

**A Study of Job Satisfaction and Employee Turnover Intention Based on
Herzberg's Two-Factor Theory in Hong Kong's Construction Industry**

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Abstract

The purpose of this paper is to investigate in the relationship among hygiene factors, motivators, job satisfaction and turnover intention of the construction industry in Hong Kong by using Herzberg's theory. In this paper, six factors, including salary, working condition, achievement, meaningfulness, job security and growth and advancement, were selected to study the relationship with job satisfaction and turnover retention.

A triangulation method, with both quantitative and qualitative approaches, were used in this paper. The quantitative approach is to collect a larger audience's data towards the hygiene factors and motivators by receiving 201 nos. of questionnaires. The qualitative data is to study the related factors further by using a focus group with 7 nos. of construction workers.

By using Statistical Product and Service Solutions (SPSS) software, this paper analyzed the hypothesizes testing, there are all six factors that are positively related to job satisfaction; while the relationship between salary and job satisfaction is the strongly positive correlated. Furthermore, job satisfaction is found to be negatively correlated with turnover intention.

In recent years, the construction industry is facing a problem of labour shortage and ageing workforce. To attract younger generation to join the industry, studying the factors that can drive people to have higher job satisfaction and improving the image of the industry are useful references. The construction workers and skilled workers are able to be recognised by the Schemes established by the government.

Keywords: Hong Kong, job satisfaction, turnover intention, Herzberg's Two-Factor Theory, motivators, hygiene factors, construction industry

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LIST OF ABBREVIATIONS

CIC	Construction Industry Council
CWRO	Construction Worker Registration Ordinance
RGW	Registered General Worker
RSS	Registered Semi-skilled Worker
RSS(P)	Registered Semi-skilled Worker (Provisional)
RSW	Registered Skilled Worker
RSW(P)	Registered Skilled Worker (Provisional)

Chapter 1. INTRODUCTION

1.1. Research Background

Construction industry is one of the main sectors in Hong Kong, with currently 480,730 registered construction workers with the average age of 46.1 and in 30 different categories. The construction industry contributed 4.5% of Gross Domestic Product (GDP) in 2018 in Hong Kong. In the past 18 years, the average GDP contribution from construction industry is over 3%. From 2000 to 2018, the percentage contribution to Gross Domestic Product (GDP) of construction had the average of 3.82%, which is slightly lower than the percentage contribution of GDP of real estate, professional and business services. This sector is long considered to be manual labour and has been facing labour shortage for many years.

In addition, the image of the construction industry is relatively negative, this industry is not as attractive as sales and retails sector where can attract more young people to join the workforce. Efforts have been made in recent decades to improve the current situation. In 2007, the Construction Industry Council is set up, aiming to align opinions in the industry, and provide suggestions to the government for the long-term development and strategies. In 2017, the Hong Kong Institute of Construction is setup by the Construction Industry Council to provide full time program to develop young talents. However, according to the research done on April 2019 by the Hong Kong Construction Association, there is a labour shortage of 6% on a random day (Hong Kong Construction Association, 2019). Moreover, the relatively low new entrants of young people under 30 years old in construction industry in Hong Kong leads to lack of

skilled young workforce in recent years. During 2016 to 2019, the unemployment rate in construction industry in Hong Kong gave the average of 4.9%. The average unemployment rate in construction industry is similar to retail, accommodation, and food services (4.4%); while for the other 6 industries gave the lower average unemployment rate (Census and Statistics Department, 2020). To understand the reason of labour shortage, this paper will study the job satisfaction in construction industry and how it affects employee retention.

The connection between job satisfaction and employee retention is positive correlated (Chatzoglou et al. 2011). Understanding the factors that affect the employees' job satisfaction is one of the ways to evaluate the human resources strategies in the modern society. This paper takes the construction industry of Hong Kong, as a case study to investigate the employee retention in from Herzberg's motivation-hygiene theory. There are many theories can study the different factors affecting employee turnover; for example, Human Resources Management theory. As the focuses of different theories are different, this paper would focus on the individual side factors by using Herzberg's theory; instead of evaluating organisational factors. The paper carried out a quantitative research towards 201 nos. of construction workers in the industry. Besides, a focus group with 7 persons was set up to further study the factors affecting their job satisfaction and thus the employee retention. Multiple linear regression models are used to study the correlation among hygiene factors, motivators, job satisfaction and workers' willingness to stay in the industry. Among the traditional motivators and hygiene factors proposed by Herzberg (1959), this paper selected six factors which are considered as highly

correlated to job satisfaction. By evaluating the multiple linear regression models, the paper aims to find out the correlation between job satisfaction and employee retention. As resources are limited, a review of resources allocation is of importance. Eventually the paper gives recommendations on strategies towards employee retention by allocating the human resources and emphasis on the significant factors that positively affect the employee retention.

Construction industry consists of a wide range of types of work. With the establishment of Subcontractor Registration Scheme in 2003 and Registered Specialist Trade Contractors Scheme in 2019 regulated by The Construction Industry Council, there are 30 types of construction workers are eligible to register on-listed specialized workers. Therefore, the construction workers can be recognized by the government and the industry. According to the classification of construction sector in Hong Kong, there are over 30 types of work, for example, concreter, bricklayer, drainlayer, mason, bar bender and fixer, metal worker, general welder, structural steel erector, structural steel welder, rigger/ metal formwork erector, carpenter, joiner, plumber, construction plant mechanic, plant & equipment operator, rock-breaking driller, asphalter, bamboo scaffolder, diver, plasterer, glazier, painter and decorator, leveller, marble worker, electrical fitter, mechanical fitter, refrigeration/ air-conditioning/ ventilation mechanic, fire services mechanic, lift and escalator mechanic, building services maintenance mechanic, cable joiner, and other general workers and labourers (Census and Statistics Department, 2020). Among all these types of work, truck driver and general workers and labourers are the exceptions from both Scheme, and thus their “growth and advancement” can be affected.

1.2. Research Motivation and Value of Study

The construction industry in Hong Kong is facing labour shortage as there are very few young generations joining the industry. Among the 457,000 registered construction workers in 2019 under Construction Industry Council in Hong Kong, only about 70,000 are under the age of 30 (Hong Kong Construction Association, 2019). The age structure in the industry means the labour supply in the industry is unsustainable in the coming future. With more than half of the registered workers are above 50 years old, the industry is at a very severe stage of labour shortage.

Studying the construction industry is one of the popular topics all over the world. From the literature reviews, many studies on Hong Kong, China, Thailand, the UK, the US, Australia, the Philippines, Pakistan, etc. Some of them studied the productivity of the construction industry. Some of them reviewed the work condition and occupational health of the construction workers, as well as risk management of the construction sites. Some of them investigated in the factors that can affect the construction workers' job satisfaction or dissatisfaction. The aim of these researches is to identify the potential problems of the industry and proposed some aspects to improve the current situation with suggestions

1.3. Research Questions

In this paper, the first research question is in what extent the six factors, including salary, working condition, achievement, meaningfulness, job security and growth and advancement can affect the employees' job

satisfaction in the construction industry in Hong Kong. This question consists of six subsidiary questions.

- (1) How the salary level can affect employees' job satisfaction?
- (2) How the working condition can affect employees' job satisfaction?
- (3) How the sense of achievement can affect employees' job satisfaction?
- (4) How the sense of meaningfulness can affect employees' job satisfaction?
- (5) How the level of job security can affect employees' job satisfaction?
- (6) How the growth and advancement can affect employees' job satisfaction?

The second research question is how the job satisfaction can affect the employees' turnover intention in the construction industry in Hong Kong.

1.4. Research Aim

Similar to many other industries, the construction industry in Hong Kong is also facing two structural problems, including labour shortage and ageing workforce.

The research aim is to examine the hygiene factors, including working condition and job security, as well as the motivators, including achievement, meaningfulness of work, growth and advancement. These factors described in motivation-hygiene theory can affect employees' job satisfaction, and thus to reduce the employee turnover intention in the construction industry in Hong Kong.

Studying job satisfaction and turnover intention within the industry is one of the ways to evaluate the productivity of the industry. Job satisfaction is a combination of a set of hygiene factors and motivators that affect employees'

feelings towards their jobs. This paper aims to identify the factors that can affect the employees' job satisfaction and propose the methods to increase the job satisfaction, and to decrease the job dissatisfaction as well as the turnover intention. By identifying which hygiene factors and motivators have more effect on job satisfaction, this paper will provide a quantitative result as a reference to the emphasis that the industry should be more focused on. In other words, the industry can make good use of the limited resources to put on the factors that are the most influential.

1.5. Research Objectives

This paper will be divided into 5 chapters which are the Introduction (Chapter 1), Literature Review (Chapter 2), Research Methodology (Chapter 3), Result and Data Analysis (Chapter 4) and Conclusion and Recommendation (Chapter 5).

By introducing the research background and reviewing the previous journals written by scholars, the paper will study the elements that can drive job satisfaction and employee retention. After that, a triangulation method will be used to collect both quantitative and qualitative data to perform a multiple linear regression to study the correlation between the six elements and job satisfaction, and employee retention. Focus group is considered as a useful tool to explore the thoughts and feelings of respondents (Mansell et al. 2004). The triangulation method will first start with a focus group to collect the interviewees' feedbacks and opinions from the current construction workers. Following by the focus group with the construction workers, this paper aims to collect data from a larger sample. The sample size is expected to be 200 nos.

of data. A pilot test will be setup before rolling out the survey. Therefore, the primary data from the questionnaire answers and the interview of the focus group were collected for latter study. This paper set up seven hypotheses for testing.

H1: job satisfaction is positively correlated with salary.

H2: job satisfaction is positively correlated with growth and advancement.

H3: job satisfaction is positively correlated with job security.

H4: job satisfaction is positively correlated with achievement.

H5: job satisfaction is positively correlated with working condition.

H6: job satisfaction is positively correlated with meaningfulness of work.

H7: turnover intention is positively correlated with job satisfaction.

This paper targets to draw a connection between observed phenomena and the hypothesised underlie reasons.

Based on the results, this paper will analyse and identify the importance of the motivators and hygiene elements which affect employees' job satisfaction by studying the coefficients of the factors given by the correlation testing and multiple linear regression model. Further study on the correlation between job satisfaction and the willingness of the employees to stay in the industry will be provided to the employer in order to reduce the turnover intention and thus increased the company productivity. In order to understand the general information of the construction industry, the secondary data retrieved from the Hong Kong Census and Statistics Department and Construction Industry Council. The information included the unemployment rate sort by sectors, the underemployment rate sort by sector and the average wage per day of workers who work in construction sites, etc.

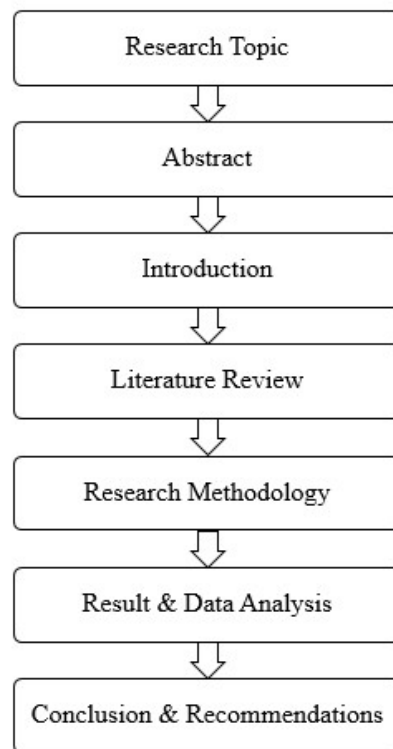
In the result and data analysis, this paper will carry out descriptive statistics, reliability statistics, correlation test and multiple linear regression model to test the hypotheses and draw a conclusion on this research topic. The model of fit and ANOVA of model will be used to study whether the model is reliable and whether the coefficients are statically significant.

Finally, conclusion will be discussed to conclude the findings and provide relevant recommendations to the management of the construction industry in Hong Kong.

1.6. Research Direction

Firstly, this paper will establish a research topic and begin with an abstract. Secondly, an introduction about the paper structure and keywords of the research will be discussed. Thirdly, literature review and the published journals will be discussed. Fourthly, the research methodology will be reviewed for this paper. Fifthly, after collecting the primary from questionnaires and the focus group. Eventually, a conclusion and recommendations will be proposed for this paper. The structure of this paper is shown in the Figure 1.1 below with timetable (Appendix 1).

Figure1.1: Flowchart of this Study



Source: This research

1.7. Research Ethics

This research respects the confidentiality and privacy of the data collected from the interviewees and all the data is used for this academic research purpose only. To protect the interviewees' information provided, this research does not disclose the personal data and no identification data is required in the interviews, such as name, company and contact information are not required in the focus group.

1.8. Limitations

In the original Two-factor theory model, there were over 10 hygiene factors and motivators to study the job satisfaction and job dissatisfaction. However,

in the paper, only six factors were studied to investigate in the relationship among the six factors and job satisfaction, and thus the employee's turnover retention. Hence, some of the factors were neglected due to the limitation of the resources and the nature of construction industry.

There are other theories can be adopt to study the job satisfaction and its factors, such as human resources management theory. Therefore, in this paper, it is limited to only one theory, leading to not a very comprehensive study. In the future research, the paper can also go through the organisational factors, including firm size, company culture, subsidiaries, company human resources policies, firm strategy, technology, etc.

The data collection of this paper may not be able to reach to all the construction workers as it will include a very large sample size. Besides, there are permanent and temporary workers in both public sector and private sector of construction industry. The paper adopts snowballing sampling to collect the data. As such, this paper does not distinguish public sector and private sector. In fact, the workers from difference sectors may contribute different ranking of the hygiene factors and motivators in Herzberg's Theory.

Obtaining personal data consists of confidential information, such as salary. As such, the interviewees may be sensitive to these questions and the answers may not reflect the true feelings of each factor.

Chapter 2. LITERATURE REVIEW

2.1. Introduction

This chapter will explore the definition, characteristics and relevant literatures on Herzberg's Theory, job satisfaction, turnover intention, salary, job security, working condition, growth and advancement, achievement and the development of construction industry, and the design of questionnaire. Apart from the relevant literatures, this chapter will review the published journals about the research topic, for example, meanings, applications, research results, evaluations of the theory and factors, as well as related research carried out for the construction industry in different countries.

2.2. Development of Construction Industry

Construction industry is one of the significant economic drives to many countries as it creates numerous job opportunities from low-level works to high-level works. Construction industry is a big industry that includes physical and knowledge-based inputs to concrete outputs. From designers and architects, to engineers and foremen, as well as site workers, then a development is built. The industry can be defined as primary industry as it engages in actual physical work and involves in various work nature (Wirahadikusumah & Pribadi, 2011). Workers' effort and performance could affect the productivity and efficiency in construction industry industry (Hasan et al, 2018). In view of the construction industry in Hong Kong, Ng et al. (2004) proposed the factors that could affect the workers satisfaction were "re-work", "inspection delays", and the factor "overcrowded work area" could demotivate workers. These three aspects could create a dissatisfactory work

environment to the site workers. The skilled workers are demotivated by re-doing the work ordered by the designers and engineers; hence, they receive little praise when they completed one task (Ng et al. 2004). The poor and delayed communication between superiors and workers affected work performance, as they needed to wait for instructions (Ng et al. 2004). The crowded construction site without management made the workers feel dissatisfied with the working environment (Ng et al. 2004). The degraded job satisfaction could result in lower productivity (Wofford & Fetzer, 2003) and higher turnover rate (Buiser, 2000).

According the figures from Construction Industry Council (2019a), the total employment workforce across the industries in 2019, there is 8.6% of the employment from construction industry. It is similar to retail industry (8.2%) and Transportation, storage, postal and courier services industry (8.0%). Because of the economic downturn during 1998 to 2006, the gross value of construction works was a negative figure; while, 2010 to 2016 was in a higher and positive gross value in both private sector sites and public sector sites. In recent years, after 2016, the gross value is relatively stable; however, construction industry faced a plunge in 2019. Thanks to the skyrocketing price of property prices in Hong Kong, the construction industry is still very competitive when comparing to the world. In addition, the demand for the construction workers comes from different sectors, including private sector (residential and commercial) and public sector (government development, MTR and the airport authority). However, Construction Industry Council (2019a) estimated that the problem of labour mismatch and ageing employment workforce in the construction industry in Hong Kong are valid

from 2019 to 2023. There is one feature in the construction industry in Hong Kong, that is there are low-skilled immigrants from the Mainland China (Census and Statistics Department, 2020). Although it is assumed there are new entrants from the Mainland China, they are rather low skills and it is not an effective way to ease the burden of labour shortage and ageing workforce (Ho, 2016). A research carried out by the Hong Kong Construction Association (2019) in April 2019, there is a labor shortage of 6% on a random day (Hong Kong Construction Association, 2019). Not only in Hong Kong, the fast growing construction industry may be a trigger to an economy without strategic plans by the government and the industry (Wong, Ng & Chan, 2010).

2.3. Herzberg's Theory

2.3.1. Definition

In 1959, Frederick Herzberg first worked on a research on the two-factor theory, namely, motivation-hygiene theory. Herzberg collected the data about the workers' feeling in engineering and accounting industry, concluding that the work environment is the primary factor to affect job satisfaction (Wofford & Fetzer, 2003). Motivators are 6 factors affecting employees' job satisfaction: achievement, recognition, interesting work, increased responsibility, growth and advancement (Lindsay et al. 1967). While 7 hygiene factors that could prevent job dissatisfaction: they consist of company policy, supervision, interpersonal relationship, work condition, salary, status and security. (Lindsay et al. 1967).

2.3.2. Construct and Measurement

In two-factor theory, Herzberg clarified that the presence of a factor does not lead to an opposite effect when the factor is absent (Beygatt, 2018). To elaborate the difference of job satisfaction and job dissatisfaction, Herzberg suggested that “the existence of satisfaction does not mean the non-existence of dissatisfaction” (Beygatt, 2018). This is because when one factor is rated relatively low from one’s perspectives, there can be any more factors that give a positive result towards one’s job satisfaction.

Originally, in Herzberg’s paper, the factors were not explained explicitly; instead, more and more scholars further study the motivators and hygiene factors. Apart from the original model, many scholars also make changes to the factors for more specific studies, by adding more motivators and hygiene factors. In Herzberg’s theory, he found that the motivators could increase employees’ job satisfaction and the hygiene factors could prevent employee’s dissatisfaction (Yusoff, Kian, & Idris, 2013). To elaborate the difference of job satisfaction and job dissatisfaction, Herzberg suggested that “the existence of satisfaction does not mean the non-existence of dissatisfaction” (Beygatt, 2018). Ruthankoon & Ogunlana (2003) concluded that the motivators are responsibility, advancement, growth and supervision and the hygiene factors are working condition, job security, relationship in the construction industry in Thailand. Therefore, in this paper, “growth and advancement”, “working condition”, “job security” are also selected for the study on the construction site in Hong Kong.

2.4. Salary

2.4.1. Definition

Salary is treated as a form of compensation from a company to the workers who contribute time and labour skills as well as knowledge. Many empirical studies have been done and concluded that the relationship between salary and job satisfaction is positive. Payment for the work is essential. The different pay packages mechanism can positively affect one's job satisfaction (Muhammad et al. 2011). Peiró, Agut & Grau (2010) also supported that the higher salary could make one feel less deprived, meaning that the employees feel well-paid for the job duties.

2.4.2. Construct and Measurement

The salary of the construction workers is one of the significant factors that affect their job satisfaction (Rajput, Mahajan & Agarwal, 2017). In Indian construction sites, Rajput, Mahajan & Agarwal (2017) found out that the site workers only achieved primary level education; however, they gained a higher daily wage than other low education level jobs. With comparison to other industries, construction industry requires in a large extent of physical work and working outdoor under the sun or under the rain; while the wages and work benefits are not attractive enough to attract young people to join the workforce (Ho, 2016). It is suggested the salary to be raised so as to attract new entrants and to compensate the construction workers for their high physical demand (Ho, 2016). In the construction industry, it is known that the main contractors would outsource some of the work to the sub-contractors due to division of labour and the employee workforce within the company, as well

as the comparative advantages. Although there are contractor associations and construction worker unions in Hong Kong, it is not always easy to demand the contractor companies to increase the average salary and work condition. Even worse, the sub-contractors have weaker bargaining power with the Developer and thus they are more difficult to request for a higher salary. Therefore, this paper set up a hypothesis.

H1: proposing the salary is positively related to job satisfaction.

2.5. Growth and Advancement

2.5.1. Definition

Growth and advancement mean the promotion opportunity and knowledge and skills acquirement. It appears to one of the motivator factors in Herzberg's theory (Ruthankoon & Ogunlana, 2003).

2.5.2. Construct and Measurement

Many researches pointed out that growth and advancement is positively related to job satisfaction (Ruthankoon & Ogunlana, 2003). However, when an employee cannot expect promotion in his current job, he would feel demotivated. In terms of growth, it means that the opportunity of learning new skills and techniques (Ruthankoon & Ogunlana, 2003). To improve the growth and advancement of construction workers, the government has set up Subcontractor Registration Scheme in 2003 and Registered Specialist Trade Contractors Scheme in 2019. Having the official registration scheme, the construction workers, categorised by demolition, reinforcement bar fixing, erection of concrete precast component, concreting formwork, concreting,

scaffolding and curtain wall, the workers can be enlisted under the scheme and the contracting company can recognise the level the workers more easily (Construction Industry Council, 2020). The industry image is relatively negative as per the society perception because the construction industry is viewed as dangerous and dirty as well as hardship. This is also the reason why the industry does not attract young generation. Therefore, this paper set up a hypothesis.

H2: there is a positive relationship between growth and advancement and job satisfaction.

2.6. Job Security

2.6.1. Definition

Job security, one of the hygiene factors, is a sense of whether the employee feels the job is insecure or could be terminated without one's advance consent. The higher job security is positively related to job satisfaction. Some hypothesis said knowledgeable workers, comparing to workers who lack of knowledge, shall give a relatively smaller effect of job security because the workers shall switch to another job easily. However, Wilczyńska, Batorski & Sellens (2016) conducted a research on job flexibility and security and concluded that the job satisfaction of knowledge staff and other workers are strongly determined by job security.

2.6.2. Construct and Measurement

Job security is the ability to avoid being terminated and the ability to reduce employee's fear of losing their job (Dhanpat et al. 2019). Employers also aim

to improve the job security in a company so as to keep the employees staying in the firm. Dhanpat et al. (2019) proposed that employees is not only afraid of losing job and money for their living, but also the sense of belongings and self-actualisation. Therefore, job insecurity can affect employees mentally, resulting in low motivation to work and thus accidents happening in the workplace. Job insecurity is also related with negative work attitudes, job dissatisfaction and employee's personal feelings (Burke, 2015). As job security can affect the employees' work performance, Faremi (2017) found that there is a significant relationship between private secondary school teachers and their retention. Therefore, this paper set up a hypothesis.

H3: proposing job security and job satisfaction gives a positive relationship.

2.7. Achievement

2.7.1. Definition

Achievement gives a positive relation to job (Avery, Smillie & Fife-Schaw, 2015). When the employee is able to achieve the goals in a workplace, one would feel satisfied with the current job. This motivator gives an employee more than the basic physical needs. The employees can feel a sense of achievement when they get involved in their jobs (Yang & Witternberg, 2016).

2.7.2. Construct and Measurement

When the employees face the challenge at work, they receive accomplishment and motivation to work harder or rather to stay in the company or industry. It is studied by various researches that the job achievement can decrease the job dissatisfaction and lower intention to leave their current work. When the

employees gained a sense of achievement because they overcame the challenges or goals, it increases the employees' commitment and job satisfaction (Charpia, Voris & Salas, 2018). According to Ruthankoon & Ogunlana (2003)'s research, achievement is one of the most important factors for job satisfaction in Thai construction industry; yet different positions and gradings would have different effect on the job satisfaction. For example, for the grade or below the grade of foreman, the construction workers are more driven by hygiene factors; instead of motivation; while the managerial grading would be more driven by motivators. Therefore, this paper set up the hypothesis.

H4: proposing achievement and job satisfaction are positively related.

2.8. Working Condition

2.8.1. Definition

A satisfying working condition is of importance in construction industry that its work injury recorded the highest, comparing to the other industries, according to Occupational Safety and Health Council (Occupational Safety and Health Council, 2014).

2.8.2. Construct and Measurement

Construction sites are more dangerous and risky than any other industries as it consists of many various mancrafting works with Electrical and Mechanical, Civil and Building, etc. Many of the construction workers are putting their lives to their work. Therefore, the work condition and environment are more important from the workers' perspective. Working in a dangerous environment

and unclear regulations could lead to work injury and thus employee's job dissatisfaction. Working condition which affects employee's mental health and physical health is positively related to job satisfaction (Kinman, Clements & Hart, 2016). Apart from the virtually work condition provided by the employer, the work condition could be affected by interpersonal relationships with colleagues and clients (Charpia, Voris & Salas, 2018). Apart from the work environment, the relevant policies enforcing the employers to provide enough personal protection equipment are also essential to ensuring the construction workers are being protected from the potential dangers on-site. The Occupational Safety & Health Council in Hong Kong was established in 1988 to promote the safety and health at work. The Council provides guidelines to employers to follow the procedure and provision of work safety, such as lifting operation in construction sites. According to a research carried out by the Council (2014), among the 931 accidents of construction workers, there was 59.6% of them thought the bad weather leads to the tragedy; and 50.1% of the injured workers thought the site was in poor management in terms of floor with many sundries (Occupational Safety & Health Council, 2014). In order to improve the safety awareness of construction workers, they are compulsory to complete Construction Industry Safety Card Revalidation Course before entering the construction sites in Hong Kong. Otherwise, the contracting company shall reject the workers to enter the construction site. Therefore, this paper set up the hypothesis.

H5: proposing there is a positive relationship between working condition and job satisfaction.

2.9. Meaningfulness of Work

2.9.1. Definition

The employee considers whether the work is significant to oneself, in a sense that the job natures and values are to an extent that matched with oneself's core values. If the work nature violates oneself's values, the job satisfaction would be lower. Meaningful work gives high degree of job satisfaction by direct and indirect effect (Allan et al. 2018).

2.9.2. Construct and Measurement

Bowie (1998) described that the characteristics of meaningfulness of work are “freely entered into the work”, “to exercise autonomy and independence”, “to develop rational capacities”, “to provide a wage sufficient for physical well being”, “to support moral development”, and “to define the happiness by employee”. The higher “meaningful of work” is received by the employee, the higher the productivity and work performance is. Meaningfulness of work is related to employee's job satisfaction and retention intention. By developing a work environment that is meaningful, the job satisfaction can be improved and motivation to work, thus it decreases the job retention (Brown, 1996). There is a Job Characteristics Model suggested by Hackman and Oldman to summarize the job skills, task significance, autonomy, etc. and it is found that the relationship between job characteristics and job satisfaction are supportive (Taylor, 2015). Therefore, this paper set up a hypothesis.

H6: proposing there is a positive relationship between meaningful works and job satisfaction.

2.10. Job Satisfaction

2.10.1. Definition

Job satisfaction is the degree of employee's contentedness with the job. They like the job or specific facets of jobs, for instance the nature of work (Spector, 1997). It can be measured in cognitive, emotional and behavioural components (Hulin & Judge, 2003). The derivatives of job satisfaction or job dissatisfaction can be driven by work-related factors and non-work related factors (Bowling & Hammond, 2008).

There are various factors that drive employee's job satisfaction. Apart from the hygiene factors and motivators, the demographic characteristics, for example, gender, race and age, could affect the turnover retention, but they are not always the primary factors. Wofford and Fetzer (2003) found out that self-actualization comes from the various managerial grades an employee is in. The higher the management position is, the more the job satisfaction is.

2.10.2. Construct and Measurement

Job satisfaction is widely discussed by scholars in industrial and organizational psychology to enhance the productivity in many industries and to give suggestion on improving the hygiene factors and motivators for workers. Bowling & Hammond (2008) summarized that there is a set of map of showing the causality and network of the job satisfaction. The complex causality starts from "hypothesized antecedents", which are job complexity, stressors, social and organizational support and person-environment fit, and "hypothesized correlates", which are job attitudes, strains and life satisfaction,

“job satisfaction”, as well as “hypothesized consequences”, which are job performance, organizational citizenship behavior, counterproductive work behavior, and employee withdrawal.

The workers would receive a negative impact on their personal feelings and they would perform badly at work, resulting in lower productivity or mistakes at work. Thus, many researches have been done to investigate the factors that affect job satisfaction and therefore to find out the ways to improve work environment so as to further enhance the productivity. Buiser (2000) proposed that a negative satisfactory work environment could give “lower productivity, work error, and job turnover”. Although each person has different personal feelings about the job satisfaction, the overall impact could be brought to the entire company or industry. Job satisfaction and productivity as well as job turnover are all interrelated. Griffeth et al’s meta-analysis (2002) studied the turnover prediction from 1990s to 2000s, job satisfaction is one of the precursors of employee’s turnover. However, they further studied that by improving the work attitudes and job satisfaction, in a small extent can predict employee’s turnover tendency (Griffeth, Hom & Gaertner, 2000). Although there are much research presented that the job satisfaction can positively affect the employee’s motivation at work, some research papers are just focusing on the individual side’ instead of the organisational variables (Zheng & Lamond, 2010). Factors related to individual are presented in this research; while the organisational factors are firm size, company culture, subsidiaries, company human resources policies, firm strategy, technology, etc. As Herzberg’s theory is more focus on individual side, including hygiene factors and motivators, this paper would not go through the organisational factors. Griffeth, Hom &

Gaertner (2000) also concluded that job dissatisfaction could lead to higher intention of turnover. Brown (1996) suggested that the job satisfaction is strongly related to job involvement, meaning that the employees' attitude towards their work. By evaluating the level of job satisfaction, Bowling & Hammond (2008) suggested theoretical and empirical reasons of the consequences of lower level of job satisfaction. Therefore, this paper set up a hypothesis.

H7: proposing there is a negative relationship between job satisfaction and turnover rate.

2.11. Turnover Intention

2.11.1. Definition

Turnover can be voluntary and involuntary, meaning that employees tend to leave the company because of their desire or the employee can be terminated by the employer. The turnover intention is highly related to the salary level (Yang & Wittenberg, 2016).

2.11.2. Construct and Measurement

Many Asian countries, including Hong Kong, Taiwan, Malaysia, Singapore and South Korea, are facing the problem of turnover when comparing with the Western countries (Yang & Wittenberg, 2016).

Job satisfaction is negatively related to turnover intention. Mael & Ashforth (1995) pointed out four factors that made a person decide whether to stay or to leave the organization; the four factors were whether a person is suitable for a

firm's lifestyle, whether a firm's culture matches with one's values, whether one could feel a sense of belonging attaching to the firm and whether a firm gave personal inspiration and a sense of achievement. The relationship in the firm with co-workers was discussed that was an important factor that affect the turnover intention of an employee (Abrams et al. 1998). Due to the lower job satisfaction, the withdrawal behaviour can occur, as suggested in Bowling & Hammond (2008)'s paper. The withdrawal behaviours were explained as absenteeism, turnover intention and actual turnover. Bowling & Hammond (2008) also gave an insight that the job satisfaction is strongly correlated with the turnover intention.

The better the relationship is, the lower intention the turnover would be. Not only the relationship could affect the turnover intention, but also the training and career development do. In Australian construction projects, the poor training and shortage of experienced workers could result in poor planning in projects and thus, the workers would leave in industry (Loosemore, 2014). In most of the industries, high turnover rate of employees is costly for a company to look for candidates and to train the new hires. Take a research paper on the investigation on the relationship among turnover intention, work environment, job characteristics and work engagement in nursing industry as an example (Wan, Li, Zhou & Shang, 2018), work environment is positively related to turnover intention. To the reason why the modern scholars are interested in studying the employee turnover, it is because high turnover intention of employee can lead to more serious problem, including lower productivity, lower profitability, and lower sustainability (Guilding, Lamminmaki & Mcmanus, 2014).

2.12. Summary

Construction industry in Hong Kong is facing problems of labour shortage and ageing workforce, having fewer young generation to join the industry. In this paper, the focus would be the labour shortage in this industry by evaluating the current construction workers' job satisfaction and employee retention driving by the six factors (hygiene factors and motivators), salary, achievement, growth and advance, working condition, job security and meaningfulness of work. Salary is a form of reward to the workers. Achievement is the sense of achieving a particular goal set by employers or by employees. Growth and advancement is the perceive of recognition by oneself or by the employers, or even by the society. Working condition refers to the physical environment provided by the industry and the employers. Job security is about whether the employees feel the job is insecure or could be terminated without their advance consent, or whether the employees feel they will lose the job easily. Meaningful of work is whether the employees feel the work is significant to themselves.

The research paper is based on the Herzberg's Theory studying the relationship between job satisfaction and hygiene factors and motivators, as well as the turnover intention. With reference to the previous literatures, this paper has made the seven hypothesizes.

Chapter 3. RESEARCH METHODOLOGY

3.1. Introduction

In this paper, in order to study the topic, a focus group is first held with construction workers. It is then followed by a questionnaire that was sent to construction workers registered under Construction Industry Council.

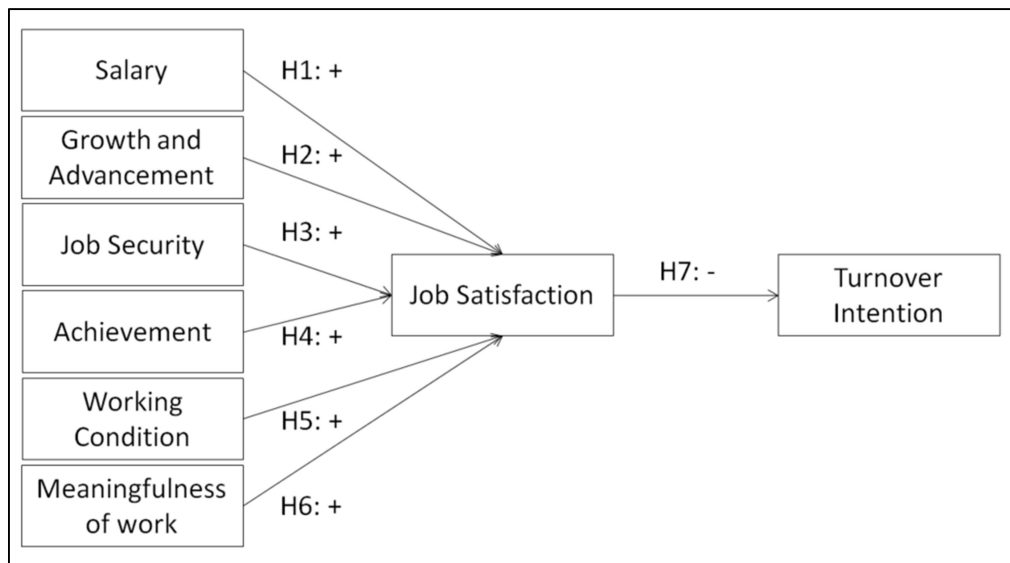
Found on the findings on the literature review in the previous chapter, the research methodology of this study is illustrated in this chapter. This chapter includes the research model, research instruments, research procedures and data analysis methods.

3.2. Research Design

In this research paper, “job satisfaction” is regarded as a dependent variable; while the other six factors and “turnover intention” are the independent variables, meaning that job satisfaction (dependent) is affected by the difference factors (independent). By evaluating the validity of ranking (from the scale of 1 to 5), this paper can use the “job satisfaction” to support the rankings of each factors (Hirschfeld, 2000).

In this paper, quantitative and qualitative research will be used. By using the triangulation, it will further allow this paper on verification on information collected through primary data and secondary data collected for the analysis of the below research model with the hypothesis.

Figure3.1: Research Framework and Hypothesis Testing



Source: This research

Table 3.1: Hypotheses

Hypothesis	Causal Path
H1:	Job Satisfaction is positively correlated with Salary
H2:	Job Satisfaction is positively correlated with Growth and Advancement
H3:	Job Satisfaction is positively correlated with Job Security
H4:	Job Satisfaction is positively correlated with Achievement
H5:	Job Satisfaction is positively correlated with Working Condition
H6:	Job Satisfaction is positively correlated with Meaningfulness of Work
H7:	Turnover Intention is negatively correlated with Job Satisfaction

Source: This research

3.2.1. Quantitative Research

Quantitative research (Given, 2008) refers to the study of an observable phenomenal by using systematic empirical investigation, such as mathematical, statistical or computation technique. By using models or theories, researchers aim to draw a connection between observed phenomena and the hypothesised underlie reasons.

In this paper, in order to study the relationship between job satisfaction and factors in Herzberg's two factor theory, questionnaire will be used in order to collect the feedback from construction workers with measurable tool. The collected data will then be analysed through regression and reliability test so as to search for the relationship between and to verify the reliability of the relationship drawn through statistical method.

3.2.2. Qualitative Research

Qualitative research refers to the collection of non-numerical data aiming at understand the underlie meaning of a certain topic through investigating the participants of the research. There are multiple methods to collect qualitative data, including observation, interview, focus group, open-end survey and content analysis. It helps researcher to study the meanings of the behaviours and actions of people (Crossman, 2020).

Qualitative research helps study the outcome of an event or peoples' action through revealing the meanings of people's behaviour. Information produced in qualitative research requires further interpretation through systematic approach in order to reveal the meanings of the response from the participants.

In this paper, in order to understand the key elements leading to job satisfaction among construction workers, focus group is used. Focus group refers to a small group of participants sampled from the population of the research target that researchers wish to generate data through engaging the group of participants through conversation and discussion among themselves. This allows researcher to observe the behaviour and conversations. In this paper, participants are asked with open- end questions to understand what they

value when they are working, and they are then asked about their understanding towards the questionnaire designed in order to study their understanding so as to modify the questionnaire to improve their understanding.

3.2.3. Triangulation

This research made use of the triangulation, which is considered as a method to establish validity to the research through using different sources of data and information (Guion, 2002). By using triangulation of data, data are compared to look for similarities in order to improve reliability and validity (Weyers et al. 2008). It is suggested that mixed methods of qualitative and quantitative research and interdisciplinary approaches are applied in projects by many scholars and researchers. (Given, 2008)

3.3. Structure of Data Collection

Data collection is the act of gathering and measuring information on the variables targeted in the research, these data are vital for the topic to be studied. Data can be collected through primary source and secondary source. In this paper, both sources are used.

3.3.1. Secondary Data

Secondary data (Rouse, 2017) refers to data that are available to researcher that are previously gathered. In this paper, secondary data includes statistical data from The Hong Kong Census and Statistics Department and Construction Industry Council, where the employment data and research works of the construction industry in Hong Kong are available. Furthermore, previous

literatures on Herzberg's Theory and its factors, job satisfaction, and the construction industry in Hong Kong are presented in this paper in order to provide supporting and further insights for this paper.

3.3.2. Primary Data

Primary data (Institute for Work & Health, 2015) refers to data that are collected from by the researcher for the specific purpose of the study. These data are collected by the researcher for the first time.

In this paper, primary data includes the focus group, a pilot test and questionnaires. It aims to collect direct feedbacks on construction workers' satisfaction on salary, growth and advancement, job Security, achievement, working Condition, meaningfulness of work, turnover intention and Job Satisfaction from employees in the industry. The process of collecting primary data is as follows,

Figure 3.2: Primary Data Collection Process



Source: This research

3.4. Sampling Design

This paper utilizes both focus group and questionnaire in order to collect information to study the topic. The focus group provided the researcher with insight and worker's actual job experience in order to understand their ideas towards job satisfaction; it also allows the researcher to improve the

questionnaire design to improve the accuracy of the questionnaire. It is then followed by a questionnaire which allows the researcher to further validate the accuracy of the questionnaire.

3.4.1. Focus Group Design

Focus group is considered as a useful tool to explore the thoughts and feelings of respondents (Mansell et al. 2004). In this research, the focus group is first used in the early stage of data collection in this paper, as it is considered as particularly useful in collecting general viewpoints, which will then be used for informing larger studies (Vaughn, Schumm & Sinagub, 1996). It is also perceived as having the possibilities to allow participants to develop ideas collectively through the actual experience of the participants (Smithson, 2007).

A focus group was setup in order to learn the elements that affecting the job satisfaction. Target participants of this focus group are construction workers registered in the Construction Industry Council. The objectives of the focus group was to collect opinions from the invited participants for collecting their opinions towards the topic of this paper; understand their perspective of factors affecting job satisfaction, and their comment towards the questionnaire.

As mentioned in previous chapter where registered construction workers are categorized into five groups according to their skills level and experience in the respective trade, in order to create a broader response from workers, cluster sampling is used which construction workers are divided into the three registration categories, which RSS and RSS (P); RSW and RSW(P) are grouped together as the only difference between them is that RSS(P) does not hold a trade test certificate, while a RSS holder does. They have same work

experience. It was the same for RSW and RSW(P), which the only difference between them is that RSW(P) holder does not hold an intermediate trade test certificate, while a RSW holder does. Therefore, the new grouping is RGW holders, RSS holders and RSW holders.

To ensure all three groups are included in the focus group to represent construction workers with different background. The participants are then invited through personal contact as the researcher is not a member of the construction industry. It was then through snowball sampling that the first participants introduce other potential participants to the researcher. In total, there are 6 more construction workers introduced through the first participant, thus, there were a total of 7 participants in the focus group (Appendix 2). The researcher then connected these potential participants to understand their registration level, their availability and their willingness to participate in this focus group. As the researcher aimed to receive feedbacks from different level of construction workers, at least one person from each of the three groups are recruited into the focus group.

The focus group was conducted on 27 January, 2020 at the researcher's apartment since it is a friendly location which can provide a quiet and relax place for participants to discuss freely. Furthermore, refreshment is provided to make the discussion more relaxed, enjoyable and comfortable (Krueger and Casey, 2008).

In the beginning of the focus group, the researcher explained the study topic, the reasons to conduct this focus group, the role of the moderator. A consent form and a demographic data form are issued to the participants for

confirmation of the use of data collected in this focus group. The researcher also informed the participants that all information collected are confidential and only for academic use in this study. Table 3.2 listed the topics we discussed.

Table 3.2: Discussion Topic in the Focus Group

1	What leads to job satisfaction in construction industry?
2	How important are the six factors towards job satisfaction?
3	What would you do when you are unsatisfied with your current job?
4	How likely would you quit your current job and look for a new one?
5	Comments on the questionnaire

Source: This research

3.4.2. Questionnaire Design

A questionnaire is a set of questions sent out to collect information. It is widely use in all sorts of industries when data is needed to be collected, the main advantages that are widely agree are that they are inexpensive, quick and easy to analyze.

Questionnaire will be distributed to construction workers to study their job satisfaction and how the factors correlated to job satisfaction. The questions will be provided in bilingual (Chinese and English).

In this paper, the design of questionnaire takes Minnesota Satisfaction Questionnaire (Weiss et al. 1977) and Michigan Organizational Assessment Questionnaire - Intention to turnover scale (Camann et al.1975) as references.

The Minnesota Satisfaction Questionnaire measures job satisfaction with 20 factors, which are ability utilization, achievement, activity, advancement,

authority, company policies, compensation, co-workers, creativity, independence, moral values, recognition, responsibility, security, social status, social service, supervision--human relations, supervision—technical, variety, and working conditions. In addition, Minnesota Satisfaction Questionnaire concludes that job satisfaction can be quantified by numbers with employee's job. By ranking a factor from the response scale of 1 (very dissatisfied) to 5 (very satisfied), the quantitative figures are easy use and understand. The original Minnesota Satisfaction Questionnaire gives a stronger confidence level when keeping the scale from 1 to 5 ranking in the questionnaire (Hirschfeld, 2000). Therefore, this paper will adopt this style of questionnaire design.

There are scholars use the five-points and seven-points from agree to disagree scale for ranking the level of job satisfaction (Bowling & Hammond, 2008).

4 questions from each of the factors in The Minnesota Satisfaction Questionnaire is selected into the questionnaires to be distributed to construction workers. As the terminology in the Job Satisfaction Survey are not identical to the terminology used in Herzberg's Two-Factor Theory, a comparison table, Table 3.5 is stated below. The data are rated at a 5-point Likert Scale in the questionnaire (Strong Dissatisfied to Strong Satisfied). The Minnesota Satisfaction Questionnaire is available in English and Traditional Chinese, however, after the questionnaire trial performed during the focus group, choice of words are modified in order to suit construction industry.

Table 3.3: Questions Formation by 5-Point Likert Scale

Factors	Data Type	Questions Number	Source of Questions
Salary	5-point Likert Scale (Burns & Bush, 2008)	1-4	Minnesota Satisfaction Questionnaire (Weiss et al. 1977)
Growth and Advancement		5-8	
Turnover Intention		9-12	Michigan Organizational Assessment Questionnaire-intention to turnover scale (Camann et al. 1975)
Job Security		13-16	Minnesota Satisfaction Questionnaire (Weiss et al. 1977)
Achievement		17-20	
Working Condition		21-24	
Meaningfulness of Work		25-28	
Job Satisfaction		29-32	

Source: This research

Table 3.4: Demographic Information Collected In Questionnaire

Personal Information	Data Type	Source of Questions
Gender	Nominal	Construction Industry Council (2020)
Age Group	Ordinal	Census and Statistics Department (2019)
Highest Education Level	Nominal	Census and Statistics Department (2019)
Average working days per week in the past 6 months	Ordinal	Construction Industry Council (2020)
Registration Category	Nominal	Construction Industry Council (2020)
Monthly Personal Income (HKD)	Ordinal	Construction Industry Council (2020)

Source: This research

The questionnaire is setup which has 4 questions for each factor, 4 questions on job satisfaction and 4 questions on intention to turnover, a total of 32

questions (Table 3.3). Participants are asked to rate each question on a 5-point Likert type scale (Burns & Bush, 2008), ranging from 1 (Strongly Disagree/ Unsatisfied) to 5 (Strongly Agree/ Satisfied). Demographic data, including age, gender, education level, year of experience, average working day per week in the past 6 months and registration category are collected for verification and further study use. As part of the questionnaire does not have a Traditional Chinese from the original source, single blind test on bilingual translation is needed, which the English version is translated into Traditional Chinese by one person and vice versa by another person to validate the correctness of choice of word.

Table 3.5: Terminology Alignment for Questionnaire

Terminology used in Minnesota Satisfaction Questionnaire	Terminology used in Herzberg's Two- Factor Theory
Compensation	Salary
Advancement	Growth and Advancement
Achievement	Achievement
Working Condition	Working Condition
Security	Job Security
Ability Utilization	Meaningfulness of Work

Source: This research

The Intention to Turnover scale used in this paper is a part of the Michigan Organizational Assessment Questionnaire which measures employee perceptions. There were three questions on this section in the original survey, thus, this paper added an extra question to be consistent with the number of questions on other factors related to the study.

To measure the job satisfaction of the respondent on one's current job in the construction industry, 4 questions are setup to measure the degree of satisfaction. The questions are:

- How they enjoy working on the current job
- How would they rate your overall satisfaction of the job
- How satisfied are they with your job in
- Are they happy with my current job

3.4.3. Pilot Test

Before the full scale study was in place, it is essential to perform a pilot test as a rehearsal or trial run to the study. The pilot test was performed from 3 February, 2020 to 7 February, 2020. The pilot test was distributed to a construction site through personal connection of the researcher; the questionnaire was then distributed to other construction workers of the construction site.

Pilot test is the tool to test the feasibility of the research methodology and allow the amendment to be made before conducting the questionnaires with the sample audience. It also helps to find flaws in the research methods and helped to provide insights to implement the survey with better understanding (Hassan et al. 2006).

The pilot test is run at least 10% of the target sample size of 200, thus 25 questionnaires were sent out via Internet. All 25 questionnaires are replied with valid results. Data received was analyzed through SPSS for reliability test by Cronbach's alpha value.

Table 3.6: Reliability Statistic Result of Pilot Test

Case Processing Summary			
		N	%
Cases	Valid	25	100
	Excluded ^a	0	0
	Total	25	100
a. Listwise deletion based on all variables in the procedure.			
Reliability Statistics			
Category		Cronbach's Alpha.	N of Items
Overall		.887	32
Salary		.887	4
Growth and Advancement		.887	4
Turnover Intention		.846	4
Job Security		.837	4
Achievement		.703	4
Working Condition		.705	4
Meaningfulness of work		.761	4
Job Satisfaction		.726	4

Source: This research

Cronbach's alpha is one of the popular tests to be used when testing the reliability of a test. The Cronbach's alpha measures the internal consistency of the test items. The higher the inter-correlation among the test items, the higher the value is. A rule of thumb on the usage of Cronbach's Alpha value is that the test result is considered as reliable and acceptable if the Cronbach's alpha value is higher than 0.7. (George & Mallery, 2003) As the above Table 3.6 shows, the Cronbach's alpha value for all factors and the overall questionnaires in this pilot test are at least 0.703. As they are all above 0.7, we can concluded that the questionnaire is feasible and able to provide result with high internal consistency that no further adjustment is needed when conducting the comprehensive and full scale questionnaire.

3.4.4. Formal Questionnaire

As the pilot test result has indicated that the questionnaire designed is reliable and acceptable, the formal questionnaire is ready to be distributed to the target

population. The formal questionnaire was distributed during 12 February, 2020 to 28th February, 2020. The questionnaire is distributed through personal connection of the researchers to various construction sites in Hong Kong. The target population, sample size and sampling method are discussed in following chapter in order to define to correct group of persons in order to perform a valid study (Appendix 4).

3.4.5. Target Population

Construction workers in Hong Kong are required to register according to the Construction Worker Registration Ordinance (CWRO) (Construction Workers Registration Ordinance, 2005), which stipulated any person who wish to perform construction work in a construction site must registered as a construction worker. As the validity of the registration is 5 years. Only inviting workers who are currently registered ensure the responses received are from professional workers who are skilled workers who are able to response with up to date information of the construction industry in Hong Kong.

According to the “Designated Workers for Designated Skills” provision under the CWRO, workers are divided into five groups (Appendix 5) based on the skill level and job experience of the workers (Table 3.7).

Table 3.7: Skill Level of Active Registered Workers in Hong Kong between March 2019 to February 2020

Skill Level	Female		Male		Total	
	Percentage	Number of workers	Percentage	Number of workers	Percentage	Number of workers
RGW	90.80%	55011	45.70%	192,045	51.40%	247,056
RSS	1.00%	620	7.20%	30,194	6.40%	30,814
RSW	8.20%	4,979	47.10%	197,881	42.20%	202,860
Total	100.00%	60,610	100.00%	420,120	100.00%	480,730

Source: Construction Industrial Council (2020)

Table 3.8: Age Distribution of Active Registered Workers in Hong Kong between March 2019 to February 2020

Age Distribution of Registered Workers In Hong Kong						
Age Band	Female		Male		Total	
	Percentage	Number of workers	Percentage	Number of workers	Percentage	Number of workers
16-19	0.09%	55	0.53%	2,227	0.48%	2,281
20-29	4.10%	2,485	15.58%	65,455	14.13%	67,940
30-39	12.53%	7,594	18.34%	77,050	17.61%	84,644
40-49	37.84%	22,935	22.23%	93,393	24.20%	116,328
50-59	34.99%	21,207	23.95%	100,619	25.34%	121,826
60+	10.45%	6,334	19.37%	81,377	18.24%	87,711
Total	100.00%	60,610	100.00%	420,120	100.00%	480,730
Average Age	N/A	48.1	N/A	45.8	N/A	51.3

Source: Construction Industrial Council (2020)

Since 2019, information from Construction Industry Council (2019a) groups provisional workers into the full skill level (Table 3.7). Thus, further breakdown for the five registration period is unavailable. However, according to the latest available data in December 2018, there are only 9 RSS(P) workers (0.001% of total registered workers in 2018) and 2601 RSW(P) workers (0.25% of total registered workers in 2018). It showed that provisional grade workers are uncommon in Hong Kong. Therefore, the researcher's

questionnaire is aligned with the latest data collection method of the council, which includes RSS(P) workers into RSS registration period and includes RSW(P) workers into RSW registration period.

The 480,730 active workers (Table 3.8) between March 2019 to February 2020 are the target population of this paper. As it is too costly to gather data from the entire target population, sampling is done to gather data that are representative enough of this population to continue the study of this paper.

3.4.6. Sample Size

As the currently active 480 thousand workers are scattered around in Hong Kong, it may impractical, too time consuming or even impossible to gather data from entire population, sampling is needed (London School of Hygiene and Tropical Medicine, 2009). So that to create quality outcome from questionnaire.

The sample size of the questionnaire to be collected is calculated based on Cochran's sample formula (Table 3.9). In the calculation of the sample size of this questionnaire, the margin of error is set at 7%, while the confidence interval is set at 95%, which is two standard deviation from the mean of a normal distribution, is adopted. From the pilot test performed, it was observed that only half of the construction workers are willing to participate in the questionnaire. Therefore, the sample size required to perform a quality outcome from the questionnaire to provide a sample size that has the statistical power to represent the population of construction workers is $n = 200$ (Appendix 6).

Table 3.9: Cochran's Sample Size Formula (Ritter, 2010)

$$N_0 = Z^2 pq / e^2 = 171$$

where:

N_0 : No. of samples
Z : z-value of the desired Confidence Interval = z value for 95% Confidence Interval = 1.96
p : Estimated proportion of the population who is willing to participate in the questionnaire from the pilot test = 20%
q : $1-p = 1-20\% = 80\%$
e : margin of error = 6%

Source: the research

After deciding the minimum sample size, 171, the formal questionnaires were issued, and 201 responses received finally.

3.4.7. Sample Method

The sampling method is through the snowball sampling, this method utilize the power of social network. It refers to having the participants of a test to recruit future participants who are able to meet the criteria through their own social network (Morgan, 2008). This method is applicable when the participants of the test are closely connected or they are difficult to reach. In this research, construction workers are closely connected as their working locations are usually construction sites, and they are usually confined in the construction sites. Thus, snowball sampling is adopted in this research.

3.4.8. Data Collection Method

The researcher reached 8 construction sites, through the personal connection of the researcher. Electronic questionnaire is used, which the questionnaire will be distributed to construction workers via online.

3.5. Data Analysis Techniques

The questionnaire data collected will be performed with descriptive statistics and inferential statistics. This includes descriptive statistics, reliability statistics, correlation statistics and multiple linear regression (Bremer, 2012) in SPSS to test if the hypothesis is true and statistically significant (t-test). And followed by analysis on the Coefficient of Multiple Determination (R^2) to determine how close the regression model fits the data.

3.5.1. Descriptive Statistics

Descriptive statistics is considered as a way to describe the basic feature of a set of data (Trochim, 2020). They are general descriptive coefficients which summarizing the study's data set into a meaningful way. It measures variability (i.e. standard deviation, variance) and central tendency (mean, median, & mode) (Kenton, 2019). In this paper, the demographic data collected and the participants' response to questions will be tested under this statistic analysis technique.

3.5.2. Reliability Test

Reliability assessment will be conducted with each factor in the questionnaire survey in this research. It is necessary to investigate the reliability of the questionnaire result to determine if the data collected is valid. The reliability of the questionnaire lies on the extent which the questions are measuring the same concept and hence the inter correlations of the questions in this test (Tavakol & Dennick, 2011), thus in this paper, internal consistency of questions are investigated.

To investigate the internal consistency of questions in the questionnaire, the Cronbach's alpha is used. It is a measure of internal consistency of a test, and the value is between 0 to 1. According to Tavakol & Dennick (2011), the general acceptable value of alpha is ranging between 0.70 and 0.95. According to George and Mallery (2003), the commonly accepted rule on Cronbach's Alpha are divided into six categories as below Table 3.10 shows.

Table 3.10: Cronbach's Alpha Value and Internal Consistency

Cronbach's Alpha	Internal Consistency
$0.9 \leq \alpha$	Excellent
$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Acceptable
$0.6 \leq \alpha < 0.7$	Questionable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

Source: George and Mallery (2003)

As there is 4 questions for each factors in the questionnaire, thus, the Cronbach's alpha of each factors are investigated to ensure the 4 questions provide high internal consistency on each factor. It was then followed by an investigation on the internal consistency of all six factors and job satisfactions.

3.5.3. Correlation Test

To test if there are Correlation between the factors and job satisfaction, job satisfaction and turnover intention, and thus if they hypotheses are supported, the relationships are tested with their linear correlation. The Pearson Correlation Coefficient is used for determining the strength of the correlation. The value of this coefficient ranges from -1 to 1 (Table 3.11), where -1

represents a perfectly negative linear relationship and +1 represents a perfectly positive linear relationship (Dancey & Reidy, 2007).

Table 3.11: Interpretation of Pearson's Correlation Coefficient

Correlation Coefficient		Dancey & Reidy (Psychology)
1	-1	Perfect
0.9	-0.9	Strong
0.8	-0.8	Strong
0.7	-0.7	Strong
0.6	-0.6	Moderate
0.5	-0.5	Moderate
0.4	-0.4	Moderate
0.3	-0.3	Weak
0.2	-0.2	Weak
0.1	-0.1	Weak
0	0	Zero

Source: Dancey & Reidy, 2007

3.5.4. Multiple Linear Regression

From the above research objective, to study the correlation between the six elements and job satisfaction and also the correlation between turnover intention and job satisfaction, following model are developed and null hypothesis are setup to verify the model.

3.5.4.1. Equation Model

The first equation (Table 3.12) developed refers to the multiple linear regression model between the six factors (the independent variable) and job satisfaction (the dependent variable). It aims to look for the magnitude of change in job satisfaction when there are changes in the six factors.

Table 3.12: The Equation for the Multiple Linear Regression Model

$$\begin{aligned} \text{Job Satisfaction} = & \beta_0 + \beta_1(\text{salary}) + \beta_2(\text{Job Security}) + \beta_3(\text{Working Condition}) \\ & + \beta_4(\text{Growth and Advancement}) + \beta_5(\text{Achievement}) \\ & + \beta_6(\text{Meaningfulness of Work}) + \epsilon_1 \end{aligned}$$

Variable	Nature	Description
β_0	the constant term of the equation	It is the value of the dependent variable when all independent variables are zero (Multivariable Methods, 2013).
β_1 β_2 β_3 β_4 β_5 β_6	the estimated regression coefficient	They represent the change in the dependent variable with respect to one unit of the independent variable. The larger the coefficient, the more significance is the effect of the independent variable to the dependent variable
ϵ_1	the residual term of the equation	It is assumed to be normally distributed for the normality of this multiple linear regression model

Source: this research

The second equation (Table 3.13) developed refers to the linear regression model between job satisfaction (the independent variable) and turnover intention (the dependent variable). It aims to look for the change in turnover intention when there is change in job satisfaction.

Table 3.13: The Equation for the Linear Regression Model

$$\text{Turnover Intention} = \varphi_0 + \varphi_1(\text{Job Satisfaction}) + \varepsilon_2$$

Variable	Nature	Description
φ_0	the constant term in the equation	It is the value of the dependent variable when all independent variables are zero (Multivariable Methods, 2013).
φ_1	the coefficient of the independent variable, i.e. job satisfaction.	-
ε_2	the residual term in the equation	It is assumed normally distributed for the normality of this multiple linear regression model.

Source: this research

The result of this multiple linear regression is then put into several tests in order to test the model fit and the statistical significance of each independent variable.

3.5.4.2. Hypothesis Tests

The null hypotheses and alternative hypotheses for the two equations are as below,

Table 3.14: Regression Hypothesis

Regression between the six factors and job satisfaction	$H_0: \beta_j = 0$ $H_1: \beta_j \neq 0$
Regression between job satisfaction and turnover intention	$H_0: \phi_j = 0$ $H_2: \phi_j \neq 0$

Source: This research

3.5.4.3. Coefficient of Determination

To test the model fit, in this paper, R-squared, the coefficient of determination, is used to study the goodness of fit and the strength of association of this

statistic model. In other words, it is a measure to the question, “To what extent the six factors stated in this paper are able to explain the job satisfaction of construction workers?” The R-squared is normally ranged from 0 and 1, which 0 means the regression has no linear relationship with between the independent variable and dependent variable, in this paper, it means no linear relationship between the six factors and job satisfaction or between job satisfaction and turnover intention. An R-squared value of 1 means the regression can perfectly fit the data, which means the six factors can predict the job satisfaction perfectly or job satisfaction can perfectly predict the turnover intention of construction workers. According to Moore, Notz & Flinger (2013), the strength of the relationship based on the R-squared value is as below Table 3.15,

Table 3.15: R-Squared Value and Strength of Relationship

R-Squared Value	Strength of Relationship
< 0.3	None or Very weak effect size
$0.3 < r < 0.5$	Weak or low effect size
$0.5 < r < 0.7$	Moderate effect size
$r > 0.7$	Strong effect size

Source: Moore, Notz & Flinger (2013)

After testing the goodness of fit of the model, the regression is tested for the significance of regression. The p-value is used in this paper to evaluate the significance. The p-value is the probability of a hypothetical test results which obtain a result as extreme as the null hypothesis (Beers, 2020). The smaller the p-value, the stronger probability that the null hypothesis is rejected, and the alternative hypothesis is favored. The p- value is required to be smaller than

0.05 to reject the null hypothesis, which is called 95% confidence level. It means the result has 95% chance to contain the population mean. In this paper, the null hypothesis, H_0 is “The factors has no relationship with job satisfaction” and H_0 “Job satisfaction has no relationship with Turnover Intention”. And the alternative hypothesis, H_1 is “The factors has linear relationship with job satisfaction” and H_2 is “Job Satisfaction has linear relationship with Turnover Intention”

3.5.4.4. Residual Analysis

To test if the line is the regression model is the line of best fit, the residuals are examined. First, the mean of the residual is reviewed. As stated in previous section, the mean of residual is assumed to be zero and normally distributed due to the assumption of normality of the equation.

Second, the histogram of the standardized residual is reviewed, this figure advised if the residual value are normally distributed and advised the amount of outliers in the model.

The scatterplot of the standardized residual against standardized predicted value is also examined. It is expected to show a random pattern, as any non-random pattern, such as U- shaped curve would suggest non- linear regression model provides a better fit to the model.

3.6. Research Limitations

As mentioned in Chapter 2, Herzberg’s two factor theory has suggested a list of factors that may affect job satisfaction of an employee, however, only six of the factors are chosen to study in this paper. The chosen six factors are

considered to be having more significance effect on job satisfaction during literature review, and thus, they are chosen. This will suggest that there may be chance that this regression model has a lower model of fit.

As mentioned in Chapter 2, previous literatures have found out a list of factors that may lead to turnover intention of an employee. In this paper, as the focus is to what extent that job satisfaction may lead to turnover intention, thus, the linear regression on job satisfaction and turnover intention may have a lower R-squared value, signaling that only using job satisfaction as the only independent variable against turnover intention has a lower model of fit.

Chapter 4. RESULT AND DATA ANALYSIS

4.1. Introduction

In accordance to the research methodology outlined in previous chapter, the research has been performed. With the data collected through the focus group and questionnaire, this chapter will focus in presenting the findings and discussion from the focus group, and the data analysis from the questionnaire. The data collected from the questionnaire will be analyzed using SPSS analysis tool. In this chapter, analysis includes descriptive statistics on the demographic data of the questionnaire participants, reliability statistics of the data collected, correlation analysis between variables and multiple linear regression analysis on the importance of each factors towards job satisfaction, and the relationship between job satisfaction and intention to turnover.

4.2. Focus Group Findings

In the questions of what leads to job satisfactory in the construction industry, it is agree by all participants that the salary plays an important role in job satisfaction. It is commented by the participants that the work conditions is not as good as office workers, therefore, they are expecting a higher salary compared to people at similar education level in order to compensate the high strength demand of construction work. The result was aligned with the census data, which was found that construction industry has the fifth highest median hourly wage among the 25 occupation groups in Hong Kong in 2019, with a median hourly wage of HKD 99.9 (Census and Statistics Department, 2020c)

In the question related to the factors listed in this paper for hypothesis towards job satisfaction. One of the participants commented that in the construction industry, the growth of a construction worker not only gain designated skills and improve their work experience in the trade, but also progress on their registration period. Thus, growth and advancement plays a major role in job satisfaction as they are able to have a higher salary when they progress on their registration.

Regarding to the question on how likely a worker would quit the current job, a RSS holder has commented that there are high demand in construction workers as there are a number of projects undergoing in Hong Kong. Thus, he therefore thinks his job is relatively secure as long as he does not make big mistakes. After all, construction sites are still suffering from labour shortage. The comment from this participant is aligned with survey data performed by The Hong Kong Construction Association (2019), there is an estimate of 7.3% of labor shortage in the construction industry of Hong Kong.

In the second part of the focus group, regarding on inviting the focus group participants to provide their opinions on the questionnaire draft, participants has commented that part of the questionnaire is confusing and not suitable to construction site, particularly work condition, which the original questionnaire is based on an office setting, thus, the questions are modified into a construction site settings to suit the participants.

Details of the focus group are available in Appendix 3 and Appendix 4.

4.3. Descriptive Statistics

Descriptive statistics refers to simple summaries and observations towards a sample or the collected information. It can be categorized into two main groups: 1. Measure of central tendency, which includes mean, mode and median, and 2. Measure of variety, which includes maximum, minimum variance and standard deviation (Kenton, 2019). It helps to summarize large data set into descriptions that are easier to understand. It can be presented in the form of summarized table, graphical charts and plots.

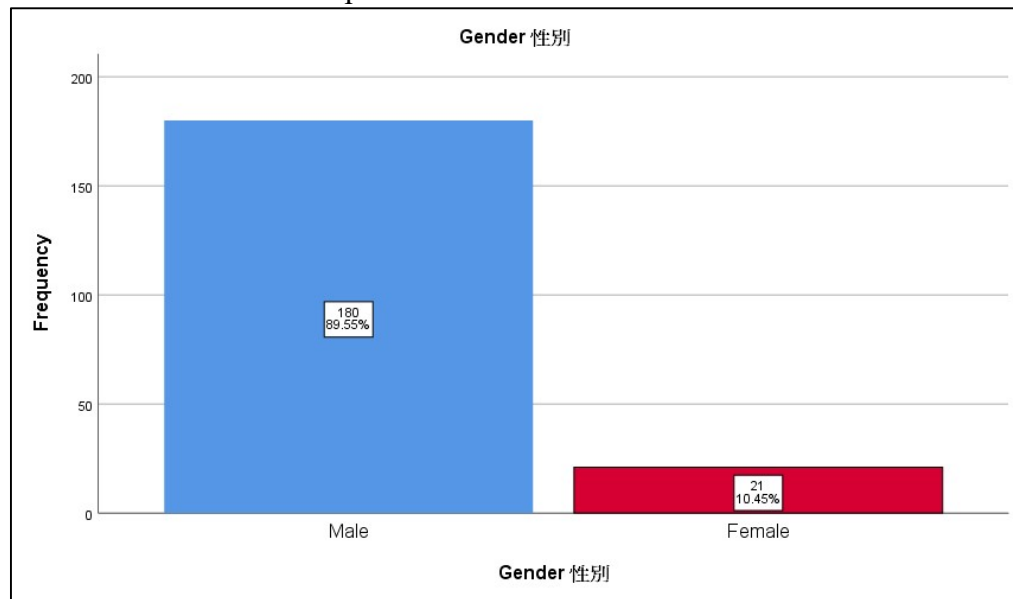
Table 4.1: Personal Information of Participant of This Questionnaire

Variables	Information	Frequency	Percent
Gender	Male	180	89.6
	Female	21	10.4
Age Group	18-30	30	14.9
	31-40	25	12.4
	41-50	40	19.9
	51-60	71	35.3
	Above 60	35	17.4
Education Level	Primary Level or below	54	26.9
	Secondary Level	135	67.2
	Tertiary Level	12	6
Average working days per week in the past 6 months	1	9	4.5
	2	20	10
	3	51	25.4
	4	65	32.3
	5	49	24.4
	6	7	3.5
Registration Category	RGW : Registered General Worker	110	54.7
	RSS : Registered Semi-skilled Worker	16	8
	RSW : Registered Skilled Worker	75	37.3
Monthly Personal Income (HKD)	<\$10,000	66	32.8
	\$10,001 - \$20,000	112	55.7
	\$20,001 - \$30,000	14	7
	\$30,001 - \$40,000	7	3.5
	>\$40,001	2	1
Total		201	100

Source: This research

4.3.1. Gender

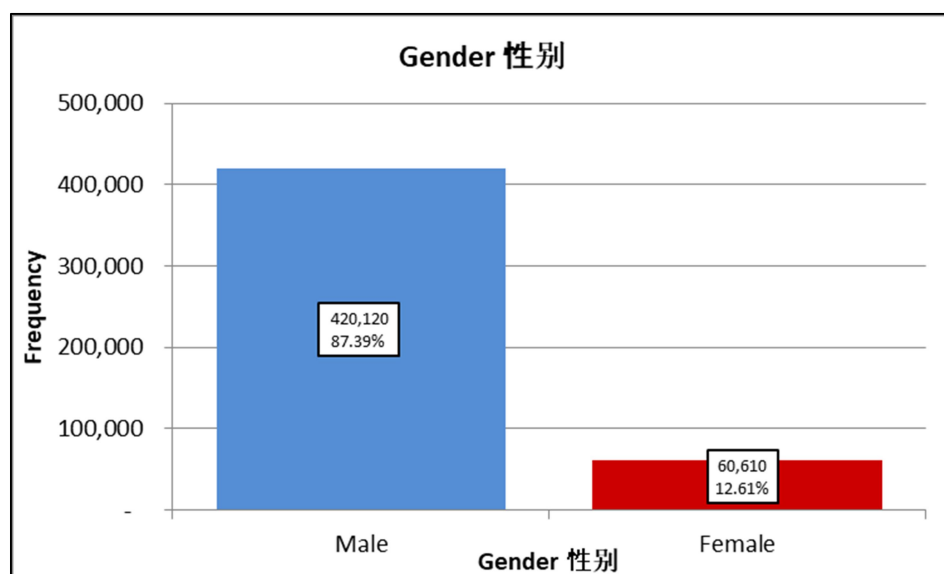
Figure 4.1: Distribution of Respondent's Gender



Source: This research

From the above Figure 4.1, there are 21 female, accounted for 10.4% of the total participants of the questionnaire. There are 180 male, accounted for 89.6% of the total participants of the questionnaire.

Figure 4.2: Distribution of Active Registered Workers in the Construction Industrial Council between March 2019 to February 2020



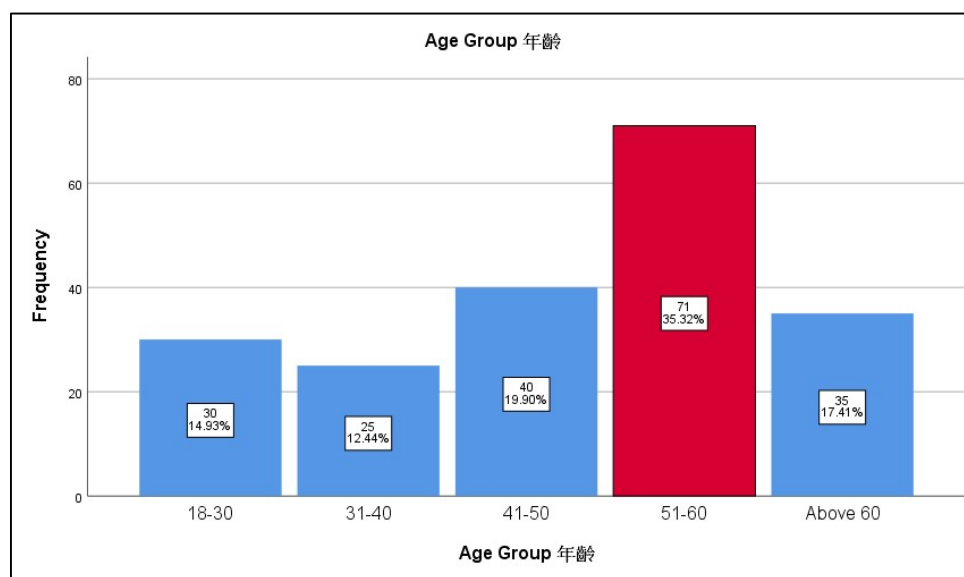
Source: Construction Industrial Council (2020)

Refers to the population of active registered workers in the Construction Industrial Council between March 2019 to February 2020, the gender structure of construction workers in Hong Kong is that female accounts for 87.4% of the total workforce, while male accounts for 12.6% of the total workforce.

Comparing the gender ratio collected in the questionnaire with the population of active construction workers in Hong Kong, the gender ratio difference is 2.2% it shows that this questionnaire has closely reflected the gender ratio of construction workers, which is male to female is 8.57:1, which shows that the majority of construction workers in Hong Kong are male.

4.3.2. Age Group

Figure 4.3: Distribution of Respondent's Age



Source: This research

From the above Figure 4.3, out of 201 responses from the questionnaire, there are 30 participants between 18 to 30 years old, accounts for 14.9% of the 201 participants. 25 participants between 41 to 50 years old, accounts for 12.4% of

the 201 participants. 40 participants between 41 to 50 years old, accounts for 19.9% of the 201 participants. 71 participants between 51 to 60 years old, accounts for 35.3% of the 201 participants. 35 participants older than years old, accounts for 17.4% of the 201 participants.

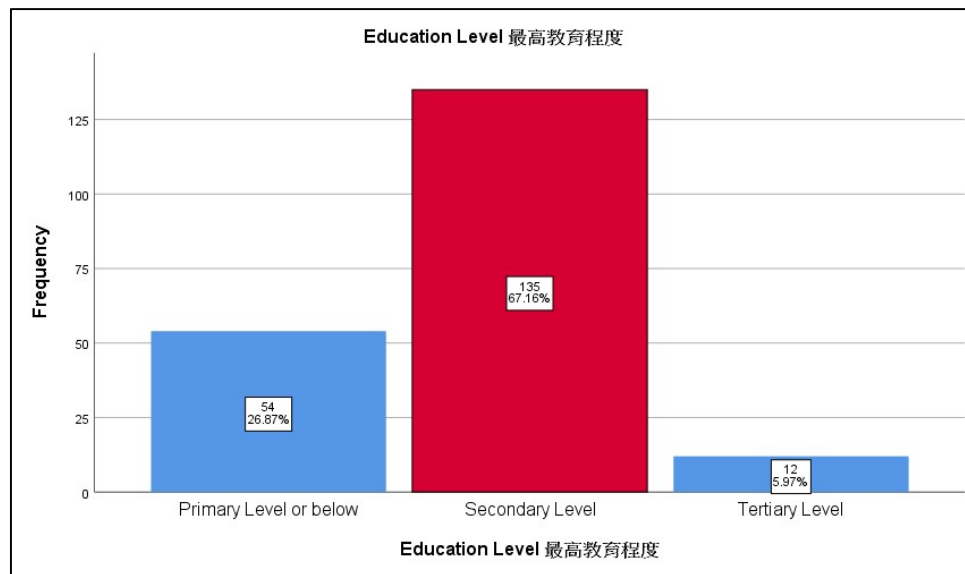
Refers to the data of age population of construction workers in Hong Kong in Chapter 3.7.3.2., among the 480,730 active workers between March 2019 to February 2020, the age group of under 29 years old accounts for 14.5%; the age group of 30-39 years old accounts for 17.6%; the age group of 40-49 years old accounts for 24.2%; the age group of 50-59 years old accounts for 25.3%; the age group of above 60 years old accounts for 18.2%.

Comparing the age distribution between the participants of the questionnaire and the population of construction workers, the largest deviation among all groups is 10%, which is the age group of construction workers in their 50s, the difference were come from the lower percentage of 30s and 40s group, each is 5% lower than the population of all active construction workers in the March 2019 to February 2020.

4.3.3. Education Level

From the below Figure 4.4, among the participants of the questionnaire, there are 52 participants' highest education level is primary level or below, accounts for 26.9% of the total participants. 135 participants' highest education is secondary level, accounts for 67.2% of total participants. 12 participants' highest education is tertiary level or above, accounts for 6% of total participants.

Figure 4.4: Distribution of Respondent's Education Level



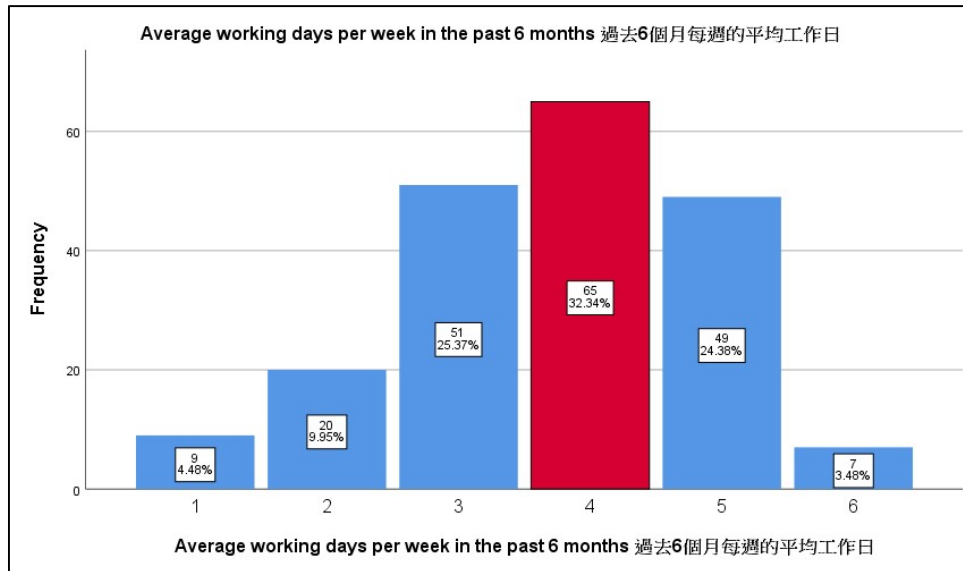
Source: This research

According to the distribution of Hong Kong population aged 15 and over by educational attainment in 2018 from the Hong Kong Annual Digest of Statistics from the Census and Statistics Department of HKSAR, 17.9% of the said population's educational attainment is primary and below; 49.0% of the said population's educational attainment is secondary level and 33.1% of the said population's educational attainment is tertiary level or above.

Comparing the education level of the participants of the questionnaire and the Hong Kong population aged 15 and over in 2018, the education of the participants has a lower education level compared with the overall population of Hong Kong in 2018. There are a difference of +9% on primary and below; +18.2% on secondary level and -26.1% on tertiary level or above.

4.3.4. Average Working Days Per Week In The Past 6 Months

Figure 4.5: Distribution of Respondent's Average Working Days Per Week in The Past 6 Months

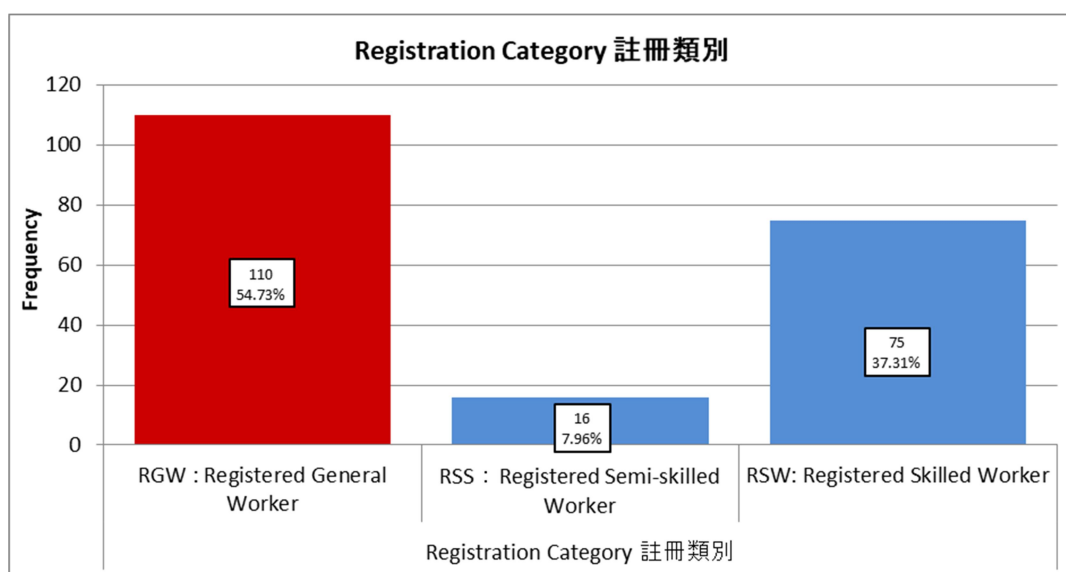


Source: This research

According to the above Figure 4.5, among the participants of the questionnaire, 9 participants works at an average of 1 day per week in the past 6 months , accounts for 4.5% of the total participants; 20 participants works at an average of 2 days per week in the past 6 months , accounts for 10.0% of the total participants;. 51 participants works at an average of 3 days per week in the past 6 months, accounts for 25.4% of the total participants;. 65 participants works at an average of 4 days per week in the past 6 months, accounts for 32.3% of the total participants; 49 participants works at an average of 5 days per week in the past 6 months, accounts for 24.4% of the total participants;. 7 participants works at an average of 6 days per week in the past 6 months, accounts for 3.5% of the total participants. The mean of the average of 6 days per week in the past 6 months is 3.73 days.

4.3.5. Registration Category

Figure 4.6: Distribution of Respondent's Registration Category



Source: This research

According to the above Figure 4.6, among the participants of the questionnaire, 110 participants are RGW workers, accounts for 54.7% of the total participants; 16 participants are RSS workers, accounts for 8.0% of the total participants; 75 participants are RSW workers, accounts for 37.3% of the total participants.

Refers to the data of skill level of construction workers in Hong Kong in Chapter 3.7.3.2, 51.4% of Hong Kong construction workers are RGW workers; 6.4% of Hong Kong construction workers are RSS workers; 42.2% of Hong Kong construction workers are RSW workers.

Comparing the skill level distribution of the participants of the questionnaire and the overall population, the largest deviation among the three skill levels is 4.9% only, thus, it can be concluded that the participants of the questionnaire

is closely reflecting the current situation of the construction industry in terms of skill level of construction workers.

4.3.6. Monthly Personal Income

Figure 4.7: Distribution of Respondent's Monthly Personal Income



Source: This research

Refers to the monthly employment earnings of employed persons in Hong Kong collected by the Census and Statistic Department of HKSAR in the 2019 Edition of the Hong Kong Annual Digest of Statistics, 21.75% of the said population's monthly employment earnings is below HKD 10,000; 36.24% of the said population's monthly employment earnings is between HKD 10,000 to 19,999; 17.85% of the said population's monthly employment earnings is between HKD 20,000 to 29,999; 9.11% of the said population's monthly employment earnings is between HKD 30,000 to 39,999; 15.06% of the said population's monthly employment earnings is larger than HKD 40,000.

Comparing the participants of the questionnaire and the overall employed persons in Hong Kong, it shows that construction workers are at the lower end of the personal income of Hong Kong.

4.3.7. Salary

This paper also performed an independent assessment on the order of satisfaction of construction workers towards factors related to job satisfaction. Four questions will be asked for each factor. The above graph shows the order of satisfaction towards salary, from strongly disagree/ strongly unsatisfied to strongly agree/ strongly satisfied.

Table 4.2: Scoring From Respondents on All 4 Questions Related to Salary

Salary		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree / Strongly Unsatisfied	135	16.8	16.8	16.8
	Slightly Disagree/ Slightly Unsatisfied	266	33.1	33.1	49.9
	Neutral	165	20.5	20.5	70.4
	Slightly Agree/ Slightly Satisfied	189	23.5	23.5	93.9
	Strongly Agree/ Strongly Satisfied	49	6.1	6.1	100
	Total	804	100	100	

Source: This research

According to the questionnaire, from the above Table 4.2, of the four questions for salary, the top response is slightly disagree/slightly unsatisfied, accounts for 33.1%; the least response is strongly agree/ strongly satisfied, which accounts for 6.1%. The average score for compensations is 2.7, which tends to disagree/unsatisfied to their current salary.

4.3.8. Growth and Advancement

Table 4.3: Scoring From Respondents on All 4 Questions Related to Growth and Advancement

		Growth and Advancement			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree / Strongly Unsatisfied	38	4.7	4.7	4.7
	Slightly Disagree/ Slightly Unsatisfied	191	23.8	23.8	28.5
	Neutral	342	42.5	42.5	71
	Slightly Agree/ Slightly Satisfied	197	24.5	24.5	95.5
	Strongly Agree/ Strongly Satisfied	36	4.5	4.5	100
	Total	804	100	100	

Source: This research

According to the questionnaire, from the above Table 4.3, of the four questions for growth and advancement, the top response is neutral, accounts for 42.5%; the least response is strongly agree/satisfied, which accounts for 4.5%. The average score for compensations is 3.0, which shows construction workers are neutral on their satisfaction on their growth and advancement.

4.3.9. Job Security

Table 4.4: Scoring from respondents on all 4 questions related to Job Security

		Job Security			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree / Strongly Unsatisfied	110	13.7	13.7	13.7
	Slightly Disagree/ Slightly Unsatisfied	228	28.4	28.4	42
	Neutral	181	22.5	22.5	64.6
	Slightly Agree/ Slightly Satisfied	192	23.9	23.9	88.4
	Strongly Agree/ Strongly Satisfied	93	11.6	11.6	100
	Total	804	100	100	

Source: This research

According to the questionnaire, from the above Table 4.4, of the four questions for job security, the top response is disagree/unsatisfied, accounts for 28.4%; the least response is strongly agree/satisfied, which accounts for 11.6%. The average score for compensations is 2.91, which shows construction workers are slightly unsatisfied on their satisfaction towards their job security.

4.3.10. Achievement

Table 4.5: scoring from respondents on all 4 questions related to achievement

Achievement		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree / Strongly Unsatisfied	87	10.8	10.8	10.8
	Slightly Disagree/ Slightly Unsatisfied	243	30.2	30.2	41
	Neutral	187	23.3	23.3	64.3
	Slightly Agree/ Slightly Satisfied	191	23.8	23.8	88.1
	Strongly Agree/ Strongly Satisfied	96	11.9	11.9	100
	Total	804	100	100	

Source: This research

According to the questionnaire, from the above Table 4.5, of the four questions for achievement, the top response is disagree/unsatisfied, accounts for 30.2%; the least response is strongly disagree/unsatisfied, which accounts for 10.8%. The average score for compensations is 2.95, which shows construction workers are slightly unsatisfied on their satisfaction towards their achievement on their work.

4.3.11. Working Condition

Table 4.6: Scoring From Respondents On All 4 Questions Related To Work Condition

		Work Condition			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree / Strongly Unsatisfied	91	11.3	11.3	11.3
	Slightly Disagree/ Slightly Unsatisfied	253	31.5	31.5	42.8
	Neutral	180	22.4	22.4	65.2
	Slightly Agree/ Slightly Satisfied	191	23.8	23.8	88.9
	Strongly Agree/ Strongly Satisfied	89	11.1	11.1	100
	Total	804	100	100	

Source: This research

According to the questionnaire, from the above Table 4.6, of the four questions for working condition, the top response is disagree/unsatisfied, accounts for 31.5%; the least response is strongly agree/satisfied, which accounts for 11.1%. The average score for compensations is 2.91, which shows construction workers are slightly unsatisfied on their satisfaction towards their work condition on their work.

4.3.12. Meaningfulness of Work

Table 4.7: Scoring From Respondents on All 4 Questions Related to Meaningfulness of Work

Meaningfulness of work					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree / Strongly Unsatisfied	107	13.3	13.3	13.3
	Slightly Disagree/ Slightly Unsatisfied	247	30.7	30.7	44
	Neutral	200	24.9	24.9	68.9
	Slightly Agree/ Slightly Satisfied	174	21.6	21.6	90.5
	Strongly Agree/ Strongly Satisfied	76	9.5	9.5	100
	Total	804	100	100	

Source: This research

According to the questionnaire, from the above Table 4.7, of the four questions for meaningfulness of work, the top response is disagree/unsatisfied, accounts for 30.7%; the least response is strongly agree/satisfied, which accounts for 9.5%. The average score for compensations is 2.83, which shows construction workers are slightly unsatisfied on their satisfaction towards the meaningfulness of work.

4.3.13. Job Satisfaction

Table 4.8: Scoring From Respondents on All 4 Questions Related to Job Satisfaction

		Job Satisfaction			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree / Strongly Unsatisfied	86	10.7	10.7	10.7
	Slightly Disagree/ Slightly Unsatisfied	233	29.0	29.0	39.7
	Neutral	158	19.7	19.7	59.3
	Slightly Agree/ Slightly Satisfied	231	28.7	28.7	88.1
	Strongly Agree/ Strongly Satisfied	96	11.9	11.9	100
	Total	804	100	100	

Source: This research

According to the questionnaire, from the above Table 4.8, of the four questions for job satisfaction, the top response is disagree/unsatisfied, accounts for 29.0%; the least response is strongly disagree/unsatisfied, which accounts for 10.7%. The average score for job satisfaction is 3.02.

4.3.14. Turnover Intention

Table 4.9: Scoring From Respondents on All 4 Questions Related to Turnover Intention

		Turnover Intention			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree / Strongly Unsatisfied	111	13.8	13.8	13.8
	Slightly Disagree/ Slightly Unsatisfied	250	31.1	31.1	44.9
	Neutral	145	18.0	18.0	62.9
	Slightly Agree/ Slightly Satisfied	234	29.1	29.1	92
	Strongly Agree/ Strongly Satisfied	64	8.0	8.0	100
	Total	804	100	100	

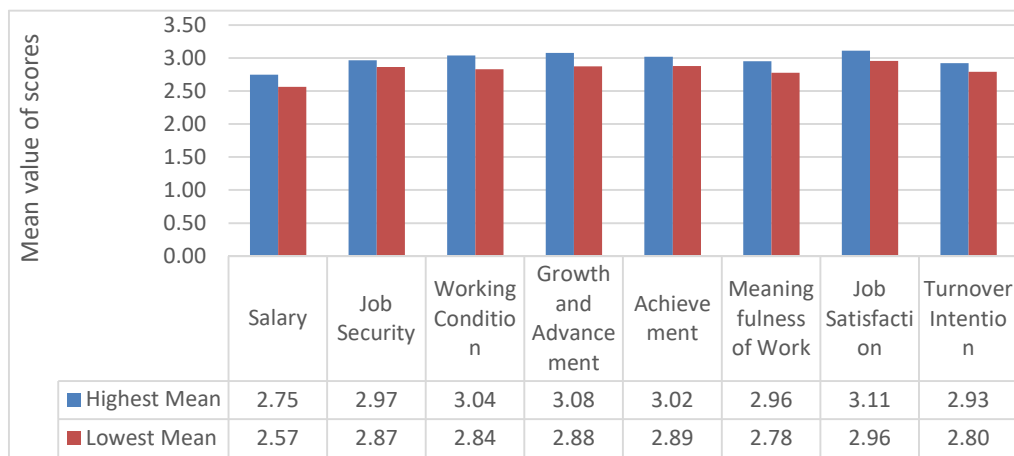
Source: This research

According to the questionnaire, from the above Table 4.9, of the four questions for turnover intention, the top response is disagree/unsatisfied, accounts for 31.1%; the least response is strongly agree/satisfied, which accounts for 8.0%. The average score for turnover intention is 2.86.

4.3.15. Mean Value of Each Factor

The mean values of each questions of each category in the questionnaire are compared, and questions with the highest and lowest mean in each factor are compared in below Figure 4.8. Among the six factors, the mean values of salary are the lowest score, ranging from 2.57 to 2.75, while the mean values of growth and advancement has the highest score, ranging from 2.88 to 3.08.

Figure 4.8: Range of the mean of the score of each category



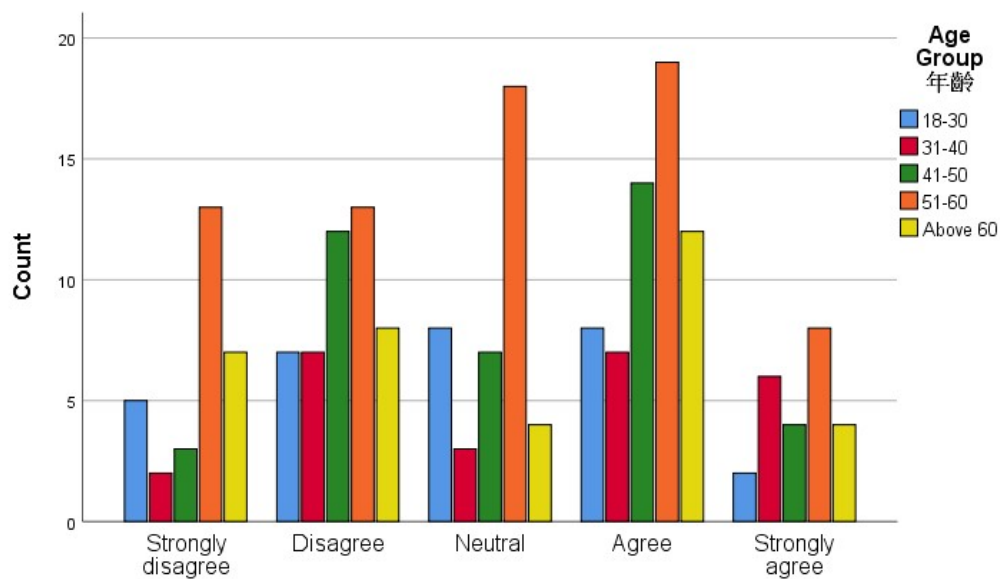
Source: This research

Among all categories in the questionnaire, job security has the smallest difference in the highest and lowest mean values of questions, the difference is 0.1. Working Condition has the largest difference, with a difference of 0.21 between the highest and lowest value of mean.

4.3.16. Cross Tabulation of Age Group And Job Satisfaction

According to below Figure 4.9, among all age group of the participants of the questionnaire, the group of “Above 60” has the highest percentage that are strongly disagree on job satisfaction, 7 of the 35 “Above 60” participants rated strongly disagree on job satisfaction, accounted for 20% within this age group.

Figure 4.9: Cross Tabulation of Age Group And Job Satisfaction



Source: This research

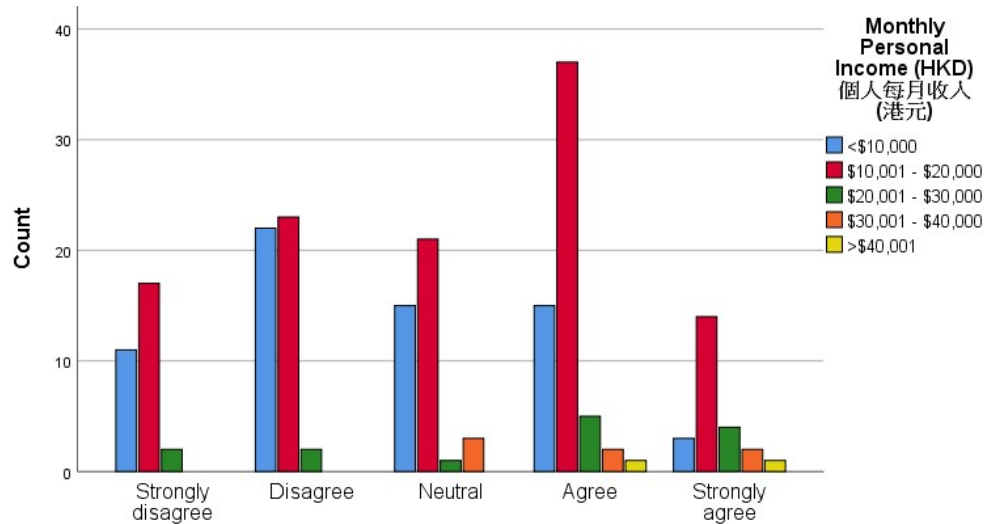
The age group of “31-40” has the highest percentage of participants who are agree or strongly agree on their job satisfaction. 13 of the 25 participants rated agree or strongly agree on job satisfaction, accounted for 52% within this age group.

4.3.17. Cross Tabulation of Monthly Personal Income and Job Satisfaction

According to below Figure 4.10, among all monthly personal income groups of the participants of the questionnaire, participants with income above

\$30,001 all rated agree or strongly agree on their job satisfaction. However, they only account for 9 of the total 201 participants, accounted for 4.8% of the total participants.

Figure 4.10: Cross tabulation of monthly personal income and job satisfaction



Source: This research

The monthly personal income group of “<\$10,000” has the highest percentage of participants who are disagree or strongly disagree on their job satisfaction. 33 of the 66 participants belong to this group replied they are disagree or strongly disagree, accounted for 50% of this group.

4.4. Reliability Analysis

As mentioned in the previous chapter on the importance of reliability statistics, this questionnaire has carried out reliability test on each of the factors in the questionnaire, in order to study the Cronbach’s alpha value for further analysis use.

The factor tested is considered as acceptable in terms of reliability and consistency when the Cronbach’s alpha value is equal to or larger than 0.7.

Table 4.10: Reliability Test Result of the Questionnaire of this Paper

Reliability Statistics				
Category	Cronbach's Alpha	N of Items	Other researcher's result	Name
Total	.887	32	0.78	Batura et al. (2016)
Salary	.829	4	0.803	Rukh, Choudhary & Abbasi (2015)
Growth and Advancement	.833	4	0.52	Batura et al. (2016)
Turnover Intention	.844	4	0.846	Yücel (2012)
Job Security	.796	4	0.813	Nanjundeswaraswamy (2018)
Achievement	.751	4	0.878	Benrazavi & Silong (2013)
Working Condition	.775	4	0.839	Rukh, Choudhary & Abbasi (2015)
Meaningfulness of Work	.755	4	0.816	Ahuja, Pathak & Panda (2014)
Job Satisfaction	.765	4	0.78	Batura et al. (2016)

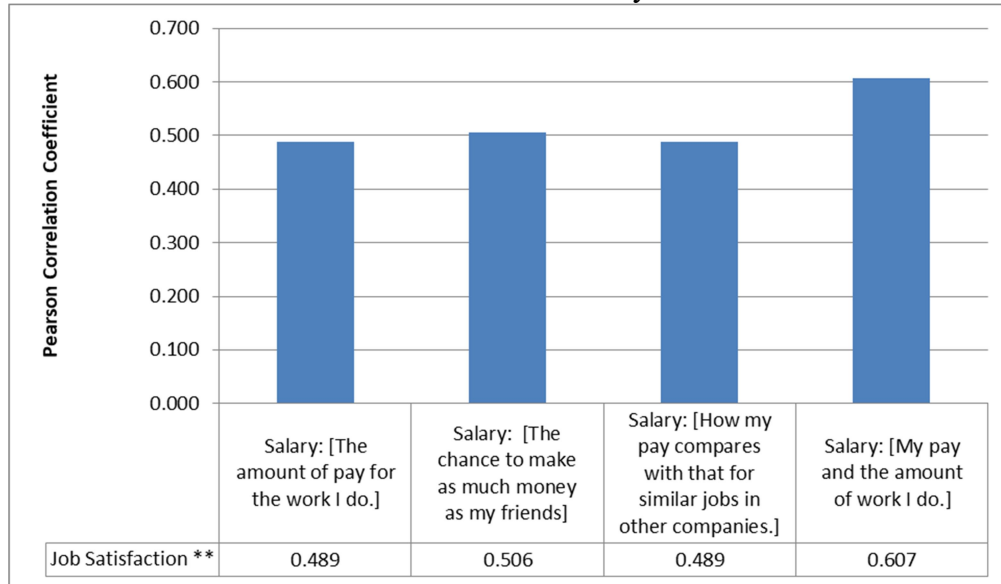
Source: This research

From the above Table 4.10, the total Cronbach's alpha value for this questionnaire is 0.887, while the Cronbach's alpha of each category has a minimum value of 0.755. As the number is above 0.7, it can be commented that the results collected are of consistency and reliability. A Cronbach's alpha value of 0.887 can be considered as a set of data with good internal consistency (George & Mallery, 2003). Thus, it can be concluded that the questions of the questionnaire has a high internal consistency.

4.5. Correlation Analysis

4.5.1. Salary and Job Satisfaction for H1

Figure 4.11: Pearson Correlation Coefficient of Salary And Job Satisfaction



** Correlation is significant at the 0.01 level (1- tailed)

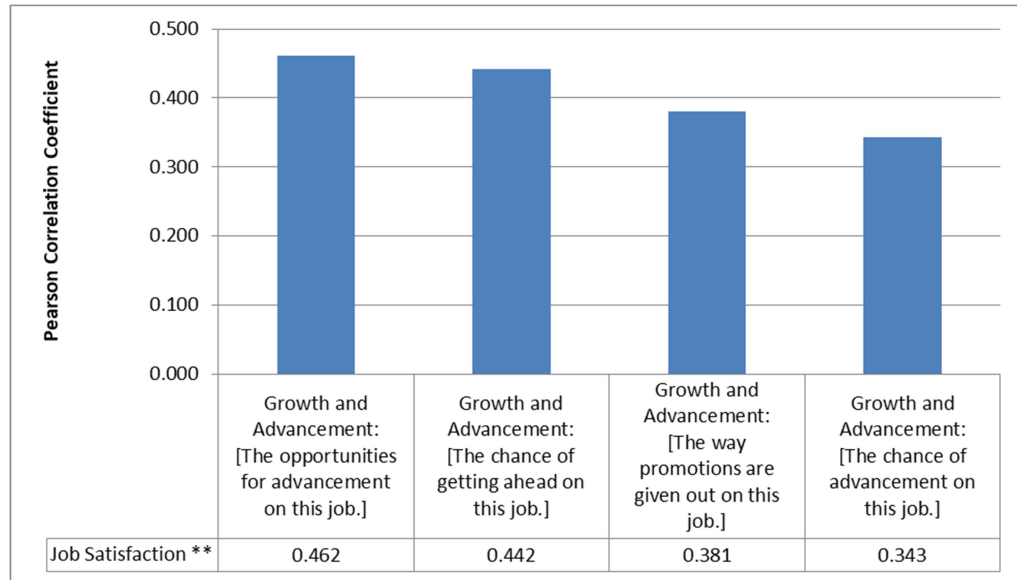
Source: This research

As the above Figure 4.11 showed, among the 4 questions related to salary in the questionnaire, the Pearson correlation coefficient between salary and job satisfaction ranges from 0.489 to 0.607, as mentioned in previous chapter, a correlation above 0.6 is considered having a strong relationship, it can be concluded that there is a strong positive relationship between salary and job satisfaction, and the Pearson coefficient is significant at the 0.01 level. Thus, it can be concluded that H1: Job Satisfaction is positively correlated with Salary is supported.

Similar result was found with a Pearson correlation coefficient of 0.615 in the study by Butt et al. (2007). It was in their research that salary has a positive correlation with job satisfaction.

4.5.2. Growth and Advancement, and Job Satisfaction for H2

Figure 4.12: Pearson Correlation Coefficient of Growth and Advancement, and Job Satisfaction



** Correlation is significant at the 0.01 level (1- tailed)

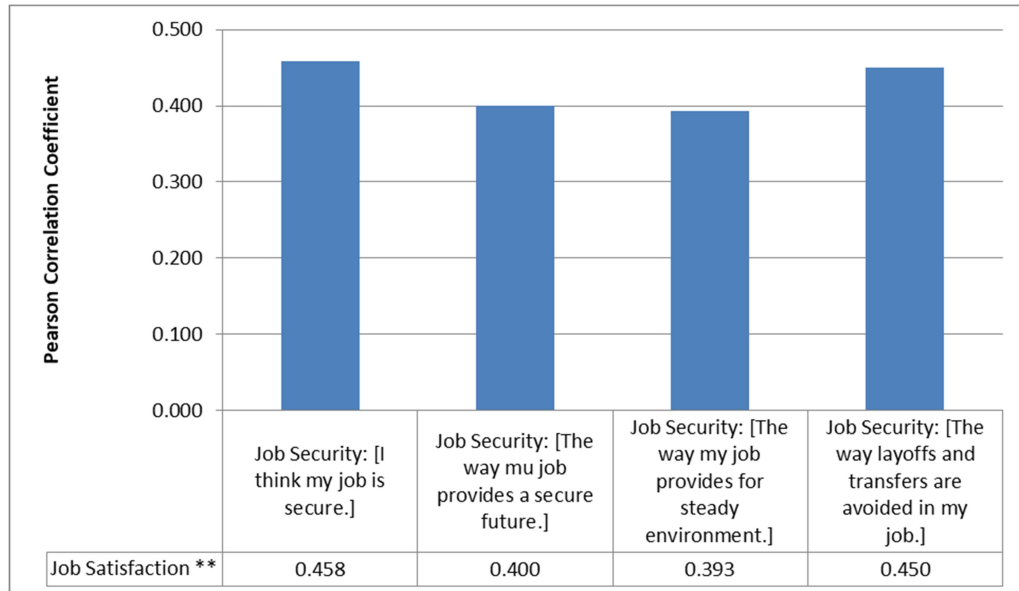
Source: This research

As the above Figure 4.12 showed, among the 4 questions related to growth and advancement in the questionnaire, the Pearson correlation coefficient between salary and job satisfaction ranges from 0.343 to 0.462. Similar result of a value of 0.56 was found (Ali, 2008).

As mentioned in previous chapter, a correlation above 0.4 is considered having a moderate relationship, it can be concluded that there is a moderate positive relationship between salary and job satisfaction, and the Pearson coefficient is significant at the 0.01 level. Thus, it can be concluded that H2: Job Satisfaction is positively correlated with Growth and Advancement is supported.

4.5.3. Job Security and Job Satisfaction for H3

Figure 4.13: Pearson Correlation Coefficient of Job Security and Job Satisfaction



** Correlation is significant at the 0.01 level (1- tailed)

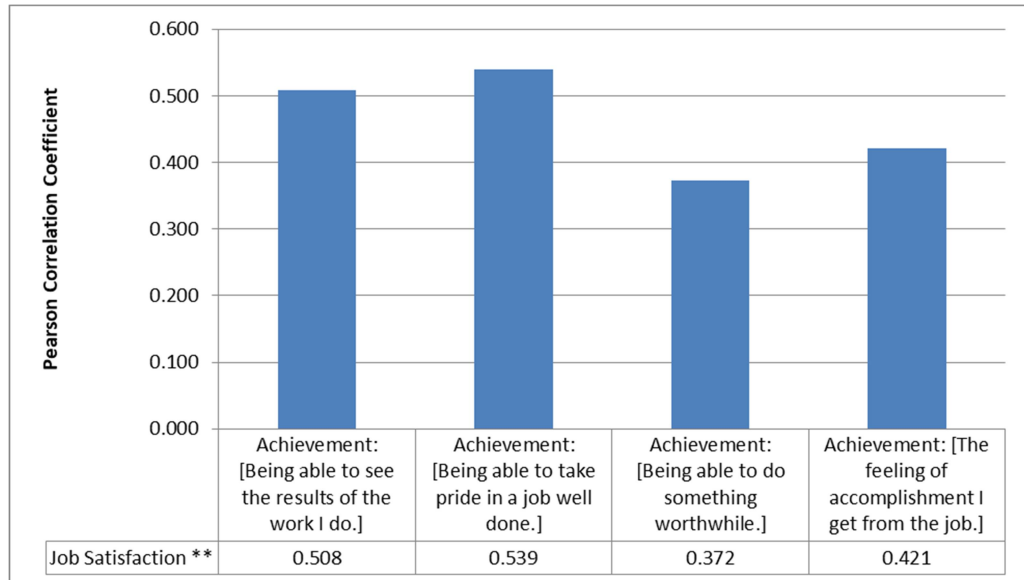
Source: This research

As the above Figure 4.13 showed, among the 4 questions related to job security in the questionnaire, the Pearson correlation coefficient between salary and job satisfaction ranges from 0.393 to 0.458. Similar result from Zeytinoglu et al, (2012) was found, with a Pearson correlation coefficient of 0.532.

As mentioned in previous chapter, a correlation above 0.4 is considered having a moderate relationship, it can be concluded that there is a moderate positive relationship between job security and job satisfaction, and the Pearson coefficient is significant at the 0.01 level. Thus, it can be concluded that H3: Job Satisfaction is positively correlated with Job Security is supported.

4.5.4. Achievement and Job Satisfaction for H4

Figure 4.14: Pearson Correlation Coefficient of Achievement and Job Satisfaction



** Correlation is significant at the 0.01 level (1- tailed)

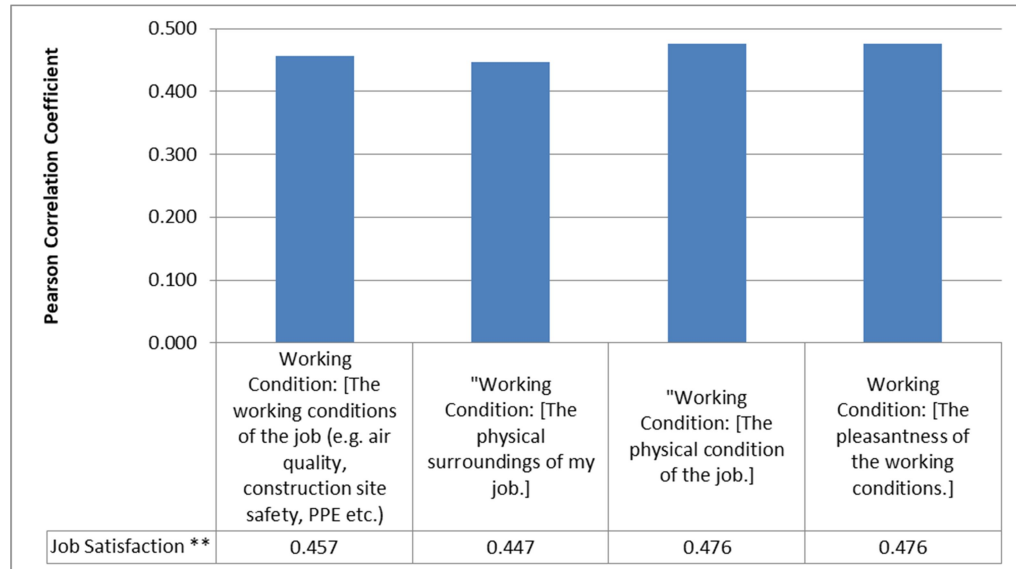
Source: This research

As the above Figure 4.14 showed, among the 4 questions related to achievement in the questionnaire, the Pearson correlation coefficient between salary and job satisfaction ranges from 0.372 to 0.539. A Pearson correlation coefficient of 0.423 was found by Popoola & Farukuoye (2018).

As mentioned in previous chapter, a correlation above 0.4 is considered having a moderate relationship, it can be concluded that there is a moderate positive relationship between achievement and job satisfaction, and the Pearson coefficient is significant at the 0.01 level. Thus, it can be concluded that H4: Job Satisfaction is positively correlated with Achievement is supported.

4.5.5. Working Condition and Job Satisfaction for H5

Figure 4.15: Pearson Correlation Coefficient of Working Condition and Job Satisfaction



** Correlation is significant at the 0.01 level (1- tailed)

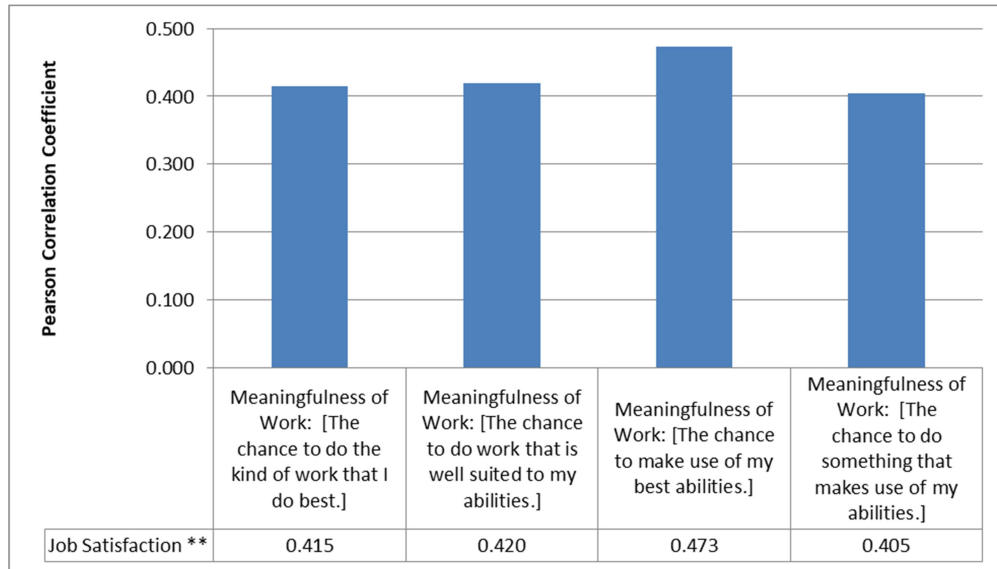
Source: This research

As the above Figure 4.15 showed, among the 4 questions related to working condition in the questionnaire, the Pearson correlation coefficient between working condition and job satisfaction ranges from 0.447 to 0.476. Similar results are being found, which a similar study by Bakotić & Babić (2013) on a Croatian shipbuilding company has a Pearson correlation coefficient of 0.527 on the relationship between working condition and job satisfaction.

As mentioned in previous chapter, a correlation above 0.4 is considered having a moderate relationship, it can be concluded that there is a moderate positive relationship between working condition and job satisfaction, and the Pearson coefficient is significant at the 0.01 level. Thus, it can be concluded that H4: Job Satisfaction is positively correlated with Working Condition is supported.

4.5.6. Meaningfulness of work and Job Satisfaction for H6

Figure 4.16: Pearson Correlation Coefficient of Meaningfulness of Work and Job Satisfaction



** Correlation is significant at the 0.01 level (1- tailed)

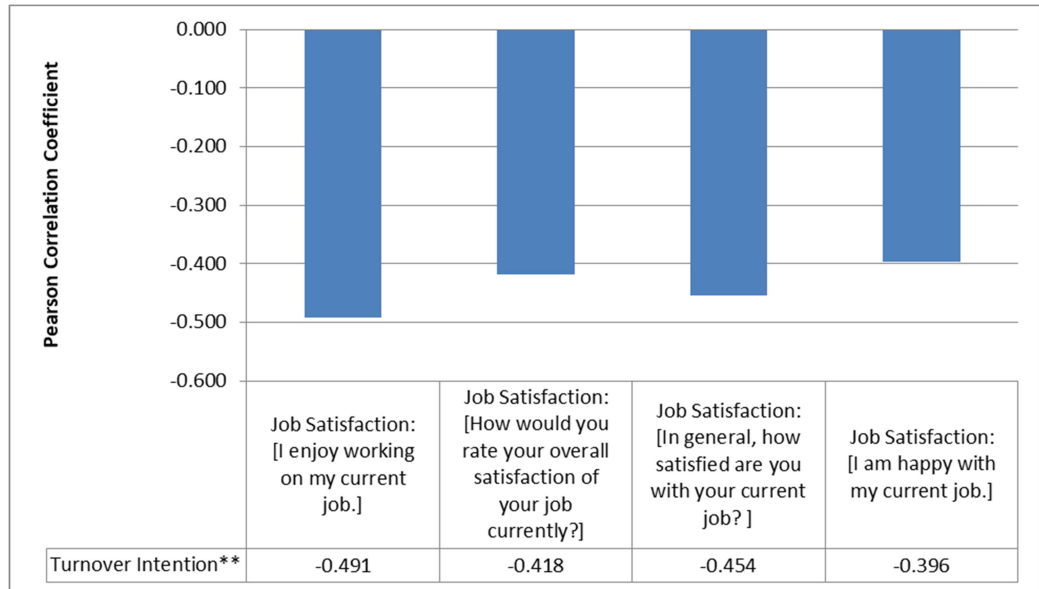
Source: This research

As the above Figure 4.16 showed, among the 4 questions related to meaningfulness of work in the questionnaire, the Pearson correlation coefficient between meaningfulness of work and job satisfaction ranges from 0.405 to 0.473. A positive Pearson correlation coefficient of 0.65 was found by Keles & Fındıklı (2016).

As mentioned in previous chapter, a correlation above 0.4 is considered having a moderate relationship, it can be concluded that there is a moderate positive relationship between meaningfulness of work and job satisfaction, and the Pearson coefficient is significant at the 0.01 level. Thus, it can be concluded that H6: Job Satisfaction is positively correlated with Meaningfulness of Work is supported.

4.5.7. Job Satisfaction and Turnover Intention for H7

Figure 4.17: Pearson Correlation Coefficient of Job Satisfaction And Turnover Intention



** Correlation is significant at the 0.01 level (1- tailed)

Source: This research

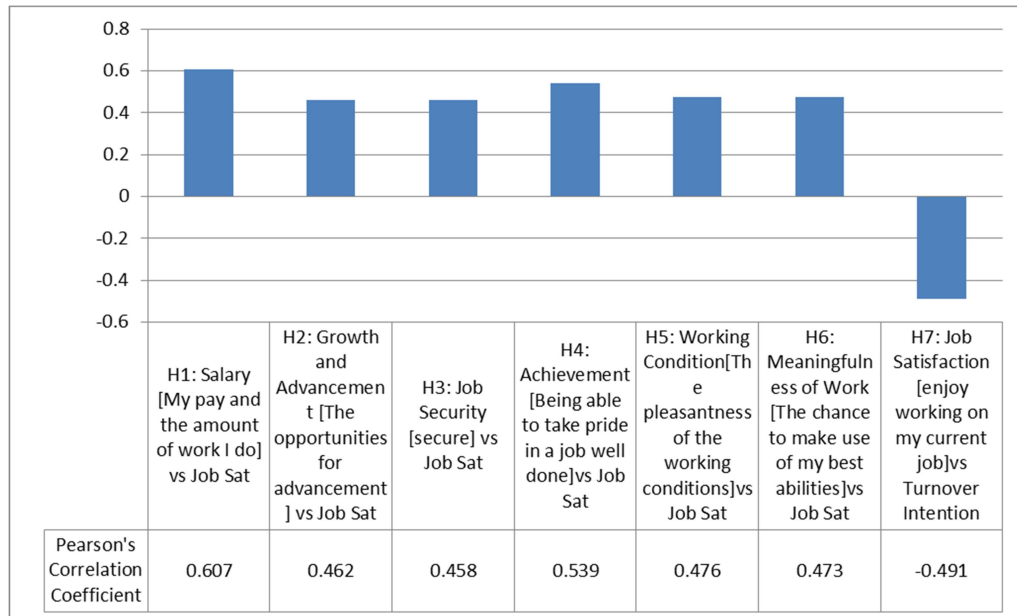
As the above Figure 4.17 showed, among the 4 questions related to turnover intention in the questionnaire, the Pearson correlation coefficient between job satisfaction and turnover intention ranges from -0.396 to -0.491. Similar result is available in research performed in Malaysia which the Pearson correlation coefficient is -0.465 (Emami, 2012).

As mentioned in previous chapter, a correlation above -0.4 is considered having a moderate negative relationship, it can be concluded that there is a moderate negative relationship between job satisfaction and turnover intention, and the Pearson coefficient is significant at the 0.01 level. Thus, it can be concluded that H7: Turnover Intention is negatively correlated with Job Satisfaction.

4.5.8. Summary of The Pearson Correlation Coefficient of All

Hypothesis

Figure 4.18: Summary Table of Pearson Correlation Coefficient of All Hypotheses



** Correlation is significant at the 0.01 level (1- tailed)

Source: This research

The above Figure 4.18 shows the summary table of Pearson correlation coefficient of all hypotheses.

Among all factors, salary has the highest Pearson Correlation Coefficient of a value of 0.607; while job security has the lowest Pearson's Correlation Coefficient of 0.458. It shows salary is highly correlated with job satisfaction at 99% confidence level.

4.6. Multiple Linear Regression

4.6.1. Multiple Linear Regressions on the Six Factors and Job Satisfaction

The multiple linear equation was setup as follows,

$$\text{Job Satisfaction} = \beta_0 + \beta_1(\text{salary}) + \beta_2(\text{Job Security}) + \beta_3(\text{Working Condition}) + \beta_4(\text{Growth and Advancement}) + \beta_5(\text{Achievement}) + \beta_6(\text{Meaningfulness of Work}) + \varepsilon_1$$

Table 4.11: Regression Model (Casual Effect)

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.746 ^a	.556	.542	.860
a. Predictors: (Constant), Meaningfulness of Work: [The chance to make use of my best abilities.], Working Condition: [The pleasantness of the working conditions.], Achievement: [The feeling of accomplishment I get from the job.], Job Security: [I think my job is secure.], Salary: [My pay and the amount of work I do.], Growth and Advancement: [The opportunities for advancement on this job.]				
b. Dependent Variable: Overall Job Satisfaction: [I enjoy working on my current job.]				

Source: This research

From the above Table 4.11, the R squared value of this multiple linear regression is 0.556. As the previous Chapter 3.10 described, as the R value is 0.746, which is above 0.7, this regression is considered having strong positive effect size.

Table 4.12: Regression Table

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	179.639	6	29.940	40.517	.000 ^b
	Residual	143.356	194	.739		
	Total	322.995	200			
a. Dependent Variable: Overall Job Satisfaction:[I enjoy working on my current job.]						
b. Predictors: (Constant), Meaningfulness of Work: [The chance to make use of my best abilities.], Working Condition: [The pleasantness of the working conditions.], Achievement: [The feeling of accomplishment I get from the job.], Job Security: [I think my job is secure.], Salary: : [My pay and the amount of work I do.], Growth and Advancement: [The opportunities for advancement on this job.]						

Source: This research

From the above Table 4.12, the ANOVA test result shows the p-value of this equation is smaller than 0.000, thus, this equation is valid at 95% confidence level.

Table 4.13: Coefficient Table

Coefficients ^a								
Model		Unstandardized Coefficients		Standard-ized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.426	.245		-1.742	.083		
	Salary: [My pay and the amount of work I do.]	.418	.062	.374	6.765	.000	.747	1.338
	Growth and Advancement: [The opportunities for advancement on this job.]	.179	.081	.125	2.215	.028	.718	1.392
	Job Security: [I think my job is secure.]	.205	.054	.204	3.807	.000	.794	1.259
	Achievement: [The feeling of accomplishment I get from the job.]	.113	.057	.109	1.977	.049	.757	1.321
	Working Condition: [The pleasantness of the working conditions.]	.171	.056	.165	3.051	.003	.780	1.283
	Meaningfulness of Work: [The chance to make use of my best abilities.]	.123	.059	.119	2.093	.038	.710	1.409
a. Dependent Variable: Overall Job Satisfaction: [I enjoy working on my current job.]								

Source: This research

From the above coefficient Table 4.13, the coefficient for all factors are positive, ($\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ are >0), indicated that all factors has a positive relationship with job satisfaction.

The VIF is below 10, which is below the maximum level of VIF that is acceptable (Hair et al. 1995), it is concluded that this equation has no collinearity problem.

In order to test if the coefficient is significant, p-value of each factor are tested.

The p-value of all six factors are smaller than 0.05, indicated that the null hypothesis, $H_0: \beta_j=0$ is rejected at the 95% confidence level. Thus, the

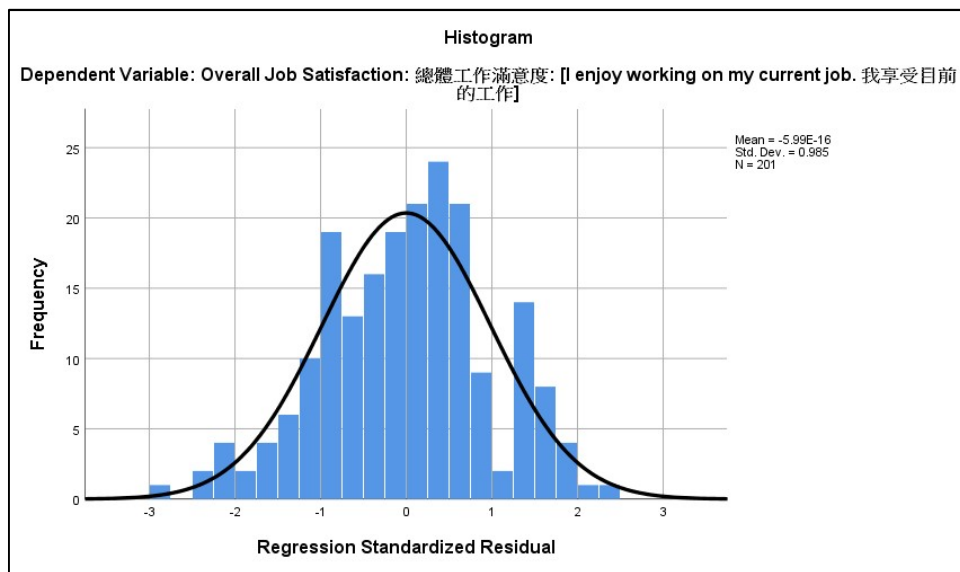
alternative hypothesis $H_1: \beta_j \neq 0$ is accepted. It can be concluded that all factors have a positive relationship with job satisfaction workers.

However, the p-value of the constant term is larger than 0.05, thus the null Hypothesis for the constant term $H_0: \beta_j=0$ is not rejected and the constant is not retained in the equation.

Based on the above analysis, the equation of the regression model is as follows,

$$\begin{aligned} \text{Job Satisfaction} = & 0.418(\text{salary}) + 0.205(\text{Job Security}) + \\ & 0.171(\text{Working Condition}) + 0.179(\text{Growth and Advancement}) \\ & + 0.113(\text{Achievement}) + 0.123(\text{Meaningfulness of Work}) \end{aligned}$$

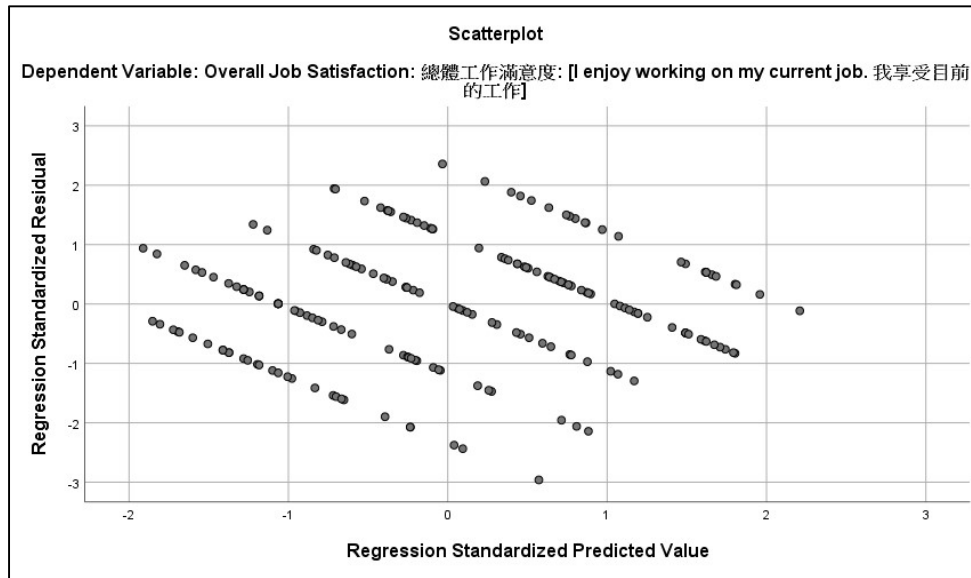
Figure 4.19: Regression Standardized Residual Histogram



Source: This research

From the above Figure 4.19, the histogram of the standardized residual is normally distributed with most of the residual lies within 2 standard deviations.

Figure 4.20: Regression Standardized Residual Scatterplot



Source: This research

From the above Figure 4.20, the scatter plot of residual value shows a random pattern, suggesting linear model is considered as a good fit for this set of data.

One of the important assumption made in Chapter 3 is the errors are normally distributed as it shows the normality of the regression model

The normally distributed residual with few outliers also suggested that this dataset collected has low chance of being deviated by outliers.

4.6.2. Linear regressions on Job Satisfaction for Turnover Intention

The linear equation was setup as follows,

$$\text{Turnover Intention} = \varphi_0 + \varphi_1(\text{Job Satisfaction}) + \varepsilon_2$$

Table 4.14: Regression Model (Casual Effect)

Model Summary ^c				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2	.556 ^b	.309	.302	1.030
b. Predictors: (Constant), Overall Job Satisfaction: [I enjoy working on my current job. Overall Job Satisfaction: [In general, how satisfied are you with your current job?				
c. Dependent Variable: Turnover Intention: [How likely is it that you could find a job with another industry with about the same pay and benefits you now have?				

Source: This research

From the above Table 4.14, the R squared value of this multiple linear regression is 0.309. As the previous Chapter 3.10 described, as the R =0.556 is between 0.5 and 0.7, this regression is considered having moderate positive effect size.

Table 4.15: Regression Table

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
2	Regression	93.957	2	46.978	44.310	.000 ^c
	Residual	209.924	198	1.060		
	Total	303.881	200			
a. Dependent Variable: Turnover Intention: [How likely is it that you could find a job with another industry with about the same pay and benefits you now have?						
c. Predictors: (Constant), Overall Job Satisfaction: [I enjoy working on my current job. Overall Job Satisfaction: [In general, how satisfied are you with your current job?						

Source: This research

From the above Table 4.15, the p-value of this equation is smaller than 0.000, thus, this equation is valid at 95% confidence level.

Table 4.16: Coefficient Table

Coefficients ^a								
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics		
	B	Std. Error	Beta			Tolerance	VIF	
2 (Constant)	4.886	.222		22.009	.000			
Job Satisfaction: [I enjoy working on my current job.]	-.349	.064	-.360	-5.439	.000	.797	1.255	
Job Satisfaction: [In general, how satisfied are you with your current job?]	-.303	.069	-.292	-4.408	.000	.797	1.255	
a. Dependent Variable: Turnover Intention: [How likely is it that you could find a job with another industry with about the same pay and benefits you now have?]								

Source: This research

The coefficient for job satisfaction (ϕ_j) is negative, indicated that there is a negative relationship between job satisfaction and turnover intention.

The VIF is below 10, which is below the maximum level of VIF that is acceptable (Hair et al. 1995), it is concluded that this equation has no collinearity problem

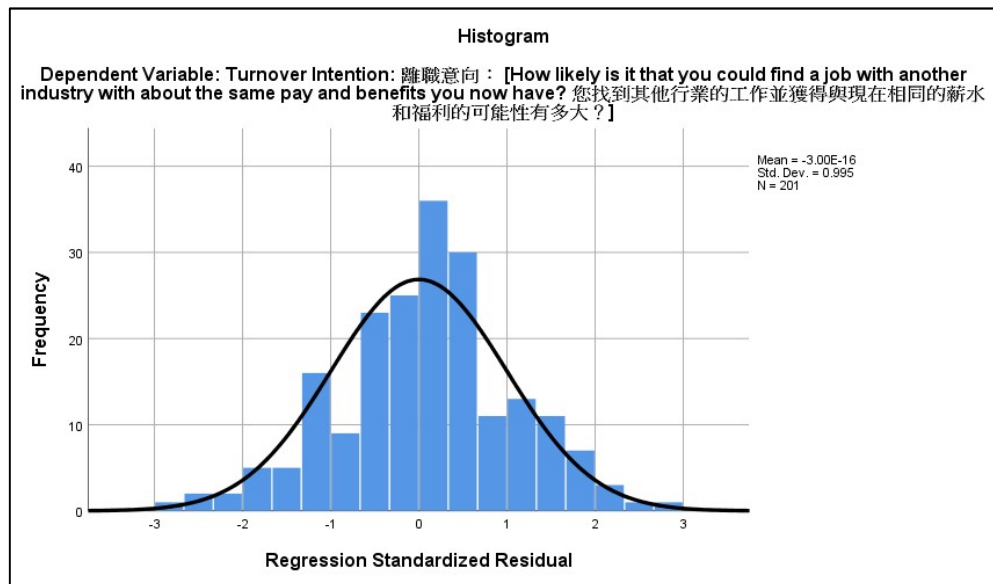
To verify the statistical significance of the coefficient, the p-value is examined. As the p-value is smaller than .05, it can be concluded that the null hypothesis (H_0): $\phi_j = 0$ is rejected at 0.05 level, and the alternative hypothesis (H_2): $\phi_j \neq 0$ is accepted.

Therefore, it can be concluded that there is a negative relationship between job satisfaction and turnover intention as the standardized coefficient are -0.360 and -0.292 and the value is significant at 95% confidence level.

The equation regression model for the relationship between job satisfaction and turnover intention is as follows,

$$\text{Turnover Intention} = 4.886 - 0.349(\text{Job Satisfaction}_{\text{enjoy}}) - 0.303(\text{Job Satisfaction}_{\text{current job}})$$

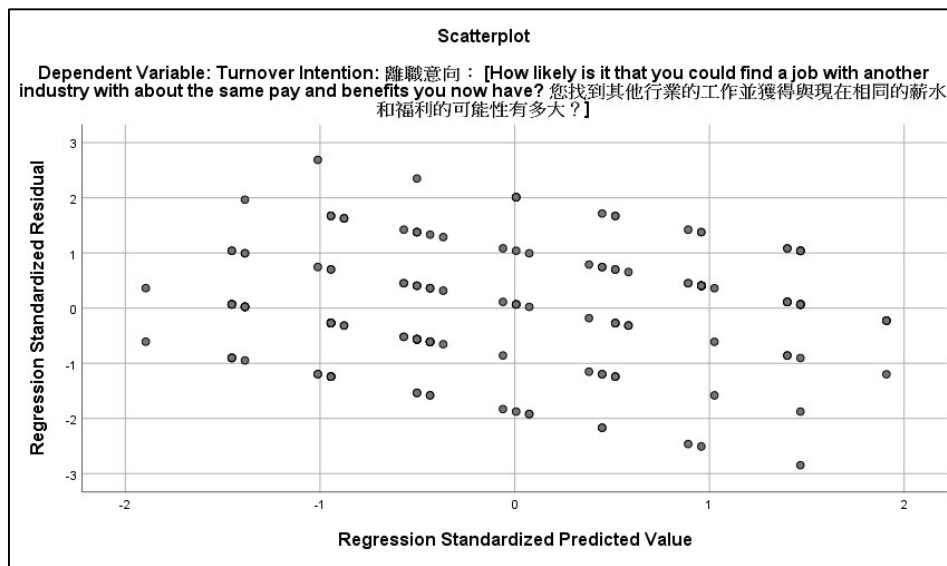
Figure 4.21: Regression Standardized Residual Histogram



Source: This research

From the above Figure 4.21, the histogram of the standardized residual is normally distributed with most of the residual lies within 2 standard deviations. However, there are more outliers in the linear regression on job satisfaction and turnover intention.

Figure 4.22: Regression Standardized Residual Scatterplot



Source: This research

From the above Figure 4.22, the scatter plot of residual value shows a random pattern, suggesting linear model is considered as a good fit for this set of data.

The normally distributed residual with few outliers also suggested that this dataset collected has low chance of being deviated by outliers.

4.7. Summary

Table 4.17: Hypotheses Results

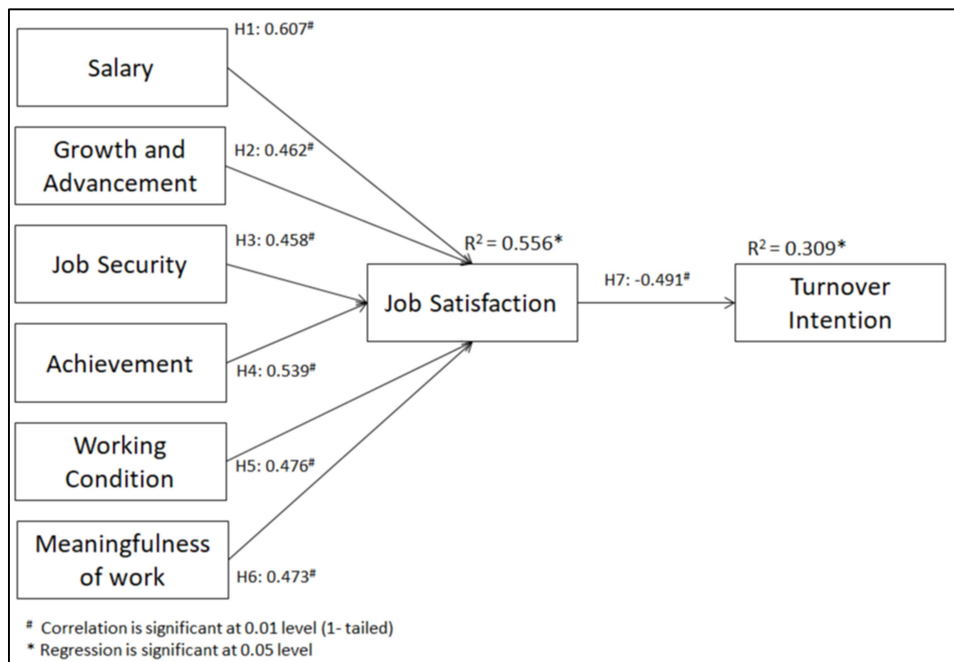
Hypothesis	Causal Path	Pearson's Correlation Coefficient [#]	Standardized Beta [*]	Test Result
H1:	Job Satisfaction is positively correlated with Salary	0.607	0.374	Supported
H2:	Job Satisfaction is positively correlated with Growth and Advancement	0.462	0.125	Supported
H3:	Job Satisfaction is positively correlated with Job Security	0.458	0.204	Supported
H4:	Job Satisfaction is positively correlated with Achievement	0.539	0.109	Supported
H5:	Job Satisfaction is positively correlated with Working Condition	0.476	0.165	Supported
H6:	Job Satisfaction is positively correlated with Meaningfulness of Work	0.473	0.119	Supported
H7:	Turnover Intention is negatively correlated with Job Satisfaction	-0.491	-0.360	Supported

* Regression is significant at the 0.05 level

Correlation is significant at the 0.01 level (1-tailed)

Source: This research

Figure 4.23: Research Model with Pearson Correlation (1-tailed)



Source: This research

Based on the technical analysis in the above chapters in each factor, it was found that all hypotheses are supported in reliability test, correlation test and multiple linear regression test. Based on the findings in this chapter, further conclusion and recommendation will be made in the following chapters on each factor.

Chapter 5. CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

The purpose of this paper is to investigate the relationship between Herzberg's two factor theory and job satisfaction, and further extend the study to investigating the relationship between job satisfaction and turnover intention of construction workers. This paper has collected data from 201 construction workers in Hong Kong through focus group and questionnaire. The data was analyzed with statistical method and then compared with previous research stated in the literature review.

In this chapter, the results from the previous chapters are summarized in order to provide further insights to do study topic. The paper also provides further recommendations for improving job satisfaction for construction workers.

5.2. Conclusion

In the last chapter, the correlation of each factor against job satisfaction and job satisfaction against turnover intention is presented. Furthermore, multiple regression analysis was performed in order to investigate relationship; the coefficient of each independent variable indicates the relationship of it against the dependent variable.

In the correlation analysis, the correlation of all six factors are positive correlated with job satisfaction, and job satisfaction is negatively correlated with turnover intention.

In the multiple linear regression, since β_1 to β_6 are all positive, below results are concluded on the relationship of the factors and job satisfaction. On the linear regression between job satisfaction and turnover intention, since β_7 is negative, thus, below result is obtained.

Table 5.1: Relationship Results of Seven Hypotheses

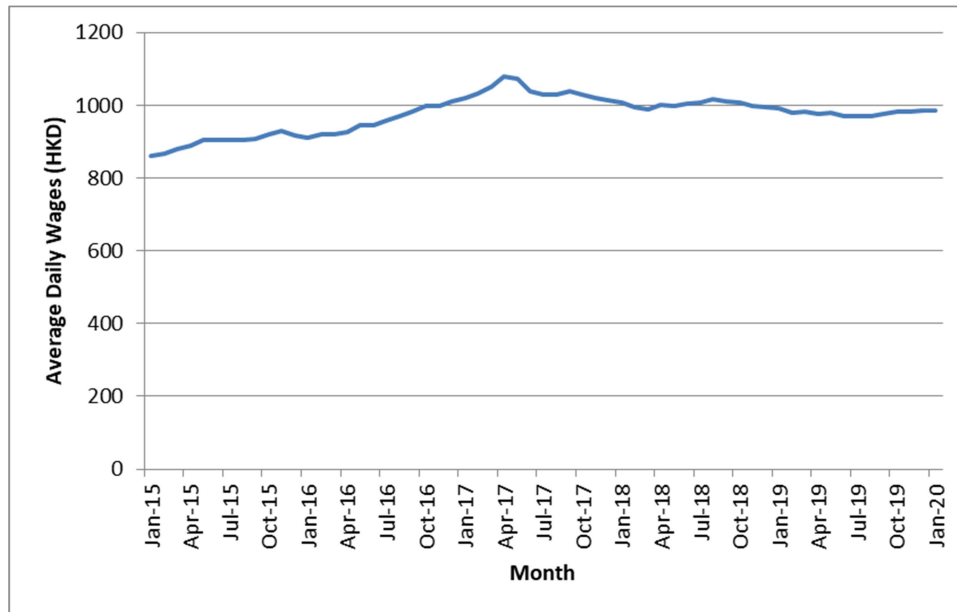
Hypothesis		Results
H1:	There is a positive relationship between salary and job satisfaction	
H2:	There is a positive relationship between growth and advancement and job satisfaction	
H3:	There is a positive relationship between job security and job satisfaction	
H4:	There is a positive relationship between achievement and job satisfaction.	
H5:	There is a positive relationship between working condition and job satisfaction	
H6:	There is a positive relationship between meaningfulness of work and job satisfaction	
H7:	There is a negative relationship between job satisfaction and turnover intention	

Source: This research

5.2.1. Relationship Between Salary and Job Satisfaction

In the multiple linear regressions, this factor also has a positive standardized coefficient of 0.374 against job satisfaction (Table 4.17), which is the highest coefficient among all factors. It shows that salary plays a significant role when the participants consider his job satisfaction.

Figure 5.1: Average Daily Wages of General Workers and Labourers Engaged In Public Sector Construction Projects As Reported By Main Contractors



Source: Census and Statistics Department (2020a)

From the above Figure 5.2, the salary of general workers (i.e. RGW) has raised for 14% from January 2015 to January 2020. Although the salary of construction workers are maintained at HKD 970- 990 per day in the second half of 2020, the salary did not improve due to the reason that there was HKD71.2 million of public work projects proposed in 2018/19 financial years were pending for approval (Construction Industry Council, 2019). According to the Chairman of the Construction Industry Council, this number represents 28.5% to 35.6% of the overall construction expenditure of Hong Kong per year in order to maintain and stable and healthy construction industry. Thus, it can be commented that the wage in the second half of 2020 was suppressed by a drop in demand.

5.2.2. Relationship between growth and advancement and job satisfaction

In the multiple linear regressions, this factor also has a positive standardized coefficient of 0.125 against job satisfaction (Table 4.17). In the focus group, one of the RSS registered participants has explained the reason behind the importance of growth and advancement to construction workers. He explained that under the current “Designated Workers for Designated Skills”, the advancement ladder is mainly through advancing from gaining specialized skills and advance through the registration ladder, from an RGW with no specialized skills, to become an RSS worker and finally become an RSW worker, who hold the highest grade of registration in the industry.

The current registration structure of the construction industry in Hong Kong, is claimed to be relatively easy to pass in the test for RSS worker, that there is a high passing rate in the intermediate trade test (The exam for becoming an RSS worker) This made it easier for construction workers to advance in their career through certifying themselves with special skills. However, the passing rate for the trade test (The exam for becoming an RSW worker) is lower compared to the intermediate trade test.

According to the current structure (Construction Workers Registration Ordinance, 2005), to become an RSS worker, the application requirements are 1. Applicants must be Hong Kong Residents and 2. Applicants must reach 18 years of age The entry requirement is very low. (Additional requirement is needed for machineries and cranes operation) To become an RSW worker, the application requirement is 1. Applicant with a minimum of 4 years relevant

working experience or 2. Applicant is an RSS workers with 1 year of relevant working experiences after passing the Intermediate Trade Test.

Table 5.2: Progress Report on Intermediate Trade Testing (Up to 29 February, 2020)

	Intermediate Trade Test for RSS level			Trade Test for RSW level		
	Intermediate Trade Test for RSS level	Electrical and Mechanical Workers	Total	Construction Craftsmen	Electrical and Mechanical Workers	Total
Tested Candidates	147,133	41,419	188,552	114,820	7,324	122,144
No. of Qualified	115,323	31,405	146,728	67,128	4,003	71,131
Percentage	78.40%	75.80%	77.80%	58.50%	54.70%	58.20%

Source: Construction Industry Council (2020)

According to above Table 5.2, as at 29 February, 2020, there are 188,552 persons participated in the Intermediate Trade Test, 146,728 persons have passed the test. The passing rate is 77.8%. For trade test for RSW workers, there are 122,144 participants and 71,131 persons have passed the test. The passing rate is 58.2%.

Thus, construction workers are expecting to have better growth and advancement chance through gaining more skills to pass the exam, so as to advance in the registration category and have higher salary.

5.2.3. Relationship Between Job Security and Job Satisfaction

In the multiple linear regressions, this factor has a positive standardized coefficient of 0.204 against job satisfaction (Table 4.17), and it is the second highest coefficient in the regression model.

It is commented by one of the participant of the focus group that the current construction industry in Hong Kong are facing labour shortage. Thus, construction workers are sure that as long as they work with average performance, their jobs are still secure.

According to the 2019 Skilled Workers Shortage Survey conducted by The Hong Kong Construction Association (2019), they interviewed 25,475 workers who are on duty on that day, and a shortage of 1,865 workers, which is a shortage of 7.3%. The interviewed workers accounted for 25.2% of the total worker on duty on that particular day, according to the data of on duty workers of that particular day issued by the Construction Industry Council, which is 101,186 workers. Thus, it is estimated that there is a shortage of 7,408 persons on 21 November, 2019.

Thus, the labour shortage in the construction industry has provided a high level of sense of job security to construction workers.

5.2.4. Relationship Between Achievement and Job Satisfaction

In the multiple linear regression, this factor has a positive standardized coefficient of 0.109 against job satisfaction (Table 4.17). It is discussed in Chapter 2 that the sense of achievement is a one of the most important motivator to workers that encourage workers to work harder.

One of the marketing efforts of the Construction Industry Council on getting more youngsters to join the workforce of the industry is to promote the value of construction work provided to the society and how one can achieve his life planning. The Construction Industry Council partnered with the Radio

Television Hong Kong and the Development Bureau to produce three seasons of drama called, “A Dream Comes True” Radio Television Hong Kong (2015), which the stories are about six youngsters’ life as a construction worker. It shows that the industry and the government understand what are lacking among youngsters on their view of the construction industry.

5.2.5. Relationship between working condition and job satisfaction

In the multiple linear regression, this factor has a positive standardized coefficient of 0.165 against job satisfaction (Table 4.17). This coefficient of this factor has the third highest value among all factors. As mentioned in Chapter 2, physical health has a positive relationship with job satisfaction. As construction industry is has the highest injury ratio among all industries in Hong Kong, it would mean that the industry has to put more effort in lowering the number of accidents.

As mentioned in Chapter 2, more than half of the accidents in the construction industry in 2019 are avoidable, by providing better equipment or cleaning up the work location.

Table 5.3: Construction Industry Council Funded Projects

Subject Area	No. of Funded Projects	Percent	Awarded Amount in HKD'000	Percent
Environment and Sustainability	13	32.50%	15,528	29.90%
Construction Safety and Health	8	20.00%	9,290	17.90%
Construction Technologies	8	20.00%	8,982	17.30%
Productivity	4	10.00%	7,942	15.30%
BIM	2	5.00%	3,845	7.40%
Construction Materials	2	5.00%	3,358	6.50%
Construction Procurement	2	5.00%	2,096	4.00%
Construction Procurement	1	2.50%	971	1.90%
Grand Total	40	100.00%	52,012	100.00%

Source: Construction Industry Council (2020)

As the above Table 5.3 shown, among the 40 projects funded by the Construction Industry Council since 2012l, 8 of them are related to construction safety and health, accounts for 20% of the total funded projects. The awarded amount is HKD 9.29 million, accounts for 17.9% of the total awarded amount.

5.2.6. Relationship Between Meaningfulness of Work and Job Satisfaction

Meaningfulness of work refers to utilizing one's ability in order to allow the employee to perform their abilities. It is considered as an important factor in job satisfaction as it allows an employee to realize one's potential.

As the construction industry is a lack of new labour force, in the promotion effort of the industry to the younger generation to join the construction industry, one of the main focuses is the meaningfulness of work in the

construction industry, which the career is promoted as a chance for youngster to develop their skills, and to be utilized in their job as a specialist.

In the multiple linear regression, this factor has a positive standardized coefficient of 0.119 against job satisfaction (Table 4.17). One explanation for the lower value of this factor is due to the highly specialized nature of the construction industry, where each person from each trade only performs his specialized skills. Thus, construction workers are expected to perform their skills and thus, they do not see this as creating high satisfaction with their job.

5.2.7. Relationship Between Job Satisfaction and Turnover Intention

In the linear regression model, the standardized coefficient for job satisfaction is -0.360 when regress with turnover intention (Table 4.17).

However, the low R-squared value of 0.309 indicated that simply using job satisfaction as the only independent variable to explain the dependent variable provide a low strength of relationship. It can be concluded that there are more factors when the participants of the questionnaire to decide if they are going to look for another job opportunities.

5.3. Recommendations

5.3.1. Salary

From the regression model, it clearly stated that salary is the most important factor in job satisfaction among all six factors. The coefficient of salary is twice higher than the second highest factor and 3.7 times higher than the

lowest factor. Thus, improving the salary of employees provides the highest increase in job satisfaction of an employee.

5.3.2. Working Condition

Regarding the working condition of the construction workers, it is said in the above section that the funding to research on worker's safety is only 17.9% of the total awarded amount, while the remaining are awarded to improving building efficiencies and techniques. It is recommended to increase the research fund allocation to improve working condition of the construction workers. By improving the working condition, it will lower the unwillingness of youngsters to join the industry. The Occupation Safety and Health Council (2013) has launched a study on improving working condition by researching a cooling vest for protecting workers from heat stroke while working in hot environment. Projects on improving the working condition not only improve the working condition, but also improve the safety of the construction workers.

5.3.3. Job Security

As suggested in the previous section, the focus group has suggested that the high job security among construction worker is due to the current labour shortage in the industry, it shows the construction industry is affected extrinsic factors such as market situation that would contribute to a worker's sense of job security. Thus, if a company would like to retain its current workers, they would have to improve constantly to provide higher job satisfaction to their workers.

5.3.4. Achievement

Due to the job nature of construction workers, the hardship of construction worker is considered as blue collar work, and is generally perceived as having lower social status among jobs (Tiwary, 2012). Thus, it reduces the attractiveness of having a career in construction industry. As mentioned in previous section, the industry has made promotion to the general public on the importance of the construction industry to Hong Kong. And thus, it is suggested that through education to general public, it can helped to establish a higher social status for construction workers. With the improved perception from the general public, it allows construction workers to perceived oneself with higher sense of achievement when working as a construction worker.

5.3.5. Growth and Advancement

To provide better advancement opportunities to construction workers, one of the most important ways is to support their advancement in their skills. By providing more opportunities to construction workers to improve their skills, they can advanced in the registration ladder quicker, in order to be certified as a skillful worker. The current passing rate of the intermediate trade test and the trade test is 77.8% and 58.2% respectively (Construction Industry Council, 2020), by supporting the workers to increase the passing rate; more workers could be certified as skillful workers.

5.3.6. Meaningfulness of Work

As suggested in the previous section, construction workers are able to perform their skills in their work due to the highly specialized skills they possessed,

and it requires the respective license to perform a specialized work. To enhance their perspective that their skills are utilized, it is suggested that the “Designated Workers for Designated Skills” provision is necessary in order to allow workers to recognize themselves as a special skilled labour.

5.3.7. Turnover Intention

In the regression model for turnover intention, the high coefficient indicates that job satisfaction plays an important role when the participants of this questionnaire consider their future career. This would mean that Human Resources Department should consider improving employees’ job satisfaction in order to retain the employee.

In previous literature review, Yang & Wittenberg (2016) has commented that turnover intention is highly negatively correlated with one’s salary level. In this paper, same could be proofed as salary is the highest coefficient factor in the regression with job satisfaction and job satisfaction is negatively correlated with turnover intention, thus, it can be concluded that salary is negatively correlated with turnover intention in this paper.

5.4. Limitations

The construction industry in Hong Kong consists of various form of labour relationship (Labour Department, 2019). The Labour Department has stated that there are several form of working engagement, including “employee”, “self-employed person” or “contractor”. Among employees, there are also several form of relationship, including full-time workers, casual workers,

helpers or substitute workers. Thus, this research may consist of organizational factors that some forms of labour relationship are not covered in this research.

As mentioned in Chapter 2, Herzberg's two factor theory has suggested a list of factors that may affect job satisfaction of an employee (Lindsay et al. 1967), however, only six of the factors are chosen to study in this paper. The chosen six factors are considered to be having more significance effect on job satisfaction during literature review, and thus, they are chosen. As a result, if all factors in the Herzberg's two factor theory are all having effect on job satisfaction, then, the multiple linear regressions in this paper shall have a lower model of fit compared to regression with all factors in the theory. However, as this paper would like to focus on the discussion on the importance of the six selected factors. The coefficients of the independent variables are investigated with validation on their statistical significance. The effect of job satisfaction from the other factors not studied in this paper will be captured in the residual term in the regression.

As mentioned in Chapter 2, previous literatures have found out a list of factors that may lead to turnover intention of an employee (Mael & Ashforth, 1995). In this paper, as the focus is to what extent that job satisfaction may lead to turnover intention, thus, the linear regression on job satisfaction and turnover intention may have a lower R-squared value, signaling that only using job satisfaction as the only independent variable against turnover intention has a lower model of fit. Nonetheless, the regression result will still be tested on the statistical significance on the coefficient of job satisfaction in the regression in order to search for the relationship between them.

5.5. Future Research

Regarding job satisfaction, future research can consider adding more factors in finding the relationship against job satisfaction. This paper has included 6 factors which are considered to be highly correlated to job satisfaction in other literature. However, the original Herzberg's two factor theory includes more factors in his original research in 1964. Over the years, different studies have discovered different factors that would have impact on job satisfaction (Lindsay et al. 1967).

The workforce in 1964 are very different from the current workforce, numerous research has been done on the difference between people in baby boomer period and the Generation Y who are the new workforce of this decade. Thus, future researches may consider including variables that are closely related to the current workforce.

Regarding turnover intention, as discussed in previous Chapter 5.2.7 on turnover intention, the low R-squared value indicated there are more factors could be included in explaining the factors deciding turnover intention, As discussed in Chapter 2, other literatures shows that other than job satisfaction, there are other factors which plays a role in turnover intention (Wan et al. 1995), including job characteristics, working engagement, relationship with colleagues, also proved to be significance.

Turnover imposed high implicit cost to a company (Guilding et al. 2014). It involves loss of work motivation after notice period of the worker, lower work ability of new comer during adapting period, training cost of new comer, reform of work group, new relationship among workers etc. Thus, it would be

beneficial for further effort for Human Resource Industry to put further effort in researching the cause of turnover intention of employees.

REFERENCES

- Abrams, D. et al. (1998) 'Psychological Attachment to the Group: Cross-Cultural Differences in Organizational Identification and Subjective Norms as Predictors of Workers' Turnover Intentions', *Personality and Social Psychology Bulletin*, 24(10), pp. 1027-1039.
- Ahuja, P., Pathak, R. and Panda, M. (2014) 'Job Satisfaction: A Comparative Study of Employees in Government and Private Hospitals in Punjab', *Indian Journal of Communicable Diseases*, 5(1), pp. 11-17. DOI: <https://doi.org/10.21088/ijcd.2395.6631.5119.2>.
- Akoglu H. (2018) User's Guide to Correlation Coefficients. *Turkish Journal of Emergency Medicine*, 18(3), pp. 91-93. DOI: <https://doi.org/10.1016/j.tjem.2018.08.001>
- Ali, N. (2008) *Factors Affecting Overall Job Satisfaction and Turnover Intention Journal of Managerial Sciences*, 2008. Available at: http://qurtuba.edu.pk/jms/default_files/JMS/2_2/05_qadar_nazim.pdf (Accessed: 2 February 2020)
- Allan, B. et al. (2018) 'Meaningful Work and Mental Health: Job Satisfaction as a Moderator', *Journal of Mental Health*, 27(1), pp. 38-44.
- Avery, R., Smillie, L. and Fife-Schaw, C. (2015) 'Employee Achievement Orientations and Personality as Predictors of Job Satisfaction Facets', *Personality and Individual Differences*, 76, pp. 56-61.

- Bakotić, D. and Babić, T. (2013) 'Relationship between Working Conditions and Job Satisfaction: The Case of Croatian Shipbuilding Company', *International Journal of Business and Social Science*, 4, pp. 206-213.
- Batura, N. et al. (2016) *Is The Job Satisfaction Survey A Good Tool to Measure Job Satisfaction Amongst Health Workers in Nepal? Results of a Validation Analysis*. Available at: <https://www.springermedizin.de/is-the-job-satisfaction-survey-a-good-tool-to-measure-job-satisf/10521110?fulltextView=true> (Accessed: 3 March 2020).
- Beers, B. (2020) *P-Value Definition*. Available at: <https://www.investopedia.com/terms/p/p-value.asp> (Accessed: 3 February 2020).
- Benrazavi, S.R. and Silong, A.D. (2013) 'Employees' Job Satisfaction and its Influence on Willingness to Work in Teams', *Journal of Management Policy and Practice*, 14(1), pp. 127-140.
- Bowie, N. (1998) 'A Kantian Theory of Meaningful Work', *Journal of Business Ethics*, 17, pp. 1083-1092. DOI: <https://doi.org/10.1023/A:1006023500585>.
- Bowling, N. and Hammond, G. (2008) 'A Meta-Analytic Examination of The Construct Validity of the Michigan Organizational Assessment Questionnaire Job Satisfaction Subscale', *Journal of Vocational Behavior*, 73(1), pp. 63-77.

- Bremer, M. (2012) *Multiple Linear Regression*. Available at:
<http://mezeylab.cb.bscb.cornell.edu/labmembers/documents/supplement%205%20-%20multiple%20regression.pdf> (Accessed: 8 November 2019).
- Brown, S. (1996) 'A Meta-Analysis and Review of Organizational Research on Job Involvement', *Psychological Bulletin*, 120(2), 235-255.
- Buiser, M. (2000) 'Surviving Managed Care: The Effect on Job Satisfaction in Hospital-Based Nursing', *Medsurg Nursing: Official Journal of the Academy of Medical-Surgical Nurses*, 9(3), pp. 129-34.
- Burke, R., Ng, E., & Wolpin, J. (2015) 'Economic Austerity and Healthcare Restructuring: Correlates and Consequences of Nursing Job Insecurity', *The International Journal of Human Resource Management*, 26(5), pp. 640-656.
- Burns, A.C. and Bush, R.E. (2008) *Basic Marketing Research*. 2nd edn. New Jersey: Pearson Education.
- Butt, B.Z. et al. (2007) 'A Study Measuring the Effect of Pay, Promotion and Training on Job Satisfaction in Pakistani Service Industry', *European Journal of Social Sciences*, 5(3), pp. 36-44.
- Cammann, C. et al. (1983) *Michigan Organizational Assessment Questionnaire. Assessing Organizational Change: A Guide to Methods, Measures, and Practices*. New York: Wiley-Interscience.

Census and Statistics Department (2019) *Hong Kong Annual Digest of Statistics*. Available at:

<https://www.statistics.gov.hk/pub/B10100032019AN19B0100.pdf>

(Accessed: 3 March 2020).

Census and Statistics Department (2020a) *Average Daily Wages of Workers Engaged in Public Sector Construction Projects as Reported by Main Contractors*. Available at:

<https://www.censtatd.gov.hk/hkstat/sub/sp210.jsp?productCode=B1050013>

(Accessed: 3 March 2020).

Census and Statistics Department (2020b) *Table-on-year % change of gross value of construction works performed by main contractors analysed by broad trade group (at constant (2000) market prices)*. Available at:

<https://www.censtatd.gov.hk/hkstat/sub/sp330.jsp?tableID=105&ID=0&productType=8> (Accessed: 31 March 2020).

Census and Statistics Department (2020c) *2019 Report on Annual Earnings and Hours Survey* Available at:

<https://www.statistics.gov.hk/pub/B10500142019AN19B0100.pdf>

Chatzoglou, P. et al. (2011) *Factors Affecting Accountants' Job Satisfaction and Turnover Intentions: A Structural Equation Model*. Greece: Democritus University of Thrace.

Cochran, W.G. (1977) *Sampling Techniques*. 3rd edn. New York: John Wiley & Sons.

Construction Industry Council (2019a) *Employment Distribution by Industry*

Section. Available at:

<http://www.cic.hk/common/StatisticofRegWorkers/dashboard.aspx?lang=en-US> (Accessed: 3 February 2020).

Construction Industry Council (2019b) *The CIC Calls for LegCo's Speedy*

Approval of Funding Proposals for Public Works Projects. Available at:

http://www.cic.hk/files/press_release/212/en/20191009_CIC%20Press%20Con_Projects%20Funding_efinal.pdf (Accessed: 25 March 2020).

Construction Industry Council (2019c) *About CIC*. Available at:

<http://www.cic.hk/eng/main/aboutcic/> (Accessed: 8 November 2019).

Construction Industry Council (2019d) *Skilled Construction Workers Forecast*

(2019-2023). Available at:

[http://www.cic.hk/files/page/56/Manpower%20Forecast%20-%20Workers%20\(2019-2023\)_e_20190503.pdf](http://www.cic.hk/files/page/56/Manpower%20Forecast%20-%20Workers%20(2019-2023)_e_20190503.pdf) (Accessed: 3 February 2020)

Construction Industry Council (2020a) *Committee on Registered Specialist*

Trade Contractors Scheme Chairperson's Message. Available at:

<https://rstc.cic.hk/en/index.aspx> (Accessed: 14 March 2020)

Construction Industry Council (2020b) *Trade Test Achievement*. Available at:

http://www.cic.hk/eng/main/research_data_analytics_/trade_test_achievement/ (Accessed: 25 March 2020).

Construction Workers Registration Ordinance (2005) *Cap. 583 Construction*

Workers Registration Ordinance. Available at:

[https://www.elegislation.gov.hk/hk/cap583!en@2017-04-](https://www.elegislation.gov.hk/hk/cap583!en@2017-04-01T00:00:00?xpid=ID_1438403485487_001)

[01T00:00:00?xpid=ID_1438403485487_001](https://www.elegislation.gov.hk/hk/cap583!en@2017-04-01T00:00:00?xpid=ID_1438403485487_001) (Accessed: 25 March 2020).

Crossman, A. (2020) *An Overview of Qualitative Research Methods*.

Available at: <https://www.thoughtco.com/qualitative-research-methods-3026555> (Accessed: 3rd February 2020).

Dhanpat, N. et al. (2019) 'Exploring Retention Factors and Job Security of Nurses in Gauteng Public Hospitals in South Africa', *African Journal of Economic and Management Studies*, 10(1), pp. 57-71.

Emami R, et al. (2012) 'Investigating the Relationship between Organizational Learning Culture, Job Satisfaction and Turnover Intention in it SMEs', *International Journal of Innovative Ideas*, 12(1), pp. 8-23.

George, D. and Mallery, P. (2003) *SPSS for Windows Step By Step: A Simple Guide and Reference. 11.0 Update*. 4th edn. Boston: Allyn & Bacon.

Given, L.M. (2008) *The SAGE Encyclopedia of Qualitative Research Methods*. Los Angeles: SAGE Publications.

Griffeth, R.W., Hom, P.W. and Gaertner, S. (2000) 'A Meta-Analysis of Antecedents and Correlates of Employee Turnover: Update, Moderator Tests, and Research Implications for the Next Millennium', *Journal of Management*, 26(3), pp. 463-488.

- Guilding, C., Lamminmaki, D. and Mcmanus, L. (2014) 'Staff Turnover Costs: In Search Of Accountability', *International Journal of Hospitality Management*, 36(C), pp. 231-243.
- Guion, L. (2002) *Triangulation: Establishing the Validity of Qualitative Studies*. Florida: Institute of Food and Agricultural Sciences.
- Hair, J.F. et al. (1995) *Multivariate Data Analysis (3rd ed)*. New York: Macmillan.
- Halpern, G. (1966) 'Relative Contributions of Motivator and Hygiene Factors To Overall Job Satisfaction', *Journal of Applied Psychology*, 50(3), pp. 198-200.
- Hasan, A. et al. (2018) 'Factors Affecting Construction Productivity: A 30 Year Systematic Review. Engineering', *Construction and Architectural Management*, 25(7), pp. 916-937.
- Hassan, Z.A., Schattner, P. and Mazza, D. (2006) 'Doing A Pilot Study: Why Is It Essential?', *Malaysian family physician : the official journal of the Academy of Family Physicians of Malaysia*, 1(2-3), pp. 70–73.
- Hirschfeld, R. (2000) Does Revising the Intrinsic and Extrinsic Subscales of the Minnesota Satisfaction Questionnaire Short Form Make a Difference? *Educational and Psychological Measurement*, 60(2), pp. 255-270.
- Ho, P. (2016) 'Labour and Skill Shortages in Hong Kong's Construction Industry', *Engineering, Construction and Architectural Management*, 23(4), pp. 533-550. DOI: <https://doi.org/10.1108/ECAM-12-2014-0165>

Hong Kong Construction Association (2019) *HKCA's Press Release on The Survey Result of the Labour Shortage in Construction Industry (2019, April)*. Available at: <https://s3.ap-southeast-1.amazonaws.com/hkca.com.hk/upload/doc/press-release/e83816176fad3f36c0600802807254ef-84lgU.pdf> (Accessed: 8 November 2019).

Hong Kong Construction Association (2020) *Skilled Workers Shortage Survey Result*. Available at: https://s3.ap-southeast-1.amazonaws.com/hkca.com.hk/upload/doc/press-release/PR_ManpowerSurvey%28%EBC%AEov19%29_HKCA_F-mN9-t.pdf (Accessed: 2 March 2020).

Hulin, C.L. and Judge, T.A. (2003) 'Job Attitudes', *Handbook of psychology: Industrial and organizational psychology*, pp. 255-276.

Institute for Work & Health (2015) Primary Data and Secondary Data.

Retrieved from: <https://www.iwh.on.ca/what-researchers-mean-by/primary-data-and-secondary-data> (Accessed: 3rd February 2020).

Keles, H. & Findıklı, M. (2016) 'The Effect of The Meaningfulness of Work On Job Satisfaction, Job Stress and Intention To Leave', *Global Journal of Business, Economics and Management*, 6, pp. 61-69, DOI: 10.18844/gjbem.v6i2.1370.

- Kenton, W. (2019) *Descriptive Statistics*. Available at:
https://www.investopedia.com/terms/d/descriptive_statistics.asp
 (Accessed: 8 November 2019).
- Kinman, G., Clements, A.J. and Hart, J. (2016). 'Work-Related Wellbeing in UK Prison Officers: A Benchmarking Approach', *International Journal of Workplace Health Management*, 9(3), pp. 290-307. DOI: 10.1108/IJWHM-09-2015-0054.
- Krueger, R.A. and Casey, M.A. (2008) *Focus Groups: A Practical Guide for Applied Research*. 4th edn. CA: Sage.
- Lindsay, C., Marks, E. and Gorlow, L. (1967) 'The Herzberg Theory: A Critique And Reformulation', *Journal of Applied Psychology*, 51(4), pp. 330-339.
- London School of Hygiene and Tropical Medicine (2009) *The Use of Epidemiological Tools in Conflict-Affected Populations: Open-Access Educational Resources for Policy-Makers*. Available at:
<http://conflict.lshtm.ac.uk/index.htm> (Accessed: 3 March 2020).
- Loosemore, M. (2014) 'Improving Construction Productivity: A Subcontractor's Perspective. Engineering', *Construction and Architectural Management*, 21(3), pp. 245-260.
- Mael, F.A. and Ashforth, B.E. (1995) 'Loyal From Day One: Biodata, Organizational Identification, and Turnover among Newcomers', *Personnel Psychology*, 48(2), pp. 309-333.

- Mansell, I. et al. (2004) 'The Learning Curve: The Advantages and Disadvantages in the Use of Focus Groups as A Method of Data Collection', *Nurse Researcher (Through 2013)*, 11(4), pp.79-88.
- Moore, D.S., Notz, W.I. and Flinger, M.A. (2013) *The Basic Practice of Statistics*. 6th edn. New York: W. H. Freeman and Company.
- Morgan, D.L. (2008) *The SAGE Encyclopedia of Qualitative Research Methods*. SAGE Publications, Inc. pp. 816-817
- Muhammad, S.C. et al. (2011) 'Exploring the Relationship between Salary Satisfaction and Job Satisfaction: A Comparison of Public and Private Sector Organizations', *The Journal of Commerce*, 3(4), pp. 1-14.
- Multivariable Methods (2013) *Multiple Linear Regression Analysis*. Available at: http://sphweb.bumc.bu.edu/otlt/MPH-Modules/BS/BS704_Multivariable/BS704_Multivariable7.html (Accessed: 19 November 2019).
- Nanjundeswaraswamy, T.S. (2018) 'Development and Validation of Job Satisfaction Scale for Different Sectors', *International Journal for Quality Research*, 13(1), pp. 193-220.
- Ng, S.T. et al. (2004) 'Demotivating Factors Influencing the Productivity of Civil Engineering Projects', *International Journal of Project Management*, 22(2), pp. 139-146.

- Occupational Safety & Health Council (2013) *Extended Study on Evaluating the Effectiveness of Personal Cooling Equipment (Cooling Vest) for Protecting Workers from Heat Stroke while Working in a Hot Environment*. Available at:
http://www.oshc.org.hk/oshc_data/files/OSHInformation/Cooling_Vest_Study_eng.pdf (Accessed: 3 March 2020)
- Occupational Safety & Health Council (2014) *OSH Survey of Injured Workers in the Construction Industry in Hong Kong*. Available at:
http://www.oshc.org.hk/oshc_data/files/OSHInformation/oshc_research_201411.pdf (Accessed: 14 March 2020).
- Peiró, J., Agut, S. and Grau, R. (2010) 'The Relationship Between Overeducation and Job Satisfaction among Young Spanish Workers: The Role of Salary, Contract of Employment, and Work Experience', *Journal of Applied Social Psychology*, 40(3), pp. 666-689.
- Popoola S. and Farukuoye M. (2018) 'Influence of Job Satisfaction, Need Achievement and Team Work On Work Performance of Staff in Academic Libraries in South West, Nigeria', *Journal of Information and Knowledge Management* 2017, 8 (4), pp. 77-98.
- Radio Television Hong Kong (2015) *A Dream Come True*. Available at:
<https://podcast.rthk.hk/podcast/item.php?pid=578&lang=en-US>
(Accessed: 4 March 2020).

- Rajput, B., Mahajan, D. and Agarwal, A. (2017) 'An Empirical Study of Job Satisfaction Factors of Masons Working on Construction Projects in Pune', *IUP Journal of Management Research*, 16(1), pp. 36-46.
- Ritter, N. (2010) *Understanding a Widely Misunderstood Statistic: Cronbach's Alpha*. LA: Texas A&M University.
- Rouse, M. (2017) *Secondary Data*. Available at:
<https://whatis.techtarget.com/definition/secondary-data> (Accessed: 14 January 2020).
- Rukh, L., Choudhary, M. and Abbasi, S. (2015) 'Analysis of Factors Affecting Employee Satisfaction: A Case Study From Pakistan', *Work*, 52(1), pp. 137-152.
- Ruthankoon, R. and Ogunlana, O.S. (2003) 'Testing Herzberg's Two-Factor Theory in the Thai Construction Industry', *Engineering, Construction and Architectural Management*, 10(5), pp. 333-341.
- Smithson, J. (2007) 'Focus Group', in Alasuutari, P., Bickman, L. and Brannen, J. (ed.) *The SAGE Handbook of Social Research Method*. London: SAGE Publications Ltd.
- Spector, P.E. (1997) 'Job Satisfaction: Application, Assessment, Causes and Consequences', CA: SAGE Publication Inc.
- Tavakol, M and Dennick, R. (2011) 'Making Sense of Cronbach's Alpha', *International Journal of Medical Education*, 2, pp. 53-55.

- Taylor, G. (2015) 'Hackman and Oldham's Job Characteristics Model',
Teaching Business & Economics, 19(2), pp.7-9.
- Tiwarly, G. et al. (2012) 'Socio-Economic Status of Workers of Building
Construction Industry', *Indian Journal of Occupational and
Environmental Medicine*, 16(2), pp. 66-71. DOI:
<https://doi.org/10.4103/0019-5278.107072>.
- Trochim, W. (2020) *Descriptive Statistics Research Methods Knowledge Base*.
Available at: <https://socialresearchmethods.net/kb/descriptive-statistics/>
(Accessed: 14 January 2020).
- Vaughn, S., Schumm, J.S. and Sinagub, J. (1996) *Focus group interviews in
education and psychology*. California: SAGE Publications, Inc.
- Wan, Q. et al. (2018) 'Effects of Work Environment and Job Characteristics
on the Turnover Intention of Experienced Nurses: The Mediating Role
of Work Engagement', *Journal of Advanced Nursing*, 74(6), pp. 1332-
1341.
- Weiss, D.J. et al. (1977) *Manual for the Minnesota Satisfaction Questionnaire*.
Available at:
[http://vpr.psych.umn.edu/sites/vpr.dl.umn.edu/files/monograph_xxii_-
_manual_for_the_mn_satisfaction_questionnaire.pdf](http://vpr.psych.umn.edu/sites/vpr.dl.umn.edu/files/monograph_xxii_-_manual_for_the_mn_satisfaction_questionnaire.pdf) (Accessed: 26
November 2019).

- Wilczyńska, A., Batorski, D. and Sellens, J. (2016) 'Employment Flexibility and Job Security as Determinants of Job Satisfaction: The Case of Polish Knowledge Workers', *Social Indicators Research*, 126(2), pp. 633-656.
- Wirahadikusumah, R. and Pribadi, K. (2011) 'Licensing Construction Workforce. Engineering', *Construction and Architectural Management*, 18(5), pp. 431-443.
- Wofford, T. and Fetzer, R.C. (2003) *A Study of Worker Demographics and Workplace Job Satisfaction for Employees in a Global Engineering and Construction Organization*, Florida: Nova Southeastern University.
- Wong, J., Ng, T. and Chan, A. (2010) 'Strategic Planning for the Sustainable Development of the Construction Industry in Hong Kong', *Habitat International*, 34(2), pp. 256-263.
- Yücel, I. (2012) 'Examining the Relationships among Job Satisfaction, Organizational Commitment, and Turnover Intention: An Empirical Study', *International Journal of Business and Management*, 7(20), pp. 44-58.
- Zeytinoglu, I.U. et al. (2012) 'Job Satisfaction, Flexible Employment and Job Security among Turkish Service Sector Workers', *Economic and Industrial Democracy*, 34(1), Pp. 123-144.
- Zheng, C. and Lamond, D. (2010) 'Organisational Determinants of Employee Turnover for Multinational Companies in Asia', *Asia Pacific Journal of Management*, 27(3), pp. 423-443.

APPENDIX

Appendix 1- Timetable

#	Task	2019				2020				
		Nov	Dec	Jan	Feb	Mar	Apr			
A	Complete research proposal									
B	Dissertation									
	1. Introduction									
	2. Literature Review									
	3. Methodology									
	4. Data analysis									
	5. Discussion, conclusions and recommendations									
C	Focus Group									
	1. Design questions to be discussed									
	2. Decide sampling method									
	3. Recruit participants									
	4. Focus group meeting									
D	Questionnaire									
	1. Questionnaire design									
	2. Conduct Pilot Test									
	3. Modify the questionnaire based on the pilot test result									
	4. Formal questionnaire									
	5. Data analysis using SPSS Statistics									
E	Finalize the Dissertation									

Appendix 2- Focus Group Outline

Participant basic background

There were 7 participants in the focus group. The age range is between 26 to 58 years old, with an average of 43.4 years old. There were 5 males and 2 females. Among the participants, there are 3 RGW holders, 3 RSS holders and 1 RSW holder.

	Gender	Age Group	Registration Category
Participant 1	M	18-30	RGW
Participant 2	F	31-40	RGW
Participant 3	M	31-40	RSS
Participant 4	M	18-30	RSS
Participant 5	F	31-40	RSS
Participant 6	M	51-60	RGW
Participant 7	M	41-50	RSW

Focus Group Discussion Outline

The focus group was organized with two parts. The first part was a discussion on open-end questions that are related to job satisfaction and retention. An open- end question, “what leads to job satisfaction in construction industry?” was firstly asked, where participants discussed their major criteria to job satisfaction. It was followed by an open-end question on their view on the importance of each factor towards job satisfaction. The discussion was then followed by open-end questions, “What would you do when you are unsatisfied with your current job?” and “How likely would you quit your current job and look for a new one?” The two questions helped to understand the consequences of failing to meet the job satisfaction of a worker and their chance of quitting.

The second part of the focus group was a trial on the questionnaire draft, where the participants filled in the questionnaire draft and discussed their understanding towards each questions. This helped to improve the questionnaire that later distributed to the construction workers as the focus group provided feedback on the understanding of the questionnaire and the questionnaire is then modified according to their feedback in order to reduce misunderstanding on the questions between the researcher and the participants of the survey.

Date: dd/mm/yyyy

Time xx:xx to xx:xx

Location: Researcher's home

Part 1: Introduction (10minutes)

1. Greetings: Welcome and thank you for coming to this group discussion.
I am Harriet Li, a student from University of Wales and today's moderator.
2. Topic: Today's discussion is to understand on factors affecting job satisfaction, and the relationship between job satisfaction and turnover intention of construction workers.
3. Atmosphere: This is not a formal meeting and it is a discussion for research purpose only. Please relax and feel free to speak up. Refreshments are available and please enjoy.
4. The followings are to apply in this discussion:
 - a. Please feel free to express your view, each opinion is valuable to the research and we are very welcome for opposite view and new aspirations.
 - b. Please take turn to speak to avoid interruption.
 - c. The information would be kept strictly confidential for this research use only.
 - d. Personal data and name will not appear in any report.

Part 2: Scope of Discussion (10 minutes per topic)

1. What leads to job satisfaction in construction industry?
2. How important are the six factors towards job satisfaction?
 - a. Salary
 - b. Growth and Advancement
 - c. Turnover Intention
 - d. Job Security
 - e. Achievement
 - f. Working Condition
 - g. Meaningfulness of work
3. What would you do when you are unsatisfied with your current job?
4. How likely would you quit your current job and look for a new one?
Why?
5. Comments on the questionnaire
 - a. Are the questions clear to you? Do they cause any confusion to you?
 - b. Do the wordings used cause any confusion to you?

Part 3: Ending (5 minutes)

1. Do you have any topics you would like to share or discuss?
2. Thank you: Thank you for participating today and thank you for the valuable information provided. They are good insights which would definitely help my research.

Appendix 3- Pilot Test Questionnaire

請標明您對每個有關工作滿意度的問題的同意程度。請圈出您的答案。

- 5 - Strongly Agree/ Strongly Satisfied 非常同意/非常滿意
 4 - Slightly Agree/ Slightly Satisfied 同意/滿意
 3 - Neutral 沒意見
 2 - Slightly Disagree/ Slightly Unsatisfied 不同意/不滿意
 1 - Strongly Disagree / Strongly Unsatisfied 非常不同意/非常不滿意

No.	Questions 題目	Strongly Disagree /Strongly Unsatisfied 非常不同意/不滿意	↔	Strongly Agree/ Strongly Satisfied 非常同意/滿意		
Salary 薪酬						
1	The amount of pay for the work I do. 我的薪酬	1	2	3	4	5
2	The chance to make as much money as my friends 能跟我朋友賺同樣多錢的機會	1	2	3	4	5
3	How my pay compares with that for similar jobs in other companies. 我的薪資與在其他公司相似工作的薪資比較	1	2	3	4	5
4	My pay and the amount of work I do. 我的薪水與工作量的比較	1	2	3	4	5
Growth and Advancement 成長與升遷						
5	The opportunities for advancement on this job. 這份工作的發展(晉升)機會	1	2	3	4	5
6	The chance of getting ahead on this job. 在工作上進展的機會	1	2	3	4	5
7	The way promotions are given out on this job. 工作上提起升級的方式	1	2	3	4	5
8	The chance of advancement on this job. 在這個工作進展的機會	1	2	3	4	5

No.	Questions 題目	Strongly Disagree /Strongly Unsatisfied 非常不同意/不滿意				Strongly Agree/ Strongly Satisfied 非常同意/滿意
Turnover Intention 離職意向						
9	How likely is it that you could find a job with another industry with about the same pay and benefits you now have? 您找到其他行業的工作並獲得與現在相同的薪水和福利的可能性有多大？	1	2	3	4	5
10	I will probably look for a new job in the next year. 我明年可能會找新工作	1	2	3	4	5
11	I often think about quitting 我經常想辭職	1	2	3	4	5
12	I wish to try out new working environment in the near future. 我希望在不久的將來嘗試新的工作環境	1	2	3	4	5
Job Security 就業保障						
13	I think my job is secure. 我認為我的工作安如泰山	1	2	3	4	5
14	The way my job provides a secure future. 在工作上提供有保障的前途	1	2	3	4	5
15	The way my job provides for steady environment. 工作所提供的穩定就業方式	1	2	3	4	5
16	The way layoffs and transfers are avoided in my job. 工作上能避免臨時被解僱和調動	1	2	3	4	5
Achievement 成就						
17	Being able to see the results of the work I do. 能夠看見工作的成果	1	2	3	4	5
18	Being able to take pride in a job well done. 能夠對自己好的表現感到自豪	1	2	3	4	5
19	Being able to do something worthwhile. 能做有意義的事情	1	2	3	4	5
20	The feeling of accomplishment I get from the job. 從工作上得到成就感	1	2	3	4	5

No.	Questions 題目	Strongly Disagree /Strongly Unsatisfied 非常不同意/不滿意				Strongly Agree/ Strongly Satisfied 非常同意/滿意
Working Condition 工作環境						
21	The working conditions of the job (e.g. air quality, construction site safety, PPE etc.) 工地環境（空氣質素，工地安全，個人安全設備，等...）	1	2	3	4	5
22	The physical surroundings of my job. 工地附近環境	1	2	3	4	5
23	The physical condition of the job. 工作環境	1	2	3	4	5
24	The pleasantness of the working conditions. 工作環境的氣氛	1	2	3	4	5
Meaningfulness of Work 工作意義						
25	The chance to do the kind of work that I do best. 在工作上可以有最佳表現的機會	1	2	3	4	5
26	The chance to do work that is well suited to my abilities. 讓我能力有所發揮的工作機會	1	2	3	4	5
27	The chance to make use of my best abilities. 有發揮能力的機會	1	2	3	4	5
28	The chance to do something that makes use of my abilities. 能夠使用我的能力做某事情的機會	1	2	3	4	5
Overall Job Satisfaction 總體工作滿意度						
29	I enjoy working on my current job. 我享受目前的工作	1	2	3	4	5
30	How would you rate your overall satisfaction of your job currently? 您如何評價您目前對工作的總體滿意度？	1	2	3	4	5
31	In general, how satisfied are you with your current job? 您總體上對工作滿意嗎？	1	2	3	4	5
32	I am happy with my current job. 我對目前的工作感到滿意	1	2	3	4	5

Completed 完成

Appendix 4- Formal Questionnaire

Job Satisfaction Questionnaire

Hello, I am a student studying in master of Business Administration at the University of Wales Trinity Saint David. I am now conducting a survey on job satisfaction of construction workers. This survey consists of 2 parts and takes approximately 10-15 minutes to complete. Please fill in the empty blanks or circle the response that is most representative to your experience. All information collected in this survey will be kept confidential and only for academic use. Thank you for participating in this survey and provide with valuable information.

你好，我是一名在 University of Wales Trinity Saint David 的研究生。我目前正在對建築工人的工作滿意度進行調查。這項調查分為兩部分，大約需要 10 到 15 分鐘完成。請填空或圈出最能代表您的經驗的答案。本調查收集的所有信息將被保密，僅供學術使用。感謝你參與此調查並提供珍貴的信息。

Part 1: Personal Information (Please fill in the blanks or tick your answers)

第 1 部分：個人信息（請填寫空白或選出答案）

Gender 性別	☐ M 男 ☐ F 女
Age Group 年齡	☐ 18-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ Above 60 60 以上
Education Level 最高教育程度	☐ Primary Level or below 小學程度或以下 ☐ Secondary Level 中學程度 ☐ Tertiary Level 大專程度
Average working days per week in the past 6 months 過去 6 個月每週的平均工作日	☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 5 ☐ 6 ☐ 7
Registration Category 註冊類別	☐ RGW : Registered General Worker 註冊普通工人 ☐ RSS: Registered Semi-skilled Worker 註冊半熟練技工 ☐ RSW : Registered Skilled Worker 註冊熟練技工
Monthly Personal Income (HKD) 個人每月收入(港元)	☐ <\$10,000 少於\$10,000 ☐ \$10,001 - \$20,000 ☐ \$20,001 - \$30,000 ☐ \$30,001 - \$40,000 ☐ >\$40,001 大於\$40,001

Part 2: Please indicate your level of agreement with each question regarding your job satisfaction. Please circle your answer.

第 2 部分：請標明您對每個有關工作滿意度的問題的同意程度。請圈出您的答案。

5 - Strongly Agree/ Strongly Satisfied 非常同意/非常滿意

4 - Slightly Agree/ Slightly Satisfied 同意/滿意

3 - Neutral 沒意見

2 - Slightly Disagree/ Slightly Unsatisfied 不同意/不滿意

1 - Strongly Disagree / Strongly Unsatisfied 非常不同意/非常不滿意

No.	Questions 題目	Strongly Disagree /Strongly Unsatisfied 非常不同意/不滿意				Strongly Agree/ Strongly Satisfied 非常同意/滿意
Salary 薪酬						
1	The amount of pay for the work I do. 我的薪酬	1	2	3	4	5
2	The chance to make as much money as my friends 能跟我朋友賺同樣多錢的機會	1	2	3	4	5
3	How my pay compares with that for similar jobs in other companies. 我的薪資與在其他公司相似工作的薪資比較	1	2	3	4	5
4	My pay and the amount of work I do. 我的薪水與工作量的比較	1	2	3	4	5
Growth and Advancement 成長與升遷						
5	The opportunities for advancement on this job. 這份工作的發展(晉升)機會	1	2	3	4	5
6	The chance of getting ahead on this job. 在工作上進展的機會	1	2	3	4	5
7	The way promotions are given out on this job. 工作上提起升級的方式	1	2	3	4	5
8	The chance of advancement on this job. 在這個工作進展的機會	1	2	3	4	5

No.	Questions 題目	Strongly Disagree /Strongly Unsatisfied 非常不同意/不滿意				Strongly Agree/ Strongly Satisfied 非常同意/滿意
Turnover Intention 離職意向						
9	How likely is it that you could find a job with another industry with about the same pay and benefits you now have? 您找到其他行業的工作並獲得與現在相同的薪水和福利的可能性有多大？	1	2	3	4	5
10	I will probably look for a new job in the next year. 我明年可能會找新工作	1	2	3	4	5
11	I often think about quitting 我經常想辭職	1	2	3	4	5
12	I wish to try out new working environment in the near future. 我希望在不久的將來嘗試新的工作環境	1	2	3	4	5
Job Security 就業保障						
13	I think my job is secure. 我認為我的工作安如泰山	1	2	3	4	5
14	The way my job provides a secure future. 在工作上提供有保障的前途	1	2	3	4	5
15	The way my job provides for steady environment. 工作所提供的穩定就業方式	1	2	3	4	5
16	The way layoffs and transfers are avoided in my job. 工作上能避免臨時被解僱和調動	1	2	3	4	5
Achievement 成就						
17	Being able to see the results of the work I do. 能夠看見工作的成果	1	2	3	4	5
18	Being able to take pride in a job well done. 能夠對自己好的表現感到自豪	1	2	3	4	5
19	Being able to do something worthwhile. 能做有意義的事情	1	2	3	4	5
20	The feeling of accomplishment I get from the job. 從工作上得到成就感	1	2	3	4	5

No.	Questions 題目	Strongly Disagree /Strongly Unsatisfied 非常不同意/不滿意				Strongly Agree/ Strongly Satisfied 非常同意/滿意
Working Condition 工作環境						
21	The working conditions of the job (e.g. air quality, construction site safety, PPE etc.) 工地環境（空氣質素，工地安全，個人安全設備，等...）	1	2	3	4	5
22	The physical surroundings of my job. 工地附近環境	1	2	3	4	5
23	The physical condition of the job. 工作環境	1	2	3	4	5
24	The pleasantness of the working conditions. 工作環境的氣氛	1	2	3	4	5
Meaningfulness of Work 工作意義						
25	The chance to do the kind of work that I do best. 在工作上可以有最佳表現的機會	1	2	3	4	5
26	The chance to do work that is well suited to my abilities. 讓我能力有所發揮的工作機會	1	2	3	4	5
27	The chance to make use of my best abilities. 有發揮能力的機會	1	2	3	4	5
28	The chance to do something that makes use of my abilities. 能夠使用我的能力做某事情的機會	1	2	3	4	5
Overall Job Satisfaction 總體工作滿意度						
29	I enjoy working on my current job. 我享受目前的工作	1	2	3	4	5
30	How would you rate your overall satisfaction of your job currently? 您如何評價您目前對工作的總體滿意度？	1	2	3	4	5
31	In general, how satisfied are you with your current job? 您總體上對工作滿意嗎？	1	2	3	4	5
32	I am happy with my current job. 我對目前的工作感到滿意	1	2	3	4	5

Completed 完成

Thank you for your participation! 感謝您的參與！

Appendix 5 – Five Groups of the Designated Workers

The “Designated Workers for Designated Skills” provision under the CWRO then requires workers to register oneself under the trade division one is skillful at. Only workers registered under the designated trade division are allowed to carry out the designated construction work at construction sites. Workers are divided into five groups based on the skill level and job experience of the workers. The groups are: Registered General Worker (RGW), Registered Semi-skilled Worker (RSS), Registered Semi-skilled Worker (Provisional) (RSS(P)), Registered Skilled Worker (RSW) and Registered Skilled Worker (Provisional) (RSW(P)). An RSW worker is a person with trade test certificate issued by approved organizations, while a RSW(P) is a person without the trade test certificate but with 6 years of experience in the particular trade. An RSS worker is a person with an intermediate trade certificate issued by approved organizations, while an RSS(P) is a person without the said intermediate trade certificate but with minimum two years of experience in the particular trade. Finally, a RGW is a worker who has passed the Mandatory Basic Safety Training Course for Construction Industry.

Appendix 6 - Calculation of Questionnaire Sample Size

$$N_0 = Z^2 pq / e^2$$

N_0 : No. of samples

Z: z-value of the desired Confidence Level = z value for 95% Confidence Level = 1.96

p: Estimated proportion of the population who is willing to participate in the questionnaire from the pilot test = 20%

q: $1 - p = 1 - 20\% = 80\%$

e: margin of error = 6%

$$N_0 = Z^2 pq / e^2 = (1.96)^2 (0.2) (0.8) / (0.06)^2 = 171$$

Appendix 7 - Notice of Candidature Form

EXAMINATION OF TAUGHT MASTER'S DEGREE DISSERTATION: NOTICE OF CANDIDATURE FORM	
Please complete this form when your dissertation is ready to be submitted for examination.	
Surname/Family Name _____ Li _____	Date of Birth _____ 23th June 1981 _____
Forenames (in full) _____ Yuen Ching Harriet _____	Title _____ Mrs _____
Institution Number (if known).....	
Title of Degree (eg MA, MSc, MBA etc)..... MBA _____	
Title of Taught Master's degree scheme followed (eg Equine Studies)	
Department/School in which study pursued _____ University of Wales Trinity Saint David _____	
Name of your Supervisor _____ Dr. Katherine Mo _____	
Full Title of dissertation submitted: <u>A Study of Job Satisfaction and Employee Turnover</u> <u>Intention Based on Herzberg's Two-Factor Theory in Hong Kong's Construction Industry</u>	
Please indicate that the following will all be submitted along with this form: ☒ two permanently bound copies of your dissertation plus 1 electronic copy submitted via Turnitin;	

SUBMISSION OF DISSERTATIONS

	<u>Final Dissertation submission</u>
	Dissertations to be submitted via Turnitin, together with 2 paper copies (Heat bound). Paper copies to be forwarded to : HKMAUWTSD MBA Secretariat Ms Lottie Fung Towngas Management Development Centre 16/F, Tower B, Southmark, 11Yip Hing Street, Wong Chuk Hang, Hong Kong

Appendix 8 – Declaration

Declaration/Statements page

DECLARATION

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Signed  (Candidate)

Date April 17th, 2020

I

STATEMENT 1

This work is the result of my own investigations, except where otherwise stated.

Other sources are acknowledged by footnotes giving explicit references. A bibliography is appended.

Signed  (Candidate)

Date April 17th, 2020

STATEMENT 2

I hereby give consent for my work, if accepted, to be available for photocopying and for inter-library loan, and for the title and summary to be made available to outside organisations.

Signed  (Candidate)

Date April 17th, 2020

Appendix 9 – The Ethics Form



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

PG2 / E1 FORM

SECTION C: External Ethical Guidance Materials

Please list the core ethical guidance documents that have been referred to during the completion of this form (including any discipline-specific codes of research ethics, and also any specific ethical guidance relating to the proposed methodology). Please tick to confirm that your research proposal adheres to these codes and guidelines.

- Research Ethics & Integrity Code of Practice	☒
	☐
	☐

SECTION D: External Collaborative Research Activity

Does the research activity involve collaborators outside of the University?	YES	☐	NO	☒
---	-----	--------------------------	----	-------------------------------------

If Yes, please provide the name of the external organisation and name and contact details for the main contact person:

Institution	
Contact person name	
Contact person e-mail address	

Where research activity is carried out in collaboration with an external organisation

Does this organisation have its own ethics approval system?	YES	☐	NO	☒
---	-----	--------------------------	----	-------------------------------------

If Yes, please attach a copy of any final approval (or interim approval) from the organisation

SECTION E: Details of Research Activity

Indicative title:	A Study in Hong Kong's Construction Industry on Job Satisfaction and Employee Retention with Herzberg's Two- Factor Theory		
Proposed start date:	25 th Nov, 2019	Proposed end date:	14 th Feb, 2020

Purpose of research activity (including aims and objectives)

Outline the purpose, aims and objectives of the research activity, including key research questions. Show briefly how existing research has informed the proposed activity and explain what the research activity will add and how it addresses an area of importance. (Maximum 300 words)

The research aim is to examine in what extent factors described in motivation-hygiene theory can affect employees' job satisfaction, and thus the employee retention in the construction industry carrying out qualitative and quantitative analysis.

(this box should expand as you type)

Proposed methods

Provide a brief summary of all the methods that may be used in the research activity, making it clear what specific techniques may be used. If methods other than those listed in this section are deemed appropriate later, additional ethical approval for those methods will be needed. (Maximum 600 words)

To collect the necessary data for performing the analysis, a triangular analysis will be adopted. Qualitative and quantitative data will be collected in both primary and secondary data. Primary data includes the focus group, a pilot test and questionnaires. It aims to collect direct feedbacks from employees in the construction industry.

(this box should expand as you type)



Location of research activity

Identify all locations where research activity will take place.

Office

(this box should expand as you type)

Research activity outside of the UK

If research activity will take place overseas, you are responsible for ensuring that local ethical considerations are complied with and that the relevant permissions are sought. Specify any local guidelines (e.g. from local professional associations/learned societies/universities) that exist and whether these involve any ethical stipulations beyond those usual in the UK (provide details of any licenses or permissions required). Also specify whether there are any specific ethical issues raised by the local context in which the research activity is taking place, for example, particular cultural sensitivities or vulnerabilities of participants.

No local ethical guideline in Hong Kong.

(this box should expand as you type)

SECTION F: Scope of Research Activity

Will the research activity include:	YES	NO
Use of a questionnaire or similar research instrument?	☒	☐
Use of interviews?	☒	☐
Use of diaries?	☐	☒
Participant observation with their knowledge?	☒	☐
Participant observation without their knowledge?	☐	☒
Use of video or audio recording?	☐	☒
Access to personal or confidential information without the participants' specific consent?	☐	☒
Administration of any questions, test stimuli, presentation that may be experienced as physically, mentally or emotionally harmful / offensive?	☐	☒
Performance of any acts which may cause embarrassment or affect self-esteem?	☐	☒
Investigation of participants involved in illegal activities?	☐	☒
Use of procedures that involve deception?	☐	☒
Administration of any substance, agent or placebo?	☐	☒
Working with live vertebrate animals?	☐	☒
Other primary data collection methods, please explain in this box	☒	☐

If NO to every question, then the research activity is (ethically) low risk and **may** be exempt from some of the following sections (please refer to Guidance Notes).

If YES to any question, then no research activity should be undertaken until full ethical approval has been obtained.



SECTION G: Intended Participants

Who are the intended participants:	YES	NO
Students or staff at the University?	☐	☒
Adults (over the age of 18 and competent to give consent)?	☒	☐
Vulnerable adults?	☐	☒
Children under 18?	☐	☒
Prisoners?	☐	☒
Young offenders?	☐	☒
Those who could be considered to have a particularly dependent relationship with the investigator or a gatekeeper?	☐	☒
People engaged in illegal activities?	☐	☒
Others (please identify):	☐	☒

Participant numbers and source

Provide an estimate of the expected number of participants. How will you identify participants and how will they be recruited?

(this box should expand as you type)

Information for participants:	YES	NO	N/A
Will you describe the main research procedures to participants in advance, so that they are informed about what to expect?	☒	☐	☐
Will you tell participants that their participation is voluntary?	☒	☐	☐
Will you obtain written consent for participation?	☒	☐	☐
Will you explain to participants that refusal to participate in the research will not affect their treatment or education (if relevant)?	☒	☐	☐
If the research is observational, will you ask participants for their consent to being observed?	☒	☐	☐
Will you tell participants that they may withdraw from the research at any time and for any reason?	☒	☐	☐
With questionnaires, will you give participants the option of omitting questions they do not want to answer?	☒	☐	☐
Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	☒	☐	☐
Will you debrief participants at the end of their participation, in a way appropriate to the type of research undertaken?	☒	☐	☐
If NO to any of above questions, please give an explanation			
(this box should expand as you type)			



Information for participants:	YES	NO	N/A
Will participants be paid?	☐	☒	☐
Is specialist electrical or other equipment to be used with participants?	☐	☒	☐
Are there any financial or other interests to the investigator or University arising from this study?	☐	☒	☐
Will the research activity involve deliberately misleading participants in any way, or the partial or full concealment of the specific study aims?	☐	☒	☐
If YES to any question, please provide full details			
(this box should expand as you type)			



SECTION H: Anticipated Risks

Outline any anticipated risks that may adversely affect any of the participants, the researchers and/or the University, and the steps that will be taken to address them. If you have completed a full risk assessment (for example as required by a laboratory, or external research collaborator) you may append that to this form. Full risk assessment completed and appended? Yes ☐ No ☒			
Risks to participants For example: emotional distress, financial disclosure, physical harm, transfer of personal data, sensitive organisational information (this box should expand as you type)			
If research activity may include sensitive, embarrassing or upsetting topics (e.g. sexual activity, drug use) or issues likely to disclose information requiring further action (e.g. criminal activity), give details of the procedures to deal with these issues, including any support/advice (e.g. helpline numbers) to be offered to participants. Note that where applicable, consent procedures should make it clear that if something potentially or actually illegal is discovered in the course of a project, it may need to be disclosed to the proper authorities (this box should expand as you type)			
Risks to investigator For example: personal safety, physical harm, emotional distress, risk of accusation of harm/impropriety, conflict of interest (this box should expand as you type)			
University/institutional risks For example: adverse publicity, financial loss, data protection (this box should expand as you type)			
Adverse outcomes List measures put in place to limit any adverse effects or outcomes of research activity where appropriate. Include any emergency protocols. (this box should expand as you type)			

Disclosure and Barring Service			
If the research activity involves children or vulnerable adults, a Disclosure and Barring Service (DBS) certificate must be obtained before any contact with such participants.	YES	NO	N/A
	☐	☒	☐
Has a DBS certificate been obtained?			



SECTION J: Data Protection and Storage

In completing this section refer to the University's Research Data Management Policy and the extensive resources on the University's Research Data Management web pages (<http://uwtsd.ac.uk/library/research-data-management/>).

	YES	NO
Does the research activity involve personal data (as defined by the Data Protection Act)? "personal data" means data which relate to a living individual who can be identified— (a) from those data, or (b) from those data and other information which is in the possession of, or is likely to come into the possession of, the data controller, and includes any expression of opinion about the individual and any indication of the intentions of the data controller or any other person in respect of the individual.	☒	☐

If YES, provide a description of the data and explain why this data needs to be collected:

(this box should expand as you type)

Does it involve sensitive personal data (as defined by the Data Protection Act)? "Sensitive personal data" means personal data consisting of information as to – (a) the racial or ethnic origin of the data subject, (b) his political opinions, (c) his religious beliefs or other beliefs of a similar nature, (d) whether he is a member of a trade union (within the meaning of the Trade Union and Labour Relations (Consolidation) Act 1992), (e) his physical or mental health or condition, (f) his sexual life, (g) the commission or alleged commission by him of any offence, or (h) any proceedings for any offence committed or alleged to have been committed by him, the disposal of such proceedings or the sentence of any court in such proceedings.	☒	☐
--	-------------------------------------	--------------------------

If YES, provide a description of the data and explain why this data needs to be collected:

(this box should expand as you type)

Will the research activity involve storing personal data on one of the following:	YES	NO
Manual files (i.e. in paper form)?	☒	☐
University computers?	☐	☒
Private company computers?	☒	☐
Home or other personal computers?	☒	☐
Laptop computers/ CDs/ Portable disk-drives/ memory sticks?	☒	☐
"Cloud" storage or websites?	☒	☐
Other – specify:	☐	☒

For all stored data, explain the measures in place to ensure data confidentiality, including details of password protection, encryption and anonymisation:

(this box should expand as you type)



Will the research activity involve any of the following activities:	YES	NO
Electronic transfer of data in any form?	☒	☐
Sharing of data with others at the University?	☐	☒
Sharing of data with other organisations?	☐	☒
Export of data outside the European Union or importing of data from outside the UK?	☐	☒
Use of personal addresses, postcodes, faxes, emails or telephone numbers?	☐	☒
Publication of data that might allow identification of individuals?	☐	☒
Use of data management system?	☒	☐
Data archiving?	☒	☐
If YES to any question, please provide full details, explaining how this will be conducted in accordance with the Data Protection Act (and/or any international equivalent):		
All the data collected will be used for the paper analysis only. No clues are given to expose the participant's information.		
(this box should expand as you type)		

List all who will have access to the data generated by the research activity:
My supervisor and myself.
(this box should expand as you type)
List who will have control of, and act as custodian(s) for, data generated by the research activity:
Only myself.
(this box should expand as you type)
Give details of data storage arrangements, including where data will be stored, how long for, and in what form. Will data be archived – if so how and if not why not.
Computer & USB
(this box should expand as you type)

SECTION K: Declaration

The information which I have provided is correct and complete to the best of my knowledge. I have attempted to identify any risks and issues related to the research activity and acknowledge my obligations and the rights of the participants.

In submitting this application I hereby confirm that I undertake to ensure that the above named research activity will meet the University's [Research Ethics and Integrity Code of Practice](#)

Signature of applicant:



Date: 10th Nov, 2019

For students:

Director of Studies/Supervisor:	Dr. Katherine Mo
Signature:	
Date:	15 Apr 2020

For staff:

Head of School/Assistant Dean:	
Signature:	
Date:	

Checklist: Please complete the checklist below to ensure that you have completed the form according to the guidelines and attached any required documentation:

This form is available electronically from the Academic Office web pages:

<http://www.uwtsd.ac.uk/academic-office/>

Application Process

All staff research projects and all research students must submit the Ethical Approval Form to the University Ethics Committee via the Academic Office (pgresearch@uwtsd.ac.uk). Staff research directly in relation to personal study for taught undergraduate or Masters programmes should be submitted via the Faculty procedures explained below.

Taught masters and taught undergraduate research Ethical Approval Forms are considered within Faculties. Faculties will provide details of the specific processes for this. Where the Ethical issues within any single ethical application are of particular concern the Faculty will refer these to the University Ethics Committee. Any student activity that involves the collection of primary data needs to undergo Ethical approval, this includes assignment work as well as dissertations.

Notes for guidance in completion of this form

Section A: About You

Please complete all relevant sections

Section B: Approval for research activity

Research proposals must be approved in principle before applying for Ethical Approval. The proposal approval only becomes final when the ethical approval is received.

The process for proposal approval varies according to the individual and programme of study:

- Research students, by application on form PG1 to the Research Degrees Committee
- Taught students by review of research proposal within Faculties (Faculties provide specific details of these processes)
- Staff, by agreement by the Head of School/Assistant Dean

Section C: External Ethical Guidance materials

Many discipline areas are required to operate with the discipline specific codes of research ethics (for example health, psychology, education etc.), any such codes must be listed and you must tick to confirm that you have consulted with these.

Section D: External Collaborative Research Activity

Provide details of the external collaborative partners, where appropriate you might want to submit a copy of the external collaboration agreement with the Ethical Approval Form. If the partner requires the research to be subject to its own internal Ethical approval process then please provide details of that process and a copy of any final (or interim) approvals received from the organisation.

Section E: Details of Research Activity

Remember that the individuals reviewing this Ethical Approval Form may not have seen your research proposal, and also may not be experts in the specific area of your research. The information provided should therefore be jargon free and clearly stated.

Indicative Title: please use the same title as used on the research proposal.

Purpose: the Ethical approval process will want to ensure that the methods you propose are adequate and appropriate to address the research aims and objectives. Excessive additional data collection can be seen as unethical.

Proposed Methods: the Ethical approval process seeks to ensure that you understand the methods that are intended, and that the implementation of those methods will be appropriate and without unnecessary impact on respondents. Please be specific.

Location: this needs to mention geographical location and also local situation (for example, within Local Authority Offices in Cardiff, using a private room but close to other individuals). If you are collecting data within an organisational setting then you need to explain the permissions that you have obtained to do this.

Research Activity outside of the UK: please complete this section in detail, and note any guidance you have received. Also describe your own familiarity (or not) with the location that you will be utilising.



Section F: Scope of Research Activity

Please tick ALL of the research activities that might be undertaken. If any additional types of activity are intended then please add an extra box and describe these.

If you have answered no to all questions in F then sections G and J do not need to be completed. Section H should be considered, and may be completed. Signatures are still required in section K.

Section G: Intended Participants

Please tick all categories that might apply.

Numbers & Source: if you are using a series of different methods or research activities please list numbers for each stage/phase. Be clear about how you will find respondents. Will you use intermediaries, and if so how? How will you ensure compliance with your sampling strategy?

Information for participants: all participants should be appropriately informed about the research, what is expected of them and what will happen to the information that they provide. The Ethical review process does not ask to see this documentation, but requires this to be reviewed and approved by the Director of Studies in the case of research students, the supervisor/module tutor in relation to students on taught programmes and the Head of School/Assistant Dean in relation to staff research.

Section H: Anticipate Risks

All research carries some level of risk. The answers you provide to questions in this section will be reviewed to ensure that you have an appropriate understanding of the type of risks involved and how you can mitigate against these risks. If you have completed a full risk assessment, as required for example for laboratory work, field work, clinical tests, diving operations, or by a collaborative partner, you may append that to this form. In that case, please tick the box indicating this has been provided. You will not then be required to complete Section H.

Risk to participants Think very carefully about how your actions/questions/discussions might affect the people you are involving as participants. You might identify the risk as small but it would still be a risk. Many types of question have the potential to make respondents less content with their life / job; you need to recognise and try to ameliorate any such effects

If these are business owners, time with you may reduce profit.

In some locations physical risk is very real to both participants and yourself, please consider this.

Risk to you, the researcher Think about where you will meet people, if there are any dangers involved in the location. If you are meeting people as individuals think about using a public place. In general do not visit people in their own homes or remote locations. If you are talking to individuals about certain issues think about how their responses might affect you emotionally. What about the risk of collecting insufficient data?

Risk to the University When undertaking your research, you are acting as a member of the University (student or staff). Professionalism is important, so it is important to be well organised and well prepared. Punctuality, clarity etc. are all part of this. What will you do to ensure this? You must ensure you do not harm the good name of the University in any way and do nothing to undermine the reputation of the research it conducts and sponsors. Upholding high standards of conduct and integrity are vital in this regard. You must also conduct the research in such a way to minimise the potential for claims of negligence made against the University, its researchers and any collaborating individual or organisation. In this respect you should always comply with ethical, legal and professional frameworks, obligations and standards as required by statutory and regulatory authorities, as well as the university's Research Integrity and Ethics Code of Practice. Research misconduct in this respect can take many forms, including:

- fabrication: making up results or other outputs (eg, artefacts) and presenting them as if they were real
- falsification: manipulating research processes or changing or omitting data without good cause
- plagiarism: using other people's material without giving proper credit
- failure to meet ethical, legal and professional obligations: for example failure to declare competing interests; misrepresentation of involvement or authorship; misrepresentation of interests; breach of confidentiality; lack of informed consent; misuse of personal data; and abuse of research subjects or material
- improper dealing with allegations of misconduct: failing to address possible infringements such as attempts to cover up misconduct and reprisals against whistle-blowers

Adverse Outcomes. Think carefully about the possibilities, and cover here

Section I: Feedback, Consent and Confidentiality

Feedback to participants: outline your approach. Will interview transcripts be shared with respondents to check accuracy? Will summaries of questionnaire analysis be made available to respondents in some way? Will an overview report be provided? How and when?

Informed consent: Draft letter / e-mail / or heading (or footer) section of questionnaire must be approved by DoS/supervisor (if research student), supervisor/module tutor if taught student, or Head of School / Assistant Dean if a member of staff.



Confidentiality/Anonymity. Explain clearly how you will ensure confidentiality and anonymity.

Section J: Data Protection and Storage

Before completing this section it is necessary to read the University's Research Data Management information. The questions that follow are designed to ensure compliance with the Data Protection Act as well as established research protocols.

Many research activities will involve electronic transfer of data and use of data management systems in the summarisation and analysis of data. You will need to explain these in relation to compliance with the Data Protection Act.

Think carefully about who will have access to your data, this will include supervisors and examiners. Also that a thesis will be made available via the University library and the British Library system. If you are seeking an access bar for a period of time after completion then mention it here. If you will provide a copy of your findings, or intend to give a presentation, to a facilitating/ supporting/accessing organisation then explain that in this section. But also think about the general principle of data sharing, as explained in the Research Data Management information.

In terms of storage of data please ensure security, and also mitigate against loss of data.

Section K: Declaration

Ensure the appropriate countersignatures have been provided

Look carefully at the checklist and ensure that you comply with and tick all that are relevant to your research.

Appendix 10 – Dissertation Proposal



October 2018 PG1 Full Research Proposal

Handout 1 PG1 - FULL RESEARCH PROPOSAL

This form is to be completed by both the student and supervisory team within **THREE** months for full time students and **SIX** months for part time students, after the commencement of the research degree or Part Two. Return the completed form to the Academic Office. The Academic Quality Handbook contains the academic regulations relating to Research Degrees (Chapter 8) <http://www.uwtsd.ac.uk/academic-office/academic-quality-handbook/>
Academic Office, University of Wales Trinity Saint David, Carmarthen, SA31 3EP
Tel: 44 (0)1267 676785 Email: pgresearch@uwtsd.ac.uk

This form is to be completed by both the student and supervisory team within **THREE** months for full time students and **SIX** months for part time students, after the commencement of the research degree or Part Two. Return the completed form to the Academic Office. The Academic Quality Handbook contains the academic regulations relating to Research Degrees (Chapter 8) <http://www.uwtsd.ac.uk/academic-office/academic-quality-handbook/>

Academic Office, University of Wales Trinity Saint David, Carmarthen, SA31 3EP
Tel: 44 (0)1267 676785 Email: pgresearch@uwtsd.ac.uk

Student Details

Institution/Centre of Study:	Hong Kong Management Association
Student Family / Surname:	Li
Student Given / First name:	Yuen Ching Harriet
Student Number:	1812208
Faculty and School:	Faculty of Business and Management
Are you a Member of Staff at UWTSD?	YES ☐ NO ☒
Are you an International student currently on a Tier 4 visa?	YES ☐ NO ☒
Start Date: Nov 2018	End Date: Apr 2020
Mode of Study:	Part time ☒ Full time ☐

Proposed Topic: A Study in Hong Kong's Construction Industry on
Job Satisfaction and Employee Turnover Intention with Herzberg's
Two- Factor Theory

1. Introduction

1.1. Research Background

Construction industry is one of the main sectors in Hong Kong, with currently 475,000 registered construction workers. This sector is long considered to be manual labor and has been facing labor shortage for many years. Efforts have been made in recent decades to improve the current situation. In 2007, the Construction Industry Council is set up, aiming to align opinions in the industry, and provide suggestions to the government for the long-term development and strategies. In 2017, the Hong Kong Institute of Construction is setup by the Construction Industry Council to provide full time program to develop young talent. However, according to the research done on April 2019 by the Hong Kong Construction Association, there is a labor shortage of 6% on a random day (Hong Kong Construction Association, 2019). To understand the reason of labor shortage, this paper will study the job satisfaction in construction industry and how it affects employee retention.

The connection between job satisfaction and employee retention is positive correlated (Chatzoglou et al. 2011). Understanding the factors that affect the employees' job satisfaction is one of the ways to evaluate the human resources strategies in the modern society. This paper takes the construction industry of Hong Kong, as a case study to investigate the employee retention in from Herzberg's motivation-hygiene theory. The paper carries out a quantitative research towards 200 nos. of workers in the industry. And a focus group to further study the factors affecting the candidate's job satisfaction. Multiple linear regressions are used to study the relationships among job satisfaction factor and workers' willingness to stay in the industry. Among the traditional motivators and hygiene factors

proposed by Herzberg (1959), this paper selected six factors which are considered as highly correlated to job satisfaction. By evaluating the regression, the paper aims to find out the concrete relationship between job satisfaction and employee retention. As resources are limited, a review of resources allocation is of importance. Eventually the paper gives recommendations on strategies towards employee retention by allocating the human resources and emphasis on the significant factors that positively affect the employee retention.

1.2. Research Motives

The construction industry in Hong Kong is facing labor shortage as there are very few young generations joining the industry. Among the 457,000 registered construction workers under Construction Industry Council in Hong Kong, only about 70,000 are under the age of 30 (Hong Kong Construction Association, 2019). The age structure in the industry means the labor supply in the industry is unsustainable in the coming future. With more than half of the registered workers are above 50 years old, the industry is at a very severe stage of labor shortage.

1.3. Research Problems

- a) What factors can attract more young workers to enter the construction industry?
- b) What factors has to be improved so that to attract more workers to join such industry?
- c) How the employer shall retain the construction worker?

1.4. Research Aim and Objectives

1.4.1. Research Aim

The research aim is to examine in what extend factors described in motivation-hygiene theory can affect employees' job satisfaction, and thus to reduce the employee turnover intention in the construction industry in Hong Kong.

1.4.2. Research Objectives

This paper will be divided into 5 chapters which are the research background, literature review, research methodology, data analysis and then conclusion. The paper will first study relevant research on the elements leading to job satisfaction and employee retention.

And then triangulation method will be used to collect both quantitative and qualitative data to perform a multiple linear regression to study to correlation between the elements and job satisfaction, and employee retention. The triangulation method will first start with a focus group to collect feedback and opinions from the current workers. And follow by a survey to collect data from a larger sample. A pilot test will be setup before rolling out the survey.

Based on the results, the paper identifies the importance of the motivators and hygiene elements which affect employees' job satisfaction. Further study on the correlation between job satisfaction and the willingness of the employees to stay in the industry will be provided to the employer in order to reduce the turnover intention and thus increased the company productivity.

Finally, data analysis and conclusion will be held which are to conclude the findings and provide relevant recommendations.

1.5. Research Timeline

The different tasks of the paper would be completed according to the following timetable:

Table 1: Research Timeline

#	Tasks	2019		2020			
		Nov	Dec	Jan	Feb	Mar	Apr
A	Complete research proposal						
B	1st half of dissertation						
	1. Introduction						
	2. Literature review						
	3. Methodology						
C	Focus group preparation						
	1. Design questions to be discussed						
	2. Divide employees in from the company into groups						
	3. Invite an employee from each group						
D	Focus group meeting						
E	Questionnaire design						
	1. Questionnaire Design						
	2. Conducting the Pilot Test						
	3. Modify the questionnaire based on the Pilot Test						
F	Distributing questionnaire to employees						
G	Data analysis using SPSS statistics						
H	2nd half of dissertation						
	1. Data analysis						
	2. Discussion, conclusions and recommendations						
I	Finalize the dissertation						

(Source: Created by the Author)

2. Literature Review

2.1. Herzberg's Theory

In 1959, Herzberg first worked on research on the two-factor theory, namely, motivation-hygiene theory. Motivators are 6 factors affecting employees' job satisfaction: achievement, recognition, interesting work, increased responsibility, growth and advancement (Lindsay, Marks & Gorlow, 1967). While 7 hygiene factors that could prevent job dissatisfaction: they consist of company policy, supervision, interpersonal relationship, work condition, salary, status and security. (Lindsay, Marks & Gorlow, 1967).

2.2. Job Satisfaction

Job satisfaction is the degree of employee's contentedness with the job. They like the job or specific facets of jobs, for instance the nature of work. (Spector, 1997) It can be measured in cognitive, emotional and behavioural components. (Hulin and Judge, 2003).

2.3. Turnover Intention

Job satisfaction is negatively related to turnover intention. Mael & Ashforth (1995) pointed out four factors that made a person decide whether to stay or to leave an organization; the four factors were whether a person suitable for a firm's lifestyle, whether a firm's culture matches with one's values, whether one could feel a sense of belonging attaching to the firm and whether a firm gave personal inspiration and a sense of achievement. The relationship in the firm with co-workers was discussed that was an

important factor that affect the turnover intention of an employee (Abrams et al. 1998). The better the relationship is, the lower intention the turnover would be.

2.4. Salary

Salary is treated as a form of compensation from a company to the workers who contribute time and labour skills as well as knowledge. Many empirical studies have been done and concluded that the relationship between salary and job satisfaction is positive. The different pay packages mechanism can positively affect one's job satisfaction (Muhammad et al. 2011). Peiró, Agut & Grau (2010) also supported that the higher salary could make one feel less deprived, meaning that the employees feel well-paid for the job duties.

2.5. Job Security

Job security is a sense of whether the employee feels the job is insecure or could be terminated without one's consent. It is positively related to job satisfaction. Some hypothesis said knowledgeable workers, comparing to workers who lack of knowledge, shall give a relatively smaller effect of job security because the workers shall switch to another job easily. However, Wilczyńska, Batorski & Sellens (2016) conducted a research on job flexibility and security and concluded that the job satisfaction of knowledge staff and other workers are strongly determined by job security.

2.6. Working Condition

A satisfactified working condition is of importance in construction industry that its work injury recorded the highest, comparing to the other industries, according to Occupational

3. Research Methodology

This research will make use of the triangulation, which is considered as a method to establish validity to the research through using different sources of data and information (Guion, 2002). By using triangulation of data, data are compared to look for similarities in order to improve reliability and validity (Weyers, Strydom & Huisamen, 2008). In this paper, both primary and secondary data, both qualitative and quantitative data will be collected.

3.1. Research Model and the Hypothesis

The research framework and relationships being hypothesized are shown in below figure:

Figure 1: The Research Framework and Hypothesis Testing



H1 - Job Satisfaction is positively correlated with Salary

H2 - Job Satisfaction is positively correlated with Job Security

H3 - Job Satisfaction is positively correlated with Working Condition

H4 - Job Satisfaction is positively correlated with Growth and Advancement

H5 - Job Satisfaction is positively correlated with Achievement

H6 - Job Satisfaction is positively correlated with Meaningfulness of Work

H7 - Turnover Intention is negatively correlated with Job Satisfaction

(Source: Created by the Author)

3.2.Data Collection

To collect the necessary data for performing the analysis, a triangular analysis will be adopted. Qualitative and quantitative data will be collected in both primary and secondary data.

3.2.1. Secondary Data

Secondary data includes statistical data from The Hong Kong Census and Statistics Department and Construction Industry Council, where the employment data of the construction industry in Hong Kong are available. Furthermore, research papers which similar factors are being tested to research on the correlation with job satisfaction.

3.2.2. Primary Data

Primary data includes the focus group, a pilot test and questionnaires. It aims to collect direct feedbacks from employees in the industry. The process of collecting primary data is as follows,

Figure 2: Primary Data Collection Process



(Source: Created by the Author)

3.2.2.1. Focus Group

A focus group will be setup in order to learn the elements that affecting the job satisfaction. Target participants of this focus group are construction

workers under the age of 30. The focus group will be setup with stratified sampling. A focus group with 6 construction workers will be arranged to discuss the factors listed in above literature review and to validate if the factors play significant role when they consider if they are satisfied with their job.

3.2.2.2. Questionnaire Design

Questionnaire will be distributed to construction workers to study their job satisfaction and how the factors correlated to job satisfaction. The questions will be provided in bilingual (Chinese and English).

Table 2: Questions Formation by 5-level Likert Scale

Factors	Data Type	Source of Questions
Salary	5-level Likert Scale	Job Satisfaction Survey (Spector, 1955)
Working Condition		
Growth and advancement		
Achievement		
Meaningfulness of Work		
Job Security		The Job Insecurity Scale (Elst, Witte and Cuyper, 2014)
Turnover Intention		Michigan Organizational Assessment Questionnaire-intention to turnover scale (Camann, Nadler & Jenkins, 1975)
Personal Information		

(Source: Created by the Author)

3.2.2.3. Pilot Test

Pilot test is the tool to test the feasibility of the research methodology and allow the amendment to be made before conducting the questionnaires with the sample audience. It also helps to find flaws in the research methods and helped to provide insights to implement the survey with better understanding (Hassan, Schattner & Mazza, 2006). As this paper's target sample size is 196, the pilot test is decided to run at 10% of the target sample size, which is 20.

3.2.2.4. Target Population, Sample Size and Sampling Method

The sample for this study is construction workers under the age of 30. The target population is 70,000 in Hong Kong (Hong Kong Construction Association, 2019). Thus, data will be collected through distributing questionnaires to the workers online.

Cochran's sample size formula (Cochran, 1977) is used:

$$N_0 = Z^2 p q / e^2$$

N_0 : No. of samples

Z : z-value of the desired Confidence Interval

P : Estimated proportion of the population with attributes in the question

Q : $1-p$

E : margin of error

The sample size for this research is about 200 (Appendix 1). And the sampling method is through the snowball sample, which allows the

candidates to refer and recommend more useful candidate to participate in the survey (Marshall, 1996).

3.3. Data Analysis

The survey data collected will be performed a multiple linear regression (Bremer, 2012) in SPSS to test if the hypothesis is true and statistically significant (t-test). And followed by analysis on the Coefficient of Multiple Determination (R^2) to determine how close can the above regression model fit the data.

3.3.1. Descriptive Statistics

Descriptive statistics are general descriptive coefficients which summarizing the study's data set into a meaningful way. It measures variability (i.e. standard deviation, variance) and central tendency (mean, median, & mode). (Kenton, 2019)

3.3.2. Multiple Linear Regression

From the above research objective, to study the correlation between the six elements and job satisfaction and also the correlation between turnover intention and job satisfaction, following model is developed and null hypothesis are setup to verify the model.

$$\text{Job Satisfaction} = \beta_0 + \beta_1(\text{salary}) + \beta_2(\text{Job Security}) + \beta_3(\text{Working Condition}) + \beta_4(\text{Growth and Advancement}) + \beta_5(\text{Achievement}) + \beta_6(\text{Meaningfulness of Work}) + \varepsilon_1$$

$$H_0: \beta_j = 0$$

$$H_1: \beta_j \neq 0$$

$$\text{Turnover Intention} = \varphi_0 + \varphi_1(\text{Job Satisfaction}) + \varepsilon_2$$

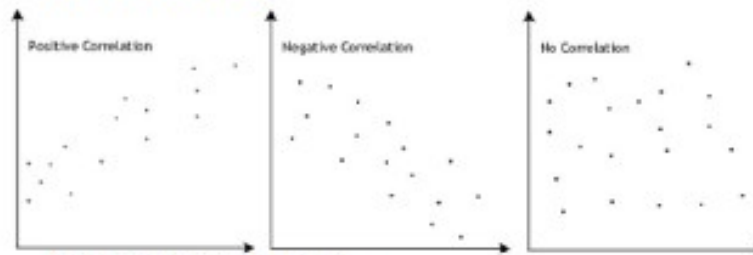
$$H_2: \varphi_j = 0$$

$$H_3: \varphi_j \neq 0$$

3.3.3. Correlation Test

Correlation is a statistic description that measures the strength or relationship between two variables. In terms of the strength of relationship, the correlation coefficient (symbol = r) range varies between +1 to -1. The value of +1 means perfect positive relationship while -1 means perfect negative relationship. If the value of coefficient goes towards 0, it refers no relationship exists between the two variables. (Lund and Lund, 2018)

Figure 3: Correlation



(Source: Lund and Lund, 2018)

3.3.4. Reliability Test

Reliability assessment will be conducted with each factor in the questionnaire survey in this research. Cronbach's alpha is a form of reliability known as internal consistency and it will be used in assessing the reliability level of the measures in the survey (Tavakol and Dennick, 2011). According to Tavakol and Dennick (2011), the general acceptable values of alpha is ranging between 0.70 and 0.95.

3.4. Research Limitation

The sample size may consider to be too small, due to limited time and resources to perform a large scale of sample, as there are 457,000 registered construction workers in the Hong Kong and 70,000 of them under the age of 30 (Hong Kong Construction Association, 2019). Furthermore, there may also be much more factors affecting the job satisfaction and intention to turnover of the construction workers, which are not included due to the limited length of the paper.

3.5. Further Research

In the latter part in this paper, solid insights and recommendations on allocation of human resources are covered. Apart from that, more discussion on the function of human resources in construction industry is put forward to arise more possible studies focusing on improving the supply of workers in the future.

4. Introductory Bibliography

Abrams, D., et al. (1998) 'Psychological attachment to the group: Cross-cultural differences in organizational identification and subjective norms as predictors of workers' turnover intentions', *Personality and Social Psychology Bulletin*, 24 (10), pp. 1027-39. ISSN 0146-1672.

Allan, B., et al. (2018) 'Meaningful work and mental health', *Job satisfaction as a moderator. Journal of Mental Health*, 27(1), pp. 38-44.

Avery, R., Smillie, L. and Fife-Schaw, C. (2015) 'Employee achievement orientations and personality as predictors of job satisfaction facets', *Personality and Individual Differences*, 76, pp. 56-61.

Bassett-Jones, N. and Lloyd, G.C. (2005) 'Does Herzberg's motivation theory have staying power?', *The Journal of Management Development*, 24(10), pp. 929-943.

Bremer, M. (2012) *Multiple Linear Regression*. Available at:
<http://mezevlab.cb.bscb.cornell.edu/labmembers/documents/supplement%20%20-%20multiple%20regression.pdf> (Accessed: 8 November 2019).

Cannmann, C. et al. (1983) *Michigan Organizational Assessment Questionnaire. Assessing organizational change: A guide to methods, measures, and practices*. New York: Wiley-Interscience.

Chatzoglou, P. et al. (2011) *Factors Affecting Accountants' Job Satisfaction and Turnover Intentions: A Structural Equation Model*. Greece: Democritus University of Thrace

Cochran, W.G. (1977) *Sampling Techniques*. 3rd Edition, John Wiley & Sons, New York.

Construction Industry Council (2019) *About CIC*. Available at:
<http://www.cic.hk/eng/main/aboutcic/> (Accessed: 8 November 2019)

- Coster, E. (1992) 'The perceived quality of working life and job facet satisfaction'. *SA Journal of Industrial Psychology*, 18(2), pp. 6-9. DOI: <https://doi.org/10.4102/sajip.v18i2.540>.
- Duoto, M. (2003) *Factors influencing job satisfaction of repatriated managers*.
- Graen, G. B. (1966) 'Addendum To: An Empirical Test of The Herzberg Two-Factor Theory', *Journal of Applied Psychology*, 50(6), pp. 551-555.
- Guion, L. (2002) *Triangulation: Establishing the Validity of Qualitative Studies*. Florida: Institute of Food and Agricultural Sciences.
- Halpern, G. (1966) 'Relative Contributions Of Motivator And Hygiene Factors To Overall Job Satisfaction', *Journal of Applied Psychology*, 50(3), pp. 198-200.
- Hassan, Z.A., Schattner, P. and Mazza, D. (2006) 'Doing A Pilot Study: Why Is It Essential?', *Malaysian family physician : the official journal of the Academy of Family Physicians of Malaysia*, 1(2-3), pp. 70-73.
- Hong Kong Construction Association (2019) *HKCA's Press Release on The Survey Result of the Labour Shortage in Construction Industry (April 2019)*. Available at: <https://s3.ap-southeast-1.amazonaws.com/hkca.com.hk/upload/doc/press-release/e83816176fad3f36c0600802807254ef-84lgU.pdf> (Accessed: 8 November 2019)
- Hulin, C.L. and Judge, T.A. (2003). 'Job Attitudes', *Handbook of psychology: Industrial and organizational psychology*, pp. 255-276. DOI: 10.1002/0471264385
- Kenton, W. (2019) *Descriptive Statistics*. Available at: https://www.investopedia.com/terms/d/descriptive_statistics.asp (Accessed: 8 November, 2019)

Kinman, G., Clements, A.J. and Hart, J. (2016) 'Work-related wellbeing in UK prison officers: A benchmarking approach', *International Journal of Workplace Health Management*, 9(3), pp. 290-307. DOI: 10.1108/IJWHM-09-2015-0054

Knoop, R. (1994) 'Work values and job satisfaction', *The Journal of Psychology*, 128(6), pp. 683. DOI:10.1080/00223980.1994.9921297

Lindsay, C., Marks, E., and Gorlow, L. (1967) 'The Herzberg Theory: A Critique And Reformulation', *Journal of Applied Psychology*, 51(4), pp. 330-339.

Lund, A. and Lund, M. (2018) *Pearson's Correlation using Stat*. Available at: <https://statistics.laerd.com/stata-tutorials/pearsons-correlation-using-stata.php> (Accessed: 8 November, 2019)

Mael, F. A., & Ashforth, B. E. (1995). Loyal from day one: Biodata, organizational identification, and turnover among newcomers. *Personnel Psychology*, 48(2), 309. Retrieved from <https://search-proquest-com.ezproxy.eduhk.hk/docview/220137185?accountid=11441>

Magras, L.S.D. (2018) 'The relationship between diversity and inclusion and employee job satisfaction'.

Marshall, M. (1996) 'Sampling for qualitative research', *Family Practice*, 13(6) pp. 522-526. DOI: <https://doi.org/10.1093/fampra/13.6.522>

Moyes, G. D., & Redd, T. C. (2008). Empirical Analysis Of Factors Influencing The Level Of Job Satisfaction Of Caucasian And Hispanic Accounting Professionals. *International Business & Economics Research Journal (IBER)*, 7(10). <https://doi.org/10.19030/iber.v7i10.3298>

- Muhammad, S.C. et al. (2011) 'Exploring the relationship between salary satisfaction and job satisfaction: A comparison of public and private sector organizations', *The Journal of Commerce*, 3(4), pp. 1-14.
- Ondrack, D.A. (1974) 'Defense mechanisms and the herzburg theory: An alternate test', *Academy of Management Journal (Pre-1986)*, 17(1), pp. 79.
- Peiró, J., Agut, S., and Grau, R. (2010) 'The Relationship Between Overeducation and Job Satisfaction Among Young Spanish Workers: The Role of Salary, Contract of Employment, and Work Experience', *Journal of Applied Social Psychology*, 40(3), pp. 666-689.
- Ruthankoon, R. and Ogunlana, O.S. (2003) 'Testing Herzberg's two-factor theory in the Thai construction industry', *Engineering, Construction and Architectural Management*, 10(5), pp. 333-341.
- Spector, P.E. (1997). 'Job Satisfaction: Application, Assessment, Causes and Consequences', *Thousand Oaks, CA: SAGE*.
- Tavakol, M and Dennick, R. (2011) 'Making sense of Cronbach's alpha', *International Journal of Medical Education*, pp. 53-55, DOI: 10.5116/ijme.4dfb.8dfd.
- Wilczyńska, A., Batorski, D., and Sellens, J. (2016) 'Employment Flexibility and Job Security as Determinants of Job Satisfaction: The Case of Polish Knowledge Workers', *Social Indicators Research*, 126(2), pp. 633-656.
- Elst, V.T., Witte, H.D. and Cuyper, N.D. (2014) 'The Job Insecurity Scale: A psychometric evaluation across five European countries', *European Journal of Work and Organizational Psychology*, 23(3), pp. 364-380.

5. Appendix

Appendix 1:

Cochran's sample size formula (Cochran, 1977) is used:

$$N_0 = Z^2 p q / e^2$$

N_0 : No. of samples

Z: z-value of the desired Confidence Interval = z value for 95% Confidence Interval = 1.96

P: Estimated proportion of the population with attributes in the question = 50%

Q: $1-p = 1-50\% = 50\%$

E: margin of error = 7%

$N_0 = Z^2 pq / e^2 = (1.96)^2 (0.5) (0.5) / (0.07)^2 = 196$ samples are needed.