embrace an adaptive capacity in coping with external turbulences. For this reason, subcontracting businesses must demonstrate business agility in seizing strategic opportunities. As such, workforce utilisation has been heralded as critical for capitalising on business opportunities. Sustainable competitive advantage is often associated with the organisation’s ability to retain its people and execute its people processes (Yankov & Kleiner, 2001; Loosemore et al., 2003; Brandenburg et al., 2006; Lobo & Wilkinson, 2008; Raidén et al., 2016). Sustaining competitive advantage through human resources has a direct bearing on the organisations’ internal resources. The external environmental dynamics are readily recognised to interfere with the subcontracting businesses’ internal resources. Therefore, diagnosing the organisation’s internal environment is important in averting the external

threats and overcoming the internal weaknesses. The internal capacity of the subcontracting businesses (constituting the company assets, capabilities, company specialisms, workforce capacity, plant, and machinery) determines the execution of the subcontractors' competitive strategy. Additionally, a strong portrayal of situational awareness has been manifested by the case study subcontracting businesses to accommodate abrupt changes in the construction market.

Research results have indicated that informal approaches to workforce planning predominate in the investigated companies. These approaches are seemingly capable of curtailing immediate issues concerning workforce resourcing. It is possible that these approaches underestimate the true prevalence of strategic implementation of workforce planning. Therefore, a planned approach to long-term workforce planning is needed in order to impart greater predictability to the organisations' employment forecast and equip subcontractors with a specific functional procedure on workforce resourcing.

6.5 Summary

Results from this research showed that a short-term approach to workforce planning is predominant in the investigated companies. The widespread adoption of a competitive tendering, low-cost business model and functional flexibility in these companies has eventually led to the anarchical arrangements of workforce planning. Albeit informal, the subcontractors' workforce planning incorporates identifying risk factors associated with the volatile construction market. This chapter presents a simplified version of workforce planning strategies (i.e., *Figure 6.1*) to meet the background within which small and medium-sized construction companies operate. Following this, the interdependency between subcontractors' business environment and organisational strategic planning has been postulated to infuse subcontracting businesses with critical business success factors. This research also suggests that a focus on swift market adaptability, transferable skills, and building workforce capacity is central to business sustainability. Adherence to the workforce planning strategies is expected to benefit the subcontracting businesses in attaining greater organisational performance. The benefits include efficient workforce resourcing for projects, strategic utilisation of the workforce, better workforce cost control and higher overall organisational efficiency. Taken together, these findings

suggest a role of workforce planning in promoting proper workforce recruitment and selection. This raises the questions about how subcontractors recruit and select their workers in the event of a crisis which will be discussed in the next chapter.

Chapter 7

Subcontractors' Workforce Recruitment and Selection Strategies

7.1 Introduction

Trade skills were in high demand following the 2010/2011 Christchurch earthquakes. The sudden burst in construction-related occupations has generated challenges in most Christchurch subcontracting businesses, particularly in finding a high calibre workforce. Many construction companies in Christchurch are seeking recourse to subcontracting arrangements in response to staffing difficulties. Given the stated concern with problematic recruitment in the construction industry, it is perhaps surprising to find that little systematic attention has been directed towards documenting the range of recruitment and selection strategies adopted in small and medium-sized construction organisations. In this chapter, a two-year investigation has been carried out to understand the employment patterns in subcontracting businesses. Dynamics in workforce recruitment and selection were represented in a causal loop diagram (CLD), creating a virtuous cycle to curb skill shortages at the organisational level. By understanding these dynamics, a best practice for workforce recruitment and selection can be established to facilitate subcontractors in their staffing process. The results are presented and discussed under two main headings as follows:

1. Workforce recruitment and selection practices; and
2. Recruitment options and preferences.

7.2 Subcontractors' recruitment and selection processes

The investigated companies perpetually favour a more informal approach to recruiting potential applicants. In essence, a high inclination towards 'word of mouth' and 'hiring

the known' recruitment methods were identified within the case study organisations. The following quotes from interviewees S1, S10, and S11 indicate the preference for an informal approach to workforce recruitment.

“For our industry most of those people come along through word of mouth.”

S1

“Half of my staff are from the West Coast and they don't own cell phones. To get a hold of them over there it might take a week to get in touch with them and then for them to give you a call. But because I know people from over there then they talk to the next-door neighbour; they call it the bush telegraph. Out of that I have got good genuine hard-working guys that I know are good because they have been recommended Dave who worked for Barry who worked for Steve. That's about the only way that it's safe for me to hire staff.”

S10

“We've gone with word of mouth. We originally got some people from the UK who had responded to ads that we have on our website. So we've managed to get people through that to start it off and then from there they've known people back in the UK who would consider coming out, so we take their recommendation and talk to them as well, so it's through word of mouth.

The Filipinos that we have brought in have been again through word of mouth is that Style Aluminium, who we bought last year, had two Filipinos working for them that they had brought out and I think they'd gone through an agency to get them, but from those two they have given us names of others back there, so we've gone again word of mouth through the Filipinos.”

S11

This 'word of mouth' recruiting relies on employee referrals and personal networks, inferring the prevalence of informality in the organisational recruitment practices.

7.2.1 Skill availability

Availability of key skills is critical in ensuring an organisation's business sustainability. Determining the availability of skills in the organisation requires a continual assessment

of the internal and external supply of the workforce. For example, one interviewee, S11, stated:

We've got to assess where we can get the staff, and this is what we're doing at the moment."

S11

This process deals with the identification of the human resource inflow and outflow within the organisation. This workforce stock-keeping practice provides subcontractors with structured data of the existing workforce capacity, critical skills required, and action plan formulation to resolve any potential skill gaps.

7.2.2 Candidates' skill and competency

Some of the interviewed companies conduct their recruitment through advertisement; however, at a local level only. Nevertheless, these companies are willing to accept the workforce from varied backgrounds, provided they possess the necessary skills to perpetuate organisational performance. One interviewee, S5, said:

"We advertise using local media - SEEK, Trade Me, local newspapers. It doesn't really matter where they're from; providing they've got the right skills to do the job then we'll generally employ them."

S5

It is in the companies' best interest to retain skilled workers and avoid staff turnover as much as possible. Therefore, the investigated companies focus on long-term employment with respect to skilled employee retention. As one interviewee, S8, put it:

"Typically, we are looking long term with our hireage and with our staff we would tend to take the guys on; if they are a good fit for our company, they work well, and they have got the right skills we tend to take them across permanently."

S8

Although some companies are increasingly focussing on deviating from informal recruitment practices through job advertisements in the media, unforeseen problems are

still occurring. Talking about the issues mentioned above, interviewee S13 explicitly mentioned that potential employees often ornamental their resumes with skills they might not possess.

“CVs looked great but when we interviewed them and gave them some practical tests, they couldn't do what they said on their CVs. So, what reads as adequate training on the CV when you actually get to meet them and see what they can actually do it's not the same.”

S13

7.2.3 Candidates' work experience

The subcontractors seemed to prefer a worker with prior international experience in construction industry projects. However, a majority of the interviewed companies relied on 'word-of-mouth' for workforce recruitment since they believed that it could give a higher guarantee of hiring skilled workers. It was observed that the 'word-of-mouth' recruitment had a cascading effect on the workforce itself. For example, one interviewee, S11, stated:

“We have brought a number of Filipinos in that have had experience in our industry. Most of them have had experience in the Arab states. Dubai and UAE and Qatar and those places. So, they have been working on big projects over there. We've brought a number in that have had that experience and they have worked out very well. We are still looking probably for some more, but we use word of mouth. The people that we've got; we go who would you recommend? So, we get the ones that we have already got employed to recommend someone else. Do they know someone else? So, we work on that; probably along the lines because of the cultural differences. They won't recommend someone who they don't know.”

“It is as good as anything. We can go out there and advertise and we get all these CVs for these different people. The CVs read great, fine. You will always get a good report and you go okay. So, it's really luck of the draw whether you get a good one or a bad one. So, we think with people recommending people it's slightly different. It just elevates them on the scale that we are more than likely going to get someone who works pretty well.”

S11

7.2.4 Candidates' personality and character

The interviewed companies somewhat rely on their comprehension of the employees' capabilities through personal communication and observation. This ability to assess the potential of the newly recruited workforce is mostly acquired through experience and is reserved for the organisation's senior managers. On this, interviewee S10 said:

“From the first time you meet them you will gauge a certain amount of what they are going to be like. They need to be able to have the right personality for whatever job it might be. You can gauge a lot by just that first meeting of how they are acting, body language and stuff like that, and then just spending time with them and seeing what they work like. Everyone works hard at first but just watching and seeing what their attitudes are like is a big difference.”

S10

The subcontracting companies give importance to the workers' ability to function within a group. Therefore, the organisations attempt to identify qualities such as commitment and coordination within the potential recruits. As one interviewee, S8, put it:

“Our recruitment process when we meet with these people is we have to really assess whether we think not only can they carry out the job, but can they work within the team and will they add value, and will they be the right sort of person? Someone might tick all the boxes, but we are dubious about whether they are going to be able to I guess work in well with other people.”

S8

The case study companies expressed their disdain for the lack of motivation within the national population to undertake intense labour. Therefore, these organisations are forced to conduct their recruitment on an international level. One interviewee, S7, alluded to the notion of:

“Why is it so hard to get New Zealanders? The young people don't seem to be interested in hard work, and it is hard work; there is no argument there, it is hard physical work, and we have started a lot of people and they have quit within one day to one week, they quit. It's too hard; it's too hard to get out of bed in the morning.”

S7

The interviewed companies stressed the importance of direct correspondence with the new employees to determine their skill levels. This approach stems from the fact that intellectually gifted people might not have the inclination or ability to perform practical construction projects. As one interviewee, S10 said:

“The worst staff I have ever got are the best resumes I have ever seen. So, if I see a good resume I generally won’t look at it because to me it’s nearly like they’re trying to trick you. You have got to be careful of that; on paper someone can look great. Some of the worst resumes that I have got with the spelling that actually makes you laugh while you are reading them, or no idea that the computer has got spell check on it, they might not be intellectual, but in terms of work they’re great. So, you can’t tell; the only way you can tell is by spending a day or couple of days with someone and find out what they’re like as a person and what they’re like as a worker; what their work ethic is.”

S10

7.3 Recruitment options and preferences

The companies have observed the reluctance of the national population to undertake construction-related jobs. This trend has prompted the investigated organisations to network internationally to recruit workers. Owing to the tendency of the international workforce to remain in New Zealand coupled with the scarcity of the local workforce, the construction industry has seen a huge influx of foreign workers. Interviewees S1 and S11 were among the others to recruit migrant workers, as the following quotes illustrate:

“I think mainly with the painting and the plastering and carpentry for the builders. Because there’s not enough here doing that work a lot of people come from overseas. There have been a lot of people from Ireland for building and brickwork, quantity surveyors.

Lots of people from Ireland. Fletcher has brought in a lot of people from Ireland to do that work. In our company we have guys from the Czech Republic.”

S1

“About 12% is overseas. Of those 12 we’ve brought some management staff in from the UK and those guys, one of them has already applied and received permanent residency. They are looking to immigrate here permanently. We have six from the Philippines,

which we've brought in on working visas. Our understanding with these guys is they've got two or three-year work visas, but they are going to be looking at extending those work visas and they will be looking at getting residency as well. A lot of these are coming in looking at staying permanently. When we bring people in from overseas the ad has had to have been on the shortage list for a certain period of time. We've had it on the shortage list now for probably nine months and I think we've had two local replies, but we've had plenty of overseas responses."

S11

The majority of the interviewees observed that the international workforce is more flexible and accepting than local workers concerning work requirements. For example, interviewee S13 elaborated:

"They have the right skills and there's a big focus on Health & Safety training and the like which is taking place in New Zealand at the moment, particularly pushed by the Christchurch rebuild. One of the things we find is with the local employees because it's never been a big factor before, but it has of recent years become a very large part of it, some of them are a bit resistant to the idea. They think oh, it wasn't like this before, I don't want to do this, and I don't want to do that, particularly in the ways of the paperwork and all the pro formas that you have to fill in. We find the guys that come from overseas have been doing this for all their careers, so they're not resistant. It's part of the business for them and that's a good thing. That's what we find, they're pre-trained if you like and ready to work and they're not resistant to Health & Safety requirements and all the elements of that side of things."

S13

Some of the case study organisations have recruited their workforce from varied backgrounds and nationalities. As one interviewee, S8, said:

"There's a mixture. The UK, Ireland. We have had some French. We have also had some Filipino workers. Probably about four I think in total from the Philippines. Then the rest are all locally sourced guys."

S8

In 2014, Immigration New Zealand (INZ) recorded the highest number of migrant workers entering Christchurch (Christchurch City Central, n.d.). Specifically, 1100

external migrants working as technicians and trades workers were reported in 2014. Overall, workers from the United Kingdom and Ireland were of the highest preference following the Christchurch earthquakes. There was also a substantial rise in demand for Filipino workers in Christchurch. Between 2011 and 2017, 5100 Filipinos were employed in the Christchurch construction industry. Employers who participated in this research eloquently stated that Filipino workers are in demand mainly because they are highly skilled, have strong work ethics, and have a good command of English. Workers from India and China have also grown in number, illustrating a diverse workforce pool in the Christchurch construction industry. *Table 7.1* shows workforce diversity in the case study subcontracting businesses. Further details of the employment trends in the case study organisations are shown in *Table 7.2*.

Table 7.1 Migrant workers in the case study organisations

<i>Countries</i>	<i>S1</i>	<i>S2</i>	<i>S3</i>	<i>S4</i>	<i>S5</i>	<i>S6</i>	<i>S7</i>	<i>S8</i>	<i>S9</i>	<i>S10</i>	<i>S11</i>	<i>S12</i>	<i>S13</i>
Australia	√				√		√						
China						√				√			
Czech Republic	√												
France										√			
Germany										√			
Ireland	√		√			√		√		√		√	√
England	√		√			√		√			√		√
Philippines	√		√		√			√		√	√		√
Scotland													√
South Africa											√		
United State					√								

Table 7.2 The case study organisation employment trends (Data in October 2014/2015)

<i>Interviewee</i>	2014		2015	
	<i>Domestic</i>	<i>International</i>	<i>Domestic</i>	<i>International</i>
S1	70%	30%	70%	30%
S2	100%	-	100%	-
S3	80%	20%	N/A	N/A
S4	100%	-	100%	-
S5	65%	35%	N/A	N/A
S6	80%	20%	80%	20%
S7	50%	50%	20%	80%
S8	80%	20%	70%	30%
S9	100%	-	100%	-
S10	94%	6%	100%	-
S11	88%	12%	70%	30%
S12	50%	50%	50%	50%
S13	97%	3%	80%	20%

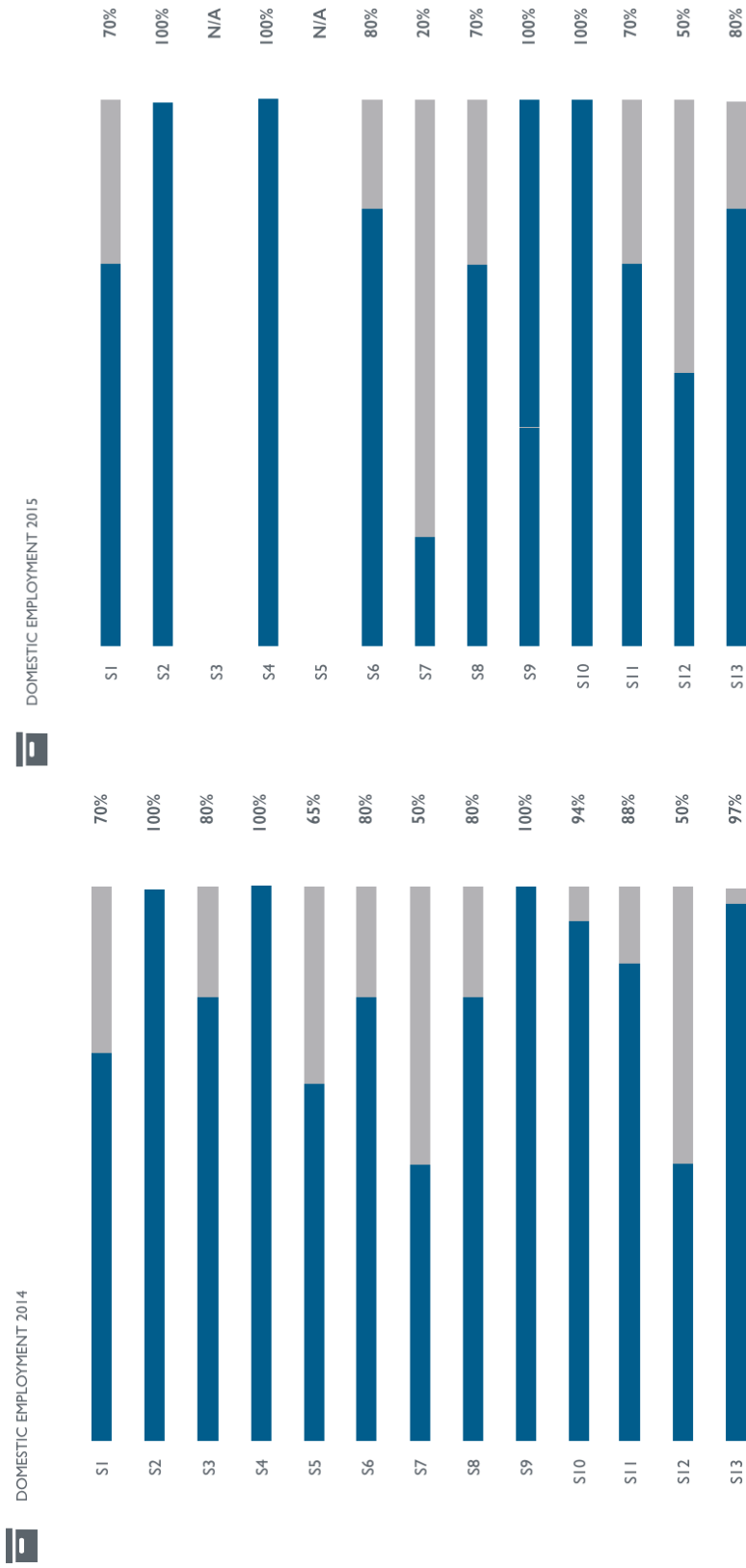


Figure 7.1 The case study organisations domestic employment in 2014 and 2015

Figure 7.1 shows the composition of the workforce in the investigated organisations. Research findings indicate that most employers prioritise local workers with the aim of better staff retention. However, in 2015 a more diverse approach to employment was demonstrated within the investigated organisations. About 80 per cent of the interviewed companies employ indirect external recruitment. In essence, these companies recruit foreign workers already present in the country. For example, interviewee S9 indicated:

“They have to be in the country; we don’t do Skype interviews or anything like that. If they are here, we will interview them.”

S9

The other 20 per cent interviewed employers recruited directly from abroad; as one interviewee, S11, put it:

“We have brought a number of Filipinos in that have had experience in our industry. Most of them have had experience in the Arab states. Dubai and UAE and Qatar and those places. So, they have been working on big projects over there. We’ve brought a number in that have had that experience and they have worked out very well.”

S11

The same patterns were portrayed in the construction industry globally. Many construction companies have indeed turned to international recruitment in the face of skill shortages (Krings et al., 2011; Caro et al., 2015; Ho, 2016). For example, Fellini et al. (2007) found that foreign workers dominate the labour market in most European countries. This research found that the case study organisations had a better experience with foreign workers than their local counterparts. Interviewed employers described migrant workers are more driven and committed to completing the projects. Additionally, they exhibit commendable work ethics that are beneficial for enhancing organisational performance. The comments below elaborate as to why migrant workers are of preferences:

“Yeah. And you get lots of Filipino, if you tell them to start work at 8 o'clock in the morning, he'll be there at 7 waiting to start. You get a young Kiwi; he'll be here at 9 o'clock to start at 8! And people will say, “Oh you know, the Filipinos are taking the Kiwi jobs,” and they're not, not at all; they're just here doing the job.”

And they're not under-paid or anything like that - oh, maybe; some are, somewhere out there, by some unscrupulous employees; but in general, they're paid very well. We'd pay Kiwis that well, but man, you just can't get them."

S7

"They turn up every day; they don't drink, they don't take drugs; they turn up every day, they're loyal, they do a fair day's work."

S11

Although the case study companies foster workforce development through mentoring, the senior staff members can be apprehensive about being authoritative. This hesitation hinders the transmittance of knowledge and skills to the new workers, as the following quote illustrates:

"It's a young man's game. It's a heavy, dirty game. So, what we try to do is we try to identify young men early on that we think are capable and will stay with the company and we try to put them in as second in command. So we have the gang leader, the foreman if you like and then we have a deputy and he should be learning from the foreman, so that hopefully he will become skilled at the hands of the foreman, but it does lead to the problem of people that are staying because a number of things happen. Sometimes they don't like the extra responsibility, so they don't want to. Some brainwork and not everybody are capable of giving orders to other people because they come from the gang and then they're in the position where they have to tell people to do things. They don't like that some people, they really want to be one of the boys."

S13

The interviewed subcontracting companies seemed to favour workers that can coordinate and cooperate reasonably with others with eventual assimilation. The companies gauge the personality, as mentioned earlier, of potential employees through direct correspondence (i.e., interviews). One interviewee, S8, commented:

"Often it's I hate to say it but a gut feeling. We may know a particular person or type of person may work well with someone else and not with others. So, there is a bit of a selection process goes on there."

If someone really distinctively stood out in an interview as they definitely wouldn't meet our values; we wouldn't offer them the job. We have got to be careful who we select."

S8

The case study investigation has revealed that the construction's poor image has discouraged potential recruits. This negative public perception of the industry has led to a lack of young people entering or remaining. Talking about this issue, an interviewee, S10, said:

"There's a huge lack of young people coming into our industry and it's a career but at school it is not being highlighted that you can have a career as a digger driver or a truck driver. To be honest, I've got an operator who is 27 years old, he's on \$100,000 a year, plus a vehicle, plus a phone."

S10

The subcontracting companies, through interviews, revealed that they are wary of the availability of projects and, hence, are apprehensive about hiring a large number of workers permanently. The organisations conserve a core of selected permanent staff and, during the growth period, procure additional workers from external agencies. In one case, the interviewee, S6, commented:

"It's slightly down; we're probably about 70 at the moment, it's a little bit down but it's a case, as always, we have to be mindful of keeping them employed but we also have to think about if we can't make the work, is that some people they become unemployed. But we have a contingent of staff, we use labour agencies for our supply of people; so we have a core of permanent staff who we would dearly like to keep together, so we're pretty confident we will be able to do that. And we have a contingent of staff from the labour agencies, so we can drop them at will, if you like; so we've got some way of mitigating the problems."

S6

The case study companies are in accord that training and apprenticeship impart the necessary skills required within the construction industry. Therefore, these organisations are willing to invest in training the workforce and employing other incentivisation

techniques that will lead to their eventual retention and aid in attaining a competitive advantage. On this, interviewee S12 said:

“Train our own staff and then we know that they are getting a good training and good apprenticeship. They know what they are doing. They are reliable and most of them will stay on afterwards and be good. We know that we are getting great employees at the end of it if we’ve trained them. But there is quite a lot of effort and cost that goes with that. But that has been one of the best recruitment tools for us.”

S12

The huge amount of competition within the construction industry has driven the price down. As a result, many subcontracting companies fall into the vicious cycle of accepting lower prices as a contingency for undertaking risks. One interviewee, S10, stated:

“If you look at the tender market though, a lot of people will just take the cheapest price. People are always trying to keep their costs low so they will take the risk.”

S10

The companies are biased towards potential employees who are proactive in seeking work. The organisations, upon identifying potentially skilled staff, endeavour to hire them for future workforce needs. For example, one interviewee, S11, said:

“So, we are selective for the ones that are here. We have taken a few that have been working for other companies here, but they all came to us for a job. We are not going out there hunting for them. They have all come and knocked on our door. There are times when we need people and good people, we won’t turn them away most of the time. Sometimes you might not need them today, but you might need them tomorrow.”

S11

7.4 Dynamics in workforce recruitment and selection

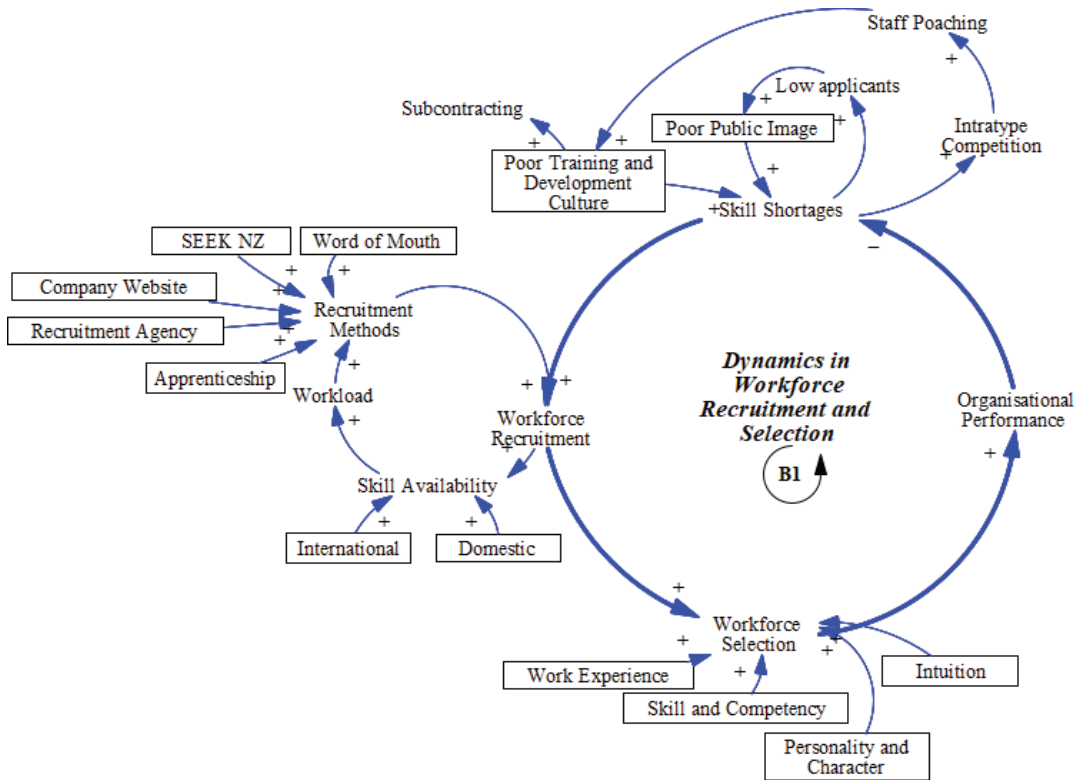


Figure 7.2 Dynamics in workforce recruitment and selection

Table 7.3 Loop in workforce recruitment and selection

Loop	Description
B1	Skill Shortages-Workforce Recruitment-Workforce Selection-Organisational Performance-Skill Shortages

Figure 7.2 shows the factors that shape workforce recruitment and selection and the relationships amongst them. The factors are identified and represented in loop B1. The most critical factor that causes the inception of workforce recruitment and selection is skill shortages. The New Zealand construction industry has continually suffered from skill shortages which are revealed by past literature (e.g., Lobo and Wilkinson, 2008; Chang et al., 2014, 2015, 2017; Wilkinson et al., 2016a; Wilkinson et al., 2017) and the case study investigations in this research. This situation is worsened by the fact that most construction organisations are perpetually competing for the same skillsets. In order to gain some

competitive advantage, construction companies often offer better job prospects to the employees of another organisation as a means to lure them into their company.

This possibility and potential of current employees to be poached by another competing organisation impedes proper training and development. Therefore, most construction organisations remain apprehensive of investing in proper training for their employees, leading to staff lacking core competency for a particular job. On the other hand, a meagre number of applicants can substantially and negatively affect an organisation as it would appear unappealing to the general public. As a consequence, the organisation would not be able to procure qualified employees to meet their staffing needs.

The prevalence of skill shortages necessitates the recruitment of a new workforce to ensure business as usual. The recruitment process is initiated by assessing the availability of skilled workers and their respective current locations. As such, construction companies have to scout both domestic and international markets for competent employees. A search for available and qualified staff is followed by determining the actual workload in the organisation. This process involves the identification of the jobs that would be assigned to the new recruits. Workload assessment presents the need for recruitment, and as such, several routes are implemented. Recruitment through word-of-mouth is effective as it identifies a particular set of skills needed for the job. Recruitment is also conducted through advertisements on generic headhunting websites (such as SEEK in New Zealand) that create a larger audience and enhance visibility. Advertisement of the position on the company website allows the dissipation of information to dedicated and determined candidates. Sometimes, recruitment is conducted through an agency that acts on behalf of the company. However, such recruitment methods could be cost-intensive since the third party obtains commissions. Finally, apprenticeship is another recruitment method involving on-the-job learning and training for potential candidates.

Workforce selection is conducted following the recruitment process. At this stage, construction companies select the final employees from a pool of potential and qualified candidates. The literature points to the fact that many organisations cannot attain their strategic goals due to incorrect assessments of candidates before their formal hiring. Therefore, workforce selection is critical as the core characteristics of the organisation must

be compatible with the employee and vice versa. Numerous techniques are implemented to conduct the selection process. The candidate's past experience is definitive proof that the skill required for the job is prevalent, along with being tested and true. A fresh candidate with the required job skill set is also considered. An array of testing methods exists that can reveal the candidate's competency. These include, but are not limited to, interviews, peer assessments, examinations, and personality tests. Often the personality and character of the candidate play a role in their selection. Some organisations require a particular mindset, and its match with the candidate's attitude would create a harmonious working environment.

Some construction organisations lack a formal selection procedure and rely on the recruiters' intuition and gut feeling. Selection through this method of intuition can provoke inconsistencies but gives precedence to human interaction that vastly relies on the past experience of the selectors. Selectors attempt to identify qualities such as optimism, the ability to be a team player and higher knowledge that is considered important for attaining strategic organisational goals. The selection of the right employees possessing the apt skills can positively enhance the organisational performance and, hence, facilitate the company in gaining a competitive advantage over other businesses. Therefore, from the discussion mentioned above, it is clear that for a business to propagate further, it is imperative to adopt an effective recruitment and selection process to negate the adverse effects of skill shortages.

7.5 Summary

Most construction research in the recruitment and selection domain is based on large organisations (i.e., Raidén et al., 2004; Forde & MacKenzie, 2007; Raidén & Sempik, 2013) despite the growing significance now accorded to smaller firms. In the face of recruitment difficulties, many construction companies have turned to a non-standard form of employment that allows greater flexibility in production and skill acquisition. This chapter presents an idiosyncratic approach to workforce employment in small and medium-sized construction organisations. Recruitment protocols in the investigated companies are often facilitated through social ties and personal networks. Experience from the case study organisation showed that smaller companies are not less successful in recruiting and

selecting the workforce than larger organisations. Therefore, these findings illustrate a ‘small is beautiful’ perspective wherein informal approaches to recruitment and selection thrive. In all cases, organisational functionality takes precedence over sophisticated recruitment methods. Indeed, employment practices in the investigated companies are determined endogenously, with an adaptive mix of human resources and managerial systems to meet fluctuations in the construction demand. This research has sought to highlight that informal practices can prove effective and appropriate in meeting organisational staffing needs, particularly in a fast-changing environment. Overall, construction organisations deem the attraction and retention of skilled workforces to be key levers in sustainable business. In particular, an organisation’s competitive advantage lies in the successful retention of a skilled workforce. The subsequent chapter presents strategies to retain strong performers in subcontracting organisations.

Chapter 8

Subcontractors' Workforce Retention and Performance Management Strategies

8.1 Introduction

Staff poaching became prevalent following the shortages of trade skills in the Christchurch construction industry. This behaviour drives up labour costs and undermines the skill base in the construction industry. The fear of losing good staff has prompted many construction employers to strategize their retention practices. Drawing primarily upon case study research from subcontracting businesses in Christchurch, this chapter discusses the practice of workforce retention along with performance review and appraisal in a sector encountering skill shortages and high workforce manoeuvres. Factors influencing workforce retention and performance management were considered in the context of a post-disaster environment. Following this, the interactions between workforce retention and performance management variables are illustrated in a causal loop diagram (CLD). The chapter concludes with a discussion of devising effective retention and performance management strategies to balance the competing demands that shape the construction environment. Research results are presented under the following headings:

1. Workforce retention practices; and
2. Workforce performance management.

8.2 Workforce retention practices

Following the Canterbury earthquakes, the Christchurch construction industry suffered from a chronic shortage of skilled workers. As a consequence, wages were pushed higher by competition for a scarce workforce. Staff poaching became commonplace, and high

rates of staff transience were much evident during the peak of the Christchurch rebuild. Commenting on the prevalence of staff poaching, interviewee S6 said:

“We have got a few guys that jump for a few bucks here and there. There are still some people out in the industry that are paying very high rates. Some of the small places are paying top dollar to get good guys and we can’t compete with that. In general, we have kept the guys we want to keep.”

S6

Another interviewee, S10, alluded to the notion that surging demand for skilled labour has pushed up prices, adding cost pressures on subcontractors lacking internal resources.

“There’s outfits out there that might pay someone that I’m \$25 an hour to and they might give them \$35 an hour but generally they’ll probably go bust in six months or a years’ time; so it’s creating an unrealistic. And that’s what a lot of the guys are doing; they jump to a job and then they find out, “Oh shit, that guy as a boss is making no money,” and they go into receivership. We’re trying to compete with an unrealistic view of what the labour is doing.”

S10

This insight creates the impetus for generating an effective workforce retention strategy for small and medium-sized construction companies. From the investigation, the companies’ modus operandi in retaining employees includes monetary and non-monetary incentives.

8.2.1 Monetary incentives

The remuneration system is one of the key levers in attracting and retaining high calibre employees in an organisation (Druker, 2013). The interviewed employers agreed that pay and associated benefits are retainers for good employees. One interviewee, S6, reported:

“The pay range is still about the same, but our pay range is in the upper level; we have no trouble with people thinking that they’re underpaid, that’s for sure. You have to do that otherwise they just go looking.”

S6

Some of the case study companies acknowledged that their staff members, although they are not paid the highest market rate, are satisfied with their relatively high remuneration. The organisations decide upon a salary range that simultaneously retains their staff and proliferates their business goals. For instance, interviewees S4 and S7 said:

“We don’t pay exceptionally high wages; we pay just average, the market rate. Not a huge amount to be honest, no. We guarantee them the 40 hours a week; so, if there’s any weather problem with snow or rain or something they still get paid for the 40 hours which is a big thing.”

S4

“I mean, we don’t have to pay the most; and we certainly don’t pay the most, but with what we pay coupled with our conditions, coupled with how we care for our people, it all works in together.”

S7

Some of the interviewed subcontractors complement their average remuneration with several non-monetary incentives that lessen staff turnover. On this, one interviewee, S9, asserted:

“We don’t want to see anybody underpaid but they must be paid fairly, and they must also be paid in a way that the company can still make a good profit. We made an effort not to overpay but there were some people who were well up there and so the challenge is going to be trying to find that wage bracket balance again because for the company to be profitable, it must be efficient. We don’t want to see anybody screwed. We don’t want to see anybody underpaid but they must be paid fairly, and they must also be paid in a way that the company can still make a good profit.”

S9

The interviewed companies seemed to have an understanding of the benefits of staff retention. These companies are committed to offering both monetary and non-monetary incentives to their workers. However, the organisations attempt to balance the incentives and positive cash flow to ensure the continuance of their businesses.

A majority of the investigated companies strive to retain the skilled workforce through monetary incentives (e.g., bonuses), especially during a growth period. However, these

organisations communicate with their workers that the extra incentive might be revoked during a downturn or stagnation of business. Therefore, the allocation of incentives is highly dependent on the current economic state of the organisation. As one interviewee, S13, put it:

“There were some key leaders that we put on project bonuses as a retainer, so we would let them know that we would pay them a project bonus and if the economy gets tight, then that project bonus is removed because there is no longer an option for them.”

S13

The interviewed companies adopted effective communication as a means to comprehend the needs of their workers. This strategy is influenced bottom-up yet driven top-down by the management. The organisations endeavour to nullify any resentment that might be fostered within staff members and create arrangements that incentivise their retention. Interviewee S10 deemed improving internal communication and employee involvement significant, as the following quote illustrates:

“We have worked out that we need to probably talk to our staff a lot more. Because it does - negativity is the worst disease that you can have in a business, because it brings everyone down and the next thing they will start with the union.”

S10

8.2.2 Non-monetary incentives

The interviewed subcontractors understand the value of non-monetary incentives and their monetary counterparts. As such, these companies have ventured into amplifying their organisations' social circle that fosters both lateral and mentor-mentee relationships. In turn, this approach enhances the collegiality among the organisation's workers. Additionally, the companies aim to maintain a safe working environment through periodical training and health insurance packages. Social reinforcement has been expounded by the interviewees, as the following quotes illustrate:

“There are also head employee schemes. So there's things like the social club which was set up by the company and also supported, as far as individual's times and the social club is exactly that, it's a social

club; they have a bank account and everybody choices to pay five dollars a week into it and they go to social events like, comedy festivals or rugby games, fishing trips, that sort of stuff. That creates comradery between the men as well, so it's not just a relationship between the labour and their supervisors or the company. So, there's a relationship up and there's also the lateral relationship, which is the relationship between peer to peer. That's important as well. The other thing is health insurance. A very, very high level of medical insurance and that's the people that have been there more than twelve months."

S9

"We have to organise social events and things. Obviously, it's staff recognition and about two or three weeks ago we had a golf day, which was a combined... in the morning was safety training and, in the afternoon, it was golf with some snacks and things afterwards. We stopped all the work in the company, everybody got paid a day, so in the morning it was safety training and then in the afternoon everybody played golf."

S13

8.2.3 Workforce assistance strategy

Due to the shortage of local workers in the New Zealand construction industry, 77 per cent of those interviewed have to conduct international recruitment. The case study subcontracting companies provide a considerable amount of non-monetary incentives to the overseas workers to acclimatise them to the new surroundings. These non-monetary incentives can be in the form of accommodation and short-term loans, which not only cultivate a sense of loyalty within the workers but also constitute effective workforce development. The following interview excerpts illustrate a focus on assimilating migrant workers into the New Zealand construction industry:

"Set people up with private accommodation until they get on their own feet."

S6

"For our overseas staff; we pay their accommodation for the first six weeks; we pay their food for the first week. That's pretty much what we do. We rent fully furnished houses. These guys, the Filipinos particularly, come in groups and they know each other. So, you've got five guys who all know themselves; we just get a five bedroomed house

and put them all in there together. It works really well. That's six weeks; we do a lot longer, because we're actually pretty generous there. That six weeks, I don't think we've ever done that yet; I think it's more like probably 10 to 12 weeks, if not longer. We don't get to the end of the six weeks and go-right, you're out. We help them along the way."

S7

"The Filipinos that are coming in from overseas; we fly them in. We put them up for a month, free accommodation. Then we assist them, getting groups of them into their own accommodation. We will provide them with bonds and give them money to get furniture and stuff as a loan. Then they pay it back through their wages. So we assist them to get self-sufficient."

S11

8.2.4 Workforce development strategy

The case study companies were observed to be aware of the benefits of workforce development and, as such, provide some form of training and development and satisfactory remuneration to reduce staff turnover. For example, interviewee S7 said:

"Generally speaking, if you're paying them a fair wage, and training them and developing them; they're not going to go anywhere, they're going to be happy. People only leave their jobs if they're either unhappy or want to advance further than they can here."

S7

The interviewed companies gauge the effectiveness of their employees through performance reviews that determine if the worker has the necessary skills needed for a particular job. Performance reviews give insight into workers' efficiency and quality of work since organisational performance is highly dependent on a skilled workforce. One interviewee, S5, reported that:

"We review regularly with what we call performance reviews to make sure that they are meeting their training targets."

S5

The interviewed subcontractors particularly encourage on-the-job learning that hinges on the transmittance of knowledge from senior and experienced staff members to new recruits. Therefore, workforce development is also performed through mentorship that provides motivation and proper guidance to workers in performing a particular set of jobs. In one case, the interviewee commented:

“Skills come with time and experience, so we have a policy of sharing information. In a saying it says, “share what you know today with benefits or hold on to it to only find that somebody knows tomorrow anyway and you’re just the sour old prick that wouldn’t share the information.” So, if I can share information with you today and it’s beneficial then that’s great and the benefit, I have got is that I was the person that shared it with you. So, I encourage site supervisors and our foreman to come alongside the labour staff when they are working to actually explain what they are doing, share what they know and share their experiences and actively do that. It’s a conscious decision; you have to choose to share what you know. You can just do something but if you take the time to explain what you are doing and why to somebody else then you increase their learning. Increasing our skills is about as we do the work; our workplace becomes the classroom.”

S9

8.2.5 Workforce relationship strategy

The case study subcontracting companies value the retention of a skilled workforce within their organisations. A large part of the retention strategy is based on the quality of the relationship between the organisation and the workforce. Therefore, the investigated companies aim to develop reciprocity between the organisations and employees on the perceived obligations and expectations from one another. In specific, these companies create a sense of attachment within the workers through various activities that inculcate loyalty and congeniality. Several approaches to maintaining employee relations were expounded by the interviewees, as the following quotes illustrate:

“Personal relationships. You can write a contract. I could write a contract, but will the people work for you or will they work for me? The decision will be made on who has the better relationship.”

S1

“There are all those little things, I think. But being fair, reasonable I think goes a long way and treating them well”.

S2

“The Filipino guys they come here, and they just want to work, work, work, and go to church. We just make them part of the company group family I suppose. Just treat them like they are permanent employees. Treat them with respect and they get on well with people.”

S6

“We try to include them I guess more like family members. We know them all individually. We know their names and where they are from and all that. We don't run a business where our employees are like numbers. We are visible as well. As management, we are often out on the site, so they see us, and they know who we are. We are not just strangers sitting in an office.”

S8

“We are a family-based company so those family values I think that we have; we try and include that within our culture as well. Our guys are really important to us. We try and do a lot of things outside of work as well, social things as well.”

S9

8.2.6 Workforce wellbeing and welfare strategy

Workforce wellbeing is pivotal for the long-term effectiveness of an organisation. There is a growing understanding of the importance of the social context of work in construction within the investigated companies. The investigated companies are developing practical workforce wellbeing mechanisms to ensure sustained organisational performance. This organisational ethos stems from the realisation that the most valuable resources within their organisations are human resources. The strategy adopted by these companies aims to impart a sense of wellbeing within the workforce. The investigated companies are increasingly committed to their workforce's needs, which often extends to lifestyle issues along with organisational ones. For instance, high-calibre workers are provided with health insurance that further bolsters the relationship between the employers and the staff. More importantly, sufficient opportunities for rest and recovery are provided to employees of all

levels to boost employees' wellbeing. The interviewees also emphasised the importance of creating a family culture in the workplace. Interviewees S5, S9, and S13 put it:

“We look after them. We make sure that they're taken care of, they're well rested. We have a support mechanism to deal with any health issues.”

S5

“No because it is not like that, it is more of a family culture. It is knowing our people on a relationship basis. We understand them and what is happening in their lives; are they having a baby, did their dad die, what's happening and then investing in them like giving them time away or dropping off some grocery vouchers if somebody has a baby or something like that. My father takes an active role in going and visiting people, so he will turn up on site and he will take a man away and just go and have coffee with him and just talk. It is letting them know that they are people and we hear. They have a direct link to the owners of the business and that is a feeling of not just being a number.”

S9

“To some employees, the ones we really consider to be key staff - we offer medical benefits but it's not universal in the company. We try to have social functions; say we send them on training courses; they might just generally try to create an environment where the people feel happy. We try to be considerate; they have family problems and things; because sometimes we know somebody has got a problem that they don't talk about it, which you fully understand.”

S13

8.2.7 Workplace environment

The workplace environment is the primary determinant of the workers' quality of work and their productivity. The case study subcontractors unanimously endeavour to generate holistic wellbeing within their workers through a congenial workplace environment. Some companies perform the aforementioned through social engagement, and others provide career development opportunities (e.g., training). The organisations develop a balance between the monetary and non-monetary incentives that enable the workers to gain and apply the necessary skills in a coherent, consistent, and continuous manner. The following

quotes illustrate the interviewees' efforts in creating a motivating work environment for the employees:

“We work very hard on our culture and make it a decent place to work and giving our people training, career pathways, support, bit of empathy when they have got family issues; we try to be a good employer in that regard.”

S6

“I think it's a working culture, a good flick through. I don't know, I think of the big experienced guys who tend to look after them and have a good - it's a good place to work.

“We have a shout once a month; had it last night actually. We have a boss's shout on the last Thursday of every month which is a barbeque and a few beers for the boys.”

S7

“We try and create a really collaborative environment. We put a heavy emphasis on our staff and their wellbeing. We try to pay them well and we try to give them good conditions.”

S8

“But for most of the people it's not about the money, it's about the people they work with, the culture of the company - just the general feeling about everything; and sometimes people for any reason you can't understand they just had enough and they go. Money is not the cause of it, it's the root of a problem, in most cases because you can't buy people's affections.”

S13

8.3 Workforce performance management

The investigated companies perceived performance management as a process for improving organisational performance. In its broadest sense, workforce performance management concerns developing and managing the employee's performance within an agreed standard. The following section discusses the organisational performance management process to monitor employees' performance.

8.3.1 Performance review

The case study companies perform reviews to measure workforce performance. In the event of any divergence from the expected achievement, the organisations provide additional training so that the required and desired (by the workers) skillset is imparted. In specific, one interviewee, S7, explained the process of performance appraisal in the workplace:

“Yes, once a year. Sit down with them one-on-one and go through everything that they do. I do the people underneath me and then they do the people underneath them, but yes, we have a yearly review; and that’s where they have a chance to - well, we let them know how they’re going: strengths and weaknesses. And then they have an opportunity to tell us what they want to do.

It’s a good open forum for people to say, “Hey, I want to learn that machine,” or, “I want to come into this position. It is a good formal way of doing feedback rather than just saying to someone, “You’re doing a good job.” If you can sit down one-on-one like this and go, “Hey look, you know; really happy with this, this, this and this, here is an area you could improve on. Is there anything you want to enable you to do your job better?” And they might go, “Well, to be honest I can’t read and write properly, can you help me with that?” Or whatever, and we will help them.”

S7

The investigated subcontracting companies engage their workers with periodical reviews, with increased frequency, which assess their performance against a particular set of jobs. Most of these performance reviews are constructive, enabling the workers to further their careers and achieve better incentives. This practice is ultimately beneficial for organisational performance, as it continually reduces the problem of skill shortages. For example, one interviewee, S4, said:

“Every year and then some guys we do a six-monthly one as well. We do our reviews in March, if we reviewed someone and then they’d stepped up really well, they’d become a junior operator moved into a senior role, you might say, “You’re going really well, we’ll lift you up, give you a pay rise and then we’ll review it after another six months,” whereas 12 months would be too long.

We do that with a few guys. I've got a couple of those to do next month and six months just come up which is good."

S4

Although the case study companies realise the importance of performance reviews in developing their workforce, some of them expressed that they face challenges in creating an effective communication route with their employees. Since the appraisal is associated with career advancement and pay awards, it was observed that employees might not feel it is in their best interests to be open to aspects of their jobs with which they have struggled. However, the situation is still progressive since the companies are committed to improving the current skill-base of their workforce through training and developmental practices. One interviewee, S13, explicitly stated:

"Yeah, we have an annual review. We sit with the employees and we ask them how they're doing, how they think they're doing, is there training they would like, do they watch their ambitions for themselves? To be honest with you it can be very difficult because most of them, to be fair; they're just very hard to draw them out, they don't want to say a thing; they come in, they feel uncomfortable, they don't want to speak. We try to draw out of them if there's anything they would like to be become. Some of them are open and talk about what they'd like to do; and if they have training that they want to undertake, and they think that they're going to be good at it then they're ready to undertake the training. We'll arrange it for them."

S13

The interviewed companies conduct performance reviews against a set of particular goals. This enables the subcontractors to make an informed judgment regarding the workers' potential, skills, personal desire, and self-expected performance. The performance reviews ultimately enhance the performance quality, which positively affects the organisational goals and aids in keeping the business afloat. As one interviewee, S8, put it:

"Obviously we work quite closely with them about what their self-evaluation results and views are. We will set a plan and set of actions and place following the review. It may mean that they are reviewed more often and assessed against some criteria or we set them some goals, or they set some goals for themselves.

We also measure their performance in a monetary way as well; whether the job's actually profitable. There are other construction-

based tools for doing that. So, it's literally whether they are bringing things in on budget and things in on time. If they are not; we sit down, and we work out why. Whether there's a problem with the estimate or the budget or whether it's something they could have done better or whether there's mistakes made. We evaluate it that way as well."

S8

8.4 Dynamics in workforce retention and performance management

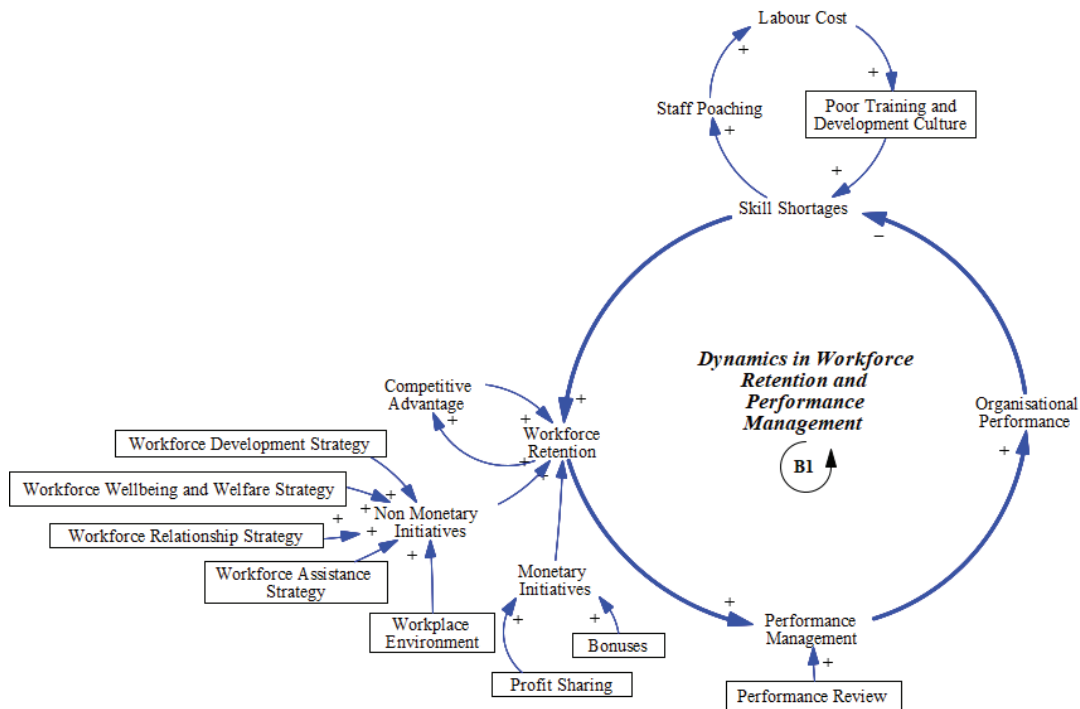


Figure 8.1 Dynamics in workforce retention and performance management

Table 8.1 Loop in workforce retention and performance management dynamics

Loop	Description
B1	Skill Shortages-Workforce Retention-Performance Management-Organisational Performance-Skill Shortages

The different factors that affect the retention and performance of the workforce are presented in a causal loop diagram in *Figure 8.1*. The relationships between these factors and how they affect each other are shown in Loop B1. Staff poaching and shortages in trade skills are two factors that go hand in hand. In order to concurrently curtail skill shortages and the loss of qualified staff to other companies, organisations are focussing more and

more on their retention strategies. The same has been revealed in the case study organisations in the aftermath of the Christchurch earthquakes. In order to retain staff, the investigated companies offer attractive remuneration, good welfare benefits, training opportunities, and employee-friendly workplace environments. In addition, constant communication and feedback were embedded in the workplace culture.

The fear of the employees being poached has greatly discouraged most investigated construction companies from investing in proper training programmes. This apprehensiveness results in staff that lack the core competencies for a particular set of jobs. Poaching practices also aggravate the factor of increased labour costs, as qualified candidates are becoming highly sought-after entities. Increased labour cost directly influences skill shortages as companies undergo financial pressure to hire appropriate employees.

The investigated companies strive to adopt retention strategies for their workforce and enhance their competitive advantage over other organisations. This competitive advantage can be manifested not only by fulfilling the workforce requirements but also by their retention. The core idea of workforce retention is to provide proper incentives to stimulate and facilitate the staff to further the organisational goals. These incentives can be both monetary and non-monetary. The non-monetary incentives are focused on providing job satisfaction to the employees wherein they feel appreciated within the organisation.

Results from the case study investigation suggest that training and development is one of the most practised non-monetary retention strategies. The subcontracting companies interviewed in this research provide workforce development, albeit some being informal. However, the organisation should be abreast of the workforce's potential and aspirations and tailor the development programme accordingly to achieve the organisational goals. A continued effort to impart training and development in the workforce is directly proportional to the company's success. This practice results in a higher company reputation which consequently attracts simultaneously qualified and satisfied employees. Therefore, workforce development directly impacts their retention positively by inhibiting staff turnover.

The case study investigation found that organisations try to involve their workforce in programmes that essentially keep them happy. These include providing employees with medical benefits, a social platform for enhanced interactions, and creating an environment that stimulates a family culture. This recognition of the well-being needs of the employees bolsters the staff-organisation relationship, which consequently and positively leads to higher workforce retention. Creating a mutual relationship between staff and employers fosters an understanding of the duties and responsibilities towards each other. Organisations try to maintain relationships between managers and staff and nurture lateral relationships between peers. Developing and maintaining such relationships within an organisation drive successful workforce retention.

Another non-monetary strategy for workforce retention is assisting employees so that their transition into the new workplace becomes smooth and stress-free. From the case study conducted, it was revealed that companies provide accommodation and financial loans for international workers during their initial setting-in period. This effort increases the confidence of the staff towards the organisation and, as a result, reinforces workforce retention. Finally, providing a safe and healthy work environment is critical to ensure the retention of the workers. The organisations make the work environment more cordial through social events, personal support, and empathy. In particular, creating a better environment reflects the company's overall culture, supporting collaborative efforts and endeavouring to gain the employee's affection.

The other aspect of workforce retention is providing monetary incentives, which is more popular amongst the investigated construction companies. These companies managed their reward system mainly through higher salaries and increased perks. Some companies support their retention strategy through profit-sharing, wherein the employees can avail of bonuses from the company's overall profit and individual performance. The companies could also assimilate the workforce into the organisation if their bonuses were high enough to hold shares and, consequently, become partners.

The strategies that provide methods for workforce retention collectively facilitate performance management. Performance management involves establishing working standards that are continuously monitored and supported to ensure the organisation

progresses towards its strategic goals. Assessing the individual performance of employees is an important tool for effective performance management. In most cases, construction companies assess the performances of the staff on an individual basis by assessing the fulfilment of their targets. This process is usually done by a formal review of the individual or collective performances against a set of objectives. Nevertheless, performance management enables the employees (individually or in groups) to fulfil their duties and achieve their targets/objectives with improved efficacy. This consequently leads to the eventual improvement of organisational performance, allowing the company can accomplish its strategic goals.

8.5 Summary

Research results have shown a similar approach to securing employees' loyalty. The drive to actively retain capable workers stems from apprehension towards staff poaching coupled with the inherent skill shortages in the construction market. It was observed that the investigated subcontracting businesses place particular emphasis on initiating recognition and rewards systems. This includes providing attractive remuneration packages, good welfare benefits, training and development, communication and feedback, and an employee-friendly workplace environment. Additionally, an inclination towards non-monetary rewards is apparent, implying assimilation of long-term thinking into creating effective workforce retention systems. Non-monetary rewards target the psychological aspect wherein programmes are devoted to imparting job satisfaction and holistic workforce wellbeing.

On the other hand, extrinsic reward systems rely on monetary supplements that diminish staff turnover. This research has shown that a proper balance between monetary and non-monetary incentives is more beneficial in reducing turnover and increasing employee affection, thereby presenting the company culture in a positive light. This research confirms that retention is associated with workforce development. Indeed, workforce retention is a by-product of proper training and development. The extent to which workforce retention is causally associated with workforce development will be discussed in the subsequent chapter. Finally, the investigated organisations undertook staff performance reviews to ensure that organisational objectives were accomplished with heightened efficacy. This

chapter also presents a causal loop diagram (CLD) where the positive inter-relation between rewards, retention, and performance is evident. Taken together, this research highlights the distinctive shape of retention and performance appraisal practices in the context of the complex employment that characterises the post-disaster environment.

Chapter 9

Subcontractors' Workforce Development Strategies

9.1 Introduction

This chapter discusses the dominant components of workforce development in a sector synonymous with workflow asymmetries, recurring skills shortages, competitive tendering, and informality in people management practices. These characteristics hamper most construction companies from implementing human resource development (HRD). Therefore, informal developmental opportunities take precedence over strategic HRD practices that dominate the literature. Given that subcontractors largely represent the construction industry, there remains a paucity of evidence describing the adoption of HRD in subcontracting businesses. This chapter reveals the workforce development initiatives adopted in subcontracting businesses through a series of case studies. Following this, the benefits of these initiatives were reviewed. A subcontractors' guide to workforce development is then illustrated in the form of a causal loop diagram (CLD), aimed at assisting subcontracting businesses in building their core competencies. The results were presented and discussed under two main headings as follows:

1. Workforce development initiatives in the case study subcontracting businesses;
and
2. Impacts workforce development on business performance.

9.2 Workforce development practices

Training and development have been a particular focus across the investigated subcontracting businesses. Indeed, the investigated companies view training and

development as part of the employer's responsibilities in building a sustainable skill base. On this, one of the interviewees, S7, stated:

“We need to do it as an industry. You can't always look at the company itself. You need to look at it as an industry-wide thing. The industry as a whole, needs to train their staff and look after their staff and make their staff better. That's the pool we've all got to work from so we might as well make the pool better. Then whatever we get out of it is for a period of time.”

S7

The interviewees agreed on the importance of workforce development and positioned training provision as one of the standard procedures in their workforce development strategy. In creating an aligned workforce capacity with the corporate organisational strategy, the rationale for implementing skill development initiatives must be clearly stated to the workforce. Therefore, the workforce has to be well-informed of the organisation's expectations, processes involved, and the workforce roles in realising the organisation's objectives.

9.2.1 Provision of work-based training

In all cases, the interviewed employers value training of their staff in order to keep them abreast of the necessary skills and equip them with health and safety knowledge. The investigated companies feel the need for continued and sustained training instead of a fast-tracked one. The employer views the step-by-step training to be more effective in imparting skills that would be perpetual and create a workforce with adequate knowledge. This practice will also ensure that the organisations remain devoted to the desire to improve their staff. The permanent staff are subjected to several developmental in-house courses that possess official accreditations and are delivered by external training agencies. One interviewee, S6, commented:

“We do a lot of compliance training and development training. We put them through courses. Any courses they need to keep themselves safe or do their job better, we sort of put them through it. And for our permanent staff we do a lot of personal development training. The 'first line management for future leaders' is a course we put people on. We do courses on; in-house courses called Beating the Paper War;

Questions and Answers and Building the Teams which is basically leadership development for small crews. So, we do that. It's an in-house training but it's developed by an external supplier. Its NZQA accredited so it's a proper course. So that's the sort of stuff we do."

S6

Certain employers focus on identifying high calibre workers, who are then introduced to leadership development programmes. These types of concentrated training and development ensure further enhancement of workers' skills and the allocation of appropriate incentives. As one interviewee, S5, put it:

"We identify the potential ones for development. If you've got a bunch of guys working there, my guys on site will soon say to me, "That fella there would be a good leader." So, we will develop him as a leader and pay him accordingly."

S5

The investigated organisations also focus their attention on workers that exhibit the potential to become future leaders. Additionally, it was observed that interviewed employers are dedicated to providing internal training that would enhance the current skills of already competent staff. One interviewee, S7, stated:

"We do a lot of stuff in-house with Leadership New Zealand, so it's growing guys into leaders; so guys that are new leaders or want to be a leader or have got potential to be a leader or a current leader has some skill gaps then we do a lot of that training."

S7

The current skill level of workers determines the type of training that they will receive. These training programmes, mostly in visual form, illustrate the correct solutions to a particular job and show the appropriate background and processes. For example, interviewee S11 said:

"You've just got to keep training, bring the people on, and train them. You're just trying to check their level of competency. We're just starting a new training system where they get an induction, which is going to be a video of the system, which is about an hour and a half. We then train them in each small area and try and build them up slowly. It's not something that they're going to get trained in in six

months. It wouldn't be six months. To get somebody to be proficient it would be a couple of years at least to get them up to a standard where we could class them as a fixer, a general fixer."

S11

The case study subcontracting organisations are aware of the lack of education amongst the majority of construction workers. The employees, therefore, are subjected to experience-based training that improves their academic skills. One subcontractor, S3, explained:

"Most of them leave school when they're 15 because they didn't want to do paperwork. Some of the guys. I've got struggle with writing and reading skills. You've just got to train them through experience really."

S3

Owing to the lack of formal education amongst the construction workers, the investigated organisations are inclined to provide academic training through periodical courses. Subcontractor S7 elaborated:

"We do literacy training with our guys whether it's verbal literacy or written skills or comprehension skills; we do a lot of that. We have around 50 staff currently doing four hours a week for ten weeks to improve them."

S7

Some organisations lack confidence in external training agencies because of the technical nature of the delivery. These employers are apprehensive that the workers would not be exposed to real-world scenarios, which are more prevalent in the construction industry. Interviewed subcontractors commented:

"The only way to learn is by doing it more. It is a very old-fashioned way."

S3

"The external training for our industry, I wouldn't say is non-existent but I would nearly say it is a waste of time. The only way that you will learn is from someone that is good. There's a difference between a teacher and a doer; a lot of the time the teachers know the practical side of it and they know what's written in a book. Unfortunately, it

involves probably a lot of yelling and a lot of swearing which you don't get in a general training environment."

S10

"For what we do, the problem is there is no one that can train to actually upskill them on how to do their job better. The only way to train a guy to operate a digger better is by having someone that is really good operating it. That, and it is time in the seat. You can upskill them on paperwork or you can upskill them health and safety wise.

But, realistically, to make them a better worker you need someone that is a good hard worker teaching them. That is the only way that you can realistically do it. No offence to most of the people that are trainers, but they are generally training them because they are not that good at doing it themselves. We have to send our guys for licences for their wheels, tracks and rollers, stuff like that."

S13

9.2.2 The culture of coaching and mentoring in the workplace

Most of the investigated companies provide on-the-job training by forming small groups of new employees whose skills and capabilities complement each other. One interviewee, S7, said:

"We've got site managers on each site and then we've got leading hands under the site managers, so we try and build teams up so that the team moves around as opposed to individuals so you get a group of three of our people that work well together so we'll move that group around so that they are happy and they're confident in each other's abilities so that they can go as a group, a team, and do the work."

S7

The interviewed companies seem to integrate some form of a mentorship programme, albeit not formal, which relies on the transference of skills and knowledge from an experienced and competent staff member to new employees. Therefore, these companies attempt to incite workers' enthusiasm and efficiency through on-the-job mentorship. Interviewed subcontractors remarked:

"We have a mentoring system. It's probably not a formal system of mentoring, but we have a couple of older guys, they're my age,

probably in their middle sixties and they go around, and they help people to try and do their work better, the younger ones.”

S4

“We try to always make sure that we put the new employees with an experienced employee so that there is a sort of - because you can't control; well, you have to try and control the operations to tell you that all but you can't be standing with the man all day watching what he does. So, we have an experienced foreman; we try to put the new guys with the better foreman, because everybody's got different abilities, and some people can't teach, is a problem. Some people have knowledge but it's very difficult for them to relay that knowledge to other people, good themselves but it's also having the people - the foreman we know will train the younger people, not just shout at them.”

S13

9.2.3 Apprenticeship opportunities

Some investigated organisations offer formal apprenticeships by employing 16 to 24-year-olds enrolled in an industry-recognised qualification (i.e., NZQA-accredited qualifications) in New Zealand. These programmes consist of self-paced workbooks with modules related to practical work on site. The New Zealand Building and Construction Industry Training Organisation (BCITO) monitors these employer-led training programmes to ensure their currency and relevance in meeting the industry's skills standards. Trainees will be awarded a diploma after successfully completing the apprenticeship programme. Nearly half of the interviewed employers (i.e., 46 per cent) agreed that apprenticeship programmes help them recruit and develop highly skilled employees. For example, interviewees S9 and S12 reported:

“We train apprentices, so they come straight from school some of them at 16 or 17. Then they do an apprenticeship with us and potentially stay on as tradespeople. We have a variety of different age groups. There is a formal apprenticeship scheme which is run by BCITO in conjunction with our own staff.

We set up training systems. It's a four-year apprenticeship for the guys. We always have had a pretty active apprenticeship scheme. We have trained a lot of carpenters over the years and at the moment I think we have out of around 60 staffs probably ten apprentices as different

levels; some have just come straight from Polytech or school, so brand new, and others are just about to complete their apprenticeship.”

S9

“To be perfectly honest, it’s a slow process but that has been one of the best recruitment tools to train our own guys. Train our own staff and then we know that they are getting a good training and good apprenticeship.

They know what they are doing. They are reliable and most of them will stay on afterwards and be good. We know that we are getting great employees at the end of it if we’ve trained them. But there is quite a lot of effort and cost that goes with that. But that has been one of the best recruitment tools for us.”

S12

The companies' confidence in these competency-based training programmes positively correlates to higher organisational output because of increased workforce productivity. The investigated companies amalgamate apprenticeship programmes with on-the-job mentorship. In specific, these companies allow apprentices to gather guidance from senior staff members. Under continued supervision, the apprentice attains encouragement, knowledge and, finally, proficiency. One subcontractor, S11, commented:

“In the first two years or first half of an apprentice’s training you are probably at a nett loss I would say as far as productivity. They are constantly needing supervision so therefore you need to put a tradesperson with them to be able to train them. I would say up to half way through it probably costs the business money. After the two years they become more productive and then they start becoming quite good.”

S11

The interviewed companies collectively agree that the benefits of training and development of employees outweigh the cost. This is because the training and development stimulate workforce performance, earnestness, and passion that guarantee their retention within the organisation, in particular, and the construction industry, in general. In one case, the interviewee elaborated:

“The senior foreman looks after them. He teaches them, and they’ll do different modules of work blocks where the senior foreman has to sign

off work. By the end of three or four years they have qualified fully to be doing the job themselves.”

S13

9.2.4 Work diversification opportunities

The organisations train their workers on an array of machines, instruments, and teach them numerous techniques. The knowledge gained from this type of work diversification practice is universal and, thus, allows the worker to be successful in any construction industry, regardless of the region. Additionally, this work diversification instigates workforce development and, in turn, enhances organisational performance. Interviewed subcontractors explained:

“That’s about it on the site; in the factory, we offer them to learn new machines and get signed off on those new machines, and once again, that’s something they can take home with them. Wherever else in the world they end up, they can then go, “I can work this machine, this machine, this machine, and this machine. And here are my training records, etc.”

S7

“I think a lot of it comes down to the type of work they are doing and giving them some variety. The fact that we do have a diverse sort of range of work allows guys to work in areas they enjoy.”

S8

9.3 Impacts of workforce development on business performance

The interviewed companies adopt similar strategies in developing their workforces. These companies perceive training and development as catalysts for continuous improvement in an organisation. In this section, the correlations between the organisations’ development initiatives and business performance were thematically discussed as follows:

1. Greater workforce retention;
2. Increased workforce productivity; and
3. Improved organisational performance

9.3.1 Greater workforce retention

The creation of a synergistic organisation to ensure organisational performance hinges upon a productive workforce. The interviewed companies concurred that workforce developmental practices impart enthusiasm and efficacy in the workers, which manifests in their retention. The companies realise that the retention of a skilled workforce is directly proportional to organisational performance.

The case study companies employ retention strategies through incentives and career developmental opportunities, which nullify staff turnover. Owing to the skilled employees being vital to organisational performance, the companies strive to achieve their loyalty through the aforementioned methods. One subcontractor, S12, said:

“It’s definitely effective and then there is more chance of them sticking around as well. That’s probably why I retain a lot of our staff, is that they started with us. We have trained them up from the start and given them a lot of training and they’re really good guys and they will be good. Because they have been with us from the start, they are more likely to be a bit more loyal to me and not jump around so much, which is good. They can see that the guys that are above them are getting well looked after and do get perks, so they have got something to work towards.”

S12

9.3.2 Increased workforce productivity

The interviewed companies observed increased workforce productivity as a result of adequate training and development. This practice has driven organisations towards competitive readiness. Therefore, it is clear that workforce development creates skilled and competent employees that display eagerness and efficiency. Interviewed subcontractors, S2 and S7, remarked:

“You see quite an improvement in the person when you give them training and they achieve and are competent at it. A big difference.”

S2

“We have improved a lot in the last year; our guys are lot better than they were.”

S7

9.3.3 Improved organisational performance

Ninety per cent of those who were interviewed underscored that adequate training and development contribute to improved performance. In specific, subcontractors S11 and S13 noted:

“Yes, the quality of work is improving by us making the teams smaller and probably more highly qualified. We are not getting as much re-work. The re-work is where you frequently lose your margin out of the whole job.”

S11

“But the strength of our company being able to go to work and work professionally and produce quality, is based on having people that we know and trust. So training is good for them in helping the sense they’ve learnt something, and secondly in the sense that they understand the company cares about them, wants to provide.”

S13

According to one of the interviewees, S10, putting people first is the key to a profitable and successful business.

“If you have got happy staff, you have got a good business. If your staffs are unhappy, they don’t care, so they don’t try and make the business money, and they don’t try and look after the equipment. We have found if the guys are happy, the cost of breakdowns and equipment damage is down a lot. Whereas, if they are negative and you have got that disease that is going through, when we have some times like that, our damage costs for repairs and maintenance goes up quite a lot.”

S10

Another interviewed subcontractor, S8, backed this view and emphasised the importance of having skilled employees on board, as the following quote illustrates:

“But ultimately, I think it’s having a really close eye on the management of the business. That’s across all areas including human resource as well. We are only as good as our staff. You need to have

really good people on board. That's ultimately what we've built our business on is good people. Good people produce great work and work well with clients and ultimately get a better job done."

9.4 Dynamics in workforce development

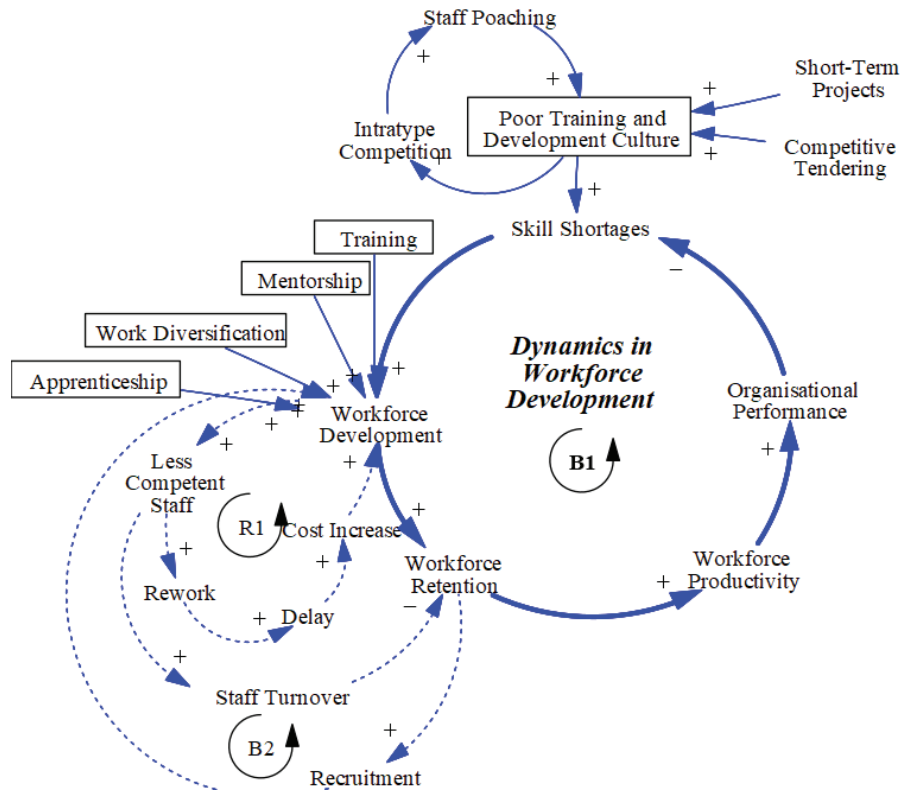


Figure 9.1 Dynamics in workforce development

Table 9:1 Loops in the workforce development dynamics

Loop	Description
B1	Skill Shortages-Workforce Development-Workforce Retention-Workforce Productivity-Organisational Performance-Skill Shortages
B2	Skill Shortages-Workforce Development-Less Competent Staff-Staff Turnover-Workforce Retention-Recruitment-Workforce Development-Workforce Retention-Workforce Productivity-Organisational Performance-Skill Shortages
R1	Skill Shortages-Workforce Development-Less Competent Staff-Rework-Delay-Cost Increase-Workforce Development-Workforce Retention-Workforce Productivity-Organisational Performance-Skill Shortages

Figure 9.1 shows the dynamics in workforce development efforts from the case study investigations. From *Figure 9.1*, two balancing loops (B1 and B2) and one reinforcing loop (R1) have been generated. *Table 9.1* presents the relationships among the variables present in the loops. Referring to Loop B1, skills shortages have been a persistent issue afflicting the construction industry. This problem is mainly brought about by the inadequate training and development culture since many construction companies are apprehensive of losing qualified candidates due to intra-organisation competition and staff poaching. On the other hand, the spatial dispersion of construction sites and the fleeting nature of construction projects pose a problem for implementing formal HRD programmes.

A way to counter the persistent skills shortages in the construction industry is to adopt and implement an effective workforce development programme. This can be done by formally training the workforce to acquire certified qualifications (from, for example, The Building and Construction Industry Training Organisation, New Zealand Certified Builders, and The Skills Organisation New Zealand) and/or availing courses offered by local tertiary institutions. Training of an informal nature includes job shadowing, induction programmes, and encouragement for innovation. Mentorship is another method applied to enable employees to gather guidance, knowledge, and encouragement from senior staff. The investigated construction companies assign new employees with experienced ones so that the transmittance of skills and knowledge can ensue. Work diversification could potentially lead to workforce development since employees are trained on a variety of techniques, instruments, and machines. Therefore, staff skills are made versatile, rendering them valuable for several job types. Initiation of an apprenticeship programme is another technique for developing the workforce.

Research findings revealed that investigated organisations absorb young candidates as apprentices. They are provided with continual training on the job until they achieve the required skills. Usually, the apprentices are supervised by a senior staff member of the organisation. Apprenticeship is an effective method that simultaneously trains, develops, and assimilates the workforce into a company. The development of the workforce positively affects its retention, whereby the employees display enthusiasm and efficiency. Details about the different aspects of workforce retention are provided in *Figure 8.1*. From the interviews conducted in this study, it is clear that employees are pivotal for enhancing

productivity and, consequently, the company's competitiveness. Increased organisational performance restrains the effect of skill shortages while sustaining a greater business resiliency.

Loop R1 demonstrates how other factors can stimulate a company to embrace workforce development systems. Without a suitable training and development programme, the employees would lack the skills required to perform a particular set of jobs. For this reason, construction companies consider the identification and eventual retention of skilled workers to be of utmost importance for maintaining their organisational competencies. The lack of competent staff would increase the possibilities for error and, as such, rework. This situation, in turn, would cause a delay in the completion of the particular project, and the company would struggle to meet its budgetary constraints (e.g., cost increase) amidst an expanding market. All these factors are unfavourable for the realisation of organisational goals and, hence, they should stimulate the application of workforce development programmes.

The balancing loop, B2, presents how the desired action of workforce development could be realised through some motivating factors. Staff turnover is one such factor, which is a result of employees lacking the necessary skills. Small and large construction companies consider staff turnover to be extremely detrimental to their business. This is because the investment in staff turnover is far higher than that used to retain a qualified worker. Hence, staff turnover negates all the methods adopted by the organisation for their retention. Such a situation drives the organisation to recruit and, subsequently, develop the new recruits. The factors affecting the recruitment and selection of the workforce were detailed in Chapter 7 (see *Figure 7.4*). However, the knowledge of the unfavourable results of untrained and unskilled workers should prompt organisations to carefully adopt techniques that would develop the skill base of the workforce. Workforce development is directly related to the measurement of holistic organisational performance, which involves identifying employees' abilities and utilising them to enhance organisational productivity.

9.5 Summary

This chapter reports on empirical work conducted about the effectiveness of workforce development initiatives in subcontracting businesses operating following the Christchurch earthquakes. Research findings showed that there are four developmental mechanisms employed in the investigated companies. This includes training, mentorship, work diversification, and apprenticeship. The utilisation of these competency-based approaches indicates a positive association with workforce retention, workforce productivity and overall organisational performance. This association is presented in a causal loop diagram, capturing the culture of workforce development within the investigated subcontracting businesses and its impact on their business performance. However, these positive outcomes are best viewed as tendencies rather than achievements, driven predominantly by casual development practices. These results are indeed a manifestation of the importance of allowing greater flexibility in production and skills utilisation. From an empirical perspective, hard evidence on linkages between casualisation practices and skills reproduction is scarce. Therefore, further investigations into structuring the HRD architecture in construction SMEs are relevant. The subsequent chapter outlines guidelines for establishing HRD as a performative lever in construction companies.

Chapter 10

Discussion

10.1 Introduction

The previous chapters (chapters 6, 7, 8 and 9) have extensively addressed four workforce resourcing functions in subcontracting businesses. This includes an individual clusterisation of workforce resourcing planning, workforce recruitment and selection, workforce retention and performance management, and workforce development to suit small and medium-sized subcontracting businesses. In this chapter, as an aid to the discussion, causal loop diagramming (CLD) was employed to systematically depict numerous factors that affect subcontractors' workforce resourcing structures. The amalgamation of all four workforce resourcing dynamics offers a holistic view of the entire workforce resourcing structure within which small and medium-sized construction companies operate. Additionally, it allows subcontractors to realise the various virtuous and vicious cycles governing the workforce resourcing system. Each reinforcing and balancing loop is described in detail, providing further insights into the interconnectivity of the workforce resourcing system. The principles enshrined within this approach are twofold; first, to understand the links between workforce resourcing elements and organisational performance; and secondly, to lessen the prevalent issue of skill shortages through proper workforce resourcing. Based on these principles, the best practice guidelines for workforce resourcing in subcontracting businesses are detailed as recommendations for best practice workforce planning, recruitment and selection, retention and performance management, and workforce development.

10.2 Workforce resourcing dynamics in small and medium-sized construction businesses

Causal loop diagramming was used in this research to indicate the dynamics between different components of workforce resourcing. *Figure 10.1* shows the dynamics in workforce resourcing. This diagram is developed by integrating the causal loop diagrams presented in [Chapter 6](#) (Workforce Planning), [Chapter 7](#) (Workforce Recruitment and Selection), [Chapter 8](#) (Workforce Retention and Performance Management) and [Chapter 9](#) (Workforce Development). This integration forms eight reinforcing loops (R1 through R8) and four balancing loops (B1 through B4). The description of the loops is presented in [Table 10.1](#). Each loop is thematically discussed in the following section.

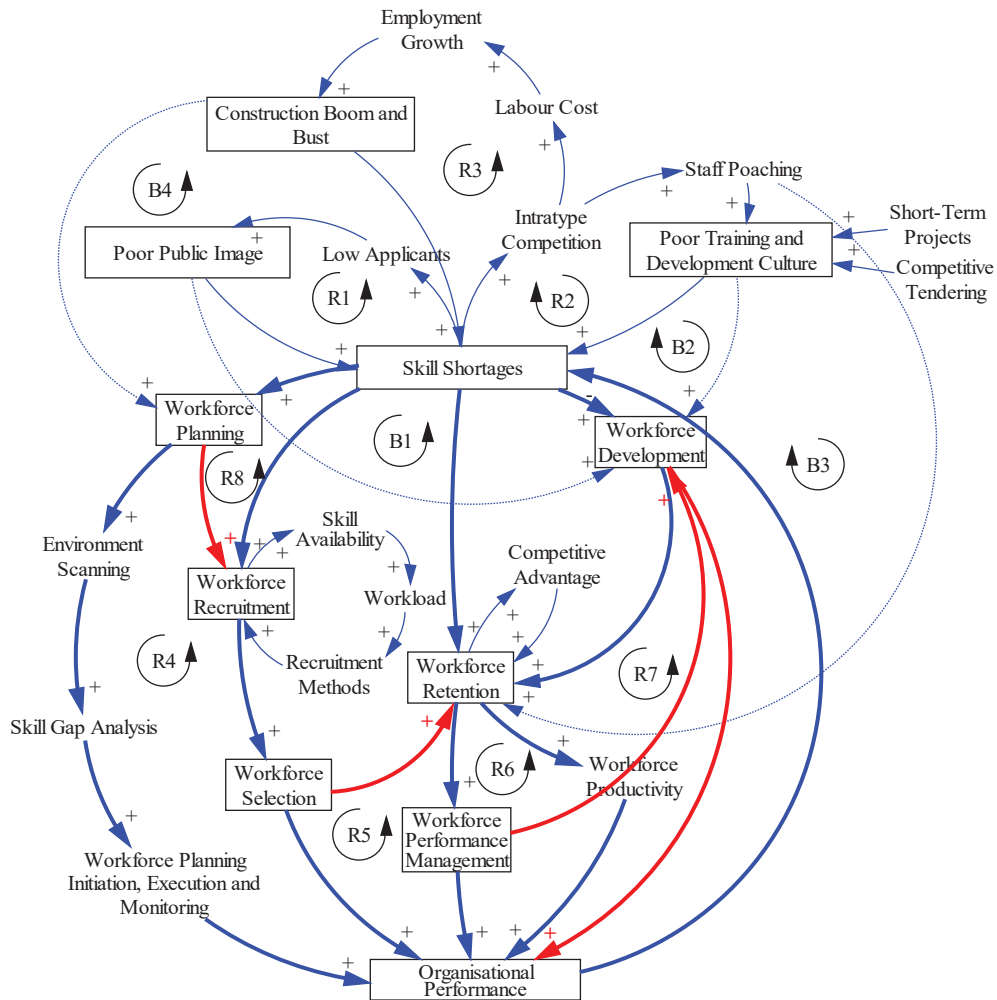


Figure 10.1 Dynamics in workforce resourcing

Table 10.1 Loops in workforce resourcing dynamics

<i>Loop</i>	<i>Description</i>
R1	Skill Shortages-Low Applicants-Poor Public Image-Skill Shortages
R2	Skill Shortages-Intrate Competition-Staff Poaching-Poor Training and Development Culture- Skill Shortages
R3	Skill Shortages-Intrate Competition-Labour Cost-Employment Growth-Construction Boom and Bust- Skill Shortages
R4	Skill Shortages-Workforce Planning-Environment Scanning-Skill Gap Analysis-Workforce Planning Implementation and Monitoring-Organisational Performance-Skill Shortages
R5	Skill Shortages-Workforce Recruitment-Workforce Selection-Organisational Performance-Skill Shortages
R6	Skill Shortages-Workforce Retention-Workforce Performance Management-Organisational Performance-Skill Shortages
R7	Skill Shortages-Workforce Development-Workforce Retention-Workforce Productivity-Organisational Performance-Skill Shortages
R8	Skill Shortages-Workforce Planning-Workforce Recruitment-Workforce Selection-Workforce Retention-Workforce Performance Management-Workforce Development-Organisational Performance-Skill Shortages
B1	Skill Shortages-Low Applicants-Poor Public Image-Workforce Development-Workforce Retention-Workforce Productivity-Organisational Performance-Skill Shortages
B2	Skill Shortages-Intrate Competition-Staff Poaching-Poor Training and Development Culture-Workforce Development- Organisational Performance-Skill Shortages
B3	Skill Shortages-Intrate Competition-Staff Poaching-Workforce Retention- Workforce Performance Management-Organisational Performance-Skill Shortages
B4	Skill Shortages-Intrate Competition-Labour Cost-Employment Growth-Construction Boom and Bust-Workforce Planning-Environment Scanning-Skill Gap Analysis-Workforce Planning Implementation and Monitoring-Organisational Performance-Skill Shortages

10.2.1 Loop R1

Skill Shortages-Low Applicants-Poor Public Image-Skill Shortages

Loop R1 shows a vicious cycle wherein the perennial issues of skill shortages in the construction industry is aggravated by the dwindling number of applicants (Mackenzie et al., 2000; Clarke & Herrmann; 2007; Sedighi & Loosemore, 2012; Kim et al., 2020; Bigelow et al., 2021). This demographic decline in the size of the workforce entering the labour market negatively affects the industry's image (Dubois & Gadde, 2002; Dainty et al., 2003; Loosemore et al., 2003; Dainty et al., 2004; Ho, 2016; Bigelow et al., 2021; Welfare et al., 2021). This poor public image creates skill shortages in the construction industry (Dainty et al., 2000; Loosemore et al., 2003; Chan & Kaka, 2007; Clarke & Herrmann, 2007; Forde & MacKenzie, 2007; Ginige et al., 2007; Swanson & Holton, 2009; Haupt & Harinarain, 2016). The same issue has been revealed in the investigated organisations wherein these companies face difficulties attracting (mainly) young recruits

owing to careers in the construction industry being unappealing. One interviewee, S10, commented:

“There’s a huge lack of young people coming into our industry and it’s a career but at school it is not being highlighted that you can have a career as a digger driver or a truck driver. To be honest, I’ve got an operator who is 27 years old, he’s on \$100,000 a year, plus a vehicle, plus a phone.”

S10

The majority of participants indicated that unskilled workforces plague the Christchurch construction industry. Skills mismatch was, therefore, a critical issue faced at the organisational level. The 3D (dangerous, demanding, dirty) perceptions of the construction industry have contributed to the declining popularity of construction careers. The industry retains a low number of applicants, particularly among the millennials. This situation further aggravates the construction industry’s skill shortages problem. This low uptake in construction careers calls for a more coordinated effort to transform the image of the New Zealand construction industry. Similarly, sudden-onset disasters place major demands on construction organisations to respond rapidly in an ambiguous environment. Previous studies (e.g., Ruddock et al., 2010; Chang et al., 2010; 2011; 2012; Chang-Richards et al., 2013; 2017) have reported that skill shortages were prevalent following a major disaster.

10.2.2 Loop R2

Skill Shortages-Intrate Competition-Staff Poaching-Poor Training and Development Culture- Skill Shortages

Loop R2 shows a vicious cycle that exasperates the problem of skill shortages in the construction industry. In Christchurch, for instance, the sudden upsurge in construction demand generated intense competition among construction companies to survive and thrive in the market (Chang-Richards et al., 2014; 2015; 2016; 2017; Wilkinson et al., 2015). Specifically, one subcontractor explained:

“It’s very easy to get the work; it’s actually doing the work that is the hard bit. We can all go out and get lots of work, but you’ve got to have

the people and the resources to be able to do it and it's becoming a challenge."

S11

This intratype competition amongst companies manifests itself in staff poaching. Poaching is an aggressive hiring tactic that is exacerbated by the decline of workforce training and development. Employee poaching for skills is predominant in the construction industry (MacKenzie et al., 2000; Dainty et al., 2005; Chan et al., 2008; Tutt et al., 2013; Chang-Richards et al., 2017). This method comes to the fore as most construction companies prefer employees who are already trained and experienced. Results from the case study investigation showed that the pursuit of production downplays the employer's interest in providing training. The following quote is pertinent to this claim.

"The only thing you could do at the moment is poach good guys but that's playing that trend going out in the market, offering more money and taking them off someone else."

S6

Furthermore, some companies equate organisational competitive advantage with cost-cutting. These cost-reduction employers operate in the absence of formal training and lure candidates from rival companies through better pay packages. Such a practice may offer short-term profits but is deleterious to the business in the long run. As one interviewee put it:

"The trap is with the pay scales they are on a scaled rate whereas they sign off unit standards they get pay increases. Once they get to about halfway through, they are starting to get some increases, but what we have seen and we have heard a lot about is companies going out there and actively poaching apprentices that are between two to three years because they're suddenly starting to become productive.

Other companies can come and offer them more money to take them on straight away and basically poach them because they haven't put the investment into them for the first two years, they are able to offer that money."

S8

This behaviour is a key barrier to training and development in individual companies. Previous studies (e.g., Chan, 2007; Forde & MacKenzie, 2007; Dainty & Chan, 2011; Chan & Marchington, 2012; Storey, 2014; Welfare et al., 2021) associate the employers' apprehensiveness in providing staff training with training expenses. This trend, consequently, creates a workforce lacking the core skills for a particular job. The issue of staff poaching and the resultant poor skill development is represented in figures 6.2, 7.4, 8.1, and 9.1.

10.2.3 Loop R3

Skill Shortages-Intrate Competition-Labour Cost-Employment Growth-Construction Boom and Bust- Skill Shortages

The vicious cycle in loop R3 demonstrates the effect of the construction boom and bust on skill shortages. Owing to the constant competition (i.e., intratype competition) amongst the rival construction companies brought about by skill shortages, the demand for labour forces becomes excessively high. As a consequence, labour costs increased due to the competition for a scarce workforce. Increased labour costs have also been reported following major disasters in Sri Lanka (Sri Lanka Post-Tsunami Recovery and Reconstruction Report, 2005; Jayasuriya et al., 2006; Jayawardena et al., 2008; Pereira & Ratnayake, 2013), Indonesia (Nazara & Resosudarmo, 2007; Jayasuriya & McCawley, 2008; Masyrafah et al., 2008; Nakazato et al., 2008; Chang et al., 2010b; Chang et al., 2012a; Matsumaru et al., 2012), China (Chang et al., 2010a; 2011c; 2012a; 2012b), and Australia (see Chang et al., 2010; Chang-Richards et al., 2013; Mannakkara et al., 2014). The upward shift in employment is indicative of the boom cycle, in which demand for labour outstripped the supply. The disparity between supply and demand means construction organisations struggle to recruit employees, signifying a symptom of skill shortages.

10.2.4 Loop R4

Skill Shortages-Workforce Planning-Environment Scanning-Skill Gap Analysis-Workforce Planning Implementation and Monitoring-Organisational Performance-Skill Shortages

Loop R4 presents the reinforcing cycle of workforce planning and the different aspects that could facilitate higher organisational performance. Skill shortages and their adverse effects force construction companies to undertake workforce planning to ensure a sufficient pool of appropriately skilled labour. The quest for organisational agility and flexibility inevitably breeds a tradition of relying on ad-hoc workforce planning. In specific, approaches to workforce planning are predominantly a response to and reflection of the environment within which they operate (i.e., increased demand for skilled workers). One subcontractor commented:

“The problem with people is if you employ the people too early it’s like surfing and trying to catch the wave, if you go too soon you miss the wave but the problem is if we employ a heap of people now in anticipation of a lot of work, we have to pay them and we maybe can’t earn enough money because there isn’t enough work to put them on so it can be quite an overhead burden. So, what you’re really trying to do is sort of bring people on as the work comes in so as to keep your overhead balanced.”

S13

Workforce planning is a systematic process to determine the organisations’ existing workforce capacity and future workforce requirements. It enables subcontractors to devise remedial actions for the shortfalls or surfeits of skills within their organisations. This procedural assessment of human resource capacity involves business environment scanning, skill-gap analysis, workforce planning, execution, and monitoring processes. The main aim of workforce planning is to ensure enough qualified employees are present to drive the business objectives forward. This planning constitutes an analysis of demand and the availability of skilled staff with remedial actions to bridge any potential gaps between the two (Kispal-Vitai et al., 2009; Sing et al., 2014; Sing et al., 2016).

“So, our business strategy and our policy is that every job that we do we leave to a very high standard. In order to maintain that we can’t over commit; too many staff – no.”

S9

The next step in workforce planning is performing an environmental scan that allows construction companies to identify the available workforce, assess the current market scenario and, accordingly, prepare in case of a demand surge. Assessing the labour market trends provides the organisations with inputs used to conduct skill-gap analysis. The skill-gap analysis primarily identifies the gap between the future workforce needs and the current workforce capability. This analysis allows construction companies to visualise the productivity gap over a specific period and, accordingly, implement remedial measures. These corrective methods are nested in practical workforce planning, implementation, and monitoring.

The pronounced construction boom following the Christchurch earthquakes puts some subcontracting businesses at risk. The propensity to be overconfident occurred in anticipation of a peak building time in Christchurch. This optimism bias has led to unsustainable growth in some investigated companies. About 30 per cent of the investigated companies informed that uncertainty in the workflows had caused them to absorb huge operating expenses during the idle (unproductive) time. As a result, these businesses were operating at the expense of business margin. Accordingly, all the interviewed companies have had to respond flexibly to irregular workflows. With this practice, the employers focus on achieving functional, numerical and skill flexibility to be competitive in the market. In short, this business model demands a high degree of flexibility in maximising performance drivers. Therefore, attaining safe staffing levels is a primary target for the companies to survive and thrive in business. On this, subcontractors S7 and S10 commented:

“A lot of contractors have now come out, but it seems to come in really big waves. It’s hard to know how to staff it. We went from 45 staff through May/June and July started staffing back and then we have dropped down to about 28 at the moment. Now we are looking for the new guys. We’re finding it hard; they seem to be under-skilled and want too much money.”

S7

“It's getting harder and harder, like especially for us, because we need skilled guys. With the skilled guys that we need they know that they're worth something but unfortunately the rates don't adjust for it. So, the rates are still relatively low now considering it is I guess what you would call a boom period. But the rates that we get for actually the worker are quite low. It's costing us a lot more to get around town; our trucks take longer; operators are more expensive and a lot more expensive – 40 to 50 percent more.”

S10

The planning aspect allows organisations to develop a specific profile of their workforce. The workforce profile includes the skills required to ensure continuous business growth and assessment of the workforce potential. The implementation aspects envelop carrying out the plans set for maximising workforce potential. This is done by stating the ultimate business goal, implementation period, and expected outputs for each milestone. Overall, attempts are made to ensure that the workforce requirements are compatible with the organisational strategic goals.

Strategic integration between the organisational workforce requirements and business strategy should be brought to the fore in ensuring the workforce planning delivers its purported benefits. Previous studies found that companies that prioritise the enactment of a workforce planning system experience positive outcomes such as improved organisational performance and sustained competitive advantage (Loosemore et al., 2003; Raidén et al., 2004; Marchington & Wilkinson, 2012; Chan & Marchington, 2012; Sing et al., 2014; Sing et al., 2016; Halpin et al., 2017). Similarly, the majority (i.e., 77 per cent) of the interviewed subcontractors have reported the same benefits. This figure indicates a growing focus on strategic alignment in ensuring that organisational people practices can execute the company's business strategy. A minority of participants (23 per cent) indicated that effective business management and adequate business knowledge are the main factors affecting business success.

A monitoring system should be in place to warrant the proper execution of the workforce planning initiatives. The monitoring system allows the organisations to identify mismatches in their system and enable them to conduct re-design in the planning process

to mitigate them in the future. Implementing the aforementioned factors in workforce planning allows construction companies to presage the staffing needs and adjust the staffing strategies accordingly to fulfil organisational workforce requirements. As a result, the organisational performance would be augmented, which would curb the skill shortage issue.

10.2.5 Loop R5

Skill Shortages-Workforce Recruitment-Workforce Selection-Organisational Performance-Skill Shortages

Loop R5 presents a virtuous cycle demonstrating positive reinforcement through workforce recruitment and selection strategies. Workloads in the Christchurch construction industry reached unprecedented highs following the 2010/2011 earthquakes. The upsurge in employment demand for construction-related jobs has impacted the labour market in Christchurch. Since 2010, labour cost has been increasing in the Canterbury region leading to a competitive labour market. The Canterbury construction wage rate growth has increased 16.8 per cent in the post-earthquakes environment and plateaued out after four years of strong growth (Ministry of Business, Innovation and Employment, 2016). During the expansion period, the recruiting intensity rises among construction companies in Christchurch. However, specific construction roles were hard to fill, particularly in the skilled and mid-skilled bands. In order to counter the effects of skill shortages, construction organisations seek qualified candidates to sustain their workforce and aid in attaining their business goals.

The boom from the Christchurch earthquakes has markedly changed the dynamics and compositions of employment practices in the subcontracting sector. Investigated companies perpetually favour a more informal approach to recruiting potential applicants. In all cases, the short-term operational needs determine the organisational staffing decision. This ‘low road’ business model limits the scope for proper human resource management (HRM) practices. Specifically, a high inclination towards ‘word of mouth’ and ‘hiring the known’ recruitment methods was identified within the case study organisations. This ‘word of mouth’ recruiting relies on employee referrals and personal networks, inferring the

prevalence of informality in organisational recruitment practices. Past studies (e.g., Fellini et al., 2007; Lockyer & Scholarios, 2007) revealed that the practice of ‘hiring the known’ is quite commonplace in the construction industry. Some companies use external suppliers such as advertising agencies and recruitment consultants to recruit. However, this option receives many criticisms owing to the perceived high costs. Research findings have shown that some recruitment agencies triggered controversies by charging unreasonable commissions. Adding to the list is apprenticeships or school leavers’ recruitment. This targeted approach to recruitment forms an integral part of a more strategic plan to attract, retain, and develop the workforce.

Informality also occurs in the selection processes (Clarke & Gribling, 2008; Ness, 2010a; Lockyer & Scholarios, 2007; Welfare et al., 2021), employees’ probationary period (Chan, 2007; Dainty & Chan, 2011), and skill development practices (Loosemore et al., 2003; Chan & Dainty, 2007; Forde & MacKenzie, 2007; Chan & Marchington, 2012). The interviewed companies agreed that the applicants’ skills, work experience, and personality are the key criteria in selecting the prospective employees. In some instances, a more intuition-based recruitment approach is explicitly applied at the selection stage. Such practices indicate growing attention in embarking on selective hiring, as evident across the investigated construction companies. Klimoski and Jones (2008) found that intuitive recruitment is preferred in an environment where fast and efficient hiring is necessary. This form of recruitment method came forefront in construction due to the implicit demanding but short-lived construction projects and limited access to experienced workforces. However, intuitive recruitments should be used cautiously, given that staffing decisions are highly likely susceptible to bias, subjectivity and inconsistencies. This research implies that more informed decision-making can be achieved by integrating intuitive and non-intuitive approaches to recruitment. Taken together, workforce selection in the investigated subcontracting organisations is typified by the absence of formality. Therefore, construction companies remain impervious to sophisticated recruitment and selection methods.

This research also revealed that the constrained labour market in Christchurch forced the investigated companies to seek migrant workers to meet the immediate project needs.

Between 2011 to 2015, the number of migrant arrivals into Canterbury working in construction and building-related occupations rose markedly (Stats NZ, 2018). In particular, workers from the United Kingdom, the Philippines, and Ireland have grown in number, illustrating a diverse workforce pool in the Christchurch construction industry. Unfortunately, this workforce diversity is flawed by the existence of occupational segregation and wage differentials.

MacLennan (2018) found that construction migrant workers in Christchurch and Auckland are susceptible to discrimination and exploitation. The study showed that migrant workers face employment uncertainty, debt bondage, earn less than similarly qualified New Zealanders, live in cramped accommodation, and are prohibited from being members of trade unions. Such discriminatory practices were also evident in the European countries, e.g., Italy, Portugal, Germany, the UK, the Netherlands and Switzerland (Fellini et al., 2007), Australia (Hedwards et al., 2017), Singapore (Sui Pheng et al., 2008), Malaysia (Abdul-Aziz, 2001) and China (Swider, 2015).

In New Zealand, issues relating to the workforce are central to the construction improvement agenda. Creating a more equitable working environment may attract a wider range of people into the construction industry. Therefore, a review of the existing anti-discrimination legislation should be made to produce an equitable working environment for all employees. Construction companies should also ensure their workplace culture is inclusive of improving the representation of ethnic minorities and women in the industry. Partnerships between policymakers, legislators, employers, recruiting agencies and trade unions should be pushed forward in strengthening the legalistic aspects of employment and treatment of migrant workers. The recruitment process was conducted through various means and platforms, the details of which are given in *Figure 7.4* (see Chapter 7).

The selection process enables subcontractors to identify and filter qualified candidates. It is imperative to ensure a strategic alliance between the organisational objectives and workforce requirements at this phase (Druker, 2013). A proper selection system enables the most suitable and qualified candidate to be retained (Raidén & Sempik, 2013). In this light, organisations can retain employees who can contribute to the skills required for a particular job and, consequently, enhance organisational performance. With this system in

place, individual construction organisations can mitigate the growth of regional skill shortages. Results featured in the case study investigations indicated that more and more small and medium-sized construction companies were reverting to effective retention strategies to remain relevant and thrive in the chaotic business scenario.

10.2.6 Loop R6

Skill Shortages-Workforce Retention-Workforce Performance Management-Organisational Performance-Skill Shortages

The adverse effects of the skill shortages present in the construction industry can also be alleviated by workforce retention strategies as described in reinforcing loop R6. Organisational skill shortages are exceptionally unfavourable for construction companies. Research in construction management both in pre-and post-disaster settings (e.g., MacKenzie et al., 2000; Dainty et al., 2000; Loosemore et al., 2003; Chang-Richards et al., 2015; 2016) reports that the construction industry does not plan sustainable human resource practices and employee retention, with casualisation being the dominant strategy to cope with changing demand in construction. The case study organisations attribute organisational competitiveness with effective retention schemes. It was observed that involving various intrinsic and extrinsic incentives in an organisational operation reinforces worker retention.

In all cases, the monetary incentive was the most important mix of measures to retain their respective workforces. This incentive comes in the form of market-rate remuneration, bonuses, and profit-sharing. Research results have shown that bonuses and profit sharing are not predominant in smaller companies. Specifically, only 20 per cent of the investigated companies use this approach to retain their good staff. While remuneration was important, research participants alluded that remuneration was predominantly mediated by the quality of the working environment. Significantly, this research revealed that the positive impacts of non-monetary incentives are contingent upon the extent of managerial influence in shaping a congenial work environment.

The investigated companies also provided their migrant workers with temporary accommodations upon arrival. This congenial and constructive workplace culture drives high levels of employees' motivation, loyalty, and commitment. More importantly, training opportunities were made available to all employees, ensuring their skill levels were relevant throughout the business operation. The investigated subcontractors involve various intrinsic and extrinsic incentives in their organisational strategy that positively reinforce worker retention. A balance between monetary and non-monetary incentives should be used to meet employees' diverse needs and interests. The latter finding is pertinent to building greater commitment and engagement with organisational strategies. More importantly, companies that can be flexible appear to be more attractive to prospective employees and are more likely to retain workers. Details on workforce retention dynamics are provided in *Figure 8.1* (see Chapter 8). Overall, it was observed that construction SMEs attempt to gain the loyalty of the employees and, in return, provide them with career developmental opportunities for the future. One subcontractor remarked:

“We work very hard on our culture and make it a decent place to work and giving our people training, career pathways, support, bit of empathy when they have got family issues; we try to be a good employer in that regard. So, it's not all about money, it's about giving them a good environment to work in. That's how we try and keep them, and we have had pretty good success. We have lost some people recently over the last six months but in saying that the people that I lost I wasn't really too worried about; and the ones that we wanted to keep we have kept.”

S6

The workforce retention strategies directly influence workforce performance management, wherein different methods are applied to enable an employee to perform his/her duty optimally. Subcontracting businesses conducted some form of performance review, albeit some being informal. The performance management process provides feedback that allows employees and employers to know their respective responsibilities and promises. It is recommended that performance management be constructive, which should guide a worker towards increased efficiency, often through additional training, and eventually drive the organisation towards its strategic goals. The process also enables proactive resolving of a problem as soon as it occurs in the system. These practices positively affect organisational performance and reduce the stress caused by skill shortage issues.

10.2.7 Loop R7

Skill Shortages-Workforce Development-Workforce Retention-Workforce Productivity-Organisational Performance-Skill Shortages

Another reinforcing loop, R7, concerns workforce development. Organisations undertake the development of the workforce through formal and informal training, mentorships, work diversification, and apprenticeships. Previous research in construction (e.g., Loosemore et al., 2003; Raidén & Dainty, 2006; Chan & Marchington, 2012) has indicated that workforce development is central to organisational success. Likewise, the case study investigations reveal that training and development are important to generate a sustainable and skilled workforce. The investigated organisations impart staff training into their workforce development plans, which is administered step-by-step to ensure the perpetuity of the generated staff skills. It was observed that construction organisations are mainly focused on developing the skills of already proficient workers through internal and external training programmes.

Interestingly, the case study investigations showed that employers are committed to providing academic training to illiterate workers. Nevertheless, the workforce development practices preferred by the companies are mostly informal, with on-the-job training and mentorship programmes. Some interviewed companies approve of formal apprenticeship programmes provided by an external training agency. The case study interviews of all the companies somewhat universally disclose that efficient workforce development practices are worthy of the investment since it concurrently abates staff turnover, enables the fulfilment of strategic goals, and intensify organisational performance. A detailed description of the workforce development initiatives is provided in *Figure 9.1* (see Chapter 9). The employers interviewed in this research unequivocally considered employees the core factor determining organisational success. One subcontractor explicitly stated:

“If we don’t get the people, we won’t be able to do the work. We’ve got time to do it, it’s just going to make it very hard to get the people, but what we’ve also got to look at when we’re bringing people is to get the number of people that we need to get we have to look at bringing some people in from overseas, because of the experience and because it

takes too long to train, even though we're still continuing the training, to increase the numbers required of experienced people we need.

So many of them to be experienced and we can bring some up from nothing through training, but we need a lot of them to be experienced for these younger ones to tag on to. We're going to have to bring in some more overseas and we'll have to look overseas in the New Year to see what we can find. We've had an ad on our website, we've had an ad on the Canterbury Work & Income site for probably the best part of a year, 18 months, and we don't get a lot of response from it."

S11

Subcontracting companies focus on workforce development to keep their employees' happy' and drive retention. Subcontractors increasingly recognise the value of people to their organisation and the importance of employees' wellbeing in the workplace. As a consequence, employees become more eager and efficient, leading to higher workforce productivity. It is therefore important for subcontracting companies to take a holistic view of their employees' wellbeing in delivering better performance. As one interviewee said:

"We've got to try and make it attractive because we don't want to drive the monetary value up. It is in no one's interest for the rate to go up. We try and look at the non-monetary benefits that we can provide, especially early on to help."

S12

10.2.8 Loop R8

Skill Shortages-Workforce Planning-Workforce Recruitment-Workforce Selection-Workforce Retention-Workforce Performance Management-Workforce Development-Organisational Performance-Skill Shortages

The interaction between the main factors that determine efficient workforce resourcing is shown in the reinforcing loop R8. Due to skill shortages, construction companies are focussing on workforce planning to ensure the presence of qualified staff who can meet organisational milestones on a long-term basis. In order to maintain the availability of a skilled workforce, these companies attract qualified candidates through various recruitment methods. This is followed by selecting the most suitable candidates and deploying a reward

system that would inspire the staff to generate higher productivity. The effectiveness of the employees is measured through workforce performance management that involves performance reviews. In case of any discrepancy, the companies resort to workforce development wherein the staff are appropriately trained to possess the skill sets needed for a particular job. A skilled workforce enhances organisational performance, thereby negating the adverse effects of the prevalent skill shortages in the construction industry.

10.2.9 Loop B1

Skill Shortages-Low Applicants-Poor Public Image-Workforce Development-Workforce Retention-Workforce Productivity-Organisational Performance-Skill Shortages

Balancing loop B1 illustrates the motivational factors that can give rise to organisational performance. This loop also depicts the counterbalancing of the vicious cycle represented in loop R1. As mentioned initially in this section, the issue of skill shortages causes the number of potential applicants in the construction industry to reduce. As a result, construction organisations appear unattractive to prospective employees. The companies are trying to alleviate this poor image through several workforce developmental schemes. It was observed from the case studies that companies invest in training the employees and commit to the development of their careers. These commitments are the key to retaining and producing high productivity employees. This increase in workforce productivity has a positive correlation with organisational performance. Overall, these findings indicate that companies that can be flexible appear to be more attractive to prospective employees and are more likely to retain workers.

10.2.10 Loop B2

Skill Shortages-Intrate Competition-Staff Poaching-Poor Training and Development Culture-Workforce Development- Organisational Performance-Skill Shortages

Balancing loop B2 shows that intratype competition can also stimulate organisational performance to dilute the adverse effects of the vicious cycle of loop R2. Construction companies compete to stay afloat in a post-disaster chaotic market scenario. The

competition for a scarce resource (i.e., a skilled workforce) leads to the emergence of staff poaching in the construction industry. This situation makes construction companies vulnerable to losing good staff. Losing good staff also signals a negative return on the training and development investment. Companies operating on a low-cost business model perceive training and development as auxiliary actions. Such a practice is undermining the skill base in the construction industry.

Some construction companies remain apprehensive about investing in the training and development of their employees due to the fear of losing them to another rival company (Loosemore et al., 2003; Dainty et al., 2005; Forde & MacKenzie, 2007; Chan & Marchington, 2012; Storey, 2014). This hesitation has resulted in inadequate training and development culture in construction companies. Consequently, the ephemeral nature of construction projects serves as a disincentive for companies to invest in workforce development. However, the case study findings indicate that the companies now realise the value of a qualified and skilled workforce and invest in techniques to develop their staff's core competencies. A productive and skilled workforce elevates organisational performance, as evident in the case study organisations.

10.2.11 Loop B3

Skill Shortages-Intratype Competition-Staff Poaching-Workforce Retention- Workforce Performance Management-Organisational Performance-Skill Shortages

Balancing loop B3 shows the virtuous cycle to curb skill shortages at the organisational level. The fear of losing staff to poaching urges construction companies to undertake retention strategies based on a reward-based system. One subcontractor said:

“That was when a lot of companies were scrambling to get their workforce in place. There was some quite serious money being offered. We would have chaps in the workshop being paid \$20.00 an hour and they would go elsewhere for \$30.00 an hour; they just couldn't turn it down. A couple have come back because it wasn't as good as what they thought it was going to be. So yes, there was a bit of that previously but not now; it seems to have settled down now. I think in another 12 months' time when it gets really, really busy it could be a problem but at the moment it's not. We are trying very hard to make sure our staffs

are looked after on those non-monetary benefits. We keep up our communication to them and let them know about the company and where we are going and what we are doing and facts about the jobs that we are doing.”

S7

The fear of losing staff to poaching urges construction companies to undertake retention strategies based on a reward-based system. As such, monetary and non-monetary reward systems are used. Successful implementation of workforce retention allows the organisation to gain a competitive advantage. To maintain this competitive advantage, companies are encouraged performance-based reviews of staff to fulfil their organisational goals (McDonnell & Gunnigle, 2009; Raidén & Sempik, 2013; Belsito & Reutzel, 2019; 2020). This performance appraisal process is conducive to organisational performance, thus curtailing the negative impacts of skill shortages.

Nevertheless, the practice of staff poaching remains rampant in the construction industry. It is recommended that the government intervene in making rival companies come to an accord to prevent them from poaching each other's staff members. Therefore, anti-poaching agreements should be the way forward. This would significantly reduce the damage-control investments made by construction companies and, instead, allow them to focus on the constructive development of their workforce and associated business goals.

10.2.12 Loop B4

Skill Shortages-Intrate Competition-Labour Cost-Employment Growth-Construction Boom and Bust-Workforce Planning-Environment Scanning-Skill Gap Analysis-Workforce Planning Implementation and Monitoring-Organisational Performance-Skill Shortages

Finally, balancing loop B4 depicts a route for enhanced organisational performance due to the construction boom and bust cycle. The demand for skilled workforces can fluctuate depending on the construction workload at a given time. Fulfilment of strategic organisational goals relies on the companies to efficiently manage the construction boom and bust cycle (Allan et al., 2008; Oviedo-Haito et al., 2014; Ruddock et al., 2014;

Wilkinson et al., 2016a). Due to this, companies focus on effective workforce planning to ensure that a skilled workforce is available long-term to perpetuate the business. As previously explained (Loop R4), this planning method involves environmental scanning that reveals the current market demands and available workforce; skill-gap analysis that determines the disparity between future workforce needs and present workforce accessibility; and implementation and monitoring process that allows companies to foresee their staffing needs and undertake methods that maximise the workforce potential. These practices allow for the betterment of organisational performance that lessens the adverse effects of skill shortages.

10.3 Best practice guidelines for workforce resourcing in subcontracting businesses

The preceding section provides hard evidence on linkages between workforce resourcefulness and organisational performance. However, as discovered in the case study organisations, workforce resourcing is primarily driven by informal practices. This has prompted the need to establish workforce resourcing best practice guidelines. *Figure 10.2* shows the four workforce resourcing functions adopted in subcontracting organisations. This includes workforce planning, workforce recruitment and selection, workforce retention and performance management and workforce development. *Table 10.2* details best practices to suit small and medium-sized construction companies. A more descriptive best practice recommendation will be provided in the following section. Adherence to the workforce resourcing best practice guidelines is expected to impart greater features of robustness, redundancy, resourcefulness and rapidity into the subcontractors' business lifecycle.

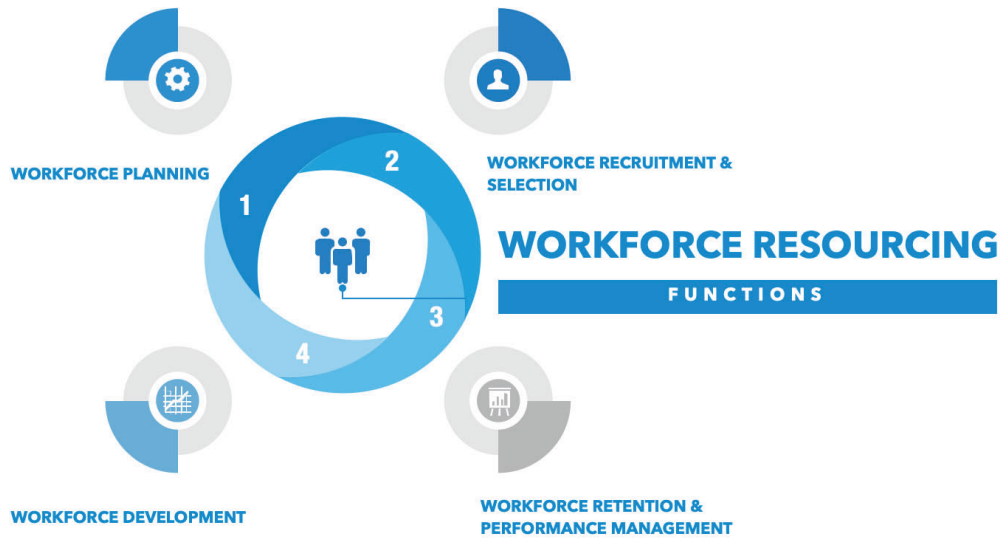


Figure 10.2 Workforce resourcing functions adopted in subcontracting business

Table 10.2 Summary of workforce resourcing best practices

<i>Workforce resourcing functions</i>	<i>Recommended best practices</i>
Workforce planning	<ol style="list-style-type: none"> 1. Perform a holistic environment scanning; 2. Forecast the organisation workforce need; 3. Conduct an analytical assessment of the organisations' workforce gap; and 4. Specify the workforce planning initiatives; 5. Implement the workforce planning strategy; and 6. Monitor and evaluate the implementation of the workforce planning strategy.
Workforce recruitment and selection	<ol style="list-style-type: none"> 1. Determine the recruitment objectives; 2. Scan the labour market for potential recruits; 3. Set up recruitment procedures; 4. Ascertain selection criteria; and 5. Monitor and evaluate the effectiveness of the recruitment and selection process
Workforce retention and performance management	<ol style="list-style-type: none"> 1. Identify the retention incentives; 2. Create a balance between the identified incentives; 3. Establish workforce performance indicators; 4. Conduct performance review; and 5. Monitor and evaluate the efficacy of the retention and performance management processes
Workforce development	<ol style="list-style-type: none"> 1. Identify the required training schemes; 2. Allocate a sufficient training budget; 3. Design the training and development programme; 4. Conduct the training and development programme; and 5. Monitor and evaluate the workforce development practices

10.3.1 Recommendations for workforce planning best practice

1. ***Perform a holistic environment scan:*** Identify the external environmental forces and their directions. The identification of the external dynamics aids subcontractors in prescribing strategic resourcing decisions and specifying appropriate workforce priorities for their projects. For businesses operating in an inherently volatile environment, knowledge of the business environment provides subcontractors with data on the domestic workforce availability, the labour market trends, and the ability to buffer their business against unpredictable demand ramifications. Following this, subcontractors can design and/or re-design their essential business processes and resourcing procedures to enhance their organisations' internal attributes (e.g., company assets, capabilities, company specialisms, workforce capacity, plant and machinery acquisition). As such, it is necessary to administer a workforce inventory that entails the collection of the workforce's key skills, job experience, knowledge, and development targets. The workforce inventory provides a reference to the critical workforce skills in an organisation and accelerates the organisational sourcing decisions.
2. ***Forecast the organisation workforce needs:*** Develop a workforce forecasting system suiting the size of the subcontracting business. Workforce forecasting involves predicting future workforce needs (demand forecasting) and future workforce availability (supply forecasting). This process requires the inclusion of 'what-if' and 'to-be' scenarios into the projection and the organisational future staffing planning. Two essential criteria to consider in the future workforce projection are the forecasting timescale and the nature of the project involved. The forecasting timescales can be characterised as short-term (1-3 years) and long-term (beyond three years). Clarity of current and future project involvement is equally important in determining the workforce forecast. It enables a workforce profile to be created, aiding subcontractors in optimising the existing workforce's capacity and shaping future staffing planning. Future workforce planning forecasting can be performed using qualitative or quantitative techniques such as the Delphi technique,

managerial judgment, scenario analysis, historical ratio, and nominal group technique.

3. ***Conduct an analytical assessment of the organisations' workforce gap:*** Identify the organisations' current workforce capacity and the foreseeable workforce needs in the next 12 or 24 months. This identification aids subcontractors in identifying the projected productivity gaps over the forecasted period. Following this, subcontractors can shape directions to resolve workforce shortages or surpluses in their organisations. The solutions to skill gaps should feature an element of long-termism. As speed in filling skill gaps matters to most organisations, a high priority should be assigned to recruiting 'good fit' employees (right skills, knowledge and attributes), which would be advantageous in meeting the future workforce needs.

4. ***Specify the workforce planning initiatives:*** Set the workforce resourcing priorities. This includes ascertaining the existing organisations' workforce capacity; and the current and future workforce requirements. As such, workforce profiling can be executed to consolidate foundation skills in the organisation, pinpoint skills that drive the organisation's growth and ascertain the workforce's potential. Apart from ensuring a productive utilisation of the existing resource base, this practice enables subcontractors to identify skill gaps in their organisations and determine the impacts of the current and future environment on their businesses. Therefore, strategic staffing planning should contain the following:
 - a. ***Workforce supply and demand analysis:*** Subcontractors' assessment of the current workforce needs and the future workforce requirement projection.
 - b. ***Workforce expansion size:*** Subcontractors' decision on the size of the workforce on the basis of long-termism. The employment growth shall be kept at a scalable size according to the organisation's and/or project's needs.
 - c. ***Workforce employment strategy:*** Subcontractors' characterisation of the employment procedures, which include tools for attracting applicants, recruitment processes, and selection criteria.

- d. ***Workforce retention strategy and anticipated turnover size:*** Subcontractors' judgement on the workforce retention initiatives and the expected turnover size.
- e. ***Workforce replacement strategy:*** Subcontractors' remedial actions in dealing with workforce departure, termination, retirement, and redundancy.
- f. ***Workforce development strategy:*** Subcontractors' commitment to providing the workforce opportunities to advance in their careers.
- g. ***Workforce flexibility strategy:*** Subcontractors' factorisation of necessary flexibility to retain their competitiveness in the turbulent market. The flexibility can be functional flexibility, numerical flexibility, and/or skill flexibility.

During the strategising phase, subcontractors are expected to incorporate the staffing planning decisions into the organisational strategic plan. The integration requires clarity in the planning horizon (strategic, tactical, or operational planning) and identifying the staffing expectations to be met. Accordingly, a systematic managerial intervention should be performed to achieve the defined goals.

- 5. ***Implement the workforce planning strategy:*** Develop an execution plan. The execution plan details the scope definitions, goal and objectives statements, a timeframe for implementation, execution milestones and deliverables, and the monitoring procedures of the programme. In order to deliver the purported benefits of the workforce planning initiatives, strategic alignment is expected and attainable by directing the workforce requirements towards the organisational strategy. In addition, the synergic interaction between workforce planning strategy and organisational strategic planning should be supported with:
 - a. ***Subcontractors' ability to develop workforce capacity:*** A continuous effort in developing the workforce's skills to ensure existing

workforces remain capable of delivering the organisational objectives in the long run.

- b. ***Subcontractors' ability to allow greater adaptability in the workforce planning programme:*** Adaptable workforce planning determines the extent of the organisation's flexibility in responding to changes in their external business environment. Creating an adaptable workforce calls for smart workforce management practices that can facilitate organisations in the recruiting, selecting, retaining and developing processes.
- c. ***Subcontractors' ability to sustain a proactive workforce planning system:*** A proactive workforce planning system illustrates the organisations' anticipatory capacity to meet current and future market demands. A proactive approach to workforce planning allows organisations to prepare for the unseen environment and effectively respond to future staffing needs.

6. ***Monitor and evaluate the implementation of the workforce planning strategy:***

Assess the performance, feasibility, and benefits of the workforce planning system. Information obtained from the monitoring and evaluation process enables subcontractors to redesign their resourcing procedures and solve the identified mismatch in the system. An effective monitoring system can be achieved by integrating an appropriate approach to collecting and reporting the system's performance input. The workforce planning results are then evaluated to determine whether the objectives were attained and, accordingly, system modifications are incorporated into the workforce planning structure. Three guiding principles to consider in the evaluation of the subcontractor's workforce planning systems are:

- a. Accepting the system's flaws (fulfilment of the workforce planning goal and objectives),
- b. Accepting workforce planning as a dynamic process (incorporating change agents to cater to abrupt changes in the business), and
- c. Accepting the need to develop organisational capabilities continuously (sustaining the system's effectiveness and efficiency).

Factoring these principles into the evaluation process enables subcontractors to synergistically integrate the workforce planning initiatives and the organisational strategic plan. Consequently, a reasonably accurate staffing projection can be established, taking into account appropriate forecasting techniques to adopt and a heuristic approach to workforce planning.

10.3.2 Recommendations for workforce recruitment and selection best practice

1. ***Determine the recruitment objectives:*** Identify the organisational recruitment needs and other core project requirements. By collating this information, subcontractors can develop recruitment objectives and strategise a recruitment process. Subsequently, recruitment priorities are set specifying the workforce's size, skillsets, recruitment timeframe, resources, and other workforce-related parameters or constraints. This upfront planning is essential, particularly in streamlining the administrative activities underpinning the recruitment selection process.
2. ***Scan the labour market for potential recruits:*** Conduct a labour market assessment to identify the availability of potential recruits. This assessment is usually conducted through observation, mainly to recognise the labour market dynamics. These dynamics include but are not limited to social, demographic, legislation, economic conditions, boom and bust cycles, etc. It is particularly important to recognise the external business environment as these factors can impact the organisation's ability to resource (i.e., recruit, retain, develop, etc.).
3. ***Set up recruitment methods:*** Informal recruiting methods may be considered, including word of mouth and personal networks. Implicit in this approach is the employers' dominance, who is regarded as able to identify, measure and select the applicant with the required skillsets for the job. Alternatively, recruitment agencies can be employed to source suitable candidates. This method is best employed in a tight labour market where specific skills are sought. The drawback of this method is that it is relatively expensive in that a commission must be paid to the recruitment agency to find suitable candidates. Central to this recruitment development process

is three key factors: *job analysis and design*, in which the job analyst (often the employer) identifies the misfits in the organisation and attempts to fill the skill gaps; *preparation of job descriptions and person specifications*, in which the organisation explicitly outlines responsibilities and duties associated with the job along with the qualification, experience, and skills necessary for the position; and finally, *job advertising*, in which jobs are advertised in compliance with legal frameworks to ensure fair and due process. Employers may utilise paper-based (e.g., newspapers) and the internet (e.g., websites, social media) as an advertising platform to attract applicants.

4. ***Ascertain selection criteria:*** The selection decision of a particular candidate should be based on well-founded factors and align with the job descriptions. The selection decision must not be imbued with prejudices such as race, ethnicity, gender, age, disability, etc. Therefore, an honest and sincere approach to selection (without bias) would facilitate ethical professionalism. This practice, in turn, would enable organisational effectiveness in the long run. Key selection criteria are the attributes, behavioural characteristics, skills, knowledge, and qualifications that the employers have specified as essential for satisfying the vacant positions. One major initial aspect of the selection process is the candidates' screening. The screening can be conducted in an indirect manner through the properties of the recruitment process and/or in a more direct fashion by highlighting predetermined eligibility. There are numerous selection methods that recruiters adopt. Although a perfect selection method remains elusive, a combination of two or more methods represents the best practice for ensuring the appropriate section of the potential candidates.

5. ***Monitor and evaluate the effectiveness of the recruitment and selection process:*** Regular monitoring of all aspects of the recruitment and selection process is essential. An overall assessment of the recruitment and selection strategy's effectiveness should be made to ensure alignment with the organisation's objectives.

10.3.3 Recommendations for workforce retention and performance management best practice

1. ***Identify retention incentives:*** Define the organisational remuneration and benefit structures. The compensation mechanisms should reflect the organisational values and performance expectations and respond to the employees' needs and expectations. In particular, the rewards offered to the employees in return for their commitment are appropriately designed in the form of salary levels and other benefits such as bonus, company vehicle, health, KiwiSaver contributions, vehicle allowance, etc. Additionally, the salary levels should be made as per the current labour market rates. Information used in establishing the organisational salary bands should be made transparent. Attractive non-financial incentives should also be designed to raise employee satisfaction, leading to higher employee retention.

2. ***Create a balance between the extrinsic and intrinsic incentives:*** Develop a system that extrinsically and intrinsically motivates the workforce through financial and non-financial rewards. In ensuring the effectiveness of the reward system, a number of important, key considerations must be taken into account, including:
 - a. ***Create acceptable and adequate reward systems:*** The rewards should be appealing and satisfying to the employee. Most importantly, the rewards offered should provide basic security for employees and organisations;
 - b. ***Create transparent and equitable reward systems:*** Employees must fully understand the reward structures, and the rewards are appropriately designed to acknowledge their contributions. Accordingly, appropriate support should be provided where necessary;
 - c. ***Create balanced reward systems:*** Reward systems to include a combination of monetary and non-monetary incentives; and
 - d. ***Create cost-effective reward systems:*** The rewards offered must be budgeted and affordable to the employer.

3. ***Establish workforce performance indicators:*** Establish performance indicator systems. The emphasis of performance management systems is clearly to provide

flexibility in approach, supported by high-quality feedback. Following this, the employer should set a performance agreement with the job holders (employees). The agreement comprises a set of achievable objectives and the developmental needs required to achieve these objectives.

4. ***Conduct performance review:*** Use the established workforce performance indicators to monitor employees' performance. Schedule how frequent a formal performance review should take place. Most organisations conduct their performance review at least annually. During the ensuing assessment period (i.e., 12 months), the employees' performance is monitored and measured. Effective performance is reinforced with recognition at this stage, whilst poor performance can be dealt with using appropriate motivational approaches. All this should take place during the monitoring period and not at the end of the review period.
5. ***Monitor and evaluate the efficacy of the retention and performance management process:*** Set proper monitoring procedures to ensure the system is well implemented and continuously measure the effectiveness of the developed system. This information must be fed back into the organisational strategic planning process in order to sustain its alignment.

10.3.4 Recommendations for workforce development best practice

1. ***Identify the required training schemes:*** Assess the workforce skill level and identify the target group. Workforce training needs should be expressed in terms of both organisational and individual needs. The workforce skill levels should align with the organisational business model with future project needs. Following this, develop a training policy that defines clear links between organisational objectives and training provision.
2. ***Allocate a sufficient training budget:*** Identify the cost of training delivery, covering the direct and indirect costs of training. Identify all training aids which are required to improve skills in the organisation.

3. ***Design the training and development programme:*** Develop training methods, resources, and specifications. Provide equal training opportunities for all employees. Appreciate the importance of diversity and the importance of maintaining a fair and equitable work environment for all employees. Training programmes and delivery are to be aligned with the organisational objectives.
4. ***Conduct the training and development programme:*** Prepare a training programme consisting of a carefully planned sequence of training activities. Decide on delivery methods-formal or informal approaches to training-including courses, training videos, job rotation, or special assignments.
5. ***Monitor and evaluate the workforce development practices:*** Training and development programme is to be conducted periodically. Therefore, it is necessary to update the training programme as the organisation's needs may change. Evaluate the training programme in the enhancement of its quality and performance. This evaluation is essential to review whether the training provision had the desired impact on the organisation's performance. Improvements can be made should any of the desired impacts prove difficult to achieve. At this stage, too, employers should be adaptable and agile to cope with the inherent changes that beset construction projects.

10.4 Summary

This chapter discusses the workforce resourcing dynamics in subcontracting businesses. By understanding these dynamics, subcontractors can adopt routes that are advantageous for their organisational performance. As an incremental approach, the identified workforce resourcing dynamics have been further shaped into best practice guidelines. The central idea behind the best practice guidelines is to create a realisation amongst the subcontractors regarding the direct relation of efficient workforce management to organisational competitiveness. The best practice recommendations would aid subcontractors in expanding workforce capacity and productivity through a balanced approach between organisational strategic goals and people management. The guidelines will also enable subcontractors to attract and retain skilled employees, who will be appropriately trained to

make the business more adaptable at various project stages. Therefore, adherence to the best practice guidelines will facilitate the creation of resiliency within the organisation and eventually eliminate the issue of skill shortage and propagate business goals further.

Chapter 11

Conclusions and Recommendations

11.1 Introduction

This chapter ties together the key findings of the research, focussing predominantly on results addressing the three research questions addressed by this thesis. The first section provides a review of key findings developed in the preceding chapters. Specific and targeted recommendations for improving workforce resourcing are provided when addressing the research questions (i.e. sections [11.2.1](#), [11.2.2](#), and [11.2.3](#)). The significance of the research will be discussed from the theoretical and empirical perspectives. Discussion on the research limitations that are particularly relevant for further elaboration and future research concludes the chapter.

11.2 Research findings

11.2.1 Objective 1: To identify the challenges faced by subcontracting businesses in resourcing Christchurch recovery projects (Chapter 4)

This research examined resourcing issues faced by subcontractors in Christchurch following the 2010/2011 earthquakes. The boom from the earthquakes illustrated a bouncing back cycle from the short-term job loss during the 2008/2009 global recession. The rising demand for the Christchurch rebuild exposed shortfalls across all skill levels in construction. In all cases, the informants reported that skilled trades were in short supply due to the heightened labour demands from the earthquake rebuild. The two-year case study investigation in 2014/2015 revealed that sourcing labour domestically was a challenge, particularly among trades with carpentry, drain laying, painting, plastering, and pipe laying skills.

These skills shortages had created ripple effects in the subcontracting sector in Christchurch. In particular, competition between subcontracting companies became prominent, leading to staff poaching in the sector. This situation made the investigated subcontracting businesses susceptible to losing good staff. Losing good employees also signalled a negative return on the training and development investment. Companies operating on a low-cost business model perceived training and development as auxiliary actions. It was observed that the pursuit of productivity took precedence over the need to maintain the cause of performance. Such a practice undermined the skill base in the construction industry. Consequently, the ephemeral nature of construction projects served as a disincentive for companies to invest in workforce development.

This research showed that the under-investment in skill development, scepticism towards career prospects in construction, and the fluctuating nature of construction demands contribute to the skills problem besetting the Christchurch construction industry. In responding to these challenges, the investigated companies set several resourcing priorities. These priorities include building adaptable workforce capacity, strategising recruitment and retention, and honing workforce development plans.

11.2.2 Objective 2: To identify the workforce resourcing strategies adopted by subcontracting businesses in response to reconstruction demand (Chapters 5, 6, 7, 8, and 9)

11.2.2.1 Workforce planning

The case study investigation showed that a short-termism approach to workforce planning is predominant in the investigated companies. The widespread adoption of competitive tendering, low-cost business models and functional flexibility in these companies has eventually led to the anarchical arrangements of workforce planning. Research findings indicate that an organisation's ability to attract, retain, and develop employees impacts business success. This exposition encourages construction companies to strengthen their core systems in responding effectively to external and internal perturbations. The results of this research also unpacked the critical elements constituting workforce planning, including employment growth decisions, critical skills identification, workforce development and workforce performance management plans.

This research demonstrated that workforce planning in the investigated companies is driven by the organisational workforce requirements and business strategy. Efforts in attaining strategic alignment are directed towards producing organisational competencies that drive the success of business operations. Therefore, agility and responsiveness are the catalysts that reinforce the organisational core competencies. The investigated companies (approximately 90 per cent) indicated that this approach to workforce planning had benefited them in better staffing management and improved organisational performance.

11.2.1.1.1 Understanding subcontractors' workforce planning

Research results show that when appropriately designed, workforce planning enhances the organisational features of crisis preparedness and response. These features enable companies to perform real-time responses in the event of physical (e.g., natural disasters, accidents, etc.) and non-physical (e.g., litigation, recession, etc.) crises. A solid understanding of the organisation's core competencies, business risks, vulnerabilities, and business continuity and contingency strategies is extremely required to improve the aforementioned features. Additionally, the utilisation of statistical techniques and managerial judgment should support the development of a robust workforce strategy. These contributing factors to improving workforce planning have been incorporated into creating holistic workforce resourcing best practices.

Research results have indicated that informal approaches to workforce planning predominate in the investigated companies. Such practices demonstrate strong adhocracy cultures in the subcontracting sector. This exposition has also prompted the idea of formalising the informal and emergent practices in managing workforces. Formalising these practices entails a high degree of organisational flexibility, agility and adaptability.

11.2.2.2 Workforce recruitment and selection

The case study investigation revealed that worrying trends emerged around the shortfalls of skilled tradespeople in the Christchurch subcontracting sector. The investigated companies expressed concerns about the prospects of the local labour market. These companies further indicated that the market is characterised by price-based competition. Some companies offered above-market wages to fill vacancies in their organisations. This

strategy creates a price war among construction companies and fosters workforce mobility across the subcontracting businesses. Staff poaching was, therefore, predominant during the period of high employment growth in Christchurch. This increased staff poaching is symptomatic of the constrained labour market and has driven up construction labour costs in the Canterbury region.

This research also revealed that the constrained labour market in Christchurch forces the investigated companies to seek migrant workers to meet the immediate project needs. Reliance on short-term migrants is becoming an increasingly important source of staffing for construction companies in New Zealand. The investigated companies developed a definite preference for immigrants for their attitudes, work ethic, and potential. However, planning for future migrant workers remains challenging due to the cyclical nature of the construction industry and shifting immigration policies. Whilst reliance on migrant workers is seemingly practical in filling immediate workforce needs, addressing skills in the longer term should be the priority. Within the current scenario (i.e., matching inefficiency between construction vacancies and workers), the New Zealand Government can provide support around the use of short-term migrants to meet needs for specific critical projects (i.e., Christchurch Anchor Projects, Auckland housing and major infrastructure projects). Specifically, special arrangements or provisions can be made around migration policies to ease importing and integrating migrant workers into the New Zealand construction industry. Additionally, it is appropriate to perform a cost-benefit analysis of immigration in order to inform future policy decisions.

11.2.2.3 Workforce retention and performance management

The case study organisations generally craft non-monetary incentives to create a sense of congeniality amongst the workers within the organisation. Another retention strategy is the training and development of workers that consequently reduce staff turnover. This research indicates that workforce development strategy is the most accepted retention practice in the subcontracting sector. In this respect, construction companies should be aware of their workers' career aspirations and design workforce development plans to suit the specific needs of the staff.

Furthermore, it was found that investigated organisations strive to enhance the happiness and wellbeing of their workers by creating a healthy staff-organisation and intra-staff relationships, providing medical benefits and a safe working environment. As such, these companies ensure their workplace culture supports employee wellbeing. A majority (70 per cent) of the interviewed companies who recruit migrant workers facilitate their acclimatisation to the new environment, which in turn bestows confidence in the staff. Critically, the interviewed employers focused on immigrants' adaptation and integration into the labour market by providing them with temporary accommodation, short-term loans, organising social events and the like. Moreover, a proper balance between the monetary and non-monetary incentives is envisioned to be more beneficial in reducing staff turnover and increasing the staff's affection, thereby presenting the company culture positively.

The importance of performance management should not be understated as it influences employee engagement and retention. The performance management system in place allows the investigated subcontractors to identify, measure, and develop their staff performance as per the organisational strategic goals. In particular, the output of a worker is assessed based on their performance against a set of particular jobs. This research suggests that a more frequent, informal check-in between line managers and employees would be beneficial in allowing a free-flowing conversation. Additionally, the reviews should be presented neutrally to the employees, focusing on areas of improvement (i.e., performance improvement plans). It was found that constructive feedback guides a worker towards increased efficiency, often through additional training, and thus drives the organisation towards its strategic goals. Further, ensuring pathways for career progression exist within the organisation is key to retaining employees.

11.2.2.4 Workforce development

This research shows that several factors impede the adoption of workforce development practices in construction companies. First, owing to the casual nature of the business in workforce management, proper skill development is lacking. Additionally, proper training and development of staff become problematic in the face of the dynamic and complicated nature of the construction business. Another factor that significantly hinders staff training

is rampant staff poaching. It was observed that the possibility of losing staff to rival companies dissuades the organisations from investing in the developmental programme for the workers. Often, organisations prioritise the immediate production goals while neglecting the training and development of staff.

This research broadly reveals that training and development are important to generating a sustainable and skilled workforce. The investigated organisations impart staff training into their workforce development plans, which is administered step-by-step to ensure the perpetuity of the generated staff skills. It was observed that the organisations are mainly focused on offering compliance and development training to their employees. The investigated organisations also realise the lack of education in the construction workers and, as such, are committed to providing academic training (i.e., verbal literacy, written skills, and comprehension skills).

Nevertheless, the workforce development practices preferred by the companies are predominantly informal with on-the-job training and mentorship programme. Some of the interviewed companies approve of formal apprenticeship programmes provided by an external training agency. Interviewed subcontractors somewhat universally disclose that efficient workforce development programmes are worthy of the investment since the programmes concurrently abate staff turnover, enable the fulfilment of strategic goals, and increase organisational performance.

11.2.3 Objective 3: To develop a best practice guideline for subcontracting businesses in managing the workforce at the organisational and/or project level (Chapter 10)

Four core elements of workforce resourcing, namely, workforce planning, workforce management, and workforce development, were identified from the case study investigation. The causal loop diagrams (CLD) developed in chapters 6, 7, 8 and 9 were combined to generate a new system that portrays the holistic dynamics of workforce resourcing. The CLD reinforces the observations made in previous chapters wherein the core of the issue faced by the construction industry is skill shortages. The problem of skill shortages creates numerous other issues related to the defamations of the construction

industry, staff poaching, insufficient training, and the cyclical nature of construction demand. However, construction companies realise the adverse effects of skill shortages, and the issues mentioned above act as motivational factors for implementing strategies to mitigate the problem and boost organisational performance.

The integrated CLD (see [Figure 10.1](#)) shows that most companies attempt to comprehend the workforce needs for the future and ensure that enough employees are available to propagate their business goals. In order to buttress their workforce, the companies also engage in practical recruitment and selection of qualified candidates that would drive the business strategies forward. To gain a competitive advantage, organisations strive to retain their employees through various intrinsic and extrinsic incentives. The companies also routinely monitor and subsequently enhance their employees' performance to promote the continuity of business goals' attainment. Through informal and formal training, mentorship, work diversification, and apprenticeship, the organisations develop their workers' skills that are directly linked to productivity. A skilled and loyal workforce is paramount for positively affecting the organisational performance and thus moderating the effect of skill shortages. Taken together, this integrative diagram presents an opportunity for subcontracting businesses to institute resilient workforce resourcing.

Critically, by understanding the dynamics in workforce resourcing and their multifaceted interactions, a guideline for workforce resourcing best practices was developed. The best practice recommendations are delivered through systematically created statements that will guide subcontractors' decisions in managing their workforces. This clearly defined methodology for workforce resourcing aids the alliance of resiliency features in the organisational business decisions. The guidelines enable subcontractors to anticipate, prevent and recover from numerous business adversities.

Table 11.1 Research objectives and key findings

<i>Research objectives</i>	<i>Chapters</i>	<i>Key findings</i>
Objective 1: To identify the challenges faced by subcontracting businesses in resourcing Christchurch recovery projects.	Chapter 4	<ul style="list-style-type: none"> • Skill shortages have emerged following the 2010/2011 Christchurch earthquakes. • Investigated companies indicated that trade skills were the hardest to find in Christchurch. • Staff poaching culture was widespread.
Objective 2: To identify the workforce resourcing strategies adopted by subcontracting businesses in response to reconstruction demand.	Chapters 5, 6, 7, 8, and 9	<p><u>Workforce planning</u></p> <ul style="list-style-type: none"> • External and internal risk factors were incorporated into the subcontractors' workforce planning programme. • The multiple case studies investigation revealed critical elements constituting workforce planning best practices: employment growth, critical skills identification, workforce career development, and workforce performance management. • In Chapter 6, a great emphasis is positioned on aligning resourcing strategy with the business model. The dynamics in workforce planning and their interactions were illustrated in a causal loop diagram. <p><u>Workforce recruitment and selection</u></p> <ul style="list-style-type: none"> • The ever-existing problem of obtaining a suitable workforce intensifies during periods of high employment. In Christchurch, this problem exaggerates following the 2010/2011 earthquakes. • Experiences from the case study subcontracting businesses show that less orthodox channels of recruitment were used. This includes a high inclination towards 'word of mouth' and 'hiring the known' methods. • Three selection criteria were explored from the case study investigation, including the candidates' skill and competency, work experiences, personality, and characters. • The dynamics in workforce recruitment and selection were represented in a causal loop diagram, creating a virtuous cycle to curb skills shortages at the organisational level. <p><u>Workforce retention and performance management</u></p> <ul style="list-style-type: none"> • Cost-reduction employers actively poach for a skilled workforce to meet the recovery projects requirements. This behaviour drives up labour costs and undermines the skill base in the construction industry. • The investigated companies offer both monetary (short-term) and non-monetary (long-term) incentives to retain the workforce. • Performance review is conducted consistently, along with constructive feedback to staff. • The interactions between the variables in workforce retention and performance management are illustrated in a causal loop diagram. <p><u>Workforce development</u></p> <ul style="list-style-type: none"> • Four developmental mechanisms adopted by the interviewed subcontractors are training, mentorship, work diversification, and apprenticeship.

- These developmental mechanisms exhibit a positive association with workforce retention, productivity, and overall organisational performance.
- This positive association is presented in a causal loop diagram, capturing the culture of workforce development within the investigated subcontracting businesses and its impact on their business performance.
- An integrative causal loop diagram was developed to better understand the dynamics between multiple interactions in workforce resourcing.
- By understanding the dynamics involved in workforce resourcing, a guideline for workforce resourcing best practices was formed.
- Best practice approaches were designed based on the main components of workforce resourcing identified from previous studies (literature) and the case study investigations.

Objective 3:

To develop a best practice guideline for subcontracting businesses in managing the workforce at the organisational and/or project level.

Chapter 10

11.3 Research significance

The previous chapter (i.e., Chapter 10) presents a powerful case for strategising workforce resourcing in subcontracting organisations. The principles enshrined within the strategies are to enable business continuity before, during, and after critical incidents. This research indicates a positive link between workforce resourcing and organisational performance. Indeed, a greater focus is placed upon business resilience as an indicator of improved organisational performance. In this section, the contribution of this research will be further elaborated from the theoretical and practical perspectives.

11.3.1 Theoretical contributions

This research offers robust data on workforce resourcing, and a sense of the subcontracting landscape, in a post-disaster environment. The present study fills a gap in the literature by directing a stronger focus on subcontractors and their roles in delivering and preparing the construction industry's skills. Specifically, it identifies the mechanisms to lift the capability and capacity of the construction workforce in the subcontracting sector. The analysis of interrelations between workforce resourcing mechanisms undertaken in this research has advanced a guideline for formulating a resilient approach to workforce resourcing.

This research confirms that subcontractors play a significant role in post-disaster reconstruction. However, subcontractors are often associated with inadequate managerial skills (i.e., project and business management), limited stock of resources (i.e., poor cash reserves), and poor corporate governance. These harsh realities raise the need to build business resilience characterised by rapidly adapting and responding to business disruptions and maintaining continuous business operations. This research has successfully identified parameters for organisational resiliency in subcontracting businesses. Crucially, the sustainable success of subcontracting organisations is not the result of one factor alone but rather the alignment of organisational objectives, strategies, structure, and resources in an evolutionary manner to cater to the constantly changing environment in construction.

In the post-disaster environment, most subcontracting organisations take an approach to workforce resourcing that is closer to the ad-hoc than to the strategic end of the scale. Investment in skills development is often hampered by the task-oriented culture of construction and the traditional short-term boom and bust cycle. This research indicates that internal resources should provide the foundation for the organisational strategy of a subcontracting business. Therefore, developing the subcontractor's capacity to respond to the external environment through better deployment of people management practices is paramount. Subcontractors must take stock of resources needed to develop a leaner business model and invest in risk management to fulfil the organisational objectives.

This research acknowledges that synergistic benefits from an integrated workforce resourcing system can occur if a high priority is placed on the strategic reduction of skill shortages. Additionally, the amalgamation of all four workforce resourcing elements (i.e., workforce planning, workforce recruitment and selection, workforce retention and performance management, and workforce development) contributes to achieving a competitive advantage by making subcontracting organisations robust and agile in resourcing the workforce. The central idea is to avoid short-term solutions that can potentially damage the organisation's long-term prospects. A clearly defined methodology for resourcing processes helps ensure that all necessary elements are given due consideration and occur in a timely and efficient manner to support an effective yet swift workforce resourcing process. Therefore, this research offers firm-level resourcing performance measures, leading to the development of a more actionable resourcing guideline.

This research is one of the first attempts to thoroughly examine causality between resourcing variables within subcontracting organisations in a post-disaster environment. This research presented the relationships between resourcing challenges and workforce resourcing elements using system dynamics methodology. In particular, causal loop diagramming was employed to depict the subcontracting-specific resourcing challenges and workforce resourcing dynamics. This causality identification allowed the development of systemic interventions to resourcing problems, further raising the novelty of this research. This new understanding should also help improve predictions of the impact of resourcing predicaments and prepare for disruptive events proactively.

11.3.2 Practical contributions

This research is relevant for subcontractors, government agencies, training providers, and educational institutions in the construction sector. It will help them understand the requirements and strategies for resourcing projects when demand exceeds the existing capacity. Specifically, the guideline developed in this thesis seeks to improve subcontractors' resourcing capacity in the face of increased challenges in a post-disaster environment. The practical contributions with respect to subcontractors, the New Zealand Specialist Trade Contractors Federation (STCF), government agencies and, finally, training providers and educational institutions are outlined below:

1. Subcontractors

The findings from this research will enable subcontractors to maximise their resource use efficiently, better assess the workforce needs, advance workforce career development, and plan for future employment. Together, these capacities improve organisational performance and make subcontracting businesses more adaptive. In the last quarter of 2014, construction-related liquidations in Christchurch were on the rise, heavily represented by subcontractors (Ensor et al., 2015). The resourcing best practice identified in this research will inform subcontractors of the measures for organisational resiliency during uncertain times. This includes upskilling people and changing the business model to ensure subcontractors are well-placed to operate in a volatile environment.

2. The New Zealand Specialist Trade Contractors Federation (STCF)

The findings, specifically the dynamics of the subcontracting resourcing model, will enable STCF to introduce strategic interventions around engaging subcontractors and specialist trades with other construction bodies (i.e., Construction Industry Council and Building Research Association of New Zealand) in addressing construction skill gaps. This research promotes a better alignment of industry training with current and future industry needs. As such, STCF can propose an effective investment system to support subcontracting businesses developing their workforce.

3. Government agencies

The empirical findings in this research provide a new understanding of how subcontractors responded to the Christchurch reconstruction demand. This understanding will enable government agencies to understand the subcontractors' needs better and support their responses to current and future requirements of the sector. This research advocates building workforce capability and capacity through bespoke training packages. With this information, government agencies can review industry training policy and regulatory frameworks. Statutory and mandatory training packages can be considered to ensure full engagement of the sector. Subsequently, government agencies can partner with subcontractors to create a sustainable solution to skill shortages and establish long-term national skill development initiatives.

4. Training providers, private training establishments (PTEs), polytechnics (Te Pūkenga) and universities

The findings from this research, with respect to where the skill gaps are, will enable training providers and tertiary institutions to review the currency of workforce development programmes in New Zealand. This research emphasises the need for fit-for-purpose and flexible training systems in New Zealand to address skills challenges subcontractors might face when the construction pipelines overwhelm their capacity. Training providers and the like should design short learning packages to enable construction employees to upskill throughout their careers. Additionally, recognition of prior learning (RPL) opportunities can be offered to highly skilled but not formally qualified employees. This research encourages a more responsive skill development system and advocates building construction productivity through skills development.

The current research is also aligned with the New Zealand government's aspiration to future-proofing the construction workforce, albeit with a focus on post-disaster environments. The Ministry of Building and Construction of New Zealand has laid out six priority initiatives to raise the profile of the construction industry. These initiatives were included in the national construction skills action plan, with a focus on (1) boosting skills through procurement, (2) establishing new jobs and skills hub, (3) growing construction careers and credentials, (4) expanding skills for industry, (5)

Mana in Mahi-Strength in Work, and (6) immigration settings. *Table 11.2* shows the alignment of the current research with the government’s aspirations to build sustainable construction skills.

Table 11.2 Alignment of the current research with the New Zealand construction skills action plan

<i>Construction skills action plan</i>	<i>Priority initiatives description</i>	<i>Research objective</i>	<i>Description</i>
Boosting skills through procurement	Inclusion of skills development criteria in building and infrastructure project procurement.	Objectives 1 and 2	Industry input on strategies to attain a balance of supply-side and demand-side of workforce resourcing in subcontracting organisations. Resourcing challenges at a firm-level were identified along with effective resourcing practices in the face of skill shortages.
Establishing new jobs and skills hub	Skills hub provides work brokerage and training services to prospective construction workers.	Objectives 1 and 2	Industry input on specific skills in short supply and recruitment preferences and/or options.
Growing construction carers and credentials	TEC facilitation in exploring and developing relevant micro-credentials. TEC offers career and pathways in construction through their careers website to maximise the impact of Group Training Schemes (GTS).	Objectives 1 and 2	Industry input on construction trades in demand alongside career options, specifically in the subcontracting sectors.
Expanding skills for industry	Partnerships between the Ministry of Social Development’s Skills for Industry programme, construction employers, and training providers to provide industry-specific training and employment opportunities for job seekers. Trades and apprenticeships training package, Targeted Training and Apprenticeship Fund (TTAF), vocational education reform to establish the New Zealand Institute of Skills and Technology.	Objectives 1 and 2	Industry input on specific subcontracting trades in short supply and types of training required by the subcontracting sector.
Mana in Mahi-Strength in work	Employer wage subsidy for training (including	Objectives 1 and 2	Industry input on retention and

	apprenticeships) or hiring a workforce in a range of industry sectors.		performance management practices in subcontracting organisations.
Immigration settings	Establishment of the Construction and Infrastructure Skill Shortage List (CISSL) to support the government's construction and infrastructure commitments. Easy movement of people across borders to keep labour costs down.	Objectives 1 and 2	Industry input on migrant workers in demand for employers in the subcontracting sector.

11.4 Research limitations and recommendations for future research

This section sets out the limitations of the research in relation to the generalisability of the research, data recency, sample size and the causal loop diagrams. In response to these limitations, recommendations for future research are presented. Finally, some concluding remarks are included.

11.4.1 Generalisability of the research

The empirical findings from this research are based solely on the Christchurch post-earthquake environment. It is recommended, in future investigations, to widen this to post-disaster reconstruction projects in other geographical areas to test the generalisability of the outputs.

11.4.2 Data recency

The workforce resourcing best practice guidelines were developed based on data collected from 2014 to 2016. Hence, the guidelines development did not account for any changes across the years thereafter that may (or may not) impact their relevance. A longitudinal study would be required to capture this information.

11.4.3 Sample size

The current data appropriately served the intents of the research under the constructivist research paradigm (e.g., ethnographic, hermeneutic, naturalistic, participatory action research, phenomenological, qualitative). Multiple case studies were investigated in this

research, although according to Boddy (2016), a single case study can be highly edifying in constructivist or in-depth qualitative research. These case studies were purposively selected with an entrenched adherence to information-oriented selection criteria.

The strategy was to focus on a small sample size that aligns with the research intent to capture richer data. This research does not attempt to find a large-scale generalisation of the outcome; therefore, this sample size was deemed satisfactory. The sample size was determined based upon the concept of expertise and eventual data saturation. This research focused on smaller groups of expert practitioners (i.e., subcontractors operating in the Christchurch post-earthquakes) to ensure optimum data with in-depth details.

11.4.4 Causal loop diagrams

The current data provide a qualitative picture of key issues facing the Christchurch subcontracting businesses in resourcing for the workforce. It offers an effective understanding of the context and process of workforce resourcing in subcontracting businesses. The depth of insight that arose through rich investigations enables understanding of causation and linking causes to the outcome. The causal loop diagram (CLD) explicitly depicted dynamics in workforce resourcing and their multifaceted interactions. However, the CLD is not intended to provide a simulation model of workforce resourcing. Instead, the CLD present the dynamic behaviour within and between the elements of workforce resourcing captured in this research.

Establishing quantitative evidence of subcontractors' workforce resourcing is beyond the scope of this study. However, quantitative measures would usefully supplement and extend the breadth of the current study. A large sample size could provide more definitive evidence and explore the potential of extending the research to establish a workforce resourcing system dynamics model. To that end, further research is required to establish a system dynamics model of workforce resourcing by incorporating mathematical and statistical inputs. Following this, model testing and validation can be performed to build confidence in the developed system dynamics model.

However, collecting the data required to develop such models is challenging and collaborative networks with government agencies are of paramount importance. For

instance, government interventions would enable the establishment of a real-time database to measure the performance of subcontractors in New Zealand. With this intervention, regular longitudinal surveys could take place, which in turn, capture the macro-level resourcing patterns within the subcontracting sector. This information could also be utilised to develop leading and lagging metrics of organisational performance in construction.

For the aforementioned study to take place, a number of important, key considerations must be taken into account, including:

1. Using an existing workforce resourcing model as a benchmark for testing purposes (i.e., quantitative data is a weak mechanism for developing new theories; thereby, an existing theory is needed);
2. Forming partnerships and/or collaboration with government agencies (i.e., MBIE, MSD, TEC, BCITO, Immigration New Zealand etc.) to expand the breadth of the research, allowing the establishment of industry-level resourcing mechanisms; and
3. Statistical representativeness is a prime requirement in quantitative research, and, therefore, sufficient time and other associated resources must be allocated to embark on this research approach.

11.5 Concluding remarks

While recognising the above limitations, this research offers a novel understanding of the roles of subcontractors in the context of workforce resourcing in response to large disaster reconstruction demands and has successfully captured workforce resourcing elements (i.e., recruitment, selection, training and development) in subcontracting businesses. Though not statistically representative of the subcontracting sector in New Zealand, such a sample is theoretically informed and relevant to the research goals. This methodological approach allows the researcher to understand the depth of knowledge in relation to the phenomenon of interest. Indeed, this research has attempted to identify the overarching variables in workforce resourcing along with their interactions.

The research also demonstrates a high conceptual validity as the findings resonate with previous works, specifically in terms of workforce resourcing elements and functions.

More importantly, this study derives a research agenda that maps under-explored areas relevant for further elaboration and future research. Prospective researchers can use the research results to identify gaps and priority areas in relation to workforce resourcing.

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Appendices

APPENDIX A: Ethics Approval Document

APPENDIX B: Data Collection Document

APPENDIX A:
Ethics Approval Document



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You are invited to participate in the interview for the research project titled 'Resource Availability for Christchurch Earthquake Reconstruction' undertaken at the University of Auckland. This project aims to understand the availability of resources required for repair and rebuilding of the damaged built environment in Christchurch following the September 2010 and February 2011 earthquakes.

Why and how are you invited in the interviews?

Approximately 30 construction professionals — broadly representatives of the construction practitioners who are currently involved in the construction project work in Christchurch — are invited to participate in an in-depth interview. Your selection to participate in this interview is based primarily on your relevant experience.

When is the interview happening?

The interview asks about the resourcing practice for construction project(s) in which the participant has been involved, including such as the resourcing issues you have encountered, your resourcing strategies and solutions, and resourcing challenges and trends.

How will the interview be conducted?

Upon taking part in this research, you may reserve the right to withdraw at any time during the interview. The interview will take approximately 30 to 45 minutes. If you wish to withdraw prior to the interview, it is recommended that you inform the researcher at least one week before the actual investigation. If you wish to discard any of the interview data, once the interview is complete, this must be done within two months after the interview.

Is there audio recording during the interview?

Given your consent, the interview will be recorded on audio tape. During the interview, recording may be stopped at any time at your discretion. You will be sent a copy of the interview recording and transcripts if requested. You have the right to edit the transcripts of the recordings within two weeks time.

What are the benefits of taking part in the interview?

The possible benefits to interview participants of taking part in the research include:

- (1) The interviews are used to draw up a comprehensive picture of post-earthquake resourcing system in Christchurch. Participation in the interviews can provide participants with a sense of satisfaction contributing to initiatives that are likely to improve resourcing practice for post-disaster reconstruction in New Zealand;
- (2) The participants will get copies of research findings in the first instance and can provide further inputs during the data analysis and report writing process;
- (3) The participants can get any updates, articles, conference papers and a summary of the research findings as requested to improve their resourcing practice during reconstruction.

How is the confidentiality addressed?

The risks associated with taking part in this research are limited to confidentiality concerns and issues arising. The confidentiality will be addressed in the following ways:

- (1) The interview will be only conducted on receipt of the consent from the participant's organisation;
- (2) The results of the project will be published in reports and academic journals but the anonymity of the participant will be preserved at all times. The name and personal

details of the participant will never be divulged to anyone, nor used in any written or published material from the project;

- (3) The interview transcription will be conducted by the researcher without involvement of a third party;
- (4) All collected data including audio recordings and consent forms will be separately and securely kept in the locked cabinet within the University of Auckland premises for a period of six years and securely destroyed by September 2017 by appropriate means of incineration or refuse disposal.

If you have any queries, please contact:

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APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS
ETHICS COMMITTEE ON 19/10/2011 FOR 3 YEARS REFERENCE NUMBER 7520



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CONSENT FORM

THIS FORM WILL BE HELD FOR A PERIOD OF 6 YEARS

Research Project Title: Resource Availability for Christchurch Earthquake Reconstruction

Project Manager: Dr. Suzanne Wilkinson

Researchers: Alice Yan Chang, Imelda Saran, Meresaini Siaosi-Laulua, Amanda Tze-Man Ling, Colin Roche, Henry Yang

I have read the **Information Sheet** concerning this project and understand what the study is about. I understand that I am free to request further information at any stage.

I know that:

1. My participation in the project is entirely voluntary.
2. I am free to withdraw from the interview at any time without any disadvantage.
3. Personal identifying information will be securely stored independent of the interview data, which itself will be stored in an anonymised form. Data will be retained in secure storage for 6 years after the project's completion.
4. I agree / do not agree to be audio taped for interview.
5. The interview will take approximately 30-45 minutes and the transcription of the interview recordings will be conducted by the researcher without involvement of a third party.
6. I wish / do not wish to have my tapes returned to me, and I understand that I have the right to edit the transcript of the recordings within two weeks on receipt of the tapes.

7. The researchers will contact me again in a longitudinal way to conduct a similar interview unless I withdraw from the project.
8. The results of the project will be published in reports and academic journals but my anonymity will be preserved at all times. My name and personal details will never be divulged to anyone, nor used in any written or published material from the project.

Name _____

Signature _____

Date _____

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS
COMMITTEE ON **19/10/2011** FOR **3 YEARS** REFERENCE NUMBER **7520**



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Imelda Saran

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You are invited to participate in the interview for the research project titled ‘Resource Availability for Christchurch Earthquake Reconstruction’ undertaken at the University of Auckland. This project aims to understand the availability of resources required for repair and rebuilding of the damaged built environment in Christchurch following the September 2010 and February 2011 earthquakes.

Why and how are you invited in the interviews?

Approximately 30 construction professionals — broadly representatives of the construction practitioners who are currently involved in the construction project work in Christchurch — are invited to participate in an in-depth interview. Your selection to participate in this interview is based primarily on your relevant experience.

When is the interview happening?

The interview asks about the resourcing practice for construction project(s) in which the participant has been involved, including such as the resourcing issues you have encountered, your resourcing strategies and solutions, and resourcing challenges and trends.

How will the interview be conducted?

Upon taking part in this research, you may reserve the right to withdraw at any time during the interview. The interview will take approximately 30 to 45 minutes. If you wish to withdraw prior to the interview, it is recommended that you inform the researcher at least one week before the actual investigation. If you wish to discard any of the interview data, once the interview is complete, this must be done within two months after the interview.

Is there audio recording during the interview?

Given your consent, the interview will be recorded on audio tape. During the interview, recording may be stopped at any time at your discretion. You will be sent a copy of the interview recording and transcripts if requested. You have the right to edit the transcripts of the recordings within two weeks time.

What are the benefits of taking part in the interview?

The possible benefits to interview participants of taking part in the research include:

- (1) The interviews are used to draw up a comprehensive picture of post-earthquake resourcing system in Christchurch. Participation in the interviews can provide participants with a sense of satisfaction contributing to initiatives that are likely to improve resourcing practice for post-disaster reconstruction in New Zealand;
- (2) The participants will get copies of research findings in the first instance and can provide further inputs during the data analysis and report writing process;
- (3) The participants can get any updates, articles, conference papers and a summary of the research findings as requested to improve their resourcing practice during reconstruction.

How is the confidentiality addressed?

The risks associated with taking part in this research are limited to confidentiality concerns and issues arising. The confidentiality will be addressed in the following ways:

- (1) The interview will be only conducted on receipt of the consent from the participant's organisation;
- (2) The results of the project will be published in reports and academic journals but the anonymity of the participant will be preserved at all times. The name and personal details of the participant will never be divulged to anyone, nor used in any written or published material from the project;
- (3) The interview transcription will be conducted by the researcher without involvement of a third party;
- (4) All collected data including audio recordings and consent forms will be separately and securely kept in the locked cabinet within the University of Auckland premises

for a period of six years and securely destroyed by September 2017 by appropriate means of incineration or refuse disposal.

If you have any queries, please contact:

Head of the Department

Professor Pierre Quenneville

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**Enquiries on Ethical Concerns
contact:**

The Chair, The University of Auckland
Human Participants Ethics Committee,
The University of Auckland, Room 005
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APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS
ETHICS COMMITTEE ON **11/06/2015 FOR 3 YEARS** REFERENCE NUMBER **7520**



THE UNIVERSITY OF AUCKLAND
NEW ZEALAND

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CONSENT FORM

THIS FORM WILL BE HELD FOR A PERIOD OF 6 YEARS

Research Project Title: Resource Availability for Christchurch Earthquake Reconstruction

Project Manager: Dr Suzanne Wilkinson

Researchers: Dr Alice Yan Chang-Richards, Imelda Saran, Ke Qin

I have read the **Information Sheet** concerning this project and understand what the study is about. I understand that I am free to request further information at any stage.

I know that:

1. My participation in the project is entirely voluntary.
2. I am free to withdraw from the interview at any time without any disadvantage.
3. Personal identifying information will be securely stored independent of the interview data, which itself will be stored in an anonymised form. Data will be retained in secure storage for 6 years after the project's completion.
4. I agree / do not agree to be audio taped for interview.
5. The interview will take approximately 30-45 minutes and the transcription of the interview recordings will be conducted by the researcher without involvement of a third party.
6. I wish / do not wish to have my tapes returned to me, and I understand that I have the right to edit the transcript of the recordings within two weeks on receipt of the tapes.
7. The researchers will contact me again in a longitudinal way to conduct a similar interview unless I withdraw from the project.

8. The results of the project will be published in reports and academic journals but my anonymity will be preserved at all times. My name and personal details will never be divulged to anyone, nor used in any written or published material from the project.

Name _____

Signature _____

Date _____

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS
ETHICS COMMITTEE ON **11/06/2015** FOR **3** YEARS REFERENCE NUMBER **7520**

APPENDIX B:
Data Collection Document



THE UNIVERSITY OF AUCKLAND
NEW ZEALAND

RESOURCING BEST PRACTICE FOR SUBCONTRACTORS IN CHRISTCHURCH

Researcher : Imelda Saran Piri
Supervisors : Professor Suzanne Wilkinson
: Dr Alice Yan Chang-Richards

1. Company Background

How long has this company been established?

What is your core business?

Do you diversify? Why do you need to diversify?

Could you give the percentage of rebuild-related work and business-as-usual activities?

How many employees do your company have?

How many plant and machinery does your company own?

2. Project Background

What are the projects in the Central District Business (CBD) that you are managing now?

Who is the owner of the project? (Public/Private)

What are the project team size and its composition?

What are the main challenges in managing the project?

3. Resourcing Challenges

Have you noticed any resources in short supply?

What are the contributing factors to the resource shortages?

Do you have any alternative sources when the resource becomes unavailable?

What are the impacts of resource shortages?

4. Subcontracting Business

How do you secure a job from the contractor? (Repeat client, client recommendation, consultant/designer recommendation, bidding/tendering process, direct/on-going agreement with contractor)

What are the roles of main contractor?

How do you ensure the building resources to be sufficient? Do you have any mechanism or system used for resource planning?

Does the contractor provide assistance in terms of resources?

Where do you get business advice?

5. Human Resource Management
Workforce Resourcing Planning (WP)
What is your human resource size expectation?
What is the basis in estimating human resource?
What is your retention and turnover expectation?
What are the identified skill in short supply in your company?
How do you fill the gap on the required skills and abilities?
If you have an ageing workforce, what are the strategies in place to ensure productivity?
How do you plan for your human resource career development?
Workforce Management (WM)
Do you consider people management as the driver for an enhanced competitiveness and improved productivity?
How do people management play its roles in ensuring project success and improved organisational performance?
How do you manage your recruitment and selection?
Do you use recruitment agencies? Do you have any recruitment agency of preference?
What is the proposition of the employee(s) you recruited at the moment? (Local/International)
How do you retain your human resource?
Workforce Development (WD)
How do you improve the skills of your employee?
What capacity exists within your company to train your employee?
What are the impacts of the training and development programmes on employee performance?
How do you monitor your employee performance?
What are the mechanisms used in ensuring continuous employee productivity?
How do you value your employee?
How do you motivate a high-performance employee?
Do you allow employee participation in any organisational decision-making?
How do you maintain effective communication at the workplace?
6. Material Management
Is there any material(s) in short supply?
What building material available locally and what need to be imported?
How do you maintain an effective coordination with your suppliers?
Is the demand for specific materials will cause price fluctuations, inflation or disruption on the supply chain?

7. Resourcing Prospects

What do you anticipate will be problematic in resourcing for the next 6, 12, 18 and 24 months?

What have been the impacts of the resource shortages?

What are your company strategies in dealing with skill shortages?