Classic or Modern? Enhancement of Job Satisfaction Scale for Green Job Workers

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Green jobs, in environmental and eco-friendly sectors, are defined as jobs where decent work conditions are presented. The green jobs, significantly increasing all over the world, support the protection of natural resources and also provide high quality work life for workers. The goal of this research is to improve the job satisfaction scale for green job workers by using the Structural Equation Model with model development strategy. Within this research SPSS 21 has been used for internal consistency rate and exploratory factor analysis and smartPLS 2.0 has been used for Structural Equation Model. Analysis results show that contingent reward, supervision, co-workers and communication effect job satisfaction of green job workers.

Key words: green jobs, job satisfaction, Structural Equation Model, smartPLS 2.0

Introduction

The importance of green jobs in the world is increasing rapidly (UNEP 2008). In recent years, 2% of the employment in the European Union (ECORYS 2012, 25–6) and 2.4% of the employment in the United States constitute of these jobs (Clayton 2013). While there were 2.3 million existing green job workers worldwide in the year 2006 (UNEP 2008, 7), this number has reached up 6.3 million people in the year 2014 (International Renewable Energy Agency 2014, 4) and by the year 2030, 21 million people worldwide are expected to be green job workers (UNEP 2008, 7–9). Green jobs are not only growing in the Europe and North America continents, but also in other continents (Cosbey 2012, 43). Furthermore, ILO has expressed that in the next 30 years existing and newly created green jobs will directly or indirectly affect 1.5 billion people from a global perspective (ILO 2013a, 22).

Rapidly increasing number of green jobs affects the dynamics of the labour market closely (UNEP 2009; ILO 2012; ILO 2013a; UNEP

2013). One of the issues to be discussed in this context is the workers' perception of green jobs. Due to their structures, green jobs not only reduce environmental problems, but also try to ensure the sustainability of work life (Linton 2008, 233; Peters, Eathington, and Swenson 2011, 12; Delmas and Pekovic, 2012: 13). In the scope of job satisfaction concept as a part of sustainability of work life, one of the questions to find an answer is whether conventional job satisfaction structure is suitable for green job workers or not. Thus the aim of this research is to examine if the conventional job satisfaction structure is valid for green job workers. In the light of previous researches (Chan and Lam 2012; OECD 2012; ILO 2013a; ILO 2013b), this paper puts forward that the job satisfaction structure of green job workers is different than conventional job satisfaction structure.

Green Jobs

Even though there is not one globally accepted definition, the most general form of green jobs are decent jobs that contribute to preserve or restore the environment in traditional sectors such as manufacturing and construction, or in new ones such as renewable energy and energy efficiency (ILO 2014, 2). The United States Department of Labor (2013) defines green jobs as jobs producing goods or services considering the environmental interests or the protection of natural resources and workers fulfilling their duties in the production process in an environmental friendly manner and completing the production process using less natural resources. The National Technical Assistance Registry (NTAR) defines green jobs as jobs resulting from traditional sectors like production, infrastructure, tourism and logistics equipped with environmental and business priorities with decent work conditions (National Technical Assistance Registry 2008, 4).

While Peters, Eathington, and Swenson (2011, 11) see green jobs as protecting environmental and natural resources, mitigating climate changes and housing objectives ensuring energy security, Raymond, Svendson, and Campbell (2013, 287) evaluate green jobs as offering decent job standards to low-income workers who work in fields having environmental priorities with activities like reducing energy demand or carbon emissions.

As it is seen, green jobs are built on two basic concepts. The first concept is the protection of the environment or to reduce environmental damage to a minimum level; the second is to offer decent job opportunities to workers. From this point it can be said that only jobs

providing these two criteria at the same time can be considered as green jobs.

Job Satisfaction

Job satisfaction as a concept came up for Hawthorne research in 1924 (Muchinsky 2006). As a concept for the first time it was defined by Hoppock as 'a combination of a person's psychological, physical and environmental events from his job to obtain job satisfaction/be satisfied' (Yew 2008). Vroom (1964) defines job satisfaction as the orientation of the emotional state an individual already is in for the job role; Locke (1976), the worker obtaining the emotional gratification after making the assessments belonging to the work; Levy and Davis (1988); the satisfaction or dissatisfaction workers get from their work; Schermerhorn, Hunt, and Osborn (1994), the degree in which expectations in the psychological agreement are being met; Spector (1997), the degree of enjoyment workers get from their job; Hellman (1997) defines it as the combination of the worker's emotional and cognitive reactions it gets from the difference between what they already receive and what they want. Job satisfaction of a worker is defined by the financial and moral satisfaction a worker gets (pay, richness of social life and meaning of work) from its job, if a person is financially and morally content from his/her job, it is possible to speak of job satisfaction (Çivilidağ 2011, 56). A worker that is satisfied enough by its job, enjoys life, displays positive actions, has a healthy psychology and is valued as an individual having a growing success in business and private life (Demirel 2014, 4925). On the other hand, a worker that does not get enough satisfaction by its job experiences negative feelings, tends to move away from its job, is indifferent towards its job and is valued as an individual that bears hopeless thoughts about the future (Rice, Near, and Hunt 1980, 44; Tett and Meyer 1993; Spector 1997; Saari and Judge 2004, 400; Duyan 2007, 27; Randstad 2012, 11; Sageer, Rafat, and Agarwal 2012, 35).

In the literature the early form of job satisfaction contains 5 dimensions such as pay, nature of work, operating procedures, supervision and co-workers (Keser 2005). Due to the change in the meaning of job, 4 more dimensions were added to job satisfaction structure which are promotion, fringe benefits, contingent reward and communication (Spector 1985; 1997; Currivan 1999; Friday and Friday 2003; Crossman and Abou-Zaki 2003). As a result, conventional job satisfaction structure includes 9 dimensions in total, which are explained in a detailed way in research method part in this paper.

Relationship between Green Jobs and job Satisfaction

Green jobs aim to create a sustainable economy sensitive towards people and environment. Economic systems that do not have sustainable goals (brown economy) will have a clear effect on individuals and the quality of their job (Muhaisen and Ahlback 2012, 6; Chan and Lam 2012, 191; Bowen 2012, 2; OECD 2012, 5; ILO 2013a, 17; ILO 2013b, 24). A research done by EUROFOUND focuses on the expectations of workers on the newly established jobs. The obtained results show that global climate changes affect the working quality of workers in a negative manner. According to this, workers experience anxiety regarding their working quality (decreasing of decent jobs standards) after climate changes and it is reported that in parallel to climate changes there will be a decline in working quality (EUROFOUND 2012, 12).

In order to determine the attitudes of individuals towards green jobs, Work and Life Quality in New & Growing Jobs (2009; 2011) investigation group has performed studies and within these studies, the group focuses on the working quality of workers in low paid sectors in Europe and one of the sectors investigated in the report is the construction sector. This section of the report compares the attitudes of workers towards their jobs and work quality of workers that are working in green and brown construction sectors. Accordingly, individuals employed in the construction sector encounter seven main problems. These problems are:

- illicit work or seasonal unemployment,
- underpaid,
- overtime work,
- no appropriate trainings are given for specialist areas,
- materials as a threat to health,
- the absence of occupational health and safety conditions and
- the lack of trade union organizations.

Green construction businesses propose permanent employment contracts to workers. These contracts avoid workers to do illicit work like seasonal unemployment and so on. Green construction sectors pay hourly more (between 20% and 120%) to workers compared to equal brown jobs. Thus, it is plausible to say that workers in the green construction sector receive more pay compared to brown jobs. This payment level is an indication that workers receive social payment instead of minimum wage. Organizations that perform green construction jobs also avoid overtime work. These organizations that

conform to the daily one-hour at most overtime work law, are changing into organizations where work-life balance is provided. Green construction organizations giving appropriate expert area education to workers, have managed to reduce employee turnover rate. The materials used during construction works also not containing toxic substances provide workers less exposure to harmful substances. Green construction organizations provide better occupational health and safety standards. Results show that green construction workers face less barriers when it comes to trade union organization (Work and Life Quality in New & Growing Jobs 2009, 86–101; 2011, 3–11). Therefore, it has been detected that European workers in green construction sectors have better working conditions than workers in similar sectors (brown construction).

The similar results can be found in another research of the same research group (Work and Life Quality in New & Growing Jobs). According to this, searching for a job, especially searching for decent job is difficult (Tejari 2011, 218) for middle or low skilled workers (for example, carpenters) expressing that green jobs offer good conditions and that they want to stay in this sector (Work and Life Quality in New & Growing Jobs 2012a, 52–9). Another study shows that green jobs have a healing effect on both environment and working conditions (Work and Life Quality in New & Growing Jobs 2012b, 25–6). When examining all the obtained findings, it can be said that green jobs offer decent job standards and are perceived as positive.

Workers evaluate green jobs with two different views. The first one is that workers evaluate green jobs as jobs that improve working conditions and working life quality compared to other jobs and therefore are better (Omar et. al. 2013, 411–2). The second one is that workers express that brown jobs worry them about the future when it comes to the environment and therefore they tend to orient towards environmental friendly jobs (EUROFOUND 2012, 12). Working in a green job means receiving a good payment, effective health services, career progression and learning opportunities and doing an enjoyable job (Drobnic, Beham, and Prag 2010, 207). Furthermore, workers consider green jobs as sustainable in terms of environmental and human aspects (Work and Life Quality in New & Growing Jobs 2011, 31).

Purpose of the Research

The information above gives clues about green job satisfaction structure might be different than the conventional job satisfaction structure. Thus the aim of this research is to examine if the conventional

job satisfaction structure is valid for green job workers. In the light of previous researches (Chan and Lam 2012; OECD 2012; ILO 2013a; ILO 2013b), this paper puts forward that the job satisfaction structure of green job workers is different than conventional job satisfaction structure. The hypothesis of the research is as in the following;

H1 *Job satisfaction structure of green job workers is different from classic job satisfaction structure.*

Research Method

Within this research, mixed method strategy was used. In order to determine if the business is green or not, structured interview technique was used; to measure the job satisfaction, survey technique was used.

The questions in the structured interview form have been created on the basis of green business measurement criteria. The first of these criteria is environment measurement (i.e. The organization should have the ISO 14001 certificate); the second is decent jobs (i.e. Working hours should be well organized; there should be no long and exhausting work). The environment measurements that determine whether a business is green were created from related articles (Jabbour, Santos, and Nagano 2010; ILO 2011; Renwick, Redman, and Maguire 2013; ILO 2013b). Decent job measurements are determined as the indicators that developed by Jarvis, Varma, and Ram (2011).

The survey form used within the research consists of two parts. In the first part, participants were asked to indicate their gender, position, marital status, educational level, age, work years and weekly working hour. In order to determine the demographical specifications of the participants, seven questions were asked in this part. In the second part however the aim was to measure job satisfaction of the participants and job satisfaction scale of Paul Elliot Spector (1997) has been used.

Job satisfaction scale consists of thirty-six items and is evaluated on six point measurements (1: I totally do not agree, 2: I do not agree, 3: I partially do not agree, 4: I partially agree, 5: I agree, 6: I totally agree) and consists of nine dimensions. These are:

- *Pay:* consists of the views of the participants upon pay levels. It is plausible to say that when this sub scale evaluation rate increases, the individual gets a higher job satisfaction from its pay. Within this sub scale; there are items like 'I believe I receive a fair pay compared to the work that I am performing.'
- *Promotion:* reflects the thoughts regarding promotion policies

within the organization. It is shown that participants who value this sub scale with a high rate, the satisfaction received from the promotion system within the organization is high. Within this sub scale; there are items like 'It is low for me to be promoted.'

- *Supervision:* contains the evaluation of managers by participants. It is shown that participants who value this sub scale with a high rate feel a high satisfaction from its managers. Within this sub scale; there are items like 'My manager is not fair towards me.'
- *Fringe Benefits:* contains the thoughts of participants regarding fringe benefits and additional rights within the organization. It is shown that an individual valuing this sub scale with a high rate receives a high satisfaction from fringe benefits and additional rights. Within this sub scale; there are items like 'The rights and benefits within my organization are better than many other organizations.'
- *Contingent Rewards:* the goal is to measure the views of the participants regarding rewards and appreciation system within their organization. It is shown that a worker valuing this sub scale with a high rate receives a high satisfaction from reward system. Within this sub scale; there are items like 'When I do my job right, I receive appreciation.'
- *Operating Procedures:* describes the area in which participants evaluate the working terms and working rules within the organization. It is shown that a high rate for this sub scale creates a high satisfaction on the worker regarding working terms and rules. Within this sub scale; there are items like 'The rules at my working place make it hard for me to do my job worthy enough.'
- *Co-Workers:* defines the thoughts of participants regarding their co-workers. It is shown that a high rate for this sub scale means that an individual receives high satisfaction from its relationship with its co-workers. Within this sub scale; there are items like 'I love the people with whom I work with.'
- *Nature of Work:* is an area that evaluates the thoughts of participants regarding nature of work (meaning of work). It is shown that a high rate for this sub scale means that the work itself means a high satisfaction for the individual. Within this sub scale; there are items like 'I like the work that I am doing at my work place.'
- *Communication:* is an area that shows how participants evaluate communication channels within their organization. It is shown

that a high rate for this sub scale means that communication channels within the organization create a high satisfaction for the individual. Within this sub scale; there are items like 'I believe communication at my work place is good.'

Research Sample

Within the scope of the research, a list of organizations has been prepared that are in business in Thrace region, Turkey (Kırklareli, Edirne, and Tekirdag provinces). 53 organizations that have more than 500 workers were found in Thrace region (Thracian Development Agency 2011, 28). The organizations in the list were alphabetically ordered and called by phone. Among 53 organizations, only 2 organizations agreed to be volunteers for research.

The organization that was detected to be a green organization had a total of 533 workers at its production facilities. After the meeting, necessary approvals were taken in order to perform the survey in the production facility and the surveys were completed. Amongst all workers 533 survey forms for green jobs have been distributed, but only 401 workers agreed to participate in the research. From the survey forms that came back, 22 survey forms were found to be missing or incorrect and these have been left out of the evaluation and the evaluation was conducted with a total of 379 surveys.

Table 1 shows the demographics of green job workers. According to this table, participants that represent the green organization are 15% female (57 people) and 85% male (322 people). 83.6% of participants (317 people) are blue-collar and 16.4% (62 people) are white-collar workers; 71.8% (272 people) of these participants are married

TABLE 1 Demographics of Green Job Workers

Category		Frequency	Percent
Gender	Female	57	15.0
	Male	322	85.0
Work Type	Blue collar	317	83.6
	White collar	62	16.4
Marital Status	Married	272	71.8
	Single	107	28.2
Educational Status	Primary school	122	32.2
	High school	170	44.9
	Short cycle	30	7.9
	Bachelor	36	9.5
	Master and above	21	5.5

and 28.2% (107 people) are single. 32.2% (122 people) has a primary school education, 44.9% (170 people) a high school, 7.9% (30 people) a short cycle, 9.5% (36 people) a bachelor and 5.5% (21 people) have a master or doctorate educational level. Average age of the participants is 34, their average tenure is 8 years and they work weekly 45 hours.

Structural Equation Modeling

In the model developed by Spector, job satisfaction is measured by averaging the whole scale. Yet, in this study, the variable 'nature of work' is presupposed as representing the job satisfaction. Similarly, in the literature, it is seen that many researchers have preferred to use 'nature of work' instead of 'job satisfaction' (Eğinli 2009; Keser 2005; Saari and Judge 2004; Toker 2008). Though the variable 'nature of work' is measured by a different measurement tool, the implied topic by the researchers is the satisfaction gained by work life of the individual. In addition to that, 'I like my job,' 'I am proud of my job' items are included in the variable 'nature of work' in the Spector's job satisfaction scale, so that it seems possible for this variable to be used instead of job satisfaction.

First step of structural equation model is exploratory factor analysis and SPSS 22 was used to perform this analysis.

Table 2 shows the results of KMO and Bartlett test results for job satisfaction scale. According to that, p value of Bartlett test is 0.00 and KMO value is 0.835. Thus, the scale is proper for exploratory factor analysis where principal component was preferred as the extraction method. Varimax with Kaiser Normalization was preferred as the rotation method and the least factor loading was determined as 0.50 (Costello and Osborne 2005, 4; Afthanorhan 2013, 200).

Table 3 shows the results of rotated matrix for job satisfaction scale. According to results, it is indicated that structure of job satisfaction scale has not altered radically. In comparison to original scale, fringe benefits factor was replaced within pay factor because of similar meanings, the name of new factor did not need to be changed. Item 5 and 13 were out of evaluation because of low fac-

TABLE 2 KMO and Bartlett Test Results for Job Satisfaction Scale

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.835
Approx. Chi-Square		5820.531
Bartlett's Test of Sphericity	*df*	561.000
	p	0.000

TABLE 3 Rotated Matrix for Job Satisfaction Scale

Items	1	2	3	4	5	6	7	8
I10	0.777							
I1	0.766							
I19	0.720							
I28	0.665							
I4	0.643							
I22	0.638							
I29	0.532							
I13	0.390							
I12		0.730						
I21		0.729						
I3		0.667						
I30		0.527						
I25			0.803					
I16			0.802					
I34			0.753					
I7			0.742					
I11				0.845				
I20				0.816				
I2				0.761				
I33				0.645				
I18					0.741			
I26					0.688			
I9					0.648			
I36					0.533			
I17						0.804		
I8						0.796		
I35						0.550		
I27						0.523		
I24							0.850	
I15							0.761	
I31							0.727	
I6							0.528	
I23								0.866
I32								0.807
I14								0.560
I5								0.410

tor loadings (Costello and Osborne 2005; Afthanorhan 2013) and it is possible to see results of exploratory factor analysis at table 4.

TABLE 4 Summary of Exploratory Factor Analysis Results

Variables	Items
Pay	I10, I1, I19, I28, I4, I22, I29
Operating Procedures	I6, I15, I24, I31
Promotion	I2, I11, I20, I33
Supervision	I3, I12, I21, I30
Contingent Reward	I14, I23, I32
Coworkers	I7, I16, I25, I34
Nature of Work	I8, I17, I27, I35
Communication	I9, I18, I26, I36

TABLE 5 Rotation Sums of Squared Loadings

Variables	Rotation Sums of Squared Loadings	
	% of variance	Cumulative %
Pay	10.678	10.678
Operating Procedures	8.645	19.323
Promotion	7.948	27.271
Supervision	7.930	35.201
Contingent Reward	7.706	42.907
Coworkers	7.003	49.910
Nature of Work	6.959	56.868
Communication	6.615	63.483

Table 5 shows rotation sums of squared loadings and 63% of the variance explained by model.

Table 6 shows the internal consistency and correlation results of the variables. Cronbach's Alpha of the whole model was calculated as 0.892.

TABLE 6 Internal Consistency and Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1)	0.840							
(2)	0.307*	0.763						
(3)	0.202**	0.042	0.806					
(4)	0.331**	0.266**	0.183**	0.779				
(5)	0.333**	0.256**	0.326**	0.380**	0.706			
(6)	0.037*	0.292**	0.136**	0.237**	0.311**	0.810		
(7)	0.191**	0.218**	0.086*	0.458**	0.432**	0.337**	0.758	
(8)	0.192**	0.276**	0.279**	0.537**	0.380**	0.323**	0.499**	0.774

NOTES Column/row headings are as follows: (1) Pay, (2) Operating Procedures, (3) Promotion, (4) Supervision, (5) Contingent Reward, (6) Coworkers, (7) Nature of Work, (8) Communication. * $p < 0.05$, ** $p < 0.01$.

TABLE 7 Endogenous and Exogenous Variables for Structural Equation Model

Endogenous	Exogenous
Job satisfaction	Pay
	Promotion
	Supervision
	Contingent Reward
	Operating Procedures
	Coworkers
	Communication

TABLE 8 Endogenous and Exogenous Variables for New Structural Equation Model

Endogenous	Exogenous
Job Satisfaction	Supervision
	Contingent Reward
	Coworkers
	Communication

Table 7 shows endogenous and exogenous variables for structural equation model by taking into consideration of factor structure obtained in consequence of exploratory factor analysis. According to this model, job satisfaction is explained by pay, promotion, supervision, contingent reward, operating procedures, co-workers and communication.

Figure 1 shows *t*-scores for structural equation model. Bootstrapping method has been used in SmartPLS 2.0, 5000 samples and 379 cases were arranged for analysis. Using a two-tailed *t*-test with a significance level of 5%, the path coefficient will be significant if the *t*-statistics is larger than 1.96. According to results; pay, operating procedures and promotion were not significant in the model because of low *t*-scores; because of these three variables were eliminated.

After eliminating the low *t*-scored variable, a new model was proposed in table 8. According to the new model, job satisfaction was explained by supervision, contingent reward, co-workers and communication.

Figure 2 shows *t*-values of the new model and results show that communication, supervision, contingent reward and co-worker variables are significant in the model.

Figure 3 shows path coefficient of the new model. The coefficient of determination, R^2, was 0.392 for job satisfaction which means communication, supervision, contingent reward and co-worker explain 39.2% of the variance of job satisfaction.

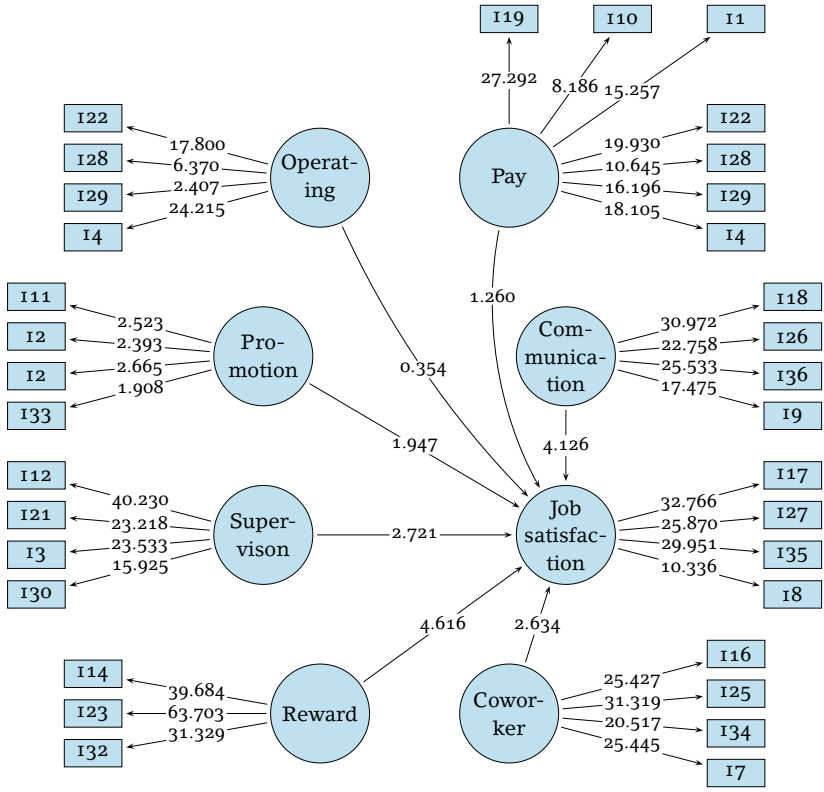

FIGURE 1 *t*-Values of the Model

After all, it is possible to say that hypothesis 1 is accepted. Conventional job satisfaction structure includes 9 factors but job satisfaction for green job worker structure includes 4 dimensions of job satisfaction.

- The most important variable for job satisfaction of green job workers is contingent reward. Contingent reward positively affects job satisfaction (0.265). Results show that having award system, effectiveness of award system and feedback mechanism of award system positively affects job satisfaction of green job workers.
- Communication positively affects job satisfaction (0.262). Results show that the importance of successful communication channel, quality of communication with co-workers and supervisors, multiple and coordinated communication type positively affect job satisfaction of green job workers.

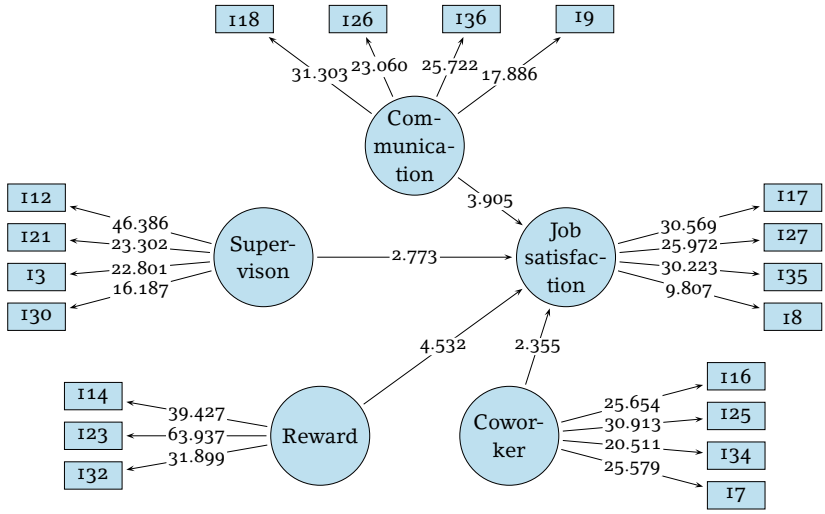

FIGURE 2 *t*-Values of the New Model

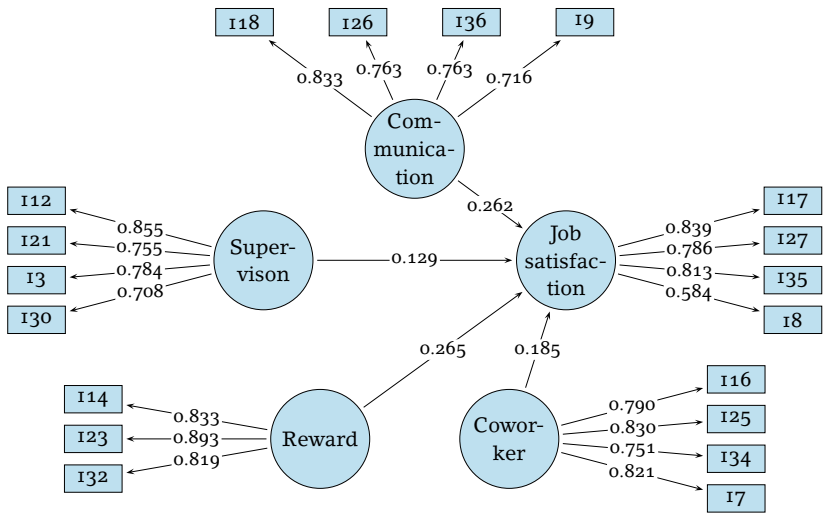

FIGURE 3 Path Coefficients of the New Model

- Supervision positively affects job satisfaction (0.185). Results show that increase of codetermination possibilities and good communication with supervisors affect job satisfaction of green job workers in a positive way.
- Coworkers positively affect job satisfaction (0.128). Results show that being in good relations with co-workers, being in a success-

ful group and being in team work positively affect job satisfaction of green job workers.

Results and Discussion

Green jobs are defined as eco-friendly and decent jobs. Most of the researches in the literature focus on the development and also economic and environmental effects of the green jobs. Only limited numbers of researches examine the relationship between green jobs and individual. Job satisfaction of green job workers gives crucial clues upon sustainability of work life. In this point, the usage of right measurements in order to measure the job satisfaction of green job workers supports the literature on the subject of being scientific and accurate of these measurements. This study shows that only 4 factors (supervision, contingent reward, co-workers, and communication) affect the job satisfaction of the green job workers instead of conventional 9 factors job satisfaction scale.

Some of the studies in the literature put forward that the expectations of the workers in green industries might be different than the ones in classical industries (Muhaisen and Ahlback 2012; Chan and Lam 2012; Bowen 2012; EUROFOUND 2012). Thus, comparative analyses show that green job workers' work life expectations might be different as they do not face the problems (e.g. low wages, overtime work, etc.) that the classical industry workers do (Work and Life Quality in New & Growing Jobs, 2009; 2011; 2012a; 2012b).

Comparing to equivalent classical jobs, due to being much of the wages as 20–120% for green job workers, it might be possible that the pay and fringe benefits variables seem insignificant. On the other hand, as the promotion turns the workers to authorized signatory individuals, it might be possible to say that this variable is also insignificant on job satisfaction. The physical and psychological working conditions might be insignificant in green job workers' job satisfaction as this variable is already happened in their working conditions.

Bitsch and Hogberg (2004, 12), realizing one of the pioneering researches in this topic, indicate that the variables most affecting the job satisfaction of green industry workers are personal life, supervision and compensation. Hence, in this present research, the variables 'contingent reward, communication, supervision and coworker' are resulted as the factors affecting the job satisfaction of green job workers.

The similar results of the researches done in different years and different countries show the necessity to do more research about

that the structures of the job satisfaction of the green job workers might be different.

Limitations and Future Research

This survey was built on the data obtained from only one region and one sector. In order that the data had a qualified validity, it is required to increase the number of participants and sectors.

For future surveys, it will be much particular to measure the job satisfaction of the green job workers by using questionnaire and interview methods together. In addition, the future surveys – by considering the differences in sectors (e.g. labour-intensive or technology intensive) – will contribute to the literature on the subject that individuals tend to be interested much whether on green jobs or brown jobs.

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