INVESTIGATE THE EFFECT OF QUALITY OF WORK-LIFE ON CONSTRUCTION CRAFT WORKERS' JOB SATISFACTION

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Abstract: a shortage in skilled construction workers is the greatest challenge the U.S. construction industry facing in this era. This shortage would create a substantial risk to the competitiveness of the U.S. construction industry. Since the research in different disciplines identified job satisfaction as a major element that influenced employee's performance and retention, this thesis investigates the relationship between job satisfaction and quality of work-life factors from construction craft workers' perception. The study used Quality of Work-Life questionnaire module (QWL) from the General Social Survey (GSS) as a source of data. The data were collected from the years 2002 to 2014. Thirty-four out of seventy-eight QWL items had significant ($p < 0.05$) correlation with the overall level of job satisfaction of construction craft workers. The underlying structure of these 34 items significantly correlated with job satisfaction was tested by using Exploratory Factor Analysis. Five latent factors were identified that had an influence on the underlying structure of these 34 items. These five factors were safety priory and organizational effectiveness, fair rewards system, resource adequacy, physical and mental health, and job tenure. Identification of the relative impact of these latent factors on construction craft workers' job satisfaction was the last step of the present study. This study helps companies in the construction industry create policies and practices inside their organizations that will lead to an increased job satisfaction of their employees by providing better QWL for them.

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CHAPTER I

INTRODUCTION

1.1 Background

Despite the construction industry innovations in the past few decades such as advanced equipment, material technologies and modularized components, the construction industry still highly depends on a labor workforce which is considered a keystone in this type of business. With approximately 6.4 million people employed in this industry in 2015 (U.S. Bureau of Labor Statistics), the construction industry is considered one of the largest industrial employers in the United States. Those workers' performance and productivity determine the longevity and competitiveness of construction companies. Construction companies should have a strategic plan to maintain their workforce since craft workers are the actual executers of the jobs on projects.

The U.S. construction industry is currently facing a shortage in craft workers (Shan 2010). A survey conducted by the National Association of Home Builders in June 2015 shows that the shortage in construction workers which was already quite widespread has been increasing for the past year (Emrath 2015). The first reason for this shortage is the last two downturns in the U.S. economy which pushed many workers to leave the field. Secondly, people still find the construction industry undesirable because of high job intensity, dangerous and dirty working environment, and ambiguous career paths. Lastly, baby boomers who could be an essential component for training the next generation are retiring while fewer skilled laborers are entering the field.

Compared to other industries, the construction labor workforce has also encountered relatively higher absenteeism and turnover (Shan 2010). Absenteeism has been recognized as a significant factor in productivity loss. In their reviewing of electrical construction projects, Hanna et al. (2005) revealed that productivity was lowered by 24.4% when the absence rate on a job site was between 6 and 10%, whereas productivity increased by 3.8% when the absence rate was between 0 and 5%. Turnover on other hand is an aspect of any organization, but its effect on the construction industry is slightly higher. Turnover can be another exasperating cause for the shrinkage of the skilled workforce pool.

Some actions should be carried out in order to face these challenges. One solution is increasing job satisfaction for construction workers. These workers would be more productive and willing to stay in their careers for a longer period of time if they felt satisfaction in their jobs. It will also improve the recruitment of a new generation of construction laborers.

1.2 Problem of statement

Job satisfaction and its contribution to worker motivation and productivity has been considered a significant topic of research in the construction industry since 1970. Borcherding (1974) used the Two-factor Theory of job satisfaction known as, "Herzberg's motivation-hygiene theory", in order to examine satisfaction and dissatisfaction of construction workers. Maloney and McFillen (1985) studied the motivation and job satisfaction of construction laborers using the expectancy theory of motivation. Birkland et al. (1996) examined the characteristics of labor in the construction industry. Goodrum (2003) tested the change of U.S. construction labor satisfaction through the 1970s, 1980s, and 1990s, and he also examined some factors that could impact job satisfaction of construction workers such as importance of income, work hours, job security, opportunity for advancement, and job importance and accomplishment over the same time period. Despite the importance of these research studies to indicate the factors that play

major roles in construction worker satisfaction, no attempt has been made to study quality of work life factors and their essential connection with job satisfaction of construction workers.

Walton (1974) pointed out eight conceptual categories that represent quality of work life needs for workers. These conceptual categories are 1) Adequacy and fair compensation, 2) Safe and healthy working environment, 3) Opportunity to use and develop creativity,4) Growth and security, 5) Work and its effect on life span, 6) Constitutionalism, 7) Social integration , and 8) Social relevance.

Empirical investigation into the relationships between construction workers quality of work-life and their job satisfaction is a crucial point since it will help us understand how the construction workforce is able to fulfill its important individual requirements while employed by a firm. It is also obvious that quality of work-life is important for construction employees' satisfaction, and it will help the construction companies create the environment that encourages laborers commitment, and retention, increased labor productivity, enhanced teamwork and communication, improved morale, and reduced negativity from organizational stress (Srivastava and Kanpur 2014)

1.3 Objectives

The aim of this study is to help companies in the construction industry create policies and practices inside their organizations that lead to increased job satisfaction of their employees by providing better quality of work life. The specific objectives that lead to this achievement are:

1. Determining Quality of Work-Life (QWL) items that affect job satisfaction within the construction industry.
2. Discovering underlying structure of latent factors for the items that are already determined in first objective; and
3. Prioritizing the QWL latent factors in terms of their impact on construction craft workers' job

satisfaction.

1.4 Scope

In order to achieve the main objectives mentioned above, this paper used the General Social Survey Data and Quality of Work-life Questionnaire (QWL). Added to GSS in 2002, the QWL is conducted by the National Opinion Research Center (Grosch et al. 2006). Appendix (1) contains the full Module of QWL and its questions. Seventy nine QWL items from 2002 to 2014 were used in this research**.**

1.5 Thesis structure

This thesis consists of five mainly parts. Chapter one presents an introduction of the research, problem of statement, objectives of this study, and scope of work. Chapter two discusses some past studies conducted to examine job satisfaction inside the U.S. construction industry, the definition of job satisfaction and QWL, and why job satisfaction is important. Chapter three describes the research methodology, data source, target respondents, and statistical techniques used to analyze the data. Chapter four shows the results of a correlation analysis between the QWL questions module and job satisfaction of construction craft workers; the results of Exploratory Factor Analysis that include the underlying dimensional relationships associated with questions discovered in the correlation analysis; and the ranking of the latent factors obtained from the Exploratory Factor Analysis according to their importance. The last two parts of this thesis are conclusions, and recommendations for future work in suggested areas.

CHAPTER II

REVIEW OF LITERATURE

This chapter discusses the definition of job satisfaction from perspective of different researchers and its four famous theories. It also includes literature review of why job satisfaction is important for any organization and a comprehensive definition of quality of work-life and its relationship with job satisfaction. The last part of this chapter is a literature review for research that were conducted to examine the job satisfaction inside the construction industry.

2.1 What is job satisfaction?

Job satisfaction was described by Hoppock (1935) as "any combination of psychological, physiological, or environmental circumstances that causes a person truthfully to say, I am satisfied with my job" (p. 55). Locke (1976) described Job satisfaction as “a pleasurable or positive emotional state resulting from appraisal of one’s job or job experiences”. Balzer (1990) identified job satisfaction as “the feelings a worker has about his or her job or job experiences in relation to previous experiences, current expectations, or available alternatives”.

Many researchers have developed different models for job satisfaction. These model are Affect Theory, Dispositional Theory, Motivation-Hygiene Theory, and Job Characteristic Model. Edwin A. Locke's Range of Affect theory (1976) is the most popular theory of job satisfaction. It describes job satisfaction as the difference between what employee needs from the job and what employee has in a job. Dispositional Theory emphasizes, regardless the nature of the job, people’s own intrinsic dispositions that trigger them to have tendencies toward a certain level of

satisfaction (Fisher and Hanna 1931; Hoppock 1935; Smith 1955; Weitz 1952). Herzberg's important Motivation-hygiene Theory which is also known as Two-factor Theory describes 1) motivation factors that lead to satisfaction of the workers such as responsibility, achievement, personal growth and advancement, recognition, and 2) hygiene factors such as work conditions, supervisory support, company policies, pay. Lastly, the Job Characteristics Model addresses how particular job features (e.g. skill variety, task identity, task significance, autonomy, and feedback) impact job outcomes satisfaction (Hackman and Oldham, 1976). Even though all of the models provide some observations into the factors that could impact job satisfaction, it is difficult to justify which of these models is outstanding over the others.

2.2 Why job satisfaction is important?

There are many reasons why job satisfaction has been intensely examined by many organizations and researchers over the years. Based on a humanitarian perspective, job satisfaction creates a perception that satisfied employee is treated fairly and with respect in his/her workplace. It also reflects emotional well-being and psychological health (Spector, 1997). Based on a more functional perspective, organization and its functioning are significantly affected by employee's behaviors and action. Job dissatisfaction in a particular segment of an organization is often an indicator of a problem area within the organization (Spector). Shah et al. (2012) point out that success of companies in the current global economy is highly dependent on developing and preserving their employees. Since human resources play a vital role in organizational performance, companies should pay much attention to their employee's satisfaction for improving their productivity, performance and survival in competitive environment. Past studies have found that worker satisfaction has positive impacts on worker behavior (i.e. productivity, absenteeism, resignations, stress, burnout, and retention) (Aletraris 2010; Borcherding and Oglesby 1974; Gazioglu and Tansel 2006; Maloney and J.1984; Rowings et al. 1996).

Withdrawal behaviors including retention issues and absenteeism and their relationship with job satisfaction are very important for organization development. According to Spector (1997) these variables have given more interest than other variables in job satisfaction research. Many studies have revealed strong connection between quitting a job or absenteeism with job satisfaction (Hackett and Guion, 1985; Hulin et al. 1985). In addition, Turnover and lateness are also considered as withdrawal behaviors and they are symptoms of "job adaption" and their effect should be examined with absenteeism together as group (Hulin et al. 1985). Hulin also argued that the occurrence of these withdrawal behavior individually is very low.

The relationship between job satisfaction and job performance is considered an essential topic for researchers of various disciplines. The thought that job satisfaction lead to better performance has controversial history (Petty et al. 1984). In the 1950s the idea that "happy worker is a productive worker" was considered to be very weak and somewhat inconsistent, and many organizations to achieve their goals used different strategies for each one of these two variables (Cranny et al. 1992).

More recently, the researchers argue that the failure to define a relationship between job satisfaction and performance is due to not including the other variables that could have the impact on this relationship. Cranny et al. (1992) argued in his model for job satisfaction and performance that the two factors that impact job performance the most are the worker's investment effort in his job and the worker's job satisfaction. Cranny also suggests that the organizations should not promote one variable on another but they should find the optimal solution that improves the performance and satisfaction. Judge et al. (2001), through their review of literature for 301 studies, discovered the true population correlation between job satisfaction and performance is about 0.3.

Another field of research interest is relationship between job satisfaction and life satisfaction. Relationship between job satisfaction and life satisfaction according to researchers could take three possible forms: (1) spillover, where job experiences people acquired affect their non-work life and vice versa; (2) segmentation, where there is almost no relationship between work and life; and (3) compensation, where people compensating their dissatisfying job by seeking fulfillment and happiness their work life and vice versa. The results from U.S. national workers sample showed that 68% of people were the spillover group, 20% in the segmentation group, and 12% in the compensation group (Judge et al. 2004).

Another potential effect of job satisfaction is its contribution to increase organizational citizenship behavior. Organ (1997) defined organizational citizenship behavior (OCB) as "contributions to the maintenance and enhancement of the social and psychological context that support task performance". Bateman and Organ (1983) found a strong and positive relationship between overall OCB and job satisfaction. Spector (1997) indicated happy people are willing to do tasks beyond what is require from them.

2.3 Quality of Work Life (QWL)

According to Sirgy et al. (2001) there is no formal definition for QWL, but the researchers majoring in industrial psychology and management agree that the QWL is a construct that deals with the well-being and it differs from job satisfaction. Sirgy et al. (2001) use QWL to refer to employee fulfillment with a variety of personal demands, by participating in workplace through resources, activities, and outcomes. Beukema (1987) also described QWL as the ability of employees aligned the jobs options with their interests and needs in the organization. Narehan (2013) emphasized that the term of QWL is usually related to "hours and wages, compensation benefits, work environment, and career development which was relevant to workers " satisfaction and motivation, work ethics, work conditions, and managerial concerns about the efficiency of

output ". Cascio (1998) identified the elements of the QWL. These element are: employees' involvement, job improvement, clash resolution, interaction, health, job protection, equal compensation, safe environment, and sense of honor.

2.3 Quality of Work Life (QWL) and work satisfaction.

Recently, research tries to improve job satisfaction which eventually will lead to organization development by studying every aspect of QWL and trying to manipulate them in order to achieve their ultimate benefits (Mirkamali and Thani 2011). Also research in human resource management studies considers QWL as essential elements for organizations in order to retain and maintain their workers (Kiernan and Knutson 1990; Sirgy et ale 2001).

According to Trist (1986) there are two types of QWL factors that an employee seeks in his work environment. Extrinsic factors relate to fair pay, job security, benefits, safety, and health. While intrinsic factors associate to job variety and challenge, opportunity to learn, autonomy, recognition, support, meaningful social contributions and workplace conditions that enable the development of greater skills and enhanced responsibilities. Cascio (1998) asserted that when organizations provide QWL for their worker and these workers feel that their job satisfies their needs, this fulfillment will eventually lead to their satisfaction with the job, commitment to it and the desire to stay for a longer period of time in their company.

Lee et al. (2007) summarized the conceptual dimensions of QWL from various studies. These studies were done by scientists and researchers who have been well known for their significant theories in job satisfaction development and its relationship with QWL such as (Maslow 1956; Herzberg et al. 1959; and Sirgy et al. 2001). These conceptual dimensions are health and safety needs, economic and family needs, self-actualization needs, esteem needs, social needs, knowledge and aesthetic needs. Thus, if the workplace could provide these needs

according to employees' expectation, then the employees will feel the positive level of QWL, which will increase the level of Job satisfaction (Champoux 1981; Sirgy et al. 2001)

2.4 Job satisfaction in construction industry.

In order to develop and succeed in this competitive environment, construction companies need to take care of the challenges they face in a construction industry. One of these challenges is maintaining and satisfying their skilled workforce. Several research has been implemented in order to find the critical factors that have a direct influence on job satisfaction from construction laborers' perspective.

Kazaz et al. (2008) in their study for the variables that affect the construction laborers productivity discovered that work satisfaction had the most influence on workers' motivation among socio-psychological factors. The influence of job satisfaction is not restricted to improving motivation or productivity. Abdel-Razek (1997) in his study for quality improvement of construction companies in Egypt discovered increasing job satisfaction among employees can be considered one of the most effective factors in quality improvement.

Table 2.1 summarizes some past research regarding job satisfaction in U.S. construction industry. It was observed that most of these studies did not take into consideration the importance of QWL as one of the key factors in human resource management and how QWL could play a vital role in attracting and retaining of workers. This study will examine the effect of QWL using NOISH module with job satisfaction of construction craft workers.

Table 2.1: Past research conducted on construction workers' job satisfaction in the U.S.

Author/s	Objective	Exposure	Main findings
Maloney and McFillen (1986)	To asked construction laborers about their experience with different factors related to their job. They reported some key factors such as intrinsic rewards , Opportunity , Interpersonal rewards , Feedback , Supervision , Performance level , and Extrinsic rewards	Out of 2,800 surveys were administered to unionized construction workers, only 703 surveys were completed.	■ The greatest contribution to general job satisfaction is made by Intrinsic rewards
Birkland et al. (1996)	To examine the characteristics of the labor in construction industry and discover their perception about job, career, and employment conditions	4,600 craft workers throughout the United States	■ Women were more satisfied with job than men. ■ The level of job satisfaction for foremen was doubled than for journeymen and apprentices. ■ Single people reported less satisfaction with their job than married, widowed, or divorced people ■ No relationship between the number of years in current job and job satisfaction ■ Hispanic workers were more likely to be satisfied than the other ethnic groups ■ The less-educated respondents were more satisfied with construction work ■ Results reveal the general job satisfaction was relatively lower than the satisfaction with financial aspects of work. ■ Level of job appreciation was higher than the satisfaction with financial aspects or job.

Table 2.1 (Continued.)

Author/s	Objective	Exposure	Main findings
Paul Goodrum (2003)	To consider changes in worker' job satisfaction between (1970s, 1980s, and 1990s) among union & non-union construction workers, and to investigate the influence of income, job security, work hours, opportunity for advancement, and job importance and accomplishment over the same time period.	General Social Survey (GSS) included the sample collected between1972 to 1998.	■ Changes in construction workers job satisfaction over the three decades are statistically insignificant. ■ "Work that gives sense of accomplishment" was the greatest job preference construction craft workers have.
Dabke et al. (2008)	To determine if age, education, number of dependents, number of trade years, duration of work, and frequency of work outside of the local area affect satisfaction with work, pay, opportunities, supervision, and people on the job for tradeswomen.	105 questionnaires sent out to women workers in different construction trade, 39 were filled out and turned back by the participant, showing a response rate of 37.14%.	■ Pay, benefits, and job security are most important to women in their occupation. ■ Demographic variables have no effect on the level of job satisfaction for women in construction trades.
Shan and Goodrum (2010)	To investigate of work-life related characteristics (e.g. respondents' annual income and spousal employment) among U.S. construction workers from 1970s to 2000s	General Social Survey (GSS) data for construction worker containing the sample from 1972 to 2008.	■ The construction industry had more workers younger than 44-year-old as opposed to other industries ■ Construction workers tended to have higher annual income than the workers from all other industries ■ There was no obvious satisfaction difference observed in terms of union status and spousal employment

CHAPTER III

METHODOLOGY

This chapter provides the details of the method for conducting this study, including the selection of database, the population, the sample, types of independent/dependent variables, and data analysis procedure.

3.2 Selection of databases

Data was acquired from the General Social Survey (GSS). The GSS survey was conducted by the National Opinion Research Center and executed biannually as a face-to-face, cross-sectional interview (Davis et al. 2003; Grosch et al. 2006). In GSS, a multi-stage probability method was used in order to obtain a sample that represents English-speaking, U.S. adults (18 years and older), civilian, and non-institutionalized population (Grosch et al. 2006). The GSS includes data on a large selection of topics like social behavior and attitude, QWL, demographic factors, etc.

The QWL questionnaire module from GSS have been used in this research. Consisting of 79 items, the QWL questionnaire module was created by the National Institute for Occupational Safety and Health (NIOSH) to assess the QWL of American workers. NIOSH based on consultant suggestions to design the QWL module. These experts are specialized in human resource management, occupational safety and health, and organizational behavior (Grosch et al., 2006). This module has been added to GSS data since 2002 and it covers a variety of topics such as; 1) Job level (Workload , Participation , Job future, Repetitive work, etc); 2) Culture/Climate (Safety climate, Discrimination, Harassment, etc); 3) Health outcomes (Physical health, Mental

health, Injuries, Sleep problems); 4) Performance; 5) Satisfaction; 6) Intent to leave; 7) Job commitment; 8) Overtime; 9) Flexibility; 10) Hours of work; 11) Work/family.

3.3 The population

As stated previously, the purpose of this special module was to assess the QWL of American workers. The QWL module was created after an interagency agreement between the National Science Foundation and the National Institute for Occupational Safety and Health (NIOSH) in 2002. For this reason the data were collected from 2002 to 2014. The target population for this research are the construction craft workers. The type of craft workers included in this study are apprentices, supervisors, construction laborers. 202 of 653 in total individuals responded to the satisfaction question, representing a 31.5% response rate.

3.4 The dependent/independent variables

The study included one ordinal dependent variable which is a ranking measure of employee's job satisfaction. The respondents were asked "All in all, how satisfied would you say you are with your job?". The respondent's answers were recorded in a Likert scale. The respondent's answers are recorded in this style: 1 for "very satisfied", 2 for "somewhat satisfied", 3 for "not too satisfied", and 4 for "not at all satisfied". The independent variables are the remaining questions of QWL model. Not all of these independent variables have the same scale for their response. There are four types of independent variables according to their way of answers. The first type is dichotomous independent variables which refer to "yes/no" type of questions. For example, one of the questions regarding this type of variable is "Do you have any jobs besides your main job or do any other work for pay?". Respondents' answers should be either "yes" or "no". The respondents' answers for all these types of question were recoded as: 1 for "yes", and 2 for "no". The second type is categorical independent variables which refer to the questions that have two or more categories but with no intrinsic order to the categories. For

example, one of questions regarding this type of variable is “Which of the following best describes your usual work schedule”. The respondents’ answer should be one of these choices: 1 for “day shift”, 2 for ”afternoon shift”, 3 for “night shift”, 4 for “split shift”, 5 for “irregular shift/on-call”, and 6 for “rotating shifts”. The third type is ordinal independent variable which is similar to categorical variables but the variable order is important. Respondents rated most of their answers for these type of questions on 4- or 5-point Likert scale. For example, 1 for “often”, 2 for “sometimes”, 3 for “rarely”, and 4 for “never” or 1 for “strongly agree”, 2 for “agree”, 3 for “disagree”, and 4 for “strongly disagree”. The last type is the continuous/ratio independent variables. For example, some questions need the respondents to record a specific number such as “How many days per month do you work extra hours beyond your usual schedule?”.

3.5 Data analysis

All analyses described in this chapter were performed using Statistical Package for Social Sciences (SPSS) software. Overall flow of the data analysis is depicted in Fig. 1

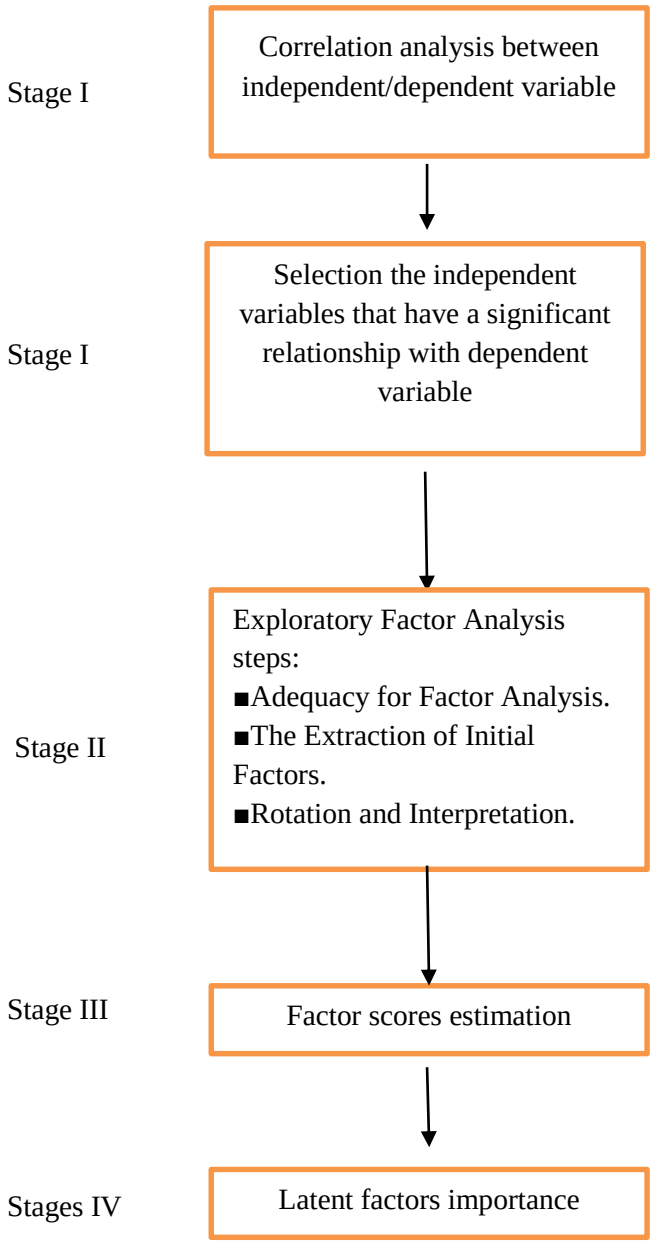

Fig 3.1. Overall flow of Data analysis

Detailed descriptions for each step are provided in the following sections.

Stage I: Implementing the correlation analysis

Spearman's correlation were used in order to discover which of dichotomous, ordinal, categorical and ratio independent variables have significant relationships with job satisfaction at 95% confidence level. Spearman's rank correlation is a non-parametric statistical measure, which was described by Weinberg and Abramowitz (2002) as a tool to measure the strength of linear relationship between two variables when the value of each variable are ranked order from 1 to N, where N are the number of pairs of values. The Spearman correlation coefficient is given in Equation (1) and denoted by r_s

$$r_s = 1 - \frac{6\sum d_i^2}{N^3 - N} \quad \ldots\ldots [1]$$

Where d represents the difference between ranks of each cases.

The spearman's coefficient values range between -1 and 1. A coefficient value between 0 and -1 would indicate that the two variables have a negative correlation (e.g., as x tends to increase , y tends to decrease) and the two variables are in disagreement. A coefficient value between 0 and 1 would indicate that two variable have positive correlation (as x tends to increase, y tends to increase) and the two variables are in agreement. If the value of spearman correlation coefficient is close to 1, that indicates a perfect agreement between two variables and as the value of spearman's correlation coefficient is close to -1, this refers to perfect disagreement between two variables.

Stage II: Exploratory Factor Analysis

After identifying which independent variables have significant correlation with the dependent variable, Exploratory Factor Analysis (EFA) was conducted for these variables. The research applied the EFA to generate and quantify the underlying structure of primary factors

through which the significantly correlated variables are likely interrelated. In EFA, a small number of factors are extracted through simplifying a large matrix of correlations. Most of the observed variables could be explained by these small factors (Kline 1994). EFA helps us eliminate many variables that may be trivial and focus on fewer factors that could lead us to meaningful categories. There are four basic steps to implement the factor analysis:

Step 1 Adequacy for EFA:

There are two tests that a researcher should implement to examine whether EFA is an appropriate method to use in his study. These two tests are the Kaiser–Meyer–Olkin (KMO) test and the Barlett's test of sphericity

KMO examines whether the number of variables and the obtained sample size are acceptable for implementing EFA method and can result in dependable factors. KMO compares the magnitude of the squared correlation between variables to the squared partial correlation between variables (Alroomi et al. 2012). The value of KMO should be greater than 0.5 to proceed in EFA.

$$\text{KMO}= \frac{(\text{Correlationbetweenvariables})2}{(\text{Partialcorrelationbetweenvariables})\ 2}$$

On the other hand, the Bartlett's test examines whether the correlation coefficient matrix is a unit matrix (i.e., there is no relationship among the items in the population correlation matrix that would reveal that the factor model is unsuitable) (Zhang, 2006).

Step 2: The Extraction of Initial Factors:

There are several factor extraction methods that determine the minimum number of factors that would satisfactorily produce the underlying structure of latent factors. Some of those extraction method are Principal Component Analysis (PCA), unweighted least squares,

generalized least squares, maximum likelihood, principal axis factoring). However, PCA is the most extensively used method (Kleinbaum and Kupper 1998).

In the PCA method, the matrices eigenvectors of the original variables are used to determine the principal components by creating orthogonal variables with the data (Trost and Oberlender, 2003). It is a linear transformation of the data into a new coordinate system so that the greatest variance in the data lie in the direction of the first axis, the second largest of variance lies in the direction of second axis, and so on (Alroomi et al. 2012). Since the principal components are orthogonal, interdependence or multicollinearity does not exist in the new transformed data (Trost and Oberlender 2003). Eigenvalues are utilized by PCA in order to create a smaller number of components from a larger set of variables. The variance explained by the factors resulting from PCA is presented by the eigenvalue (Alroomi et al. 2012).

There are many techniques available to determine how many underlying factors to be extracted from the EFA. One of these methods that providing satisfactory results and frequently used is known as scree test. The scree test generates a curve on a coordinate plane that connects the eigenvalues of the unrotated factors. The slope of this curve is examined in order to discover the cutoff point for retaining factors. This point is determined when the slope of the curve approaches zero, which indicates deleting a given factor at this point would no longer result in discarding significant variance (Floyd and Widaman, 1995). Floyd and Widaman (1995) also argued that in order to determine "elbow" in the scree curve, the researcher should analyze the influence of different cutoff points. If there are two or more factors close to the cutoff point, it is helpful to analyze the interpretability and meaningfulness of alternative factor solutions.

Step 3: Rotation and Interpretation:

The resulted initial factors are ambiguous and need to be rotated to a simple structure for better interpretation. When each variable loads highly on as few factors as possible, the optimal simple structure is achieved (Floyd and Widaman, 1995). It is also preferable that each variable will have only one significant or primary loading (Floyd and Widaman, 1995).

After performing many rotation techniques, the most interpretable factors in this research were discovered by varimax rotation. The varimax uses the orthogonal rotation and it is assumed that the factors are uncorrelated. It maximizes the high correlations and minimizes the low correlations (Alroomi et al. 2012).

Stage III: Factor scores

In order to convert factors resulting from Stage II to variables and use them in other additional analysis such as correlation or regression, factor scores need to be constructed. Factor scores help us provide information about an individual's placement on the factor(s). Factor scores are latent scores on the factors themselves. According to Comrey and Lee (1992), factor scores could be estimated by summing the raw scores corresponding to all items or variables with significant and primary loadings on each factor. The raw score of the item with a negative factor loading on the factor, is subtracted rather than added to the factor.

Stage IV: Latent factors importance

To examine how the latent factors influence job satisfaction, a spearman's correlation analysis was performed between the latent factor scores and the rating levels of job satisfaction assigned by construction craft workers.

CHAPTER IV

RESULTS

This chapter includes the results of spearman's correlation described in Methodology section. It also demonstrates the most important results from in EFA and why the factors resulting from this analysis are so important from the construction craft workers' perception. Finally, this chapter shows the ranking of the latent factors according to the perspective of construction craft workers.

4.1 Demographics

Two hundred and two out of six hundred and fifty-three participants responded to the job satisfaction question, indicating a response rate of 30.9%. Table 4.1 shows characteristics of the respondents by gender, age, job experience, nature of employment, ethnic background, union membership, and overall satisfaction for their jobs.

Classification by gender showed that 97.5% of participants were males while 2.5% were females. There were four groups categorized according to their age: (a) those who were older than 45 years old representing 37.3% of the sample, (b) those whose age ranged between (36-45) representing 22.9% of the sample ,(c) those who were between (25-35) representing 27.4% of the sample, (d) those who were less 25 representing 12.4% of the sample.

In terms of job experience, 54.7% reported they had less than 5 years of experience, 22.4% with between 5 to 10 years of experience and 21.4% with more than 10 years of experience.

There were three job careers in this study: (a) construction laborers (61.1%), (b) apprentices (28.6%), and (c) supervisors (21.4%). In terms of ethnic backgrounds, Caucasian workers represented 76.6% of the respondents; 19% were African American, and the rest were indicated as "others". Regarding union membership, 15.9% were union members, while 84.1% were non-union members.

For the overall satisfaction, people were asked to rank their satisfaction according to four-point Likert scale. The results showed that 44.8% of people were satisfied in their job, and 45.4% relatively satisfied, while 6.5% were not satisfied, and 3.0% disliked their job.

Table 4.1 Characteristics of the respondents

Characteristics	Frequency	Percentage (%)
Gender		
Male	196	97.5
Female	6	2.5
Age		
Less than 25	25	12.4
25-35	55	27.4
36-45	46	22.9
Above 45	75	37.3
Experience of job		
Less than 5 years	110	54.7
5-10 years	45	22.4
more than 10	43	21.4
Nature of employment		
Construction labors	124	61.1
Apprentices	58	28.6
Supervisors	21	10.3
Ethnic background		
White	154	76.6
Black	19	9.5
Other	28	13.9
Union Status in Construction:		
Union	25	15.9
Non-union	105	84.1
Overall job satisfaction		
Very satisfied	90	44.8
Some what satisfied	92	45.8
Not too satisfied	13	6.5
Not at all satisfied	6	3.0

4.2 Correlation result analysis

The first objective for this study was to examine how satisfied construction craft workers with their QWL items. Spearman correlation was conducted for this analysis using the SPSS software. Out of 78 QWL items, 34 of them had significant correlation with the job satisfaction at 95% confidence interval level. Table 4.2 shows the magnitude of Spearman's correlation coefficients for these items. They are arranged from largest to lowest value.

Table 4.2 The magnitude of Spearman correlation coefficient between significant items and job satisfaction

			overall job satisfaction	
Number	Description	Type of variable	r	significant (2 tail)
X1	Coworkers take a personal interest in me	ordinal(true/not true)	0.384	0.000
X2	Promotions are handled fairly	ordinal(true/not true)	0.365	0.000
X3	Relation between management and employees	ordinal(good/bad)	0.363	0.000
X4	My supervisor treats me fairly.	ordinal(true/not true)	0.33	0.000
X5	Proud to be working for my employer	ordinal(agree/disagree)	0.33	0.000
X6	Access to stress management at workplace	dichotomous (yes/no)	0.328	0.001
X7	Effort for new job next year	ordinal(likely/not likely)	-0.322	0.000
X8	The job security is good	ordinal(true/not true)	0.317	0.000
X9	Supervisor help to get the job done	ordinal(true/not true)	0.291	0.000
X10	Working condition allow productivity	ordinal(agree/disagree)	0.288	0.000
X11	Trust the management at work	ordinal(agree/disagree)	0.271	0.000
X12	Opportunity to develop my own abilities	ordinal(true/not true)	0.269	0.000
X13	Days of poor mental health past 30 days	continuous/interval	0.261	0.003
X14	Supervisor concerned about employee welfare	ordinal(true/not true)	0.251	0.000
X15	Enough help and equipment to get the job done	ordinal(true/not true)	0.251	0.000
X16	Job income is enough	dichotomous (yes/no)	0.247	0.000
X17	Safety and health condition at work is good	ordinal(agree/disagree)	0.246	0.000
X18	Days of poor physical health past 30 days	continuous/interval	0.245	0.003

Table 4.2 (continued)

			overall job satisfaction	
Number	Description	Type of variable	r	significant (2 tail)
X19	Workplace runs in smooth manner	ordinal(agree/disagree)	0.242	0.000
X20	Praised by your supervisor or employer	categorical(yes/maybe/no)	0.237	0.000
X21	Trouble sleeping in last 12 Months	ordinal(often/never)	-0.235	0.000
X22	Chances for promotion are good	ordinal(true/not true)	0.229	0.000
X23	Employee has enough time to get the job done	ordinal(true/not true)	0.227	0.000
X24	Employees and management work together to ensure the safest	ordinal(agree/disagree)	0.21	0.000
X25	A lot of freedom to decide how to do job	ordinal(true/not true)	0.204	0.000
X26	Worker safety priority at work	ordinal(agree/disagree)	0.201	0.000
X27	My fringe benefits are good	ordinal(true/not true)	0.194	0.000
X28	Enough information to get the job done	ordinal(true/not true)	0.192	0.000
X29	Employee knows exactly what is expected of me	ordinal(agree/disagree)	0.184	0.000
X30	Treated with respect at workplace	ordinal(agree/disagree)	0.171	0.000
X31	Days per months work extra hours	continuous/interval	-0.166	0.004
X32	Employee work as part of team	ordinal(agree/disagree)	-0.154	0.000
X33	Employee free from conflicting demands	ordinal(true/not true)	0.146	0.011
X34	Time at current job	continuous/interval	-0.14	0.023

4.3 Exploratory Factor analysis (EFA) results

After recognizing the significant QWL items on construction craft workers job satisfaction, EFA was conducted. The following section shows the results of the factor analysis.

4.3.1 Adequacy of factor analysis:

According to Kaiser (1974) Criterion , the minimum value of Kaiser–Meyer–Olkin (KMO) statistical test that makes the EFA appropriate would be greater than 0.5. The value for the factor analysis was 0.86 which considered significant according to Kaiser. To examine whether the correlation matrix of variable is an identity matrix, Bartlett's test of sphericity was conducted. The result of the sphericity test was 1964.93 and its related p-value was 0.000 which indicated that the correlation matrix of the variables is not an identity matrix (Alroomi et al. 2012). The interpretation of above two tests showed that EFA was an appropriate method.

4.3.2 Extraction of initial factors

Figure 1 shows the scree plot of the factor analysis for all of 34 items that had significant correlation with job satisfaction. The scree plot consists of the eigenvalue and the number of components. The variance explained by each factor decrease with each successive component. The appropriate number of factors to retain should be above the break point (i.e., point of inflexion of scree curve). Five latent factors were extracted from the scree graph since the scree curve declined dramatically after the fifth eigenvalue factor and approximately reached to zero slope. The five extracted factors cumulatively explain 58.57% of total variance as shown in Table 4.3. The loadings for the 34 QWL items that correlated with job satisfaction were scattered among the five factors. Most of these items shown in Table 4.4 were loaded highly around the first factor and also highly of the other factors. It was difficult to interpret these factor due to the

items overlapping. Therefore, a varimax rotation was used to reach a more valid interpretation.

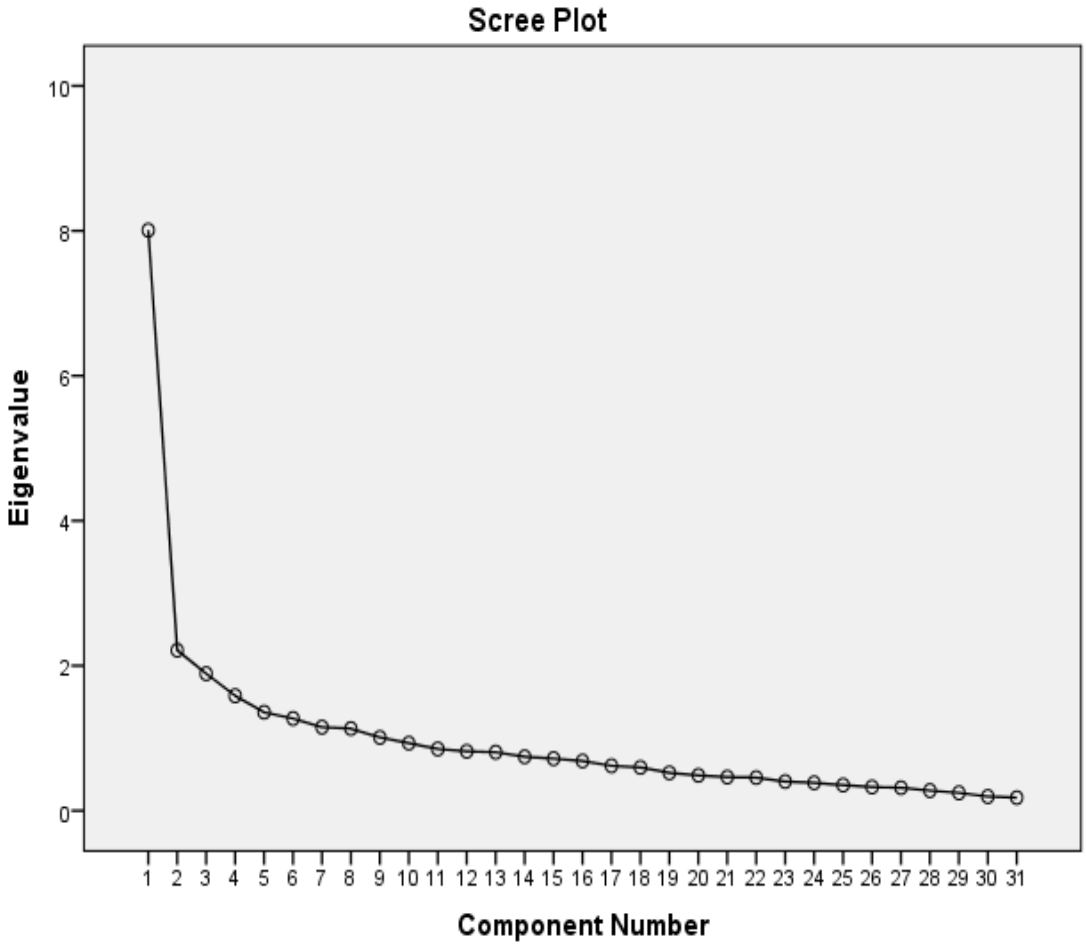

Figure. 4.1 Scree plot of EFA

Table 4.3 PCA Results

Principal component	Eigenvalue	Percentage of variance explained	Cumulative variance percentage
1	8.01	25.84	25.836
2	2.21	7.14	32.973
3	1.89	6.10	39.071
4	1.59	5.12	44.189
5	1.36	4.38	48.568

Table 4.4 EFA Results—Unrotated Factors

Identification	QWL correlated variable with job satisfaction	Factor 1	2	3	4	5
X34	Time at current job	-.115	-.098	.493	.266	.281
X31	Days per months work extra hours	-.133	-.154	.222	.228	.129
X29	Employee knows exactly what is expected of me	.365	-.416	.222	.003	-.271
X30	Treated with respect at workplace	.505	-.302	.321	-.013	-.048
X11	Trust the management at work	.690	-.335	.136	-.061	-.083
X26	Worker safety priority at work	.678	-.340	-.189	-.094	.288
X24	Employees and management work together to ensure the safest	.688	-.372	-.075	-.054	.296
X17	Safety and health condition at work is good	.604	-.309	-.317	-.144	.223
X5	Proud to be working for my employer	.772	-.218	-.011	-.124	.080
X10	Working condition allow productivity	.494	-.298	-.253	-.090	-.099
X19	Workplace runs in smooth manner	.727	-.297	.008	-.108	-.099
X32	Employee work as part of team	-.048	.141	.614	.006	.278
X22	Chances for promotion are good	.408	.452	.173	-.122	.071
X12	Opportunity to develop my own abilities	.483	.450	-.141	.054	-.251
X15	Enough help and equipment to get the job done	.581	.059	.159	.327	-.325
X28	Enough information to get the job done	.521	-.071	.143	.381	-.431
X25	A lot of freedom to decide how to do job	.467	.242	-.291	.060	-.321
X27	My fringe benefits are good	.391	.421	.025	-.185	.216
X4	My supervisor treats me fairly.	.617	.107	.008	-.108	.373
X33	Employee free from conflicting demands	.399	.110	.246	.181	.077
X2	Promotions are handled fairly	.656	.314	-.060	.042	.166
X1	Coworkers take a personal interest in me	.609	.407	-.024	.093	.085
X8	The job security is good	.499	.322	-.080	-.054	.007
X20	Praised by your supervisor or employer	.563	.084	.128	.359	.101
X23	Employee has enough time to get the job done	.594	-.051	.015	.364	-.097
X24	Employees and management work together to ensure the safety	.602	.198	.110	.063	.015
X20	Praised by your supervisor or employer	.432	.165	.131	.027	.070
X16	Job income is enough	.216	.262	-.347	-.019	.087
X7	Effort for new job next year	-.371	-.033	.164	.382	.195
X18	Days of poor physical health past 30 days	.105	.045	.449	-.584	-.251
X19	Days of poor mental health past 30 days	.246	.134	.445	-.522	-.182

4.3.3 Rotation and Interpretation

The results of implementing the varimax rotation are shown in Table 4.5. Each factor contained the items that have the highest loadings and these items were ranked according to the magnitude of their factor loadings. The factor loading represented the degree to which each items was associated with its assigned factor. In order to identify the loading factor as significant and practical loading, the value of factor loading should be greater than +0.50 or less than -0.5 (Hair et al. 2010). Thus, the loadings less than this value were removed. Among the 34 QWL items that already identified in correlation analysis, only 11 did not load significantly on these latent factors.

Table 4.5 EFA results Using the varimax orthogonal rotation

Identification		Factors				
		1	2	3	4	5
X24	Employees and management work together to ensure the safest	.804				
X26	Worker safety priority at work	.798				
X17	Safety and health condition at work is good	.737				
X5	Proud to be working for my employer	.696				
X19	Workplace runs in smooth manner	.655				
X11	Trust the management at work	.633				
X10	Working condition allow productivity	.536				
X30	Treated with respect at workplace					
X1	Coworkers take a personal interest in me		.681			
X2	Promotions are handled fairly		.664			
X27	My fringe benefits are good		.610			
X22	Chances for promotion are good		.603			
X14	Supervisor concerned about employee welfare		.562			
X8	The job security is good		.522			
X12	Opportunity to develop my own abilities		.516			
X3	Relation between management and employees		.506			
X28	Enough information to get the job done			.768		
X15	Enough help and equipment to get the job done			.689		
X23	Employee has enough time to get the job done			.544		
X34	Time at current job				.642	
X18	Days of poor physical health past 30 days					.786
X13	Days of poor mental health past 30 days					.733

Table 4.6 shows the final five factors of QWL that had significant contribution to construction craft workers' job satisfaction and the percentage of the variance that each factor explains. The following section describes these factors in detail and why they were important from the perspective of construction workers.

Table 4.6 Final five factors of QWL that have significant contribution on construction craft workers job satisfaction

Latent factors	Variance explained%	QWL items included in each factor	
Factor 1: Safety priority and organizational effectiveness	25.84	X24	Employees and management work together to ensure the safest
		X26	Worker safety priority at work
		X17	Safety and health condition at work is good
		X5	Proud to be working for my employer
		X19	Workplace runs in smooth manner
		X11	Trust the management at work
		X10	Working condition allow productivity
Factor 2: Fair reward system	7.14	X1	Coworkers take a personal interest in me
		X2	Promotions are handled fairly
		X27	My fringe benefits are good
		X22	Chances for promotion are good
		X14	Supervisor concerned about employee welfare
		X8	The job security is good
		X12	Opportunity to develop my own abilities
		X3	Relation between management and employees
Factor 3: Resource Adequacy	6.10	X28	Enough information to get the job done
		X15	Enough help and equipment to get the job done
		X23	Employee has enough time to get the job done
Factor 4: Job tenure and teamwork	5.12	X34	Time at current job
Factor 5: Physical and mental health	4.38	X18	Days of poor physical health past 30 days
		X13	Days of poor mental health past 30 days

Factor 1. Safety priority and organizational effectiveness

Construction is a hazardous industry. It requires from laborers to work in confined crowded space, lift and carry heavy items, and use equipment and tools that are considered potentially dangerous. Construction workers are often exposed to extreme weather conditions since much of their work is executed in outdoor environment or partially open space. Thus, one of the fundamental requirements for workers to perform well and satisfy with their job is safety in their workplace. On other hand, the organizational effectiveness plays a major role in job satisfaction. If the construction companies run their operation in a more predictable and smoother manner, craft workers will show higher productivity and produce satisfactory work.

Factor 2. Fair reward system

In order to manage their workforce effectively, construction companies should design a fair rewards system that acknowledges workers efforts inside their organizations. A fair reward system helps creating commitment among employees that guarantees high performance and workforce loyalty. Through a fair reward system, the construction companies would keep their workers highly motivated and help them to attract more people for their workplace. A Fair reward system will give the employees the drive to promote their own skills and knowledge since some companies appreciate skilled workers. There are two types of rewards loaded in this factor that construction craft workers seek to feel satisfied with their job: extrinsic and intrinsic reward. Extrinsic reward in this factor include promotion, fringe, supervisor behavior, and job security, while there is one intrinsic reward which is the opportunity for development.

Factor 3. Resource adequacy

To achieve work related goals and fully utilize their relevant capabilities and motivation, construction craft workers must have full access to essential resources in their workplace. Equipment and tools, information, support services, and time are primary resources that most of construction craft workers need to perform their tasks. If these resource are inadequate or the job site lack of them, this may have a negative impact on workers job performance since workers would face difficulties in using their job related knowledge, skill, and abilities. This deficiency will result in a frustrated situation for workers and make them feel less satisfied with their jobs.

Factor 4. Job tenure

The more time workers sustain in the job the more satisfaction they feel. This concept is correct for many reasons. First, older people in the organization find their jobs matching with their needs in terms of opportunities, promotion, etc. Second, younger employees expect much more from their job and sometimes discover that their new job does not meet with their job expectation. Lastly, older employees learn new skills or improve their limited abilities over time and this job experience gives them a sense of confidence toward their profession (Janson and martin 1982: Kallebereg and Loscocco 1983).

Factor 5. Physical and mental health

Another important factor that has a significant effect on with job satisfaction in construction craft workers perception is physical and mental health. Since construction industry is considered as physically demanding industry, construction workers are vulnerable to high risk of occupational injury compared to other industries. Reports show that the construction industry in the U.S. had the highest number of fatal occupational injuries in 2010 (Dong et al. 2011). A high percentage of construction injuries could be diagnosed either as intense or lifelong

musculoskeletal (Dong et al. 2011). Physical injuries either have a strong impact on reducing the workers ability to perform the tasks or lead to most serious cases such as permanent disability.

Another part of human health that construction craft workers concern about is mental health. Mental distress can result from the stress people have with jobs that do not fit into their resources, needs, or capabilities. Mental health problems such as depression or anxiety can also distract workers' attention to their profession.

4.4 Factor score and Latent factor importance

To examine the influence of QWL latent factors on construction craft workers' job satisfaction, Spearman's correlation was performed between latent factors scores and the overall level of job satisfaction for construction craft workers. Factor scores were computed for each latent factors by summating the raw score for all items that have primary loading on each factor. Table 4.7 shows the results of spearman's correlation analysis between latent factor scores and overall job satisfaction. A fair reward system had the greatest influence on construction craft workers job satisfaction as evidenced by a Spearman's correlation coefficient of 0.46. The next most influential latent factor was safety priority and organizational effectiveness with a Spearman's correlation coefficient of 0.36. Physical and mental health factor ranks the third with a Spearman's correlation coefficient of 0.28. Resource adequacy had the fourth rank with a Spearman's correlation coefficient of 0.27. Finally, the least important latent factor according to construction craft workers' opinion was job tenure.

Table 4.7 The magnitude of Spearman correlation coefficients between Latent factor scores and job satisfaction.

		overall job satisfaction	
Factor	Description	r_s	significant (2 tail)
1	Fair reward system	0.46	0.000
2	Safety priority and organizational effectiveness	0.36	0.000
3	Physical and mental health	0.28	0.000
4	Resource Adequacy	0.27	0.000
5	Job tenure	-0.14	0.000

CHAPTER V

CONCLUSION

Construction craft workers are considered as a keystone that plays a major role in the success of the construction industry. Since the construction industry in the U.S. is currently facing a shortage in craft workers, this study has focused on determining the QWL factors that are associated with job satisfaction from a construction craft workers' perception. We used the QWL questionnaire module conducted by the National Institute for Occupational Safety and Health as a source of data in this study. This module is part of the General Social Survey and was added since 2002. The pooled sample of this study was the QWL questionnaire of construction craft workers between 2002 and 2014.

This study has addressed 34 of 78 QWL items that are significantly related to employee satisfaction. EFA was utilized to test if the interrelation and the underlying structure of these items could be represented by primary factors. Five primary factors were extracted from these 34 significant QWL items. These primary factors are: Safety priority and organizational effectiveness, Fair reward system, Resource adequacy, Job tenure, and Physical and mental health. This will help the construction companies to create the programs and practices that enhance these factors inside their organizations. Spearman's correlation between the factor scores and overall job satisfaction showed that the

most critical factor for job satisfaction from construction craft workers point of view is a Fair reward system. This study has shown that craft workers search for two types of rewards that make them feel satisfaction with their career: extrinsic and intrinsic rewards. Extrinsic rewards include job security, fringe benefit, promotion opportunity and fairness, coworkers interest, and supervisor support for his employee welfare while intrinsic rewards include opportunity for development. Companies should focus on building a fair and effective reward system which takes into consideration the basis of the job itself, employee skills, number of years in service, and performance (Chelladurai 2006).

Construction craft workers considered safety priority and organizational effectiveness the second most important factor to achieve job satisfaction. Logically, when organizations run their operations in a steady, foreseeable, and effective approach, this will enhance their worker performance and satisfaction and result in a safer workplace. Three key areas that construction companies should work on to foster their effectiveness include: 1) establishing trust and giving people automny, 2) creating vital work environment, and 3) providing physical support for their individual. These workers believed that construction companies must work with them to achieve safe job conditions that preserve their lives. Jaselskis et al. (1996) pointed out some practices that construction companies could implement to increase safety in their job site. These practices are increasing safety inspections, developing comprehensive safety programs, and establishing "back-to-work" programs for injured workers.

Construction craft workers considered physical and mental health a significant factor that effected job satisfaction and it was ranked as the third among the five extracted factors. Workers who suffered from physical and mental health problem in last thirty days showed less satisfaction to their job than people who were in good health conditions. Construction companies could promote health programs that help them enhance the health status of their workers. These programs are health examination, exercise/fitness, health guidance, smoking measure, nutrition

education, and mental health (Muto et al. 1999). Resource adequacy ranked as the fourth factor according to its importance for construction craft workers. Workers on job sites indicate they need enough information, equipment, help, and time in order to perform their task adequately. Some recommendations for construction companies to improve the resource adequacy are communication-focused training programs for managers, employing more lower level management such as Foreman, and implementation of a material and tool tracking system (Hewage and Ruwanpura 2006). Finally, Job tenure was ranked the fifth in its importance. In order to keep their employees for a longer period of time in their organizations, construction companies could take some actions regarding this factor such as creating challenging environment, ensuring work life balance for their employees, taking personal interest in developing staff, and providing inspirational vision and strong value (Nkomo and Thwala 2009).

CHAPTER VI

RECOMMENDATIONS

Since most of studies related to job satisfaction of construction workers were implemented in 80's and 90's of last century, new research should be performed that could reflect the new perception of construction workers about their level of job satisfaction specially after the two downturn in U.S. economy (e.g. 2001 and 2008) and retirement most of baby boomer construction workers. The following recommendations are suggested for future studies:

1-Studies similar to this study need to be conducted for employees who work in managerial and administrative occupations inside the organizations.

2- Focusing in the next studies on job satisfaction of specific occupation in construction industry and compare it with other professions.

3-Studying the relationship between employees' job satisfaction and QWL in their workplace with the consideration of different demographic items (e.g. age, ethnic, gender) can be considered also an interesting topic that future studies could take care of.

4- The size of companies (e.g. small, medium, and large) is another factor that could result in different levels of job satisfaction.

5- Finding solutions that could reduce high turnover and abstention in construction industry are vital to keep construction workers in their jobs and help professional development in their career.

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APPENDICES

Appendix (1). Full Module of QWL and its questions

General Social Survey 2010

SECTION D

Quality of Worklife Module

NIOSH

5.2

How would you describe your work arrangement in your main job?

1 I work as an independent contractor, independent consultant, or freelance worker

2 I am on-call, and work only when called to work

3 I am paid by a temporary agency

4 I work for a contractor who provides workers and services to others under contract

5 I am a regular, permanent employee (standard work arrangement)

5.3

How long have you worked in your present job for your current employer?

1 Less than 6 months

2 6-12 months

3 Enter years

5.5

In your main job, are you salaried, paid by the hour, or what?

1 Salaried

2 Paid by the hour

3 Other _____

5.7

Which of the following best describes your usual work schedule?

1 Day shift

2 Afternoon shift

3 Night shift

4 Split shift

5 Irregular shift/on-call

6 Rotating shifts

5.8

How many days per month do you work extra hours beyond your usual schedule?

Enter days

5.9

When you work extra hours on your main job, is it mandatory (required by your employer)?

1 Yes

2 No

5.10

How often are you allowed to change your starting and quitting times on a daily basis?

1 Often

2 Sometimes

3 Rarely

4 Never

5.11

How often do you work at home as part of your job?

1 Never

2 A few times a year

3 About once a month

4 About once a week

5 More than once a week

6 Worker works mainly at home

5.12 *(This question applies only to people who indicate that they work at home as part of their job.)* When you work at home, is it part of your primary job at another location, are you taking work home to catch up, or do you have a home-based business?

1 Worker is working at home as part of his/her primary job at another location

2 Worker is taking work home to catch up

3 Worker is operating a home-based business

4 Other reasons or combination of these reasons

5.13

How hard is it to take time off during your work to take care of personal or family matters?

1 Not at all hard

2 Not too hard

3 Somewhat hard

4 Very hard

5.14

How often do the demands of your job interfere with your family life?

1 Often

2 Sometimes

3 Rarely

4 Never

5.15

How often do the demands of your family interfere with your work on the job?

1 Often

2 Sometimes

3 Rarely

4 Never

5.16

After an average work day, about how many hours do you have to relax or pursue activities that you enjoy?

Number of hours:

5.17

Do you have any jobs besides your main job or do any other work for pay?

1 Yes

2 No

5.18

Do you supervise others at work as a part of your job?

1 Yes

2 No

5.19

Now I'm going to read you a list of statements that might or might not describe your main job. Please tell me whether you strongly agree, agree, disagree, or strongly disagree with each of these statements.

My job requires that I keep learning new things

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

5.20

My job requires that I work very fast

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

5.21

I get to do a number of different things on my job

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

5.22

I have too much work to do everything well

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

5.23

On my job, I know exactly what is expected of me

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

5.25

At the place where I work, I am treated with respect

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

5.26

I trust the management at the place where I work

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

5.27

The safety of workers is a high priority with management where I work

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

5.28

There are no significant compromises or shortcuts taken when worker safety is at stake

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

5.29

Where I work, employees and management work together to ensure the safest possible working conditions

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

5.31

I am proud to be working for my employer

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

5.32

Conditions on my job allow me to be about as productive as I could be

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

5.33

The place where I work is run in a smooth and effective manner

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

5.34

Workers need strong trade unions to protect their interests

1 Strongly Agree

2 Agree

3 Disagree

4 Strongly Disagree

5.35

In your job, do you normally work as part of a team, or do you work mostly on your own?

1 Yes, I work as part of a team

2 No, I work mostly on my own

5.36

In your job, how often do you take part with others in making decisions that affect you?

1 Often

2 Sometimes

3 Rarely

4 Never

5.37

How often are there not enough people or staff to get all the work done?

1 Often

2 Sometimes

3 Rarely

4 Never

5.38

Now I'm going to read you another list of statements about your main job.

For each, please tell me if the statement is very true, somewhat true, not too true, or not at all true with respect to the work you do.

The chances for promotion are good

1 Very true

2 Somewhat true

3 Not too true

4 Not at all true

5.39

I have an opportunity to develop my own special abilities

1 Very true

2 Somewhat true

3 Not too true

4 Not at all true

5.40

I receive enough help and equipment to get the job done

1 Very true

2 Somewhat true

3 Not too true

4 Not at all true

5.41

I have enough information to get the job done

1 Very true

2 Somewhat true

3 Not too true

4 Not at all true

5.42

I am given a lot of freedom to decide how to do my own work

1 Very true

2 Somewhat true

3 Not too true

4 Not at all true

My fringe
benefits are
good

1 Very true

2 Somewhat true

3 Not too true

4 Not at all true

5.44

My supervisor is concerned about the welfare of those under him or her

1 Very true

2 Somewhat true

3 Not too true

4 Not at all true

5.45

I am free from the conflicting demands that other people make of me

1 Very true

2 Somewhat true

3 Not too true

4 Not at all true

5.46

Promotions are handled fairly

1 Very true

2 Somewhat true

3 Not too true

4 Not at all true

5.47

The people I work with take a personal interest in me

1 Very true

2 Somewhat true

3 Not too true

4 Not at all true

5.48

My supervisor treats me fairly.

1 Very true

2 Somewhat true

3 Not too true

4 Not at all true

5 Does not apply/No supervisor

My supervisor is helpful to me in getting the job done

1 Very true

2 Somewhat true

3 Not too true

4 Not at all true

5.51

I have enough time to get the job done

1 Very true

2 Somewhat true

3 Not too true

4 Not at all true

5.52

The people I work with can be relied on when I need help

1 Very true

2 Somewhat true

3 Not too true

4 Not at all true

5.53

Do you have access to stress management or stress reduction programs at your current workplace?

1 Yes

2 No

5.54

In general, how would you describe relations in your work place between management and employees?

1 Very good

2 Quite good

3 Neither good nor bad

4 Quite bad

5 Very bad

5.55

Does your job require you to do repeated lifting, pushing, pulling or bending?

1 Yes

2 No

Does your job regularly require you to perform repetitive or forceful hand movements or involve awkward postures?

1 Yes

2 No

5.57

Please rate the overall physical effort at the job you normally do.

1 Very hard

2 Hard

3 Somewhat hard

4 Fairly light

5 Very light

5.58

When you do your job well, are you likely to be praised by your supervisor or employer?

1 Yes

2 Maybe

3 No

5.59

How fair is what you earn on your job in comparison to others doing the same type of work you do?

1 Much less than you deserve

2 Somewhat less than you deserve

3 About as much as you deserve

4 Somewhat more than you deserve

5 Much more than you deserve

5.60

Do you feel that the income from your job alone is enough to meet your family's usual monthly expenses and bills?

1 Yes

2 No

5.61

Were you laid off your main job at any time in the last year?

1 Yes

2 No

5.62

How easy would it be for you to find a job with another employer with approximately the same income and fringe benefits as you have now?

1 Very easy to find similar job

2 Somewhat easy to find similar job

3 Not easy at all to find similar job

Taking everything into consideration, how likely is it you will make a genuine effort to find a new job with another employer within the next year

1 Very likely

2 Somewhat likely

3 Not at all likely

5.64

Do you feel in any way discriminated against on your job because of your age?

1 Yes

2 No

5.65

Do you feel in any way discriminated against on your job because of your race or ethnic origin?

1 Yes

2 No

5.66

Do you feel in any way discriminated against on your job because of your gender?

1 Yes

2 No

5.67

In the last 12 months, were you sexually harassed by anyone while you were on the job?

1 Yes

2 No

5.68

In the last 12 months, were you threatened or harassed in any other way by anyone while you were on the job?

1 Yes

2 No

5.69

Would you say that in general your health is Excellent, Very good, Good, Fair, or Poor?

1 Excellent

2 Very good

3 Good

4 Fair

5 Poor

During the past 12 months, how often have you had trouble going to sleep or staying asleep?

1 Often

2 Sometimes

3 Rarely

4 Never

5.71

Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?

Number of days:

5.72

Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good.

Number of days:

5.73

During the past 30 days, for about how many days did your poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?

Number of days:

5.74

How often do you find your work stressful?

1 Always

2 Often

3 Sometimes

4 Hardly ever

5 Never

5.75

How often during the past month have you felt used up at the end of the day?

1 Very often

2 Often

3 Sometimes

4 Rarely

5 Never

5.76

In the past 12 months, have you had back pain every day for a week or more?

1 Yes

2 No

In the past 12 months, have you had pain in the hands, wrists, arms, or shoulders every day for a week or more?

1 Yes

2 No

5.78

In the past 12 months, how many times have you been injured on the job?

Number of times: _____

5.79

All in all, how satisfied would you say you are with your job?

1 Very satisfied

2 Somewhat satisfied

3 Not too satisfied

4 Not at all satisfied

VITA

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