Migrant construction workers' demography and job satisfaction: A New Zealand study

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Abstract

Purpose: The demand for construction-related occupations has increased consistently over many years in New Zealand (NZ). This has necessitated recourse to migrant workers to address capacity and capability requirements. Migrant construction workers hail from various backgrounds with a complex set of their needs being met through employment in NZ. Research on understanding the satisfaction levels of this category of construction workers is scarce. With recent insinuations about migrant exploitations, research investigations into this knowledge area is significant. In this study we sought to establish the moderating effect of migrants' demography on the determinants of job satisfaction in NZ's construction sector.

Research design: Data was obtained from migrant construction workers of Chinese extraction through a structured questionnaire survey. From 200 questionnaires administered, 108 samples were completed by migrant construction workers involved in major projects in Auckland city, NZ. Data obtained were analysed using descriptive and inferential statistics to establish the moderating effects of their demography on job satisfaction.

Findings: Results from this study support the internal validity and reliability of these personal characteristics as moderators of job satisfaction for migrant construction workers. These results suggest the relevance of personal characteristics of Chinese migrants in any improvement initiatives being developed for this group of construction workers.

Research limitations/implications: The findings from this study contribute to the discourse on the relevance of construction migrants as a strategic alternative to addressing skill shortages within the NZ construction sector. They also provide evidence that contributes to an improved understanding of the migrant workforce to meet their aspirations and enhance their general well-being.

Originality/value: Although the study is ethnic-specific, the conclusions show the relevance of personal characteristics in the experiences of construction migrant workers. The study is representative of the catchment of temporary migrant workers in the construction industry in NZ. The study provides insights for organisations employing migrants about putting in place appropriate measures to enhance their satisfaction levels. Finally, this study's findings may contribute to policy initiatives on the optimal categories of migrants engaged on construction activities to derive the maximum benefits for NZ.

Keywords: Construction workers; Demography, Migrant workers; Job satisfaction

Introduction

New Zealand's construction industry [NZCI] has witnessed considerable year-on-year growth since 2011. Annual growth within the industry averaged 6.60% between 2011 and 2015, slowing gently thereafter until 2019 when the COVID-19 pandemic hit (Granwal, 2020). Regardless, the NZCI's economic importance remains significant. According to recent report by NZ's Ministry of Business, Innovation and Employment (MBIE) (2020), NZCI's Gross Domestic Product (GDP) contribution in 2020 was NZ$16.2 billion – the equivalent of about 8% of the national GDP. Another report by Stat NZ (2020) suggests NZCI is fourth amongst the top 10 industries that contribute to NZ's GDP's national production measure and the fifth-largest sector in terms of employment. When combined with other sectors that provide services related to construction, NZCI accounts for just under 200,000 people, which translates to about 10% of total national employment.

Various NZCI growth triggers have been reported. According to Bretherton (2017), there were increased construction activities after the 2010 and 2011 Christchurch earthquakes due to the city's rebuild programme. Most of the construction works in NZ's major cities have been due to population growth and economic activities, resulting in a more considerable demand for different infrastructural facilities such as housing, commercial building, transportation, communication, energy, and industrial projects. The phenomenal increase in economic activities across all NZCI subsectors heightened resource shortfalls amongst construction organisations. The MBIE (2017) report projects the demand for construction-related occupations to rise by about 11% between 2016 and 2022, suggesting over 57,000 additional skilled workers will be required by 2022 to cope with the growth in demand. This skill requirement is challenging because the industry is already in a state of acute skill shortage. A BDO (2020) NZ report had indicated concerns around the availability and quality of construction occupations. It had concluded from their investigations that the balance between quality and quantity of workers in the construction sector was precarious. Shortages of skilled workers in construction industries are therefore prevalent. Jackson (2018) articulates the difficulties faced by industry associations in the United States' construction sector. For instance, 78% of Associated General Contractors of America members had trouble finding qualified workers, while 82% of construction firms said they expected the unavailability of skilled labour to remain a difficult challenge or to worsen. Another report by AECOM, a global premier infrastructure firm, showed skills and materials shortages were the highest ranked (at 43%) of the industry's most critical challenges (AECOM, 2019).

Many studies have acknowledged resource shortages as a common challenge in the construction industry globally, due to a wide range of factors (Dainty *et al.,* 2005; Dhal, 2020; Ho, 2016; Juricic *et al.,* 2021; Lobo and Wilkinson, 2008; McGrath-Champ *et al.,* 2011). As a result, attracting skilled migrant workers has become a policy thrust in many developed economies (Guo and Al Ariss, 2015; Přívara *et al.,* 2020). Migrant workers are of considerable economic significance to the NZCI (MacLennan, 2018). Harkins (2016) explains how such migrant workers contribute to the economies of their host countries. Harkins also offers some insight about the need to understand the challenges faced by these workers, so appropriate measures can be put in place to ensure and enhance their well-being and economic outcomes, wherever they are resident. There is evidence of exploitation of construction migrant workers in NZ, some of which have necessitated recent changes to immigration policies (MBIE, 2021).

Seale et al (2015) had reported that the vulnerability of temporary migrant workers in the construction industry had become an emerging issue. The rebuild programme exacerbated exploitation after the 2012 Canterbury earthquake with noticeable pay differences between migrants and locals, and unhealthy living conditions (MacLennan, 2018). More recently, Kilgallon and Xia (2021) confirmed that Chinese migrants are overworked and underpaid. There is also a propensity for lower job security for migrant construction workers according to Buckley *et al.* (2016). MacLennan's (2018) seminal work on Filipino construction workers is hereby acknowledged; however, little is known of Chinese migrant worker situations in NZ. In 2017, 9% of temporary work visa holders came from China (MBIE, 2017). We submit that migrant construction workforce remain largely understudied in NZ's social science research.

Such a knowledge gap is consequential. In an industry where job satisfaction remains an ongoing issue (Macky and Boxall, 2008), it is important to understand how migrant workers moderate this. For greater clarity, van der Westhuizen *et al.* (2012), Pacheco *et al.* (2016), and Kwok *et al.* (2015) have explained the role of culture in determining job satisfaction. Thus, it is essential to establish whether the same determinants of (dis)satisfaction speak to migrants and indigenous workers the same way; and, if at all, whether there are demographic nuances to outturn effects of the determinants of (dis)satisfaction on migrants or indigenous workers in the NZCI. This current study seeks to identify the determinants of job (dis)satisfaction for migrant construction workers using a representative sample of Chinese ethnic groups who hold temporary visas and work in the NZCI.

Determinants of Job Satisfaction and Demographic Measures

It is critical to consider the nuances arising from the ways migrants and the indigenous workforce view job satisfaction. However, normative literature seldom considers this definitively; and, where it does, comparisons between migrant and indigenous workforce satisfaction are mainly inconclusive, especially around the demographics and ecosystems of work (see Wahi *et al.,* 2020, on the future of work and the modern workplace as an ecosystem).

Understanding such nuances does not render extant applied psychology theories less valid. Instead, it is crucial to know whether these would help future studies better understand job satisfaction and the specific implications of situating migrants and indigenous workforces within the broader industry. Wang and Jing (2018) provide insights into work- or non-work-related factors that could influence immigrants' job satisfaction, either independently or in combination. Within their postulations of non-work-related factors are three main categorisations: general demographic, culture-related and community-related factors. The current study considers the moderating influence of general demographic factors on job satisfaction. We focus on Chinese immigrant workers within the NZCI as the host community; these are intended to act as proxies for culture and community-related factors. The following subheadings provide brief outlines of the demographic measures used in the current study.

General demographic measures

Previous studies provide empirical justification of the variability in job satisfaction levels between immigrants from different backgrounds. Magee and Umamaheswar (2011) and Ko *et al.* (2015) contend that immigrants' backgrounds are significant in job satisfaction studies because of the tendency of migrants to choose different reference systems to evaluate job conditions in their host country. Furthermore, variable responses to job experiences can be explained by migrants' needs, prior experiences and work orientation that are likely to be specific to their countries of origin. We expand on these general demographic factors in the following paragraphs.

Understanding measures of demography

Gender

Bussey (2011) explains the underlying importance of gender as a means of self-definition in most societies. Bussey's story draws a line of distinction between sex and gender: sex as a biological denominator; gender as the way people want to be identified. Nonetheless, beyond identification, societal complexities around gender identification and discrimination have been well documented. For example, Gartzia and Lopez-Zafra (2016) explained such complexities include equality issues in the sense of inclusion, wage discrimination, equal opportunities and cultural segregation, and marriage and education biases. There is also a political side: many countries have different cultural orientations, public perceptions and reforms regarding gender identities and rights. For example, some countries still struggle with accepting same-sex marriage and transgender outlooks – these can attract severe penalties in such parts of the world. Thus, gender as an issue is a reasonable cause for migration. People tend to move to locations where they achieve safety, inclusion, acceptance, fulfilment, personal values, freedom and career opportunities. They tend to avoid places where societal complexities around their gender could burden them.

Age

Age is a widespread basis for differentiation across the strata of social structure (Linton, 1936). It defines inclusion and exclusion regarding work and entitlements, critical life decisions regarding work and family, and the attraction of migrating to seek improved work satisfaction or leisure. A study by Ajayi and Olatunji (2017) found that some employees are more inclined to voluntary turnover for mobility within certain age brackets. Gazioglu and Tansel (2006) found a U-shaped relationship between worker age and job satisfaction – aspirations to remain in a job are highest amongst young and old workers. While it is logical that young people are often inclined to explore opportunities and seek freedom through mobility, middle-aged workers are often attracted to stability and have commitments beyond work to stay in a job. These perceptions shape the decision to migrate, as well as job satisfaction and turnover.

Educational background

Education can be considered a key source of self-improvement and could be a prerequisite for growth and advancement in career and professional goals. Education can enhance esteem, confidence, skills and

competencies, career success, self-efficacy and future career expectations (Baruch and Peiperl, 2000). Several studies have associated levels of education with job satisfaction. González *et al.* (2016) believe that an employee's education level is an important variable that is strictly personal in nature, and that the higher the level of education, the more employment options are available. Nikolaou *et al.* (2005) argue that job satisfaction levels increase with education levels because workers can gain the correct employment positions to help them live a great life. Other authors have argued that higher job satisfaction comes from higher income (Bakan and Buyukbese 2013), better employment benefits (Pandey and Asthana 2017) and career advancement opportunities (Ling *et al.*, 2018; Mehdiabadi and Li, 2016) that higher educational backgrounds provide.

However, in contrast, Clark and Oswald (1996) contend the higher the level of educational attainment, the lower the satisfaction level reported by job holders. A more recent study in Spain found that educational levels do not influence job satisfaction (Gonzalez *et al.,* 2016). The argument is that higher educational levels impact negatively on overall satisfaction in certain jobs (Clark and Oswald, 1996; Gazioglu and Tansel, 2002; Grund and Slivka, 2001; Sloane and Williams, 1996). According to González *et al.* (2016) and Lam *et al.* (2001), education may raise employees' expectations, depending on their personal and professional aspirations. Such employees could also become more discerning regarding improper work contexts that could impact their mental and physical health (Gürbüz, 2007).

For the current study, we align with the reflection theory explained in Froese *et al.* (2019) that more educated migrants are more likely to exhibit greater job satisfaction. Especially when they perceive that their work performance counts towards their achievements within their host country.

Marital status

Marital status can be significant in determining the level of satisfaction of migrant workers. Depending on immigration status, they are either able to travel alone or not. Knipe *et al.* (2019) explain that most Asian migrant workers have temporary visas and emigrate without their families. Compared to unmarried men and women, married migrant workers face additional issues, chiefly due to marital separation and an inability to fulfill some parental responsibilities. The moderating effect of marital status is studied in global literature with respect to the well-being of migrant workers and those who are left behind (Knipe *et al.,* 2019; Lei *et al.,* 2020; Shattuck *et al.,* 2019; Tong *et al.,* 2019). Tong *et al.* (2019) found the psychological consequences of family separation are largely underexplored in Chinese migrant workers. These authors found that depressive symptoms are more prevalent in married adults who emigrated from rural areas of China.

Furthermore, because of additional household commitments and a reduced level of intimacy, spouses left behind in China may also experience elevated stress levels. Stress may eventually have a consequential effect on the psychological well-being of the migrant worker and, thus, their job satisfaction. In contrast, migrant workers may have enhanced job satisfaction because of their ability to provide a better economic environment for their dependents (Hadi, 1999; Shattuck *et al.,* 2019). Another possibility is that Chinese migrant workers may move to NZ with their families. Global literature shows they may face additional work-life balance issues because of

competing priorities such as caregiving and breadwinning (Khanh *et al.*, 2020). Eventually, their overall job satisfaction may be impaired. Mohsin *et al.* (2019) explain that the prevalence of these issues is different from one context to another depending on host governments' commitments to international protocols and local legislation that could focus on migrant workers' goal achievements and well-being. Therefore, in the current study, marital status is considered a demographic variable that could influence overall job satisfaction, either in isolation or in combination with other personal characteristics.

Years of experience

The last measure relating to general demography is the length of migrant workers experience. We have taken the premise that workers could perceive their job satisfaction differently based on their experience levels. Prior work experiences may mean migrant workers have more reference points with which to compare their work situations. For example, Badawy (1994) has shown that work experiences, coupled with career expectations, relate to satisfaction because of perceived confidence and competence in doing work. In another regard, Okpara (2004) argues that the more work experience, the more respect workers have for their jobs, translating to greater job satisfaction. Latiff *et al.* (2017) contended that this was the case for teachers' job satisfaction levels, increasing with their service length.

Furthermore, Bilgic (1998) concludes that work experience contributes positively to feeling good about one's job. Although, feeling good may be impaired by discrimination, especially discrimination against migrants' characteristics such as their experience level. A perception of inferior work experiences (however useful these may be) may cause reduced psychological well-being and, consequently, lower job satisfaction (Wang and Jing, 2018). Townsend *et al.* (2014) report on this lack of trust in prior abilities for immigrants, which we consider significant to their level of job satisfaction.

General measures of job satisfaction

Many studies have examined numerous attributes of job satisfaction amongst workers. Normative knowledge about job satisfaction has matured over several decades. For example, a survey of public employees by Brayfield *et al.* (1957) found employees who are not satisfied with their jobs often lack a general sense of satisfaction in other areas of their lives. The same argument is relevant today: if migrant workers are to have some pleasant experiences in their mobility, it is important that they are pleased with their work as with their lives generally. What these mean to workers in different industries and across nuanced demographics have been measured by various authors. Tian *et al.* (2018) found migrant skilled workers in Australia are keener on skill utilization than just having a job. However, migrants' opportunities to migrate and integrate themselves in their new nation depend on two crucial factors. Firstly, is whether they are satisfied with their host nation and communities, and secondly whether there are many policies in such a host nation and communities that facilitate what migrant workers might consider attractive in terms of labour relation and social security. According to a finding by Randeree (2008), skilled migrants are often not attracted to societies that are notorious for labour injustice or are not known for social investments that are hospitable to migrant workers.

Other studies have further investigated workers' general satisfaction into specific elements. Evidence suggests workers would prefer to be paid well, on time and that they receive benefits and entitlements that do not discriminate them negatively (Card *et al.,* 2012; Steinmetz *et al.,* 2014). In addition, voluntary turnover risks have reduced where workers received paid leave, medical insurance and can afford their health costs, and where they receive considerable housing benefits (Ajayi and Olatunji 2017; Lee *et al.,* 2006).

In addition, Jaskyte *et al.* (2020) also suggests that the work environment is critical to employees' job satisfaction. For migrant workers, they need to know whether their host communities value them; in that, they can put their skills to use, they can integrate in the society, they understand their work requirements and that their work provides them considerable opportunities for advancement. Such advancement would mean that workers are able to improve their knowledge and skills, as well as their career (Oyewobi *et al.,* 2012; Tsai 2008). Felstead *et al.* (2015) view is that an organisation that allows their employees to advance their knowledge and career opportunities often benefits from workers' goodwill as workers generate self-led enablement through creativity, continuous renewal through active learning, and are able to develop their special abilities. Zou and Sunindijo (2013) found that the quality of employees' knowledge will determine their self-awareness and commitment to safe work practices and the regulatory codes and standards in relation to their duties.

Ajayi and Olatunji (2017) have examined the role of leadership quality in workers' voluntary turnover. They found employees connect to their jobs through their leaders, supervisors and work colleagues. A notable finding in their study is that leaders and direct supervisors must be capable of providing clear instruction to the employees under them, and such employees must see them as trustworthy and a go-to person, including for personal and confidential conversations. Li *et al.* (2018) add loneliness to this: migrant workers are often vulnerable to a high level of loneliness. This could draw away from their level of affective commitment and their engagement and participation. This can only worsen when they lack companionship at work or feel isolated or unwanted.

The Study Variables

It is evident from the literature reviewed that migrants' work satisfaction within the NZCI is under-reported. Specifically, it is unclear how personal characteristics shape job satisfaction amongst these Chinese migrant workers, and how job satisfaction amongst the migrant workers shapes overall well-being. It is important to provide clarity on the relationship between demographic variables of migrant workers, their perceptions of job satisfaction and the ideals of job satisfaction amongst the general NZCI workforce. This study assumes that work attitude is shaped by multidimensional contexts, such as individual attributes, and job and organisational characteristics.

Table 1 illustrates the codes of the dependent and independent variables used in the study. Overall satisfaction was the dependent variable; OS1—OS3 were the statements of measure. A 5 point Likert scale was used to obtain responses from participants through a questionnaire survey. On this scale, '1' represents 'strongly disagree' whilst '5' represents 'strongly agree'. Mid-scale, '3' represents 'neutral'. At the end of the literature review, 23 factors (f) were selected as determinants of overall satisfaction. They were arranged under five sub-categories: remunerations (RN) (f=7); work environment (WE) (f=3); knowledge advancement and career progression (KACP)

(f=5); quality of leadership and work colleagues (QLWC) (f=5); and loneliness (LON) (f=3). As with the dependent variables, similar 5 point Likert scale was used. It is expected these factors are positively correlated with general satisfaction, except LON1 and LON2 which may negatively influence general satisfaction.

Table 1: Definition of variables

Code	Variables		
	Dependent variable		
OS	**Overall satisfaction**		
OS1	I am generally satisfied with my work in New Zealand		
OS2	I will recommend this country as a good place to work		
OS3	I would like to continue working in New Zealand if I was given the opportunity		
	Independent variables		
RN	**Remunerations**	QLWC	**Quality of leadership and work colleagues**
RN1	I am generally satisfied with my income level	QLWC1	My supervisor keeps me informed of the things I need to do to perform well in my job
RN2	I always get paid on time	QLWC2	My supervisor is fair and does not show favouritism
RN3	I can get paid leave	QLWC3	I feel comfortable bringing up my personal issues with my supervisor and co-workers
RN4	My employer offers medical insurance		
RN5	I can afford my local health care	QLWC4	My supervisor is understanding when I talk about personal and family issues that affect my work
RN6	My employer offers accommodation		
RN7	My employer offers other benefits for employees	QLWC5	I have support from supervisor and co-workers that help me to manage my job and personal or family life
WE	**Work environment**		
WE1	I can adapt to the work environment of NZ		
WE2	It's easy for me to understand the way work is done in NZ	LON	**Loneliness**
WE3	I feel valued and recognised by my employer	LON1	I feel a lack of companionship at my place of work
		LON2	My interest and ideas are not shared by those around me
KACP	**Knowledge advancement and career progression**	LON3	There are people I can turn to for help or support
KACP1	My job requires that I keep learning new things		
KACP2	My job requires that I be creative		
KACP3	I have the opportunity to develop my own special abilities		
KACP4	I understand the roles of health and safety in NZ		
KACP5	I understand the standards and codes of NZ related to my duties		

Migrant construction workers who are Chinese citizens were selected for this study (see Introduction) because they remain understudied in NZ. This study sets the following hypotheses to evaluate the status and dependents of overall job satisfaction of the Chinese construction workers in NZ.

    H1:   Chinese construction workers in New Zealand are satisfied with their jobs overall.

    H2:   The demographic status of migrant Chinese construction workers moderates their job satisfaction.

    H3:   The demographic status of migrant Chinese construction workers moderates the determinants of overall job satisfaction.

Figure 1 shows the conceptual framework of the current research. The relationships among overall job satisfaction and the independent variables (i.e. RN, WE, KACP, QLWC and LON) will be established in future study; the scope of the current study is limited to evaluating the moderating effect of the demographics towards the dependent (H2) and independent (H3) variables. What are the practical implications of the outcomes of H2 and H3?

Testing H2 will assist to understand the variations of overall job satisfaction across the NZ Chinese construction worker's population. More importantly, the outcomes will determine the pre-requisites of the regression analysis required in future to determine the holistic effect from the independent variables and demographics towards overall job satisfaction. If any of the demographical variables significantly influences workers' job satisfaction, those categorial variables will require specific methods of transformation before regression compared to continuous variables (see the discussion). Some researchers may be interested in improving particular areas (for example: work environment or loneliness) or variables of the independent category regardless of their effect towards employee's overall job satisfaction. For example, being valued or recognised (i.e. WE3) may or may not influence Chinese construction worker's job satisfaction significantly. Nevertheless, human right activists and unions may be interested in them. Therefore, the outcomes of H3 will be important in understanding the variations in perceptions of the independent variables across the population.
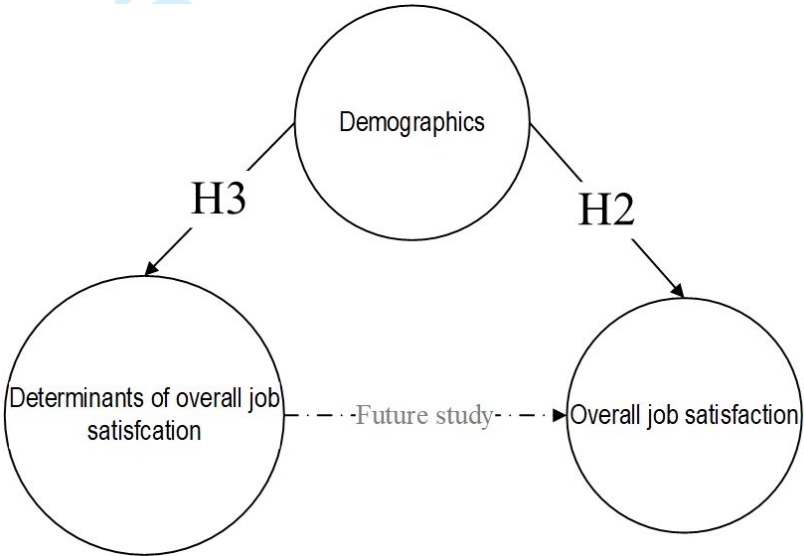

Figure 1: Conceptual framework of the study: the effect of demographics on overall job satisfaction and the determinants

Research Method

This study uses explanatory research design to explain causal relationships between the different variables through hypothesis testing. Participants of the study are Chinese migrant construction workers plying their trades in Auckland. They hold Temporary Work Visas [TWVs] that last only for the duration of a project. Chinese construction workers were selected for the current study because little is known of their working conditions, perceptions of their work environments and the level of their goal achievements, yet they are significant in number, they work on large projects, and are well-entrenched as a substantial component of the diversified local workplace. The actual number of migrant Chinese construction workers on temporary work visa is currently unavailable. However, in 2019 there were 22,192 Chinese migrants that arrived on temporary work visa to NZ (Kilgallon and Xia, 2021). Auckland was chosen as the study area because it is the biggest city with more construction activities. A sample of 200 workers was taken by purposive sampling, and questionnaires were administered to migrant construction workers employed on five major projects. The participants were selected on the basis of a degree of homogeneity of their

visa status (i.e. Temporary Work Visa holders). This is to ensure that the data collected was reliable and adequate (Alreck and Settle, 1995). Survey participants were accurately targeted using purposive sampling. This sampling approach permitted the selection of participants that represent a broad group of cases as closely as possible on a dimension of interest (Teddlie and Yu (2007). 108 questionnaires were completed among this group, representing a response rate of 54% of the target population. All participants were aged above 18 years, with 92% of them aged between 25 and 54 years old. Most respondents – 91% – were males.

Table 2: Respondents' demographic information

Description	Respondents	
	Number	Percentage
Gender		
Male	98	90.74%
Female	9	8.33%
Prefer not to answer	1	0.93%
Age		
18–24 years old	7	6.48%
25–34 years old	23	21.30%
35–44 years old	40	37.04%
45–54 years old	36	33.33%
55+ years old	2	1.85%
Ethnicity		
Chinese	107	99.07%
Southeast Asian	1	0.93%
Educational background		
Under high school	49	45.37%
High school	26	24.07%
Bachelor's degree	17	15.74%
Postgraduate qualification (Grad. Certificate, Grad. Diploma or Master)	12	11.11%
Trade school	2	1.85%
None	2	1.85%
Marital status		
Yes	90	83.33%
No	10	9.26%
In a relationship	2	1.85%
Prefer not to say	6	5.56%
Year of work experience		
0–5 years	27	25.00%
5–10 years	8	7.41%
10–15 years	23	21.30%
15–20 years	19	17.59%
20–25 years	10	9.26%
25+ years	21	19.44%
How long have you been in NZ?		
0–6 months	32	29.63%
7–12 months	28	25.93%
13–18 months	7	6.48%
19–24 months	12	11.11%
24+ months	29	26.85%
How long do you plan to stay in NZ?		
1–3 years	39	36.11%
4–6 years	18	16.67%
7–9 years	10	9.26%
10+ years	41	37.96%

The questionnaire for this study was developed based on the review of relevant literature on the measures of job satisfaction. A questionnaire survey was employed over other methods of data collection because it captures the perception of the construction migrant workforce regarding the significance of the identified variables as measures

of job satisfaction. The questionnaire was physically distributed to the research participants on construction sites. This way it was possible to reach a representative group of migrant workers in a short time. The questionnaire had four sections and required about 15 minutes to complete. It was developed in English before being translated to Chinese (Mandarin). Participation was voluntary, and participants could choose between the English and Chinese versions of the questionnaire. Almost all the participants chose the Chinese version – this could be attributed to the fact that English is not an official language in China. A full breakdown of the demography of the participants is presented in Table 2. The Table reports data on participants' gender, age, nationality, educational qualification, marital status, work experience, and planned and actual length of stay in NZ.

Data analyses

Before data analysis, internal consistency was checked for each sub-group shown in Table 1 using Cronbach's Alpha Reliability test. Findings suggested data were consistent internally (Cronbach's Alpha > 0.7). In addition, outliers were checked by observing histograms and box-plots. Using SPSS 26, a Little's Missing Completely at Random (MCAR) test was conducted at α=0.05. Findings showed data were missing randomly, hence there was no requirement to impute missing data.

To test normality, a series of Shapiro-Wilk (SW) tests was conducted after removing the outliers. The level of significance was less than 0.05 for all the variables. Thus, the data distributions were not 'precisely' normal. Since the non-parametric alternatives have limitations and accuracy issues, parametric tests could be still used and recommended if the data distributions are '*approximately*' normal; (Cantor and Shuster 1992; Kwak and Kim 2017; Matulová and Rejentová 2021; Razali and Wah 2011; Smith 2012). To check the validity of approximate normality, numerical and graphical tests were conducted as there is no formal test to assist this (Smith 2012): after checking the Q-Q plots for all the distributions, there was no significant deviation between the snake like data distributions and straight lines. Thus, approximate normality could be assumed, but the interpretation of graphical tests can be overly subjective. Because of this, kurtosis and skewness were checked as additional means to substantiate this conclusion. The findings showed that both kurtosis and skewness were between ±1 for the data distributions. Consequently, the data distributions were considered as approximate normal (Razali and Wah 2011): means and standard deviation were selected over non-parametric measures to explain the data.

One-sample t-tests were used to interpret population means. For all inferential statistical tests, the threshold was set as p≤0.05. To check group-wise variations in the population means, independent samples' t-test and one-way ANOVA were conducted. Table 2 shows the demographic information of migrant construction workers from whom data were collected.

Results

Overall job satisfaction

As per H1, Table 3 illustrates the sample statistics and population tendencies derived for the measures of overall job satisfaction. The sample means show participants were somewhere between 'somewhat agree' and 'strongly agree' towards OS1-3. The agreement was most positive towards OS3 (μ_s=4.38), followed by OS1 (μ_s=4.22) and OS2 (μ_s=4.15) respectively.

Table 3: Sample statistics and population tendencies – overall satisfaction

| Statistics | N | Sample statistics | | | | Population tendencies | | | | Correlation: r (p value) | |
		Mean	Median	Mode	Std. deviation	μ_0	t	df	Sig. (2-tailed)	OS1	OS2
OS1	102	4.22	4	4	0.840	4.2	0.189	101	0.851	-	-
OS2	97	4.15	4	4	0.939	4.2	-0.476	96	0.635	0.763 (p=0.000)	-
OS3	104	4.38	5	5	0.816	4.5	-1.442	103	0.152	0.588 (p=0.000)	0.743 (p=0.000)

To find participants' agreement towards overall job satisfaction, one-sample t-tests were conducted. For the population mean (μ), the null (H_0) and alternative (H_a) hypotheses were set as below:

H_0: $\mu = \mu_0$ (the population mean is equal to the hypothesised population mean)

H_a: $\mu \neq \mu_0$ (the population mean is not equal to the hypothesised population mean)

By observing the sample mean and standard deviation values, a trial-and-error procedure was employed to set the hypothesised population means for each dependent variable until one-sample t-test statistics indicated that the population mean was not significantly different to the hypothesised population mean. Only the accepted μ_0 values are shown in Table 3. The one-sample t-test statistics (p>0.05) showed that μ was not significantly different from μ_0 = 4.2 for OS1 and OS2 and μ_0 = 4.5 for OS3. **Table 3**Therefore, the Chinese construction population has a preference between 'somewhat agree' and 'strongly agree' towards the continuation of their work in NZ (i.e. OS3; μ=4.5). Their general satisfaction (OS1) and the perception of NZ as a good place to work (OS2) are slightly greater than 'somewhat agree' (μ=4.2). According to a paired-sample t-test, Chinese construction workers are more favourable towards OS3, compared to OS1 [t=2.259, df=98, p=0.026] and OS2 [t=3.742; df=93; p=0.000]. In addition, Table 3 shows the three variables are significantly correlated at α=0.05. A strong positive correlation exists between OS1 and OS2 (r=0.763; p=0.000), between OS2 and OS3 (r=0.743; p=0.000), and between OS1 and OS3 (r=0.588; p=0.000).

Moderating effect of demographics towards general job satisfaction

As per H2, this study analysed the effects of migrant workers demographics towards overall job satisfaction. The following were set as H_0 and H_a to facilitate the analysis:

H_0: the population means are equal across the groups.

H_a: the population means are not equal across the groups

Table 4 shows the summary of the analysis, including the demographic variables considered. Under gender, only males and females were considered; because these two groups account for 99.1% of participants, and the third category of participants who prefer not to state their gender did not meet the minimum required sample size for comparison [n=1]. The proportion between male and female was approximately 11:1. Although there is no data with respect to Chinese construction workers living in NZ, generally, women account for less than 10% in construction management positions while this percentage could be as low as 3-4% in the construction workforce (Hegarty 2020; Naismith *et al.,* 2017). Therefore, the sample distribution could be considered as a general representation of gender in the construction industry. Nevertheless, the low sample size in female may reduce the accuracy of the independent sample t-tests because of compromising the central limit theory (Kwak and Kim 2017). Therefore, as a secondary measure, the non-parametric alterative (i.e., independent sample median test) was also performed to compare the median across the two gender groups. Another issue was the possibility to violate homogeneity of variance: however, the independent sample t-test provided statistics to test this assumption before conclusions were derived.

Similarly, only married and unmarried participants were considered under marital status. To test the null hypothesis, an independent-sample t-test was used. Other demographical variables such as length of time spent in NZ, age and educational background had more than two categories; therefore, one-way ANOVA was used for them. For the three dependent sub-variables (i.e. OS1-3), p-values were greater than 0.05 for gender, marital status and length of time stayed in NZ. For gender, the independent sample median tests showed the median of OS1 (p=0.991), OS2 (p=0.698) and OS3 (p=0.478) are the same for male and female. Therefore, H_0 was accepted. This means both male and female participants had the same preference towards the measures of overall job satisfaction regardless of their marital status. Also, length of time spent in NZ had no significant influence on the overall job satisfaction of participants.

Table 4: Effect of demographic towards overall satisfaction

Demographic variable	Categories considered	Type of statistical test	*p*-value			Outcome(s)
			OS1	OS2	OS3	
Gender	Male and female	Independent-sample t-test	0.634	0.560	0.478	H_0 accepted for OS1-3
Marital status	Married and unmarried	Independent-sample t-test	0.119	0.335	0.114	H_0 accepted for OS1-3
Time spent in NZ	All categories*	One-way ANOVA	0.124	0.162	0.881	H_0 accepted for OS1-3
Age	All except 55+*	One-way ANOVA	0.013	0.033	0.107	H_0 rejected for OS1 and OS2; H_0 accepted for OS3
Educational background	All except 'trade school' and 'none'*	One-way ANOVA	0.016	0.023	0.408	H_0 rejected for OS1 and OS2; H_0 accepted for OS3

* see conducted. Table 2 shows the demographic information of migrant construction workers from whom data were collected.

Regarding age, the '55+ years' category was eliminated from the analysis due to sample inadequacy. A Levene's test was conducted to ensure that the assumption of the homogeneity of variances was satisfied under the ANOVA test. The p-values were 0.994, 0.974 and 0.535 for OS1, OS2 and OS3 respectively. In addition, the mean population agreement was significantly different for at least one age category – specifically, for OS1, F= 3.332, p=0.013; whilst for OS2, F= 2.751, p=0.033. This implies age does not influence the willingness of participants to continue work in NZ [F= 1.960, p=0.107]. To find out which group mean is significantly different, a Tukey test was conducted as a post-hoc test. The only statistically significant mean difference was between '25—34 years old' and '45—54 years old' for both OS1 (p=0.005) and OS2 (p=0.017). By observing this mean difference further, evidence suggests the '45—54 years old' age group is generally happier than other age groups and will recommend NZ to others as a good country in which to work.

Under educational background, two categories [participants who ticked 'trade school' and 'none'] were eliminated due to limited data. Using Levene's test, the assumption of homogeneity of variances was satisfied [p=0.488, 0.181 and 0.573 for OS1, OS2 and OS3 respectively]. ANOVA test showed mean population agreement was significantly different for at least one category of educational background: for OS1, F= 2.966, p=0.016; whilst for OS2, F= 2.551, p=0.023. This evidence suggests educational background does not influence participants' willingness to continue work in NZ [F= 1.024, p=0.408]. According to a Tukey test, participants who possessed 'under high school' qualifications showed a greater general satisfaction (OS1) than holders of Bachelors' degrees (p=0.004) and post-graduate qualifications (p=0.023). Participants who possessed 'under high school' qualifications were more likely to recommend NZ as a country to work than holders of Bachelors' degrees (p=0.044) and post-graduate qualifications (p=0.037).

Moderating effects of participants' demographics towards independent determinants of job satisfaction

To determine the moderating effects of participants demographics towards independent determinants of overall job satisfaction, the study considered their ages and educational backgrounds. This is because these were the only demographic variables that influenced overall job satisfaction (i.e. the main focus of this paper). The following hypotheses were tested via one-way ANOVA. When the null hypothesis was rejected, a Tukey test was used to determine the specific groups showing significant differences.

H_0: the population means are equal across the groups.

H_a: the population means are not equal across the groups.

A summary of the analysis is presented in Table 5, which illustrates that age and educational background significantly influenced some of the overall job satisfaction determinants. Similar to the measures of overall job satisfaction, the 45—54 age group was more favourable than the 25—34 category towards nine determinants of OS1-2 [i.e. RNs1and 5, WE1, KACPs2-5; QLWCs3 and 5]. This implies 80% of KACP factors were more favourably perceived by participants aged 45 to 54 years. In addition, there was a significant difference between the 45—54 and 35—44 categories towards RN5. Only three determinants were influenced by the educational background of participants (RNs 4 and 5, and LON1). When compared to holders of Bachelors' and post-graduate qualifications,

workers who earned no more than high school qualifications were more favourable towards RNs 4 and 5, although they felt lonelier than participants who had earned at least one degree (LON1).

Table 5: Favourability towards the determinants of overall satisfaction

Factor	Rank*	Sample Mean (μ_s)	Std. Deviation (Sample)	Population mean (μ_0)	Age [interpretation; statistical evidence]		Educational background [interpretation; statistical evidence]	
					Interpretation	Supporting evidence [One-way ANOVA (p-value) followed by Tukey HSD (p-value)*]	Interpretation	Supporting evidence [One-way ANOVA (p-value) followed by Tukey HSD (p-value)*]
RN1	6	3.75	1.128	3.90	(45-54) > (25-34)	p_{ANOVA}=0.028; P_{Turkey}= 0.05	No effect	p_{ANOVA}=0.121
RN2	18	4.16	0.879	4.30	No effect	p_{ANOVA}=0.324	No effect	p_{ANOVA}=0.969
RN3	20	3.44	1.574	3.70	No effect	p_{ANOVA}=0.255	No effect	p_{ANOVA}=0.459
RN4	15	3.64	1.531	3.90	No effect	p_{ANOVA}=0.139	Bachelor< Under High school; Bachelor < High school; Postgrad< Under High School; postgrad< High School	p_{ANOVA}=0.003; P_{Turkey}= 0.018 for Bachelor versus Under High school P_{Turkey}= 0.018 for Bachelor versus High school P_{Turkey}= 0.047 for Postgrad versus Under High School P_{Turkey}= 0.039 for postgrad< versus High School
RN5	17	3.53	1.277	3.80	(45-54)>(25-34); (45-54)>(35-44)	p_{ANOVA}=0.007; P_{Turkey}= 0.046 for (45-54)versus(25-34) P_{Turkey}= 0.030 for (45-54)verus(35-44)	No effect	p_{ANOVA}=0.622
RN6	13	3.59	1.596	3.80	No effect	p_{ANOVA}=0.061	Bachelor< Under High school; Bachelor < High school; Postgrad< Under High School; postgrad< High School	p_{ANOVA}=0.000 P_{Turkey}= 0.000 for Bachelor versus Under High school P_{Turkey}= 0.014 for Bachelor versus High school P_{Turkey}= 0.000 for Postgrad versus Under High School P_{Turkey}= 0.001 for postgrad< versus High School
RN7	19	3.22	1.375	3.10	No effect	p_{ANOVA}=0.136	No effect	p_{ANOVA}=0.789
RNavg	*N/A***	*3.69*	*1.024*	*3.82*				
WE1	16	4.38	0.693	4.50	(45-54)>(25-34)	p_{ANOVA}=0.002; P_{Turkey}= 0.008	No effect	p_{ANOVA}=0.111
WE2	8	4.35	0.769	4.40	No effect	p_{ANOVA}=0.063	No effect	p_{ANOVA}=0.571
WE3	11	4.06	0.973	4.00	No effect	p_{ANOVA}=0.088	No effect	p_{ANOVA}=0.184
WEavg	*N/A*	*4.3*	*0.648*	*4.39*				
KACP1	21	4.32	0.839	4.40	No effect	p_{ANOVA}=0.187	No effect	p_{ANOVA}=0.399
KACP2	14	4.15	0.930	4.00	(45-54)>(25-34)	p_{ANOVA}=0.014; P_{Turkey}= 0.024	No effect	p_{ANOVA}=0.339
KACP3	12	4.25	0.875	4.40	(45-54)>(25-34)	p_{ANOVA}=0.003; P_{Turkey}= 0.047	No effect	p_{ANOVA}=0.414
KACP4	5	4.26	0.883	4.40	(45-54)>(25-34)	p_{ANOVA}=0.048; P_{Turkey}= 0.034	No effect	p_{ANOVA}=0.381
KACP5	7	4.24	0.935	4.40	(45-54)>(25-34)	p_{ANOVA}=0.015; P_{Turkey}= 0.05	No effect	p_{ANOVA}=0.340
KACPavg	*N/A*	*4.29*	*0.735*	*4.40*				

QLWC1	10	4.09	1.006	4.00	No effect	p_{ANOVA}=0.492	No effect	p_{ANOVA}=0.778
QLWC2	3	4.18	1.014	4.30	No effect	p_{ANOVA}=0.954	No effect	p_{ANOVA}=0.449
QLWC3	1	4.11	0.937	4.00	(45-54)>(25-34)	p_{ANOVA}=0.047; P_{Turkey}= 0.002	No effect	p_{ANOVA}=0.063
QLWC4	4	4.06	0.998	4.00	No effect	p_{ANOVA}=0.100	No effect	p_{ANOVA}=0.765
QLWC5	2	4.10	1.005	4.00	(45-54)>(25-34)	p_{ANOVA}=0.038; P_{Turkey}= 0.041	No effect	p_{ANOVA}=0.056
QLWCavg	*N/A*	*4.11*	*0.858*	*4.20*				
LON1	=22	3.45	1.375	3.70	No effect	p_{ANOVA}=0.275	Bachelor< Under High school; Bachelor < High school; Postgrad< Under High School; postgrad< High School	p_{ANOVA}=0.021 P_{Turkey}= 0.024 for Bachelor versus Under High school P_{Turkey}= 0.044 for Bachelor versus High school P_{Turkey}= 0.028 for Postgrad versus Under High School P_{Turkey}= 0.014 for postgrad< versus High School
LON2	=22	3.17	1.432	3.00	No effect	p_{ANOVA}=0.604	No effect	p_{ANOVA}=0.816
LON3	9	4.01	1.088	4.00	No effect	p_{ANOVA}=0.488	No effect	p_{ANOVA}=0.682

Discussion of the Findings

This research has highlighted the significance of migrants as a solution to addressing the skills shortages seen within the NZCI. The economic importance of the migrant construction workforce is acknowledged (MacLennan, 2018). However, as little is known about their working conditions, perceptions of their work environments and the level of their goal achievements in their new environment (NZ), the current study finds its relevance. Yalabik *et al.* (2017) had made a note of the importance of job satisfaction as a driver of all dimensions of work engagement, which could positively impact on the productivity of the national workforce. The need to capitalise on the full potential of the migrant construction workforce cannot be overemphasised. In this study, we investigate Chinese migrant construction workers satisfaction in relation to their overall job satisfaction in NZ. Thus, the study provides insights into the moderating effect of migrants' demography on the determinants of job satisfaction within the NZCI.

Three hypotheses were developed and tested to address the study objective. The first hypothesis (H1) sought to establish how satisfied respondents were with their jobs overall. There was a general agreement of satisfaction between study participants, which indicated they would like to extend their stay and were most likely to recommend NZ as a good place to work. The first hypothesis (H1) was therefore accepted. This is new knowledge considering the absence of literature within the social science field on construction migrants in NZ. The comparison of the population means indicated that Chinese construction workers were more favourable towards OS3 (willingness to continue work in NZ) with compared to OS1 (generally satisfied with work) and OS2 (NZ is a good place to work). Within this quantitative study, it was not possible to find 'why'. Potentially, this may be because OS1 and OS2 are more specific measures of 'work environment' whereas OS3 could be influenced by factors outside of work such as improved living conditions and better education for children with compared to the homeland. A qualitative investigation is required to find out these additional factors. Also, OS1 and OS3 showed only a moderately strong association (r=0.588; p=0.000). These substantiate that there are factors outside of work that influence willingness to live in NZ.

The second hypothesis (H2) focused on the moderating effect of the demography of Chinese construction migrants on job satisfaction. Although the literature review showed inequality issues and discrimination worldwide against women in the construction industry, the study found that the overall job satisfaction expressed by the study participants was irrespective of their gender. This could be because the NZ government and construction industry stakeholders have a significant and shared commitment to ensure gender equality and diversity (Construction Sector Accord 2020). Nevertheless, equal satisfaction cannot be considered valid for other women populations – such as New Zealanders and Pacific islanders – as their cultural and social constructs may be significantly different from Chinese women. The study also showed that the length of stay in NZ did not determine job satisfaction significantly. Thus, it could be expected that it is easy to become adapted to NZ work environments. As shown in Table 5, the average population mean for the WE factors is 4.39, indicating favourable construction work environments in NZ.

The literature review showed that marital status could influence job satisfaction in migrant workers; nevertheless, both married and unmarried Chinese migrant workers are equally favourable towards overall job satisfaction. According to literature (Mohsin *et al.,* 2019), the effect of marital status gets diminished when the host government is committed towards migrant workers' wellbeing via commitment to international protocols and local legislations. Nevertheless, the current study's methodological position is inadequate to explain this equal favourability credibly. Firstly, the current study did not evaluate if the married migrant workers left their families behind or moved with them. Secondly, there is a future study requirement to assess how NZ work environments and living conditions help migrant workers cope with depressive symptoms when leaving their families behind.

However, in terms of age, the study revealed that participants within the 45–54 age group were happier than those in other age groups and would recommend NZ to others as a good country in which to work. It should be noted that the above 55 group was not considered under this analysis. Compared to younger migrant workers, middle-aged workers typically have added family commitments to support children's education and look after aged parents. Coupled with favourable income levels (see Table 5), an ability to fulfil these commitments could enhance job satisfaction in this age category. Also, the middle-aged workers have more positive reaction towards job stability when compared to younger generations that prioritise travelling, leisure and adventures. Thus, the field study findings are consistent with the reviewed literature.

Another important demographic was educational background; the study found that participants with high school qualifications (and below) were more likely to recommend NZ as a country in which to work. This finding is consistent with Gonzales *et al.* (2016) that workers with lower educational levels are more likely to express higher levels of appreciation for work that they have been able to secure and maintain. Our study did not investigate the Chinese migrants' previous employment (or employability) status in their home country, which may be significant to their responses to job satisfaction in their new environment.

Finally, the last hypothesis (H3) tested the moderating effect of the demographic status of migrant Chinese construction workers on the determinants of job satisfaction. Our findings indicate that age and educational backgrounds had significant influence on some of the determinants of overall job satisfaction. Older migrants (45-54 years) tended to be more favourable to the determinants of overall satisfaction. In contrast, participants' educational backgrounds influenced only three determinants (RNs 4 and 5, and LON1). Furthermore, migrants with lower qualifications were more favourable towards RNs 4 and 5, although they felt lonelier than participants who had earned at least one degree (LON1).

Considering that age and educational background significantly influenced both independent and dependent variables, a correlation analysis will be inappropriate to test the hypothesis in future. That *'RN/WE/KACP/QLWC/ LON influences Chinese migrant worker's job satisfaction in NZCI.* Thus, a regression analysis could be employed to test this hypothesis while introducing age and educational background as moderating variables. The challenge is that age and educational background as moderating variables are categorical; compared to continuous and dichotomous variables, they need specific attention before regression. Thus, the authors suggest re-coding age

and educational background using an appropriate coding system (see Institute for Digital Research and Education. 2021). The outcomes could elicit evidence to assist policymakers in developing strategic interventions regarding the enduring determinants of overall job satisfaction for a critical population of skilled immigrant construction workers in the NZCI.

Conclusion

This study aimed to establish the moderating effect that demography has on the overall job satisfaction of Chinese migrant workers in the NZCI. It is an aspect of a more extensive study on the working conditions of migrant construction workers in NZ. The study identified gender, age, educational background, marital status and years of experience as personal characteristics that may influence migrants' perception of satisfaction within their host country, NZ. The current study results support the internal validity and reliability of these personal characteristics as moderators of job satisfaction for this category of migrant construction workers. Migrant Chinese construction workers over 45 years old were more satisfied with working conditions than younger migrants. Also, the educational background of these migrants (especially those less educated) was significant to overall perception of satisfaction. Both age and educational background were confirmed as moderators to the determinants of their job satisfaction within the NZCI. These findings are significant to future efforts by government and policymakers to address the perceived exploitations reported in the NZ media. Satisfied Chinese migrant workers are more likely to be productive, significantly benefiting their employers, industry and the national economy. Also, the findings may contribute to policy initiatives on the optimal categories of migrants engaged on construction activities to derive the maximum benefits for NZ. Finally, the study provides insights for organisations employing migrants about putting in place appropriate measures to enhance their satisfaction levels.

Similar empirical findings can improve living conditions and the overall achievement of expectations of life in the NZCI. It provides an alternative perspective to the immigration survey monitoring programme in NZ, because of its focus on a particular ethnic nationality that makes up a significant percentage of the migrant workforce. Further studies will build on the achievements of this current study to determine the holistic effects of participants' demographics against overall job satisfaction and the independent variables using a suitable regression analysis. This will elicit evidence to assist policymakers in developing strategic interventions regarding the enduring determinants of overall job satisfaction for a critical population of skilled immigrant construction workers in the NZCI.

There are limitations to the study findings. Firstly, the sample consists exclusively of Chinese construction migrant workers in Auckland city, NZ. Therefore, the generalisation of these research results to other migrant worker groups, should be made with caution. Despite this limitation, the current study provides a meaningful beginning to exploring a largely ignored population in the NZ workforce. More studies are needed to focus on construction migrant workers from other cultural backgrounds. The second construct we measured in the current study was general job satisfaction. Therefore, findings in the present study should not be generalised to other, more specific aspects of job satisfaction. As mentioned previously, job satisfaction is a broad and multi-faceted construct. Migrant

workers' job satisfaction toward pay, management, and skill variety might have different predictors that need to be explored in more detail in future studies. Overall, the current study is encouraging, and fills the gap in the literature regarding construction migrant workers' job satisfaction in NZ. More studies are needed in this field to explore the antecedent and consequent effects of these key elements. In the future, involving other construction migrant worker groups and even local-born workers could extend the current study, as would the coverage area extension to other cities or locations in NZ.

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Migrant construction workers' demography and job satisfaction: A New Zealand study

Abstract

Purpose: The demand for construction-related occupations has increased consistently over many years in New Zealand (NZ). This has necessitated recourse to migrant workers to address capacity and capability requirements. Migrant construction workers hail from various backgrounds with a complex set of their needs being met through employment in NZ. Research on understanding the satisfaction levels of this category of construction workers is scarce. With recent insinuations about migrant exploitations, research investigations into this knowledge area is significant. In this study we sought to establish the moderating effect of migrants' demography on the determinants of job satisfaction in NZ's construction sector.

Research design: Data was obtained from migrant construction workers of Chinese extraction through a structured questionnaire survey. From 200 questionnaires administered, 108 samples were completed by migrant construction workers involved in major projects in Auckland city, NZ. Data obtained were analysed using descriptive and inferential statistics to establish the moderating effects of their demography on job satisfaction.

Findings: Results from this study support the internal validity and reliability of these personal characteristics as moderators of job satisfaction for migrant construction workers. These results suggest the relevance of personal characteristics of Chinese migrants in any improvement initiatives being developed for this group of construction workers.

Research limitations/implications: The findings from this study contribute to the discourse on the relevance of construction migrants as a strategic alternative to addressing skill shortages within the NZ construction sector. They also provide evidence that contributes to an improved understanding of the migrant workforce to meet their aspirations and enhance their general well-being.

Originality/value: Although the study is ethnic-specific, the conclusions show the relevance of personal characteristics in the experiences of construction migrant workers. The study is representative of the catchment of temporary migrant workers in the construction industry in NZ. The study provides insights for organisations employing migrants about putting in place appropriate measures to enhance their satisfaction levels. Finally, this study's findings may contribute to policy initiatives on the optimal categories of migrants engaged on construction activities to derive the maximum benefits for NZ.

Keywords: Construction workers; Demography, Migrant workers; Job satisfaction

Introduction

New Zealand's construction industry [NZCI] has witnessed considerable year-on-year growth since 2011. Annual growth within the industry averaged 6.60% between 2011 and 2015, slowing gently thereafter until 2019 when the COVID-19 pandemic hit (Granwal, 2020). Regardless, the NZCI's economic importance remains significant. According to recent report by NZ's Ministry of Business, Innovation and Employment (MBIE) (2020), NZCI's Gross Domestic Product (GDP) contribution in 2020 was NZ$16.2 billion – the equivalent of about 8% of the national GDP. Another report by Stat NZ (2020) suggests NZCI is fourth amongst the top 10 industries that contribute to NZ's GDP's national production measure and the fifth-largest sector in terms of employment. When combined with other sectors that provide services related to construction, NZCI accounts for just under 200,000 people, which translates to about 10% of total national employment.

Various NZCI growth triggers have been reported. According to Bretherton (2017), there were increased construction activities after the 2010 and 2011 Christchurch earthquakes due to the city's rebuild programme. Most of the construction works in NZ's major cities have been due to population growth and economic activities, resulting in a more considerable demand for different infrastructural facilities such as housing, commercial building, transportation, communication, energy, and industrial projects. The phenomenal increase in economic activities across all NZCI subsectors heightened resource shortfalls amongst construction organisations. The MBIE (2017) report projects the demand for construction-related occupations to rise by about 11% between 2016 and 2022, suggesting over 57,000 additional skilled workers will be required by 2022 to cope with the growth in demand. This skill requirement is challenging because the industry is already in a state of acute skill shortage. A BDO (2020) NZ report had indicated concerns around the availability and quality of construction occupations. It had concluded from their investigations that the balance between quality and quantity of workers in the construction sector was precarious. Shortages of skilled workers in construction industries are therefore prevalent. Jackson (2018) articulates the difficulties faced by industry associations in the United States' construction sector. For instance, 78% of Associated General Contractors of America members had trouble finding qualified workers, while 82% of construction firms said they expected the unavailability of skilled labour to remain a difficult challenge or to worsen. Another report by AECOM, a global premier infrastructure firm, showed skills and materials shortages were the highest ranked (at 43%) of the industry's most critical challenges (AECOM, 2019).

Many studies have acknowledged resource shortages as a common challenge in the construction industry globally, due to a wide range of factors (Dainty *et al.,* 2005; Dhal, 2020; Ho, 2016; Juricic *et al.,* 2021; Lobo and Wilkinson, 2008; McGrath-Champ *et al.,* 2011). As a result, attracting skilled migrant workers has become a policy thrust in many developed economies (Guo and Al Ariss, 2015; Přívara *et al.,* 2020). Migrant workers are of considerable economic significance to the NZCI (MacLennan, 2018). Harkins (2016) explains how such migrant workers contribute to the economies of their host countries. Harkins also offers some insight about the need to understand the challenges faced by these workers, so appropriate measures can be put in place to ensure and enhance their well-being and economic outcomes, wherever they are resident. There is evidence of exploitation of construction migrant workers in NZ, some of which have necessitated recent changes to immigration policies (MBIE, 2021).

Seale et al (2015) had reported that the vulnerability of temporary migrant workers in the construction industry had become an emerging issue. The rebuild programme exacerbated exploitation after the 2012 Canterbury earthquake with noticeable pay differences between migrants and locals, and unhealthy living conditions (MacLennan, 2018). More recently, Kilgallon and Xia (2021) confirmed that Chinese migrants are overworked and underpaid. There is also a propensity for lower job security for migrant construction workers according to Buckley *et al.* (2016). MacLennan's (2018) seminal work on Filipino construction workers is hereby acknowledged; however, little is known of Chinese migrant worker situations in NZ. In 2017, 9% of temporary work visa holders came from China (MBIE, 2017). We submit that migrant construction workforce remain largely understudied in NZ's social science research.

Such a knowledge gap is consequential. In an industry where job satisfaction remains an ongoing issue (Macky and Boxall, 2008), it is important to understand how migrant workers moderate this. For greater clarity, van der Westhuizen *et al.* (2012), Pacheco *et al.* (2016), and Kwok *et al.* (2015) have explained the role of culture in determining job satisfaction. Thus, it is essential to establish whether the same determinants of (dis)satisfaction speak to migrants and indigenous workers the same way; and, if at all, whether there are demographic nuances to outturn effects of the determinants of (dis)satisfaction on migrants or indigenous workers in the NZCI. This current study seeks to identify the determinants of job (dis)satisfaction for migrant construction workers using a representative sample of Chinese ethnic groups who hold temporary visas and work in the NZCI.

Determinants of Job Satisfaction and Demographic Measures

It is critical to consider the nuances arising from the ways migrants and the indigenous workforce view job satisfaction. However, normative literature seldom considers this definitively; and, where it does, comparisons between migrant and indigenous workforce satisfaction are mainly inconclusive, especially around the demographics and ecosystems of work (see Wahi *et al.,* 2020, on the future of work and the modern workplace as an ecosystem).

Understanding such nuances does not render extant applied psychology theories less valid. Instead, it is crucial to know whether these would help future studies better understand job satisfaction and the specific implications of situating migrants and indigenous workforces within the broader industry. Wang and Jing (2018) provide insights into work- or non-work-related factors that could influence immigrants' job satisfaction, either independently or in combination. Within their postulations of non-work-related factors are three main categorisations: general demographic factors, culture-related factors and community-related factors. The current study considers the moderating influence of general demographic factors on job satisfaction. We focus on Chinese immigrant workers within the NZCI as the host community; these are intended to act as proxies for culture and community-related factors. The following subheadings provide brief outlines of the demographic measures used in the current study.

General demographic measures

Previous studies provide empirical justification of the variability in job satisfaction levels between immigrants from different backgrounds. Magee and Umamaheswar (2011) and Ko *et al.* (2015) contend that immigrants' backgrounds are significant in job satisfaction studies because of the tendency of migrants to choose different reference systems to evaluate job conditions in their host country. Furthermore, variable responses to job experiences can be explained by migrants' needs, prior experiences and work orientation that are likely to be specific to their countries of origin. We expand on these general demographic factors in the following paragraphs.

Understanding measures of demography

Gender

Bussey (2011) explains the underlying importance of gender as a means of self-definition in most societies. Bussey's story draws a line of distinction between sex and gender: sex as a biological denominator; gender as the way people want to be identified. Nonetheless, beyond identification, societal complexities around gender identification and discrimination have been well documented. For example, Gartzia and Lopez-Zafra (2016) explained such complexities include equality issues in the sense of inclusion, wage discrimination, equal opportunities and cultural segregation, and marriage and education biases. There is also a political side: many countries have different cultural orientations, public perceptions and reforms regarding gender identities and rights. For example, some countries still struggle with accepting same-sex marriage and transgender outlooks – these can attract severe penalties in such parts of the world. Thus, gender as an issue is a reasonable cause for migration. People tend to move to locations where they achieve safety, inclusion, acceptance, ~~fulfillment~~fulfilment, personal values, freedom and career opportunities. They tend to avoid places where societal complexities around their gender could burden them.

Age

Age is a widespread basis for differentiation across the strata of social structure (Linton, 1936). It defines inclusion and exclusion regarding work and entitlements, critical life decisions regarding work and family, and the attraction of migrating to seek improved work satisfaction or leisure. A study by Ajayi and Olatunji (2017) found that some employees are more inclined to voluntary turnover for mobility within certain age brackets. Gazioglu and Tansel (2006) found a U-shaped relationship between worker age and job satisfaction – aspirations to remain in a job are highest amongst young and old workers. While it is logical that young people are often inclined to explore opportunities and seek freedom through mobility, middle-aged workers are often attracted to stability and have commitments beyond work to stay in a job. These perceptions shape the decision to migrate, as well as job satisfaction and turnover.

Educational background

Education can be considered a key source of self-improvement and could be a prerequisite for growth and advancement in career and professional goals. Education can enhance esteem, confidence, skills and

competencies, career success, self-efficacy and future career expectations (Baruch and Peiperl, 2000). Several studies have associated levels of education with job satisfaction. González _et al., Sánchez and López-Guzmán_ (2016) believe that an employee's education level is an important variable that is strictly personal in nature, and that the higher the level of education, the more employment options are available. Nikolaou _et al., Theodossiou and Vasileiou_ (2005) argue that job satisfaction levels increase with education levels because workers can gain the correct employment positions to help them live a great life. Other authors have argued that higher job satisfaction comes from higher income (Bakan and Buyukbese 2013), better employment benefits (Pandey and Asthana 2017) and career advancement opportunities (Ling _et al.,_ 2018; Mehdiabadi and Li, 2016; Ling _et al.,_ 2018) that higher educational backgrounds provide.

However, in contrast, Clark and Oswald (1996) contend the higher the level of educational attainment, the lower the satisfaction level reported by job holders. A more recent study in Spain found that educational levels do not influence job satisfaction (Gonzalez _et al.,_ Sanchez and Lopez-Gunzman (2016). The argument is that higher educational levels impact negatively on overall satisfaction in certain jobs (Clark and Oswald, 1996; Gazioglu and Tansel, 2002; Grund and Slivka, 2001; Sloane and Williams, 1996). According to González _et al._ (2016) and Lam _et al._, Zhang and Baum (2001), education may raise employees' expectations, depending on their personal and professional aspirations. Such employees could also become more discerning regarding improper work contexts that could impact their mental and physical health (Gürbüz, 2007).

For the current study, we align with the reflection theory explained in Froese, _Peltokorpi, Varma and Hitotsuyanagiet al._ Hansel (2019) that more educated migrants are more likely to exhibit greater job satisfaction. Especially when they perceive that their work performance counts towards their achievements within their host country.

Marital status

Marital status can be significant in determining the level of satisfaction of migrant workers. Depending on immigration status, they are either able to travel alone or not. Knipe _et al._ (2019) explain that most Asian migrant workers have temporary visas and emigrate without their families. Compared to unmarried men and women, married migrant workers face additional issues, chiefly due to marital separation and an inability to fulfill some parental responsibilities. The moderating effect of marital status is studied in global literature with respect to the well-being of migrant workers and those who are left behind (Knipe _et al.,_ 2019; Lei _et al.,_ 2020; Shattuck _et al.,_ 2019; Tong _et al.,_ 2019). Tong _et al._ (2019) found the psychological consequences of family separation are largely underexplored in Chinese migrant workers. These authors found that depressive symptoms are more prevalent in married adults who emigrated from rural areas of China.

Furthermore, because of additional household commitments and a reduced level of intimacy, spouses left behind in China may also experience elevated stress levels. Stress may eventually have a consequential effect on the psychological well-being of the migrant worker and, thus, their job satisfaction. In contrast, migrant workers may have enhanced job satisfaction because of their ability to provide a better economic environment for their

dependents (Hadi, 1999; Shattuck *et al.,* 2019). Another possibility is that Chinese migrant workers may move to ~~New Zealand~~NZ with their families. Global literature shows they may face additional work-life balance issues because of competing priorities such as caregiving and breadwinning (Khanh *et al.*, 2020). Eventually, their overall job satisfaction may be impaired. Mohsin *et al.* (2019) explain that the prevalence of these issues is different from one context to another depending on host governments' commitments to international protocols and local legislation that could focus on migrant workers' goal achievements and well-being. Therefore, in the current study, marital status is considered a demographic variable that could influence overall job satisfaction, either in isolation or in combination with other personal characteristics.

Years of experience

The last measure relating to general demography is the length of migrant workers experience. We have taken the premise that workers could perceive their job satisfaction differently based on their experience levels. Prior work experiences may mean migrant workers have more reference points with which to compare their work situations. For example, Badawy (1994) has shown that work experiences, coupled with career expectations, relate to satisfaction because of perceived confidence and competence in doing work. In another regard, Okpara (2004) argues that the more work experience, the more respect workers have for their jobs, ~~which could translate~~translating to greater job satisfaction. Latiff *et al.* (2017) contended that this was the case for teachers' job satisfaction levels, increasing with their service length.

Furthermore, Bilgic (1998) concludes that work experience contributes positively to feeling good about one's job. Although, feeling good may be impaired by discrimination, especially discrimination against migrants' characteristics such as their experience level. A perception of inferior work experiences (however useful these may be) may cause reduced psychological well-being and, consequently, lower job satisfaction (Wang and Jing, 2018). Townsend *et al.* (2014) report on this lack of trust in prior abilities for immigrants, which we consider significant to their level of job satisfaction.

General measures of job satisfaction

Many studies have examined numerous attributes of job satisfaction amongst workers. Normative knowledge about job satisfaction has matured over several decades. For ~~example, a~~example, a survey of public employees by Brayfield *et al.~~, Wells and Strate~~* (1957) found employees who are not satisfied with their jobs often lack a general sense of satisfaction in other areas of their lives. The same argument is relevant today: if migrant workers are to have some pleasant experiences in their mobility, it is important that they are pleased with their work as with their lives generally. What these mean to workers in different industries and across nuanced demographics have been measured by various authors. Tian *et al.* ~~, Wang and Chia~~ (2018) found migrant skilled workers in Australia are keener on skill utilization than just having a job. However, migrants' opportunities to migrate and integrate themselves in their new nation depend on two crucial factors. Firstly, is~~:~~ whether they are satisfied with their host nation and communities, and secondly whether there are ~~considerable~~ many policies in such a host nation and communities that facilitate what migrant workers might consider attractive in terms of labour relation and social

security. According to a finding by Randeree (2008), skilled migrants are often not attracted to societies that are notorious for labour injustice or are not known for social investments that are hospitable to migrant workers.

Other studies have further investigated workers' general satisfaction into specific elements. Evidence suggests workers would prefer to be paid well, on time and that they receive benefits and entitlements that do not discriminate them negatively (Card *et al.,* 2012; Steinmetz *et al., de Vries and Tijdens,* 2014). In addition, voluntary turnover risks have reduced where workers received paid leave, medical insurance and can afford their health costs, and where they receive considerable housing benefits (Ajayi and Olatunji 2017; Lee *et al.,* Hsu and Lien 2006; Ajayi and Olatunji 2017).

In addition, Jaskyte *et al.* (2020) also suggests that the work environment is critical to employees' job satisfaction. For migrant workers, they need to know whether their host communities value them; in that, they can put their skills to use, they can integrate in the society, they understand their work requirements and that their work provides them considerable opportunities for advancement. Such advancement would mean that workers are able to improve their knowledge and skills, as well as their career (Oyewobi *et al.,* Suleiman and Muhammad-Jamil 2012; Tsai 2008). Felstead *et al.* (2015) view is that an organisation that allows their employees to advance their knowledge and career opportunities often benefits from workers' goodwill as workers generate self-led enablement through creativity, continuous renewal through active learning, and are able to develop their special abilities. Zou and Sunindijo (2013) found that the quality of employees' knowledge will determine their self-awareness and commitment to safe work practices and the regulatory codes and standards in relation to their duties.

Ajayi and Olatunji (2017) have examined the role of leadership quality in workers' voluntary turnover. They found employees connect to their jobs through their leaders, supervisors and work colleagues. A notable finding in their study is that leaders and direct supervisors must be capable of providing clear instruction to the employees under them, and such employees must see them as trustworthy and a go-to person, including for personal and confidential conversations. Li *et al.* (2018) add loneliness to this: migrant workers are often vulnerable to a high level of loneliness. This could draw away from their level of affective commitment and their engagement and participation. This can only worsen when they lack companionship at work, or feel isolated or unwanted.

The Study Variables

It is evident from the literature reviewed that migrants' work satisfaction within the NZCI is under-reported. Specifically, it is unclear how personal characteristics shape job satisfaction amongst these Chinese migrant workers, and how job satisfaction amongst the migrant workers shapes overall well-being. It is important to provide clarity on the relationship between demographic variables of migrant workers, their perceptions of job satisfaction and the ideals of job satisfaction amongst the general NZCI workforce. This study assumes that work attitude is shaped by multidimensional contexts, such as individual attributes, and job and organisational characteristics.

Table 1 TabTable 1 illustrates the codes of the dependent and independent variables used in the study. Overall satisfaction was the dependent variable; OS1—OS3 were the statements of measure. A 5 point Likert scale was

used to obtain responses from participants through a questionnaire survey. On this scale, '1' represents 'strongly disagree' whilst '5' represents 'strongly agree'. Mid-scale, '3' represents 'neutral'. At the end of the literature review, 23 factors (f) were selected as determinants of overall satisfaction. They were arranged under five sub-categories: remunerations (RN) (f=7); work environment (WE) (f=3); knowledge advancement and career progression (KACP) (f=5); quality of leadership and work colleagues (QLWC) (f=5); and loneliness (LON) (f=3). As with the dependent variables, similar 5 point Likert scale was used. It is expected these factors are positively correlated with general satisfaction, except LON1 and LON2 which may negatively influence general satisfaction.

Table 1: Definition of variables

Code	Variables		
	Dependent variable		
OS	**Overall satisfaction**		
OS1	I am generally satisfied with my work in New Zealand		
OS2	I will recommend this country as a good place to work		
OS3	I would like to continue working in New Zealand if I was given the opportunity		
	Independent variables		
RN	**Remunerations**	QLWC	**Quality of leadership and work colleagues**
RN1	I am generally satisfied with my income level	QLWC1	My supervisor keeps me informed of the things I need to do to perform well in my job
RN2	I always get paid on time	QLWC2	My supervisor is fair and does not show favouritism
RN3	I can get paid leave	QLWC3	I feel comfortable bringing up my personal issues with my supervisor and co-workers
RN4	My employer offers medical insurance		
RN5	I can afford my local health care	QLWC4	My supervisor is understanding when I talk about personal and family issues that affect my work
RN6	My employer offers accommodation		
RN7	My employer offers other benefits for employees	QLWC5	I have support from supervisor and co-workers that help me to manage my job and personal or family life
WE	**Work environment**		
WE1	I can adapt to the work environment of NZ		
WE2	It's easy for me to understand the way work is done in NZ	LON	**Loneliness**
WE3	I feel valued and recognised by my employer	LON1	I feel a lack of companionship at my place of work
		LON2	My interest and ideas are not shared by those around me
KACP	**Knowledge advancement and career progression**	LON3	There are people I can turn to for help or support
KACP1	My job requires that I keep learning new things		
KACP2	My job requires that I be creative		
KACP3	I have the opportunity to develop my own special abilities		
KACP4	I understand the roles of health and safety in NZ		
KACP5	I understand the standards and codes of NZ related to my duties		

Migrant construction workers who are Chinese citizens were selected for this study (see Introduction) because they remain understudied in NZ. This study sets the following hypotheses to evaluate the status and dependents of overall job satisfaction of the Chinese construction workers in ~~New Zealand~~NZ.

H1: Chinese construction workers in New Zealand are satisfied with their jobs overall.

H2: The demographic status of migrant Chinese construction workers moderates their job satisfaction.

H3: The demographic status of migrant Chinese construction workers moderates the determinants of overall job satisfaction.

Figure 1 shows the conceptual ~~model~~ framework of the current research~~, which is to determine the effect of demographics on overall job satisfaction~~. The relationships among ~~the~~ overall job satisfaction and the independent variables (i.e. RN, WE, KACP, QLWC and LON) will be established ~~only under~~in future study; the scope of the current study is limited to ~~evaluate~~ evaluating the ~~moderat~~ing~~e~~ effect of the demographics towards the dependent (H2) and independent (H3) variables. What are the practical implications of the outcomes of H2 and H3?

Testing H2 will assist to understand the variations of overall job satisfaction across the NZ Chinese construction worker's population. More importantly, the outcomes will determine the pre-requisites of the regression analysis required in future to determine the holistic effect from the independent variables and demographics towards overall job satisfaction. If any of the demographical variables significantly influences workers' job satisfaction, those categorial variables will require specific methods of transformation before regression compared to continuous variables (see the discussion). Some researchers may be interested in improving particular areas (for example: work environment or loneliness) or variables of the independent category regardless of their effect towards employee's overall job satisfaction. For example, being valued or recognised (i.e. WE3) may or may not influence Chinese construction worker's job satisfaction significantly. Nevertheless, human right activists and unions may be interested in them. Therefore, the outcomes of H3 will be important in understanding the variations in perceptions of the independent variables across the population.
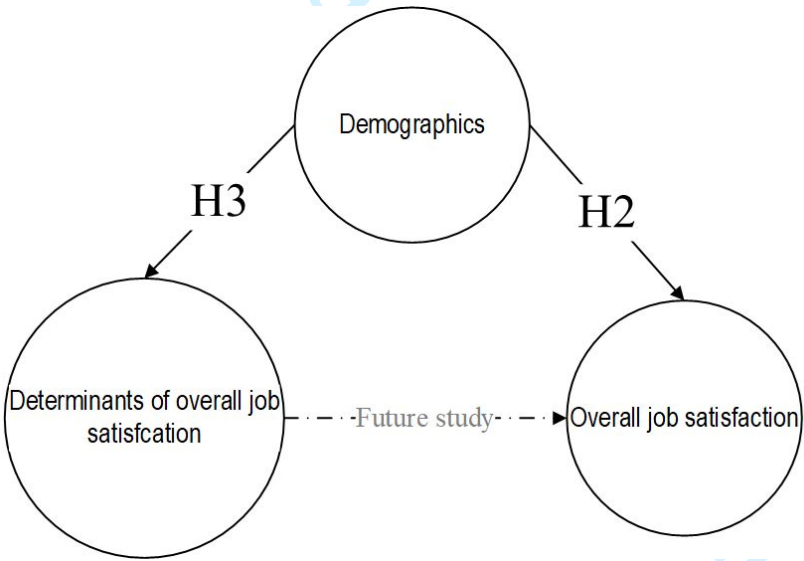

Figure 1: Conceptual framework of the study: the effect of demographics on overall job satisfaction and the determinants

Research Method

This study uses explanatory research design to explain causal relationships between the different variables through hypothesis testing. Participants of the study are Chinese migrant construction workers plying their trades in Auckland. They hold Temporary Work Visas [TWVs] that last only for the duration of a project. Chinese construction workers were selected for the current study because little is known of their working conditions, perceptions of their work environments and the level of their goal achievements, yet they are significant in number, they work on large projects, and are well-entrenched as a substantial component of the diversified local workplace. The actual number

of migrant Chinese construction workers on temporary work visa is currently unavailable. However, in 2019 there were 22,192 Chinese migrants that arrived on temporary work visa to ~~New Zealand~~NZ (Kilgallon and Xia, 2021). Auckland was chosen as the study area because it is the biggest city with more construction activities. A sample of 200 workers was taken by purposive sampling, and questionnaires were administered to migrant construction workers employed on five major projects. The participants were selected on the basis of a degree of homogeneity of their visa status (i.e. Temporary Work Visa holders). This is to ensure that the data collected was reliable and adequate (Alreck and Settle, 1995). Survey participants were accurately targeted using purposive sampling. This sampling approach permitted the selection of participants that represent a broad group of cases as closely as possible on a dimension of interest (Teddlie and Yu (2007). 108 questionnaires were completed among this group, representing a response rate of 54% of the target population. All participants were aged above 18 years, with 92% of them aged between 25 and 54 years old. Most respondents – 91% – were males.

Table 2: Respondents' demographic information

Description	Respondents	
	Number	**Percentage**
Gender		
Male	98	90.74%
Female	9	8.33%
Prefer not to answer	1	0.93%
Age		
18–24 years old	7	6.48%
25–34 years old	23	21.30%
35–44 years old	40	37.04%
45–54 years old	36	33.33%
55+ years old	2	1.85%
Ethnicity		
Chinese	107	99.07%
Southeast Asian	1	0.93%
Educational background		
Under high school	49	45.37%
High school	26	24.07%
Bachelor's degree	17	15.74%
Postgraduate qualification (Grad. Certificate, Grad. Diploma or Master)	12	11.11%
Trade school	2	1.85%
None	2	1.85%
Marital status		
Yes	90	83.33%
No	10	9.26%
In a relationship	2	1.85%
Prefer not to say	6	5.56%
Year of work experience		
0–5 years	27	25.00%
5–10 years	8	7.41%
10–15 years	23	21.30%
15–20 years	19	17.59%
20–25 years	10	9.26%
25+ years	21	19.44%
How long have you been in NZ?		
0–6 months	32	29.63%
7–12 months	28	25.93%
13–18 months	7	6.48%
19–24 months	12	11.11%
24+ months	29	26.85%
How long do you plan to stay in NZ?		
1–3 years	39	36.11%
4–6 years	18	16.67%
7–9 years	10	9.26%
10+ years	41	37.96%

The questionnaire for this study was developed based on the review of relevant literature on the measures of job satisfaction. A questionnaire survey was employed over other methods of data collection because it captures the perception of the construction migrant workforce regarding the significance of the identified variables as measures of job satisfaction. The questionnaire was physically distributed to the research participants on construction sites. This way it was possible to reach a representative group of migrant workers in a short time. The questionnaire had four sections and required about 15 minutes to complete. It was developed in English before being translated to Chinese (Mandarin). Participation was voluntary, and participants could choose between the English and Chinese versions of the questionnaire. Almost all the participants chose the Chinese version – this could be attributed to the fact that English is not an official language in China. A full breakdown of the demography of the participants is presented in Table 2. The Table reports data on participants' gender, age, nationality, educational qualification, marital status, work experience, and planned and actual length of stay in NZ.

Data analyses

Before data analysis, internal consistency was checked for each sub-group shown in_Table 1 Table 1 using Cronbach's Alpha Reliability test. Findings suggested data were consistent internally (Cronbach's Alpha > 0.7). In addition, outliers were checked by observing histograms and box-plots. Using SPSS 26, a Little's Missing Completely at Random (MCAR) test was conducted at α=0.05. Findings showed data were missing randomly, hence there was no requirement to impute missing data.

To test normality, a series of Shapiro-Wilk (SW) tests was conducted after removing the outliers. The level of significance was less than 0.05 (p<0.05) for all the variables. Thus, the data distributions were not 'precisely' normal. Since the non-parametric alternatives have limitations and accuracy issues, parametric tests could be still used and recommended if the data distributions are '*approximately*' normal; (Cantor and Shuster 1992; Kwak and Kim 2017; Matulová and Rejentová 2021; Razali and Wah 2011; Smith 2012; Kwak and Kim 2017; Matulová and Rejentová 2021). To check the validity of approximate normality, numerical and graphical tests were conducted as there is no formal test to assist this (Smith 2012): after checking the Q-Q plots for all the distributions, there was no significant deviation between the snake like data distributions and straight lines. Thus, approximate normality could be assumed, but the interpretation of graphical tests can be overly subjective. Because of this, kurtosis and skewness were checked as additional means to substantiate this conclusion. The findings showed that both kurtosis and skewness were between ±1 for the data distributions. Consequently, the data distributions were considered as approximate normal (Razali and Wah 2011): means and standard deviation were selected over non-parametric measures to explain the data.

One-sample t-tests were used to interpret population means. For all inferential statistical tests, the threshold was set as p≤0.05. To check group-wise variations in the population means, independent samples' t-test and one-way ANOVA were conducted. Table 2 shows the demographic information of migrant construction workers from whom data were collected.

Results

Overall job satisfaction

As per H1, Table 3 illustrates the sample statistics and population tendencies derived for the measures of overall job satisfaction. The sample means show participants were somewhere between 'somewhat agree' and 'strongly agree' towards OS1-3. The agreement was most positive towards OS3 (μ_s=4.38), followed by OS1 (μ_s=4.22) and OS2 (μ_s=4.15) respectively.

Table 3: Sample statistics and population tendencies – overall satisfaction

		Sample statistics				Population tendencies				Correlation: r (p value)	
					Std. deviation		μ_0	t	df	Sig. (2-tailed)	OS1	OS2
Statistics	N	Mean	Median	Mode								

OS1	102	4.22	4	4	0.840	4.2	0.189	101	0.851	-	-
OS2	97	4.15	4	4	0.939	4.2	-0.476	96	0.635	0.763 (p=0.000)	-
OS3	104	4.38	5	5	0.816	4.5	-1.442	103	0.152	0.588 (p=0.000)	0.743 (p=0.000)

To find participants' agreement towards overall job satisfaction, one-sample t-tests were conducted. For the population mean (μ), the null (H_0) and alternative (H_a) hypotheses were set as below:

H_0: $\mu = \mu_0$ (the population mean is equal to the hypothesised population mean)

H_a: $\mu \neq \mu_0$ (the population mean is not equal to the hypothesised population mean)

By observing the sample mean and standard deviation values, a trial-and-error procedure was employed to set the hypothesised population means for each dependent variable until one-sample t-test statistics indicated that the population mean was not significantly different to the hypothesised population mean. Only the accepted μ_0 values are shown in Table 3. The one-sample t-test statistics ($p>0.05$) showed that μ was not significantly different from $\mu_0 = 4.2$ for OS1 and OS2 and $\mu_0 = 4.5$ for OS3. **Table 3**Therefore, the Chinese construction population has a preference between 'somewhat agree' and 'strongly agree' towards the continuation of their work in NZ (i.e. OS3; $\mu=4.5$). Their general satisfaction (OS1) and the perception of NZ as a good place to work (OS2) are slightly greater than 'somewhat agree' ($\mu=4.2$). According to a paired-sample t-test, Chinese construction workers are more favourable towards OS3, compared to OS1 [t=2.259, df=98, p=0.026] and OS2 [t=3.742; df=93; p=0.000]. In addition, Table 3 shows the three variables are significantly correlated at $\alpha=0.05$. A strong positive correlation exists between OS1 and OS2 (r=0.763; p=0.000), between OS2 and OS3 (r=0.743; p=0.000), and between OS1 and OS3 (r=0.588; p=0.000).

Moderating effect of demographics towards general job satisfaction

As per H2, this study analysed the effects of migrant workers demographics towards overall job satisfaction. The following were set as H_0 and H_a to facilitate the analysis:

H_0: the population means are equal across the groups.

H_a: the population means are not equal across the groups

Table 4 shows the summary of the analysis, including the demographic variables considered. Under gender, only males and females were considered; because these two groups account for 99.1% of participants, and the third category of participants who prefer not to state their gender did not meet the minimum required sample size for comparison [n=1]. The proportion between male and female was approximately 11:1. Although there is no data with respect to Chinese construction workers living in ~~New Zealand~~NZ, generally, women account for less than 10% in construction management positions while this percentage could be as low as 3-4% in the construction workforce (Hegarty 2020; Naismith *et. al.,* 2017~~, Hegarty 2020~~). Therefore, the sample distribution could be considered as a general representation of gender in the construction industry. Nevertheless, the low sample size

in female may reduce the accuracy of the independent sample t-tests because of compromising the central limit theory (Kwak and Kim 2017). Therefore, as a secondary measure, the non-parametric alterative (i.e., independent sample median test) was also performed to compare the median across the two gender groups. Another issue was the possibility to violate homogeneity of variance: however, the independent sample t-test provided statistics to test this assumption before conclusions were derived.

Similarly, only married and unmarried participants were considered under marital status. To test the null hypothesis, an independent-sample t-test was used. Other demographical variables such as length of time spent in NZ, age and educational background had more than two categories; therefore, one-way ANOVA was used for them. For the three dependent sub-variables (i.e. OS1-3), p-values were greater than 0.05 for gender, marital status and length of time stayed in NZ. For gender, the independent sample median tests showed the median of OS1 (p=0.991), OS2 (p=0.698) and OS3 (p=0.478) are the same for male and female. Therefore, H_0 was accepted. This means both male and female participants had the same preference towards the measures of overall job satisfaction regardless of their marital status. Also, length of time spent in NZ ew Zealand had no significant influence on the overall job satisfaction of participants.

Table 4: Effect of demographic towards overall satisfaction

Demographic variable	Categories considered	Type of statistical test	p-value			Outcome(s)
			OS1	OS2	OS3	
Gender	Male and female	Independent-sample t-test	0.634	0.560	0.478	H_0 accepted for OS1-3
Marital status	Married and unmarried	Independent-sample t-test	0.119	0.335	0.114	H_0 accepted for OS1-3
Time spent in NZ	All categories*	One-way ANOVA	0.124	0.162	0.881	H_0 accepted for OS1-3
Age	All except 55+*	One-way ANOVA	0.013	0.033	0.107	H_0 rejected for OS1 and OS2; H_0 accepted for OS3
Educational background	All except 'trade school' and 'none'*	One-way ANOVA	0.016	0.023	0.408	H_0 rejected for OS1 and OS2; H_0 accepted for OS3

* see conducted. Table 2 shows the demographic information of migrant construction workers from whom data were collected.

Regarding age, the '55+ years' category was eliminated from the analysis due to sample inadequacy. A Levene's test was conducted to ensure that the assumption of the homogeneity of variances was satisfied under the ANOVA test. The p-values were 0.994, 0.974 and 0.535 for OS1, OS2 and OS3 respectively. In addition, the mean population agreement was significantly different for at least one age category – specifically, for OS1, F= 3.332, p=0.013; whilst for OS2, F= 2.751, p=0.033. This implies age does not influence the willingness of participants to continue work in NZ [F= 1.960, p=0.107]. To find out which group mean is significantly different, a Tukey test was conducted as a post-hoc test. The only statistically significant mean difference was between '25—34 years old' and '45—54 years old' for both OS1 (p=0.005) and OS2 (p=0.017). By observing this mean difference further, evidence suggests the '45—54 years old' age group is generally happier than other age groups and will recommend NZ to others as a good country in which to work.

Under educational background, two categories [participants who ticked 'trade school' and 'none'] were eliminated due to limited data. Using Levene's test, the assumption of homogeneity of variances was satisfied [p=0.488, 0.181

and 0.573 for OS1, OS2 and OS3 respectively]. ANOVA test showed mean population agreement was significantly different for at least one category of educational background: for OS1, F= 2.966, p=0.016; whilst for OS2, F= 2.551, p=0.023. This evidence suggests educational background does not influence participants' willingness to continue work in NZ [F= 1.024, p=0.408]. According to a Tukey test, participants who possessed 'under high school' qualifications showed a greater general satisfaction (OS1) than holders of Bachelors' degrees (p=0.004) and post-graduate qualifications (p=0.023). Participants who possessed 'under high school' qualifications were more likely to recommend NZ as a country to work than holders of Bachelors' degrees (p=0.044) and post-graduate qualifications (p=0.037).

Moderating effects of participants' demographics towards independent determinants of job satisfaction

To determine the moderating effects of participants demographics towards independent determinants of overall job satisfaction, the study considered their ages and educational backgrounds. This is because these were the only demographic variables that influenced overall job satisfaction (i.e. the main focus of this paper). The following hypotheses were tested via one-way ANOVA. When the null hypothesis was rejected, a Tukey test was used to determine the specific groups showing significant differences.

H_0: the population means are equal across the groups.

H_a: the population means are not equal across the groups.

A summary of the analysis is presented in Table 5 Table 6, which illustrates that age and educational background significantly influenced some of the overall job satisfaction determinants. Similar to the measures of overall job satisfaction, the 45—54 age group was more favourable than the 25—34 category towards nine determinants of OS1-2 [i.e. RNs1and 5, WE1, KACPs2-5; QLWCs3 and 5]. This implies 80% of KACP factors were more favourably perceived by participants aged 45 to 54 years. In addition, there was a significant difference between the 45—54 and 35—44 categories towards RN5. Only three determinants were influenced by the educational background of participants (RNs 4 and 5, and LON1). When compared to holders of Bachelors' and post-graduate qualifications, workers who earned no more than high school qualifications were more favourable towards RNs 4 and 5, although they felt lonelier than participants who had earned at least one degree (LON1).

Table 5: Favourability towards the determinants of overall satisfaction

Factor	Rank*	Sample Mean (μ_s)	Std. Deviation (Sample)	Population mean (μ_0)	Effect of:			
					Age [interpretation; statistical evidence]		Educational background [interpretation; statistical evidence]	
					Interpretation	Supporting evidence [One-way ANOVA (p-value) followed by Tukey HSD (p-value)*]	Interpretation	Supporting evidence [One-way ANOVA (p-value) followed by Tukey HSD (p-value)*]
RN1	6	3.75	1.128	3.90	(45-54) > (25-34)	p_{ANOVA}=0.028; P_{Turkey}= 0.05	No effect	p_{ANOVA}=0.121
RN2	18	4.16	0.879	4.30	No effect	p_{ANOVA}=0.324	No effect	p_{ANOVA}=0.969
RN3	20	3.44	1.574	3.70	No effect	p_{ANOVA}=0.255	No effect	p_{ANOVA}=0.459
RN4	15	3.64	1.531	3.90	No effect	p_{ANOVA}=0.139	Bachelor< Under High school; Bachelor < High school; Postgrad< Under High School; postgrad< High School	p_{ANOVA}=0.003; P_{Turkey}= 0.018 for Bachelor versus Under High school; P_{Turkey}= 0.018 for Bachelor versus High school; P_{Turkey}= 0.047 for Postgrad versus Under High School; P_{Turkey}= 0.039 for postgrad< versus High School
RN5	17	3.53	1.277	3.80	(45-54)>(25-34); (45-54)>(35-44)	p_{ANOVA}=0.007; P_{Turkey}= 0.046 for (45-54)versus(25-34); P_{Turkey}= 0.030 for (45-54)verus(35-44)	No effect	p_{ANOVA}=0.622
RN6	13	3.59	1.596	3.80	No effect	p_{ANOVA}=0.061	Bachelor< Under High school; Bachelor < High school; Postgrad< Under High School; postgrad< High School	p_{ANOVA}=0.000; P_{Turkey}= 0.000 for Bachelor versus Under High school; P_{Turkey}= 0.014 for Bachelor versus High school; P_{Turkey}= 0.000 for Postgrad versus Under High School; P_{Turkey}= 0.001 for postgrad< versus High School
RN7	19	3.22	1.375	3.10	No effect	p_{ANOVA}=0.136	No effect	p_{ANOVA}=0.789
RNavg	*N/A**	*3.69*	*1.024*	*3.82*				
WE1	16	4.38	0.693	4.50	(45-54)>(25-34)	p_{ANOVA}=0.002; P_{Turkey}= 0.008	No effect	p_{ANOVA}=0.111
WE2	8	4.35	0.769	4.40	No effect	p_{ANOVA}=0.063	No effect	p_{ANOVA}=0.571
WE3	11	4.06	0.973	4.00	No effect	p_{ANOVA}=0.088	No effect	p_{ANOVA}=0.184
WEavg	*N/A*	*4.3*	*0.648*	*4.39*				
KACP1	21	4.32	0.839	4.40	No effect	p_{ANOVA}=0.187	No effect	p_{ANOVA}=0.399
KACP2	14	4.15	0.930	4.00	(45-54)>(25-34)	p_{ANOVA}=0.014; P_{Turkey}= 0.024	No effect	p_{ANOVA}=0.339
KACP3	12	4.25	0.875	4.40	(45-54)>(25-34)	p_{ANOVA}=0.003; P_{Turkey}= 0.047	No effect	p_{ANOVA}=0.414
KACP4	5	4.26	0.883	4.40	(45-54)>(25-34)	p_{ANOVA}=0.048; P_{Turkey}= 0.034	No effect	p_{ANOVA}=0.381
KACP5	7	4.24	0.935	4.40	(45-54)>(25-34)	p_{ANOVA}=0.015; P_{Turkey}= 0.05	No effect	p_{ANOVA}=0.340
KACPavg	*N/A*	*4.29*	*0.735*	*4.40*				

QLWC1	10	4.09	1.006	4.00	No effect	p_{ANOVA}=0.492	No effect	p_{ANOVA}=0.778
QLWC2	3	4.18	1.014	4.30	No effect	p_{ANOVA}=0.954	No effect	p_{ANOVA}=0.449
QLWC3	1	4.11	0.937	4.00	(45-54)>(25-34)	p_{ANOVA}=0.047; P_{Turkey}= 0.002	No effect	p_{ANOVA}=0.063
QLWC4	4	4.06	0.998	4.00	No effect	p_{ANOVA}=0.100	No effect	p_{ANOVA}=0.765
QLWC5	2	4.10	1.005	4.00	(45-54)>(25-34)	p_{ANOVA}=0.038; P_{Turkey}= 0.041	No effect	p_{ANOVA}=0.056
QLWCavg	*N/A*	*4.11*	*0.858*	*4.20*				
LON1	=22	3.45	1.375	3.70	No effect	p_{ANOVA}=0.275	Bachelor< Under High school; Bachelor < High school; Postgrad< Under High School; postgrad< High School	p_{ANOVA}=0.021 P_{Turkey}= 0.024 for Bachelor versus Under High school P_{Turkey}= 0.044 for Bachelor versus High school P_{Turkey}= 0.028 for Postgrad versus Under High School P_{Turkey}= 0.014 for postgrad< versus High School
LON2	=22	3.17	1.432	3.00	No effect	p_{ANOVA}=0.604	No effect	p_{ANOVA}=0.816
LON3	9	4.01	1.088	4.00	No effect	p_{ANOVA}=0.488	No effect	p_{ANOVA}=0.682

Discussion of the Findings

This research has highlighted the significance of migrants as a solution to addressing the skills shortages seen within the NZCI. The economic importance of the migrant construction workforce is acknowledged (MacLennan, 2018). However, as little is known about their working conditions, perceptions of their work environments and the level of their goal achievements in their new environment (NZ), the current study finds its relevance. Yalabik *et al.*, Rayton and Rapti (2017) had made a note of the importance of job satisfaction as a driver of all dimensions of work engagement, which could positively impact on the productivity of the national workforce. The need to capitalise on the full potential of the migrant construction workforce cannot be overemphasised. In this study, we investigate Chinese migrant construction workers satisfaction in relation to their overall job satisfaction in NZ. Thus, the study provides insights into the moderating effect of migrants' demography on the determinants of job satisfaction within the NZCI.

Three hypotheses were developed and tested to address the study objective. The first hypothesis (H1) sought to establish how satisfied respondents were with their jobs overall. There was a general agreement of satisfaction between study participants, which indicated they would like to extend their stay and were most likely to recommend NZ as a good place to work. The first hypothesis (H1) was therefore accepted. This is new knowledge considering the absence of literature within the social science field on construction migrants in NZ. The comparison of the population means indicated that Chinese construction workers were more favourable towards OS3 (willingness to continue work in New ZealandNZ) with compared to OS1 (generally satisfied with work) and OS2 (New ZealandNZ is a good place to work). Within this quantitative study, it was not possible to find 'why'. Potentially, this may be because OS1 and OS2 are more specific measures of 'work environment' whereas OS3 could be influenced by factors outside of work such as improved living conditions and better education for children with compared to the homeland. A qualitative investigation is required to find out these additional factors. Also, OS1 and OS3 showed only a moderately strong association (r=0.588; p=0.000). These substantiate that there are factors outside of work that influence willingness to live in New ZealandNZ.

The second hypothesis (H2) focused on the moderating effect of the demography of Chinese construction migrants on job satisfaction. Although the literature review showed inequality issues and discrimination worldwide against women in the construction industry, the study found that the overall job satisfaction expressed by the study participants was irrespective of their gender. This could be because the NZew Zealand government and construction industry stakeholders have a significant and shared commitment to ensure gender equality and diversity (Construction Sector Accord 2020). Nevertheless, equal satisfaction cannot be considered valid for other women populations – such as New Zealanders and pacific Pacific islanders – as their cultural and social constructs may be significantly different from Chinese women. The study also showed that the length of stay in NZ did not determine job satisfaction significantly. Thus, it could be expected that it is easy to become adapted to NZew Zealand work environments. As shown in Table 5, the average population mean for the WE factors is 4.39, indicating favourable construction work environments in NZew Zealand.

The literature review showed that marital status could influence job satisfaction in migrant workers; nevertheless, both married and unmarried Chinese migrant workers are equally favourable towards overall job satisfaction. According to literature (Mohsin *et al.,* 2019), the effect of marital status gets diminished when the host government is committed towards migrant workers' wellbeing via commitment to international protocols and local legislations. Nevertheless, the current study's methodological position is inadequate to explain this equal favourability credibly. Firstly, the current study did not evaluate if the married migrant workers left their families behind or moved with them. Secondly, there is a future study requirement to assess how ~~New Zealand~~NZ work environments and living conditions help migrant workers cope with depressive symptoms when leaving their families behind.

However, in terms of age, the study revealed that participants within the 45–54 age group were happier than those in other age groups and would recommend NZ to others as a good country in which to work. It should be noted that the above 55 group was not considered under this analysis. Compared to younger migrant workers, middle-aged workers typically have added family commitments ~~such as supporting children's education and looking~~to support children's education and look after aged parents. Coupled with favourable income levels (see Table 5), an ability to fulfil these commitments could enhance job satisfaction in this age category. Also, the middle-aged workers have more positive reaction towards job stability when compared to younger generations that prioritise travelling, leisure and adventures. Thus, the field study findings are consistent with the reviewed literature.

Another important demographic was educational background; the study found that participants with high school qualifications (and below) were more likely to recommend NZ as a country in which to work. This finding is consistent with Gonzales *et al.,* ~~Sanchez and Lopez-Guzman~~ (2016) that workers with lower educational levels are more likely to express higher levels of appreciation for work that they have been able to secure and maintain. Our study did not investigate the Chinese migrants' previous employment (or employability) status in their home country, which may be significant to their responses to job satisfaction in their new environment.

Finally, the last hypothesis (H3) tested the moderating effect of the demographic status of migrant Chinese construction workers on the determinants of job satisfaction. Our findings indicate that age and educational backgrounds had significant influence on some of the determinants of overall job satisfaction. Older migrants (45-54 years) tended to be more favourable to the determinants of overall satisfaction. In contrast, participants' educational backgrounds influenced only three determinants (RNs 4 and 5, and LON1). Furthermore, migrants with lower qualifications were more favourable towards RNs 4 and 5, although they felt lonelier than participants who had earned at least one degree (LON1).

Considering that age and educational background significantly influenced both independent and dependent variables, a correlation analysis will be inappropriate to test the hypothesis in future. That *'RN/WE/KACP/QLWC/ LON influences Chinese migrant worker's job satisfaction in ~~the New Zealand Construction industry'~~NZCI*. Thus, a regression analysis could be employed to test this hypothesis while introducing age and educational background as moderating variables. The challenge is that ~~these two~~age and educational backgrounds as moderating variables

are categorical; compared to continuous and dichotomous variables, they need specific attention before regression. Thus, the authors suggest re-coding ~~these categorical variables~~age and educational background using an appropriate coding system (see Institute for Digital Research and Education. 2021). The outcomes could elicit evidence to assist policymakers in developing strategic interventions regarding the enduring determinants of overall job satisfaction for a critical population of skilled immigrant construction workers in the NZCI.

Conclusion

This study aimed to establish the moderating effect that demography has on the overall job satisfaction of Chinese migrant workers in the NZCI. It is an aspect of a more extensive study on the working conditions of migrant construction workers in NZ. The study identified gender, age, educational background, marital status and years of experience as personal characteristics that may influence migrants' perception of satisfaction within their host country, NZ. The current study results support the internal validity and reliability of these personal characteristics as moderators of job satisfaction for this category of migrant construction workers. Migrant Chinese construction workers over 45 years old were more satisfied with working conditions than younger migrants. Also, the educational background of these migrants (especially those less educated) was significant to overall perception of satisfaction. Both age and educational background were confirmed as moderators to the determinants of their job satisfaction within the NZCI. These findings are significant to future efforts by government and policymakers to address the perceived exploitations reported in the NZ media. Satisfied Chinese migrant workers are mos~~t~~re likely to be productive, ~~which could significantly benefit~~significantly benefiting their employers, industry and the national economy. ~~—~~Also, the findings may contribute to policy initiatives on the optimal categories of migrants engaged on construction activities to derive the maximum benefits for NZ. Finally, the study provides insights for organisations employing migrants about putting in place appropriate measures to enhance their satisfaction levels.

Similar empirical findings can ~~contribute to improving~~improve living conditions and the overall achievement of expectations of life in the NZCI. It provides an alternative perspective to the immigration survey monitoring programme in N~~ew~~ Z~~ealand~~, because of its focus on a particular ethnic nationality that makes up a significant percentage of the migrant workforce. Further studies will build on the achievements of this current study to determine the holistic effects of participants' demographics against overall job satisfaction and the independent variables using a suitable regression analysis. This will elicit evidence to assist policymakers in developing strategic interventions regarding the enduring determinants of overall job satisfaction for a critical population of skilled immigrant construction workers in the NZCI.

There are limitations to the study findings. Firstly, the sample consists exclusively of Chinese construction migrant workers in Auckland city, NZ. Therefore, the generalisation of these research results to other migrant worker groups, should be made with caution. Despite this limitation, the current study provides a meaningful beginning to exploring a largely ignored population in the NZ workforce. More studies are needed to focus on construction migrant workers from other cultural backgrounds. The second construct we measured in the current study was general job satisfaction. Therefore, findings in the present study should not be generalised to other, more specific

aspects of job satisfaction. As mentioned previously, job satisfaction is a broad and multi-faceted construct. Migrant workers' job satisfaction toward pay, management, and skill variety might have different predictors that need to be explored in more detail in future studies. Overall, the current study is encouraging, and fills the gap in the literature regarding construction migrant workers' job satisfaction in NZ. More studies are needed in this field to explore the antecedent and consequent effects of these key elements. In the future, involving other construction migrant worker groups and even local-born workers could extend the current study, as would the coverage area extension to other cities or locations in NZ.

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Migrant construction workers' demography and job satisfaction: A New Zealand study

	Reviewers' Comments	Authors' Responses
	Reviewer 1	
1	In page 7 line 57, page 12 line 6, page 15 line 32, the references are missing.	Resolved: "Table 1"; "Table 1", "Table 5" respectively
	Reviewer 2	
1	There are some problems still with citations. Check page 5, lines 5-11 and correct them. Same with lines 31-34.	Resolved: *et al…*
2	Page 7, line 57, "Error...."	Resolved: "Table 1"
3	Please change the H1 to "Chinese construction workers in New Zealand are satisfied with their jobs overall".	Resolved
4	Update the text on page 9, line 3 as "Figure 1 shows the conceptual framework..."	Resolved: replacing model with framework.
5	In the section "The study variables", the authors use terms like "independent variables", "dependent variables" and "categorical variables", however it is not clear to the reader which of the variables you mean. Since this leads to conceptual framework development and explanation, it might be a better idea to refer to the actual variables such as RN, WE etc or give examples, especially for the categorical variables. Referring to Table 1 can be a good idea to since there they are categorised as independent and dependent.	Resolved: spelt out the categorical variables i.e. age and educational background.
6	What does "degree of homogeneity of their visa status" mean? Is it so that they have the same type of visa? Was this a criteria before handing the questionnaire to them?	Yes, all participants held temporary Work Visas TWVs. This is included in the sentence for clarity.
7	Error...." text in page 12, line 5.	Resolved: "Table 1"

8	Page 12, line 15, it is enough that you wrote "...was less than 0.05". There is no need for (p<0.05).	Resolved: (p<0.05) removed.
9	Page 15, line 32, "Error..." problem.	Resolved: "Table 5"
10	In Discussion, text is including both NZ and New Zealand. Please use one.	Resolved: replaced with NZ
11	I suggest authors to define "who" should benefit from increased job satisfaction of Chinese migrant workers in NZ. This can be added in the conclusion to motivate the practical contribution of the study. For whom it will be beneficial and how or why?	Resolved, sentence added to the conclusion section to demonstrate practicial relevance.

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Rotimi JOB

2021