International Journal for Quality Research 13(1) 193-220
ISSN 1800-6450

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Article info:
Received 02.09.2018
Accepted 14.01.2019

UDC - 331.101.32
DOI - 10.24874/IJQR13.01-12

DEVELOPMENT AND VALIDATION OF JOB SATISFACTION SCALE FOR DIFFERENT SECTORS

Abstract: *In a competitive business environment retaining skilled and talented employees are major challenges to the organizations. Amongst, job satisfaction plays a vital role in employee retention rate. Job satisfaction is a multidimensional construct and it has been influenced by many variables. The purpose of the study was to develop and validate the common measuring instrument that suits any types of sectors. A survey using a questionnaire was conducted among 697 employees working in Manufacturing, Construction, Nursing, IT industries. The collected data were subjected to EFA to reduce the items; to validate the instrument CFA was done and SEM was done to determine the interrelationships between extracted components. Through the EFA 18 significant dimensions were extracted, these 18 dimensions together explained 87.04 percent of the total variance. Using CFA following 8 components were extracted and validated the instruments. These eight components address 82.35 percent of the total variance. All the important fit indices of the CFA model indicated a good fit and model proposed for Job satisfaction consisting of 8 factors with 52 items has construct validity.*

Keywords: *Job Satisfaction, Confirmatory Factor Analysis, Structural Equation and modelling, Exploratory Factor Analysis*

1. Introduction

Job satisfaction of employees is the relation on one person's own assessment on his/her job against the matters and concerns that matter to them, and these sentiments and emotions involved will considerably have an influence on person's work attitude, Roodt et al. (2002). Job satisfaction of employees is associated with superior job performance, positive work values, elevated levels of employee motivation, and minor rate of absenteeism, turnover and burnout argued by Ngo et al. (2009). Swamy et al. (2015) stated that satisfied employees are the key asset to the organization. Nanjundeswaraswamy (2016) opinion is to continue in the cutthroat business environment, organizations have to preserve skilled and talented employees; this is possible only through the humanized job design process that enriches the employee's job satisfaction.

There have been several types of research on the employee job satisfaction, its drives and their effects on different organizational and employees concept. These varieties of concepts and the effect of job satisfaction on them were examined for the purpose of

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contributing a solution to the employees and organizational issues. Although many studies have been made on the job satisfaction concept, from the literature it is identified that there are many differences in the selections of dimensions, development and validation of measuring instrument.

This research adapted the standard methodology for the development of the measurement scales in social sciences according to Churchill (1979); and Llusar and Zornoza (2002) for the development and validation of job satisfaction measuring instrument that suits for all the sectors. In this research through the extensive literature review, important job satisfaction components were identified; by using EFA items were reduced based on eigen value and item loading. By using Confirmatory Factor Analysis (CFA) and model fitness was determined and Structural Equation Modelling (SEM) was done to determine the interrelationships between extracted components using AMOS.

2. Literature review

Weiss et al. (1967) designed an instrument to measure employee job satisfaction, by considering 20 dimensions which are effects on job satisfaction, the dimensions are as follows; Ability Utilization, Achievement, Activity, Advancement, Authority, Company Policies, Compensation, Coworkers, Creativity, Independence, Moral Values, Recognition, Responsibility, Security, Social Status, Social Service, Human Relations, Supervision, Working Conditions. For the validated instrument is named as the Minnesota Satisfaction Questionnaire (MSQ). Hirschfeld 2000 stated that revision of Minnesota Satisfaction Questionnaire (MSQ) necessary by adding some components such as job involvement, overall job satisfaction, and volitional absence variables, in addition to the job satisfaction components for the better measurement of the status of Job satisfaction of employees.

By considering five major drives of job satisfaction like Nature of work, Compensation and benefits, Attitudes toward supervisors, Relations with co-workers and Opportunities for promotion, Smith et al. (1969) developed Job Description Index (JDI) to measure the extent of job satisfaction of employees. Tasios and Giannouli (2017) stated that JDI is more suitable for measuring specific aspects of work and not general job satisfaction.

Locke and Dunnette (1976) classified the job satisfaction drives into two like intrinsic and extrinsic drives. The intrinsic drives were coworkers, a method of supervision, and the work itself. While extrinsic drives were paid package, company management style, working condition, opportunities for promotion, recognition. Tatsuse et al. (2011) and Jurgensen (1978) used five dimensions to measure the employee job satisfaction they were supervision, compensation, policies, promotion opportunities, coworkers. Spector (1985) considered nine components to assess the extent of Job Satisfaction in employees they were, Pay policies, Promotion Policies, Supervision methods, Fringe benefits, Reward System, Operating conditions, Coworkers, Nature of work, and Communication. Kathawala et al. (1990), argued that salary is the most important drive for the job satisfaction of employees. Koustelios (1991) identified the six predominant components to quantify the employee job satisfaction level and they were Working Conditions, Earnings, Promotions, Nature of Work, Immediate Superior, and the Institution as a whole he coined that instrument as Employee Satisfaction Inventory (ESI). Drakou et al. (1997); Platsidou (2010); Belias et al. (2014); Belias et al. (2015) all stated that ESI instrument has not been validated and reliability value Cronbach alpha was very low for few items. Rentsch et al. (1992) used pay policies, promotion opportunities, coworker's relationship, supervision methods, and work itself to measure the employee job satisfaction level. Clark (1997)

adopted, employee rights, working conditions, coworker's manners, supervisor attitude, involvement in the process of decision making factors to quantify job satisfaction of employees. Stamps (1997) argued that job satisfaction is a complex, multidimensional construct that captures an individual'sreactions to specific components of their work. In their research Stamps used six significant components of work to estimate the status of job satisfaction for employees they were Pay policies, Autonomy, Task requirements, Organizational requirements, Interactions and Prestige.

Cano et al. (2004) study proved that interpersonal relationships, recognition and supervision are the important drives of job satisfaction. Christen et al. (2006) proposed a model for employee's job satisfaction which includes: Job-related factors, Role perceptions, Job performance and Firm performance. Vidal et al. (2007) argued that Job satisfaction is a complex phenomenon comprising comprise of multi-facets like salary, working environment, autonomy in work, communication method and organizational commitment.

Parvin and Kabir (2011) assessed the level of Job satisfaction of employees through their Working Condition, Pay policies, Promotion methods, Fairness, Job Security, Relation with Co-worker and Supervisor. Sell and Cleal (2011) research illustrate that psychosocial work environment factors, participation in the decision-making process related to the workplace, social support, and influence are the predominant factors and have significant impacts on the status of job satisfaction of employees. Neriman et al. (2011) analyzed the employee job satisfaction through, Management and managers in the organization, Patient examination, treatment and care, Personal and interpersonal relations, Career improvement opportunities, Organizational participation, Motivation, Payment. The study also revealed that Payments and organization related dimensions significantly associated with job satisfaction. Swarnalatha and Sureshkrishna (2012) evaluated the intensity of job satisfaction with, work performance, commitment, compensation, responsibility, achievement, supervisory support, workgroup cohesion, quantitative workload, the instrument consist of 25 items for 6 components and also this instrument is not validated through the content, convergent and divergent validations method.

Tariq et al. (2013) research revealed that different variables like workload, salary, and stress at the workplace and work-life balance are associated with employee job satisfaction. Saeed et al. (2013) research evident that employee relations, salary, fringe benefits methods and supervision methods are the predominant factors that effect employee job satisfaction.

Ayamolowo (2013) adopt five components to measure the status of job satisfaction using work environment, professional recognition, management practices, the support structure in the workplace, education and career advancement and occupational health and safety. Md Yusof et al. (2014) research used salary, working environment, and stress at the workplace, leadership style dimensions to quantify the employee job satisfaction. Skitsouet al. (2015) research used Job Satisfaction Survey questionnaires designed by Spector (1985), it includes nine dimensions of job satisfaction, namely salary, promotion policies, supervision method, general benefits, moral, rewards, operational procedures, partners, nature of work, a method of communication.

Lottrup et al. (2015); Vakola and Nicholaou (2012) and Giannikis and Mihail (2011); Agarwal (2016) research reveals that personal factors like personality, gender, age social differences etc, and environmental factors like job stability, salary, fairness in workplace and economy can affect job satisfaction.

Education level, self-awareness, empathy, emotional intelligence, and social skills, also

associated with job satisfaction according to the Ouyang, et al. (2015); Belias et al. (2014) research results. Equity in the workplace, salary, rewards, promotion and supervisor behaviour are positively associated with employee job satisfaction as stated by Onorato and Zhu (2015); Mudor and Phadett (2011).

Tabatabaeiet al. (2013) research used Job Descriptive Index developed by Smith et al. (1969) to measure the Job satisfaction, following five dimensions were included in the Job descriptive index they were Nature and content of the job, Pay, Supervision, Promotion opportunities, Relationships with coworkers. Kouvoussis (2016) study used a variety of factors such as working environment, relations with colleagues, Command, career opportunities, professional benefits and obligations to measure the level of job satisfaction among employees. Yousef (2017) used six dimensions, namely working conditions, pay, promotion, supervision, co-workersand security to measure the level of job satisfaction.

The research by Sudha and Beena Joice (2017) investigates the intensity of job satisfaction among the employees by salary, co-worker relationship, career planning, work environment, rewards on job satisfaction. Dawson, et al. (2017) research used following dimensions to quantify the level of job satisfaction they were job security, satisfaction with total pay, satisfaction with hours, satisfaction with actual work itself.

From the literature it is evident that Job Descriptive Index (JDI) instrument designed by Smith et al. (1969) and Minnesota Satisfaction Questionnaire (MSQ) designed and validated by Weiss et al. (1967), were extensively used by the different researchers. However, these scales were developed in 1960 and its measures can be debatable in the present day scenarios, due to various reasons such as the effect of globalization, liberalization, privatization and competitions in the business.

Further, Maslow's (1943) hierarchy of needs theory claims that, once the low-level needs fulfil, high-level needs will actuate. As the technology changes because of liberalization, Globalization and Privatization, employee living standards also change. Once living standards of employees changes, employees need also varies, if needs are fulfilled employees will be satisfied otherwise they will be dissatisfied. To survive in the competitive market organizations need to reduce the absenteeism, retain skilled and talented employees, by improving level job satisfaction for the changed scenario. Therefore organizations need to ensure the status of Job satisfaction level of employees, based on the current conditions. Employers have to take necessary actions, to measure the current status of job satisfaction of employees, by incorporating the various Job satisfactions dimensions which have an adverse effect on the job by itself and employees. Hence there is a need for revising the existing job satisfaction scale by considering the present competitive and global economic scenarios and the labour market.

Form the literature review it is recognized that many researchers used a various mechanism to determine Employee Job satisfaction, these mechanisms measure less than 60 percent of total variance in the measurement of Job satisfaction. Hence, there is a need for developing a reliable scale to measure the employee Job satisfaction and validate the same.

3. Demographic characteristics

Any studies related to employees and without an enquiry into the demographic characteristic of the workers would reveal only half the legend.Job satisfaction of employees depends on demographic characteristics of firms and employees as stated by Samad (2006); Long et al. (2007); Buker et al. (2010); and Tabatabaei et al. (2013). Employee demographic attributes

like age, education, experience, average monthly salary, etc and firmsdemographic characteristics like size of the firms, cost of the firms, age of the firms etc, act as a catalysts, which modify the employees perception towards job satisfaction according to De Vane and Sandy (2003). Many researchers identified the associations of demographic with employee job satisfaction. Valid analysis of job satisfaction of employees is partial unless the differences of demographic attributes are recognized, deliberate and accommodate in the decision-making process.

4. Methodology

A survey was conducted among 697 employees working in different sectors such as Manufacturing, Construction, Nursing, IT industries using a predetermined questionnaire. The data collected were subjected to Exploratory Factor Analysis (EFA) to reduce the items; to validate the instrument Confirmatory Factor Analysis (CFA) was done using SPSS16. Further Structural Equation Modeling (SEM) was done to determine the interrelationships between extracted components using Amos.

4.1. Components selection

From the literature review, 30 important Job Satisfaction components were considered based on the frequency of usage by the different researchers in their study. The components for the present study were; Compensation, Promotion, recognition of efforts, Leadership Style, Benefits, Welfare Facilities, Recognition/Rewards, Relation & Cooperation, physical work environment, Communication, Working Condition, Training & Development, Career Development Opportunities, Work-Life Balance, Work Stress, Work-Life Balance, Job Clarity, Organization Culture, Team Work, penalty system, Employee Engagement, Information Sharing, Promotion and Opportunity, grievance handling, nature of job, work and total life space, workload.

4.2. Design of Questionnaire

Survey approach method was adopted for this study. Questionnaires were developed as a measuring instrument in five-point Likert scale, with “5” is “strongly agree” and “1” is “strongly disagree”. The instrument was developed by considering job satisfaction as a dependent variable and 30 components that drive the job satisfaction were considered as independent variables, it consists of 120 items. The instrument consists of two parts. The first part of the questionnaire gathered general demographic factors of firms and employees. The second part of the questionnaire consists of 120 items of 30 job satisfaction components. To reduce the bias in responses of respondents, few items were intentionally negatively worded. During the analysis, these items responses were reverse scored. Care was taken to avoid the double barrel questions.

4.3. Predominant JobsatisfactionComponents

Through the Exploratory Factor Analysis (EFA) using Principal Component Analysis (PCA) allows the dimension reduction of the proposed measuring instrument and varimax rotation method maximizes the sum of variance for required loading according to Hair et al. (1998).

For the present study, Exploratory Factor Analysis was conducted to check the dimensionalities of 120 items from 30 components were analyzed using Principal Component Analysis method and from the varimax rotation, 18 predominant factors had Eigen values greater than 0.5 were taken in account. Basic 18 components of job satisfaction were obtained they were Compensation, Promotion, Leadership Style, Benefits, Welfare Facilities, Recognition / Rewards, Relation & Cooperation,

Communication, Working Condition, Training & Development, Career Development Opportunities, Work-Life Balance, Work Stress, Organization Culture, Team Work, Job Clarity, Participative management, Job security. Table 2 shows the rotated matrix of factor analysis.

Kaiser-Meyer- Olkin (KMO) statistic was performed to check the adequacy of the collected data sample. Table 1 presents test statistics, for the present study KMO value is 0.759, it greater than 0.6, it is considered to be adequate stated by Kaiser and Rice, (1974). Barlett's Test of Sphericity statistics (6393.739, dof. 2016, Sig.0.000) indicates values are significant and there exist non-zero correlations at the significance level of 0.000, it provided an adequate basis for proceeding with the factor analysis.

Table 1. KMO and Bartlett's Test results

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.759
Bartlett's Test of Sphericity	Approx. Chi-Square	6393.734
	Df	2016
	Sig.	.000

The outline of PCA factor loading is shown in Table 2. Based on EFA, subsequent 18 principal Job Satisfaction components were selected based on Eigenvalues which are greater than 1.

1) Compensation
2) Promotion
3) Leadership Style
4) Benefits
5) Welfare Facilities
6) Recognition/Rewards
7) Relation & Cooperation
8) Communication
9) Working Condition
10) Training & Development
11) Career Development Opportunities
12) Work-Life Balance
13) Work Stress
14) Organization Culture
15) Team Work
16) Job Clarity
17) Participative management
18) Job security

Further, in order to assess the significance of the data through the items for factor analysis, the commonalities derived from the factor analysis were reviewed. The item loading is greater than 0.5, falling in the range of 0.520 to 0.880, it suggests that the data set was appropriate according to Stewart (1981). For the final instrument, 64 items were extracted based on those variables having a loading of at least 0.50 on a single factor.Table 3 summarized the extraction of eight components through the factor analysis.

The reliability coefficient was 0.870 Cronbach's alpha value, it was concluded that the questionnaire has good reliability and is acceptable for statistical computation, as Cronbach alpha is more than 0.7, as prescribed by Nunnally (1978). Factor loadings of 0.50 or greater are "Practically significant" for a sample size of 100 according to Hair et at. (2009). It is shown in Table 3.

Table 2. Summary of Principal Component Analysis

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.293	11.933	11.933	8.293	11.933	11.933	8.293	11.933	11.933
2	7.717	11.104	23.037	7.717	11.104	23.037	7.717	11.104	23.037
3	6.486	9.357	32.370	6.486	9.357	32.370	6.486	9.357	32.370
4	4.341	6.353	38.727	4.341	6.353	38.727	4.341	6.353	38.727
5	4.418	6.246	44.973	4.418	6.246	44.973	4.418	6.246	44.973
6	4.027	5.794	50.767	4.027	5.794	50.767	4.027	5.794	50.767
7	3.877	5.579	56.346	3.877	5.579	56.346	3.877	5.579	56.346
8	3.633	5.228	61.574	3.633	5.228	61.574	3.633	5.228	61.574
9	3.276	4.714	66.288	3.276	4.714	66.288	3.276	4.714	66.288
10	3.051	4.390	70.678	3.051	4.390	70.678	3.051	4.390	70.678
11	1.624	2.337	73.015	1.624	2.337	73.015	1.624	2.337	73.015
12	1.597	2.298	75.313	1.597	2.298	75.313	1.597	2.298	75.313
13	1.533	2.206	77.519	1.533	2.206	77.519	1.533	2.206	77.519
14	1.474	2.121	79.640	1.474	2.121	79.640	1.474	2.121	79.640
15	1.422	2.046	81.686	1.422	2.046	81.686	1.422	2.046	81.686
16	1.414	2.035	83.721	1.414	2.035	83.721	1.414	2.035	83.721
17	1.174	1.689	85.410	1.174	1.689	85.410	1.174	1.689	85.410
18	1.164	1.675	87.085	1.164	1.675	87.085	1.164	1.675	87.085
19	0.972	1.254	79.346						
20	0.940	1.213	80.559						
21	0.850	1.097	81.656						
22	0.806	1.040	82.696						
23	0.765	0.987	83.683						
24	0.729	0.941	84.624						
25	0.670	0.865	85.488						
26	0.665	0.858	86.347						
27	0.617	0.796	87.143						
28	0.588	0.759	87.901						
29	0.539	0.696	88.597						
30	0.530	0.684	89.281						
31	0.501	0.646	89.927						
32	0.063	0.081	99.925						
33	0.058	0.075	100						
Extraction Method: Principal Component Analysis.									

Table 3. Summary of factor analysis

Factors	Measurable values	Weights	Eigen values	Variance	Accumulated
Compensation	Fair salary	.792	8.293	11.933	11.933
	Annual increments	.771			
	Allowances	.754			
Promotion	Fair promotion	.735	7.717	11.104	23.037
	Performance-based promotion	.720			
	Chances of promotion	.709			
	Promotion Opportunities	.679			
Leadership Style	Fair supervisor	.826	6.486	9.333	32.37
	Supervisor attitudes	.674			
	Supervisor orientation towards subordinates	.650			
	Decision-making policies	.637			
	Decision-making policies	.560			
Benefits	Magnitude of benefits	.772	4.341	6.357	38.727
	Benefits compared to other organization	.758			
	Benefits compared to another co-worker	.736			
	Accidental benefits	.696			
Welfare Facilities	Recreational facilities	.696	4.418	6.246	44.973
	Canteen facilities	.666			
	Medical benefits	.661			
	Transport facilities	.625			
Recognition/ Rewards	Recognition	.839	4.027	5.794	50.767
	Appreciation	.812			
	Rewarded	.794			
	Reward mechanism	.593			
	Fair reward process	.569			
Relation & Cooperation	Relationship with co workers	.719	3.877	5.579	56.346
	Relationship with an incompetentco-worker	.696			
	A pleasure to work with co-workers	.620			
	Bickering and fighting with co-workers	.569			
	Smooth relationship with co-workers	.534			
Communication	Proper channel	.766	3.633	5.228	61.574
	Proper direction of assigned work	.765			
	Accurate organizational goal	.687			
	Accurate information sharing	.671			
Working Condition	Quantity of work	.743	3.276	4.714	66.288
	Rules & procedures	.732			
	Good facilities	.636			
	Safety precaution	.575			
	Statutory norms	.510			

Table 3. Summary of factor analysis (continued)

Factors	Measurable values	Weights	Eigen values	Variance	Accumulated
Training & Development	Effectiveness of T&D (Confidence)	.791	3.051	4.39	70.678
	Sufficient number of Training	.790			
	The effectiveness of T&D (Morale)	.755			
	The effectiveness of T&D (Technical Ability)	.678			
	Adaptability of training output	.665			
	The effectiveness of T&D (Job satisfaction)	.508			
Career Development Opportunities	Opportunities for development	.688	1.624	2.337	73.015
	Amount of Opportunities for development	.543			
Work Life Balance	Time spend with family	.807	1.597	2.298	75.313
	Support form organization to fulfil the important responsibility of the family	.768			
	Origination work during the personal time in the home	.728			
Work Stress	Outcome of work	.678	1.533	2.206	77.519
	Willingness to work	.666			
	Unachievable deadline	.560			
Organization Culture,	Co-operation from other department	.768	1.474	2.121	79.64
	Comments and suggestion	.638			
Team Work	Team work and cooperation	.560	1.422	2.046	81.686
	Encouragement by the teammates	.731			
Job Clarity	Clear understanding of job	.643	1.414	2.035	83.721
	Clearly defined responsibility	.599			
Participative management	Decision making power	.579	1.174	1.689	85.41
	Employees input for decision making	.918			
	Autonomy to make an important decision	.801			
Job security	Job security	.560	1.164	1.675	87.085
	Secured job feeling	.550			

Table 4 represents the components of Job satisfaction and Question Numbers in the Questionnaires, negative questions and also Cronbach's alpha value for each component. The questionnaire used for the survey is shown in Appendix 2.

Table 4. Dimensions of Job satisfaction and Question Numbers in the final Questionnaires

Sl No	Dimensions of Job satisfaction	Question number in the Questionnaires	Negative Question number in the Questionnaires	Cronbach's alpha value
1	Compensation	1,2,3	-	0.917
2	Promotion	4,5,6,7	-	0.856
3	Leadership Style	8,9,10,11,12	8,9,11	0.986
4	Benefits	13,14,15,16	13	0.829
5	Welfare Facilities	17,18,19,20	-	0.886
6	Recognition/Rewards	21,22,23,24,25,	22,23	0.815
7	Relation & Cooperation	26,27,28,29,30	29	0.773
8	Communication	31,32,33,34	34	0.848
9	Working Condition	35,36,37,38,39	-	0.841
10	Training & Development	40,41,42,43,44,45	-	0.898
11	Career Development Opportunities	46,47	-	0.911
12	Work Life Balance	48,49,50	49,50	0.912
13	Work Stress	51,52,53	51,52,53	0.879
14	Organization Culture	54,55	-	0.827
15	Team Work	56,57	-	0.854
16	Job Clarity	58,59	-	0.906
17	Participative management	60,61,62	-	0.855
18	Job security	63,64	-	0.813

5. Validation of the instrument

Factor analysis, reliability, convergent validity and discriminant validity are the tests to measure the construct validity and reliability of the developed measuring instrument according to Bagozzi and Phillips (1982). For the present research study content validity, convergent validity, discriminant validity and through the Confirmatory Factor Analysis and Structural Equation Modeling using AMOS was done to check the validity of the developed instrument.

5.1. Content Validity

Content validity based on judgments about the sampling adequacy of test items. Sampling adequacy test gauges the soundness of scientific measurement of stated items in the instrument. Agreement among experts represents the items covers the stated objectives of the measurement. The designed questionnaires were circulated among 12 subject experts, for the feedback and suggestion about the relevance of questions intended to measure the job satisfaction of employees. Out of 12 expertise, 10 gave "yes" and 2 gave "no", based on the feedback Lawshe test was conducted, Content Validity Ratio (CVR) = 0.66, for sample size 12 CVR>0.56 is acceptable as mentioned by Lawshe, (1975) and Wilson et al., (2012). Thereforethe content of the designed instrument is relevant to measuring Job satisfaction.

5.2. Convergent validity

Convergent validity was examined to identify whether the constructs are different from one another. Convergent validity represents the consistency between the

applications made by different methods for the same purpose stated by different authours like Rao et al.,(1999); and Llusar & Zornoza, (2002). For present research the developed instrument was pretested for the small sample group and the research was expanded for larger group, it is identified that the result obtained for the two types of research were very close to each other, the results are presented in Table 5, is the final reliability and variance addresses by the each component of job satisfaction.

Table 5. Convergent Validity

Sl No	Dimensions of Job satisfaction	Mean	Standard deviation	Reliability	Variance in %
1	Compensation (D_1)	3.54	0.66	0.917	81
2	Promotion (D_2)	2.74	0.79	0.856	71
3	Leadership Style(D_3)	2.93	0.28	0.986	90
4	Benefits(D_4)	3.28	0.40	0.829	88
5	Welfare Facilities(D_5)	2.59	0.80	0.886	69
6	Recognition/Rewards(D_6)	3.02	0.41	0.815	87
7	Relation & Cooperation(D_7)	3.33	0.34	0.773	90
8	Communication(D_8)	2.93	0.52	0.848	82
9	Working Condition(D_9)	3.52	0.51	0.841	85
10	Training & Development(D_{10})	3.31	0.70	0.898	79
11	Career Development Opportunities (D_{11})	3.42	0.54	0.911	84
12	Work Life Balance (D_{12})	3.42	0.54	0.912	84
13	Work Stress(D_{13})	3.38	0.58	0.879	83
14	Organization Culture(D_{14})	3.40	0.56	0.827	84
15	Team Work(D_{15})	3.39	0.57	0.854	83
16	Job Clarity(D_{16})	3.69	0.84	0.906	77
17	Participative management(D_{17})	3.49	0.49	0.855	86
18	Job security(D_{18})	3.59	0.61	0.813	83

Table 5 shows that the reliability and variance explained for all the constructs are greater than 0.77 and 0.70 respectively; it is acceptable at 0.50 or more proposed by Van Saane et at., (2003). This suggests that all the adopted constructs are different.

5.3. Discriminate Validity

Discriminant validity specifies that the selected dimensions were distinctly and independently differs from each other according to Bryman and Bell (2015); Bagozzi & Phillips,(1991). Discriminant validity can be assessed by the variance extracted estimates should be greater than the squared correlation estimate staed by Fornell and Larcker,(1981).

For the designed questionnaires discriminate validity test was conducted, the discriminant validity measure explains whether the eighteen Components used in this study were distinct among themselves. It is evident that from Table 6 (See Appendix 1) variance explained score of all the selected eighteen components is higher than the squared correlation of two factors. Thus, it can be concluded that the scale used for data collection for this research ensured the adequate discriminant validity as stated by Bryman et al.,(2015); Van Saane, et at., (2003).

6. Confirmatory Factor Analysis for of Jobsatisfaction Components

Confirmatory Factor Analysis (CFA) is the next step after Exploratory Factor Analysis to confirm the factor structure of the research data extracted in EFA according to Özpehlivan and Acar (2016). Confirmatory Factor Analysis (CFA) permits to test the hypothesis that exists the relationship between the observed variables and latent constructs stated by Suhr (2006); Schumacher and Lomax (2004) and Byrne (2001).

The 18 factors consisting of 64 items extracted from EFA was subjected to Confirmatory Factor Analysis to confirm the factor structure. The reliability coefficient of the items in the questionnaire was 0.933 Cronbach's alpha value which indicates that all factors had acceptable reliabilities according to Kline (1998).

The model fit is typically analyzed through set of fit indices like: Goodness Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index, (CFI), Incremental Fit Index (IFI) and Tucker-Lewis Coefficient (TLI) all these indices must be close to 1.0 for perfect fit as stated by Bentler (1992); Bentler and Bonett (1987); While the error approximation in data represented by Root Mean Square Error of Approximation (RMSEA) must be less than 0.08 according to Browne and Cudeck (1993). The CFA test results showed an adequate fit as shown in Figure 1, further the other set of model fit indices were above the acceptable criterion range as stated by Bentler (1992) and Bonett (1987) and it is represented in the Table 7.

Table 7. Model Fit Indices for Eight Job satisfaction components

Model fit Indices	Job satisfaction Factors								Acceptable criteria Range
	C1	C2	C3	C4	C5	C6	C7	C8	
$\chi 2$/df	2.116	2.213	1.803	1.334	1.367	1.203	2.238	2.450	Less than 3
GFI	0.946	0.954	0.952	0.930	0.923	0.955	0.988	0.995	Greater than 0.9
AGFI	0.920	0.927	0.966	0.978	0.958	0.962	0.956	0.958	
CFI	0.965	0.947	0.995	0.988	0.999	0.998	0.993	0.999	
IFI	0.965	0.948	0.995	0.988	0.999	0.998	0.993	0.998	
TLI	0.955	0.932	0.998	0.996	0.996	0.997	0.957	0.993	
RMSEA	0.059	0.073	0.037	0.024	0.025	0.018	0.064	0.030	Less than 0.08

The CFA model of 8 factors with 52 items showed factor loadings or estimates in the range of 0.42 to 0.91 which is above the acceptance criterion of 0.3, indicating convergent validity. The R-squared values in the range of 0.20 - 0.50 represent the percentage variation in the 52 items as shown in the Table 8. The chi-square statistics was 2425.89 (df = 1233 and p = 0.000), $\chi 2$ /df ratio=1.967, it is should be within 5 according to Bentler (1992); Bentler and Bonett (1987); Hair et al. (1998). GFI=.988, AGFI=.905, IFI=.912, TLI=.905, CFI=.959, indices >0.9 indicates good model fit according to Hu and Bentler (1999); Hair et al. (2006); Daire et al. (2008) and Hair et al.,(1998) and RMSEA=0.04 it should be less than 0.08 for good model fit that is errors of approximation, smaller is better stated by Hair et al. (2006). All the major model fit indices of the CFA model indicated a good fit and model proposed for Job satisfaction consisting of 8 factors with 52 items have to construct validity i.e. all the 8 factors and their respective items can measure the Job satisfaction.

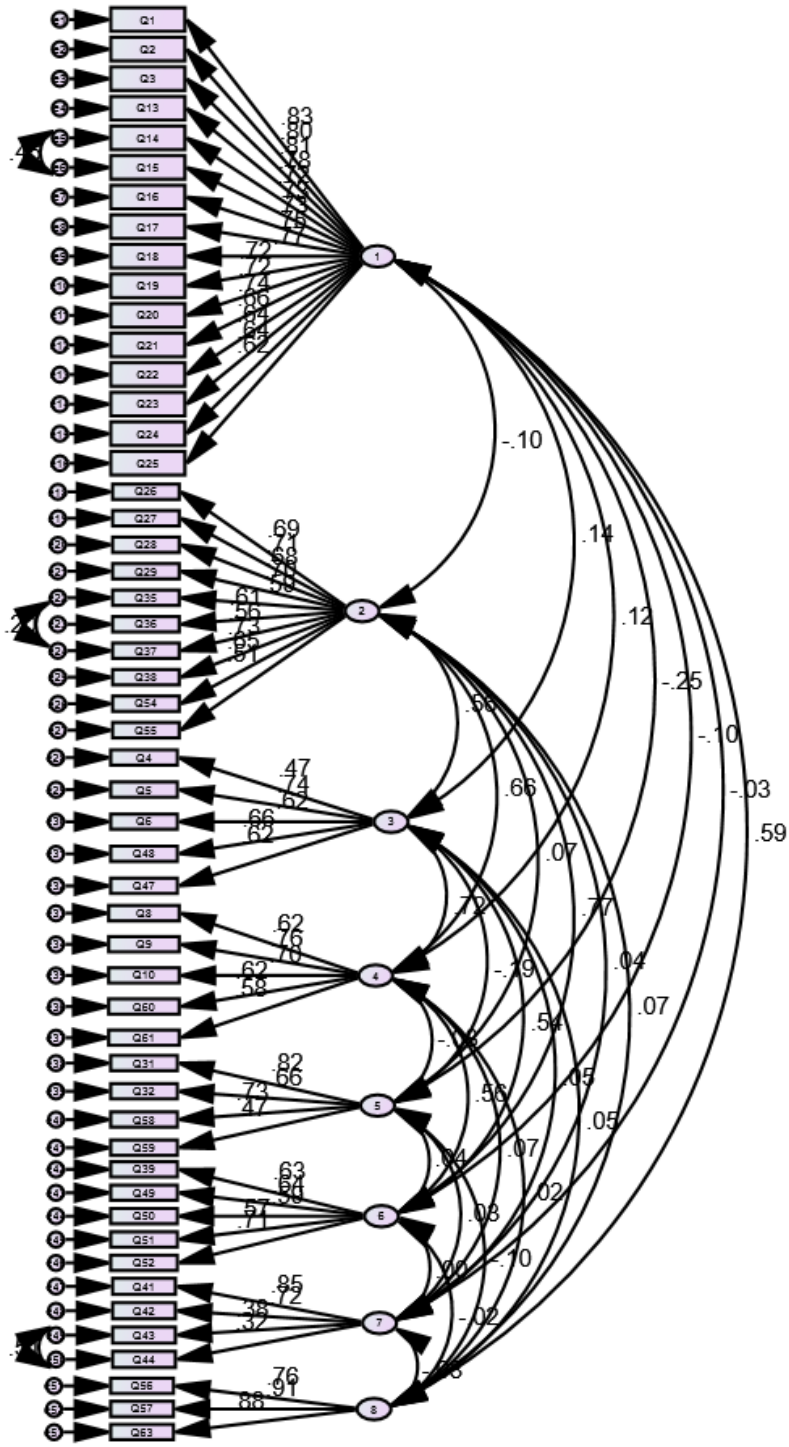

Figure 1. Path diagram for 8 factors Job satisfaction model

Table 8. Standardized coefficient estimates and R^2 values of 8 Job satisfaction Components

Parameters	Job satisfaction Factors								Acceptable criteria
	C1	C2	C3	C4	C5	C6	C7	C8	
Factor loading or Standardized coefficient estimates	0.83 0.80 0.80 0.78 0.75 0.75 0.74 0.75 0.76 0.72 0.71 0.73 0.66 0.63 0.64 0.62	0.69 0.70 0.67 0.70 0.61 0.61 0.58 0.73 0.65 0.51	0.47 0.74 0.62 0.66 0.62	0.62 0.76 0.74 0.62 0.59	0.82 0.66 0.73 0.47	0.63 0.64 0.59 0.57 0.71	0.78 0.73 0.46 0.42	0.76 0.91 0.88	Greater than 0.30 shows convergent validity
R-squared value (Percentage of variation)	0.43 0.40 0.30 0.38 0.25 0.45 0.44 0.35 0.36 0.32 0.31 0.43 0.66 0.63 0.64 0.62	0.41 0.30 0.42 0.50 0.41 0.41 0.23 0.43 0.35 0.31	0.20 0.31 0.21 0.23 0.24	0.41 0.34 0.41 0.43 0.33	0.40 0.21 0.31 0.30	0.41 0.34 0.32 0.44 0.21	0.32 0.44 0.31 0.22	0.33 0.31 0.27	

Form the CFA analysis is concluded that 52 items address the eight components, for this components name was done they are as follows, Compensation and welfare benefits (C1), Work environment(C2), Career and promotion opportunities(C3), Leadership style(C4), Communication and job clarity(C5), Work life balance(C6), Training and development(C7), Teamwork and job security(C8). Table 9 shows the eight components of Job satisfaction and questions in the final questionnaires.

Table 9. Dimensions of Job satisfaction and Question Numbers in the final Questionnaires

Sl No	**Dimensions of Job satisfaction**	**Question number in the Questionnaires**
1	Compensation and Welfare Benefits (C1)	1,2,3,13,14, 15,16,17,18,19, 20,21,22,23,24,25
2	Work Environment (C2)	26,27,28,29, 35,36,37,38, 54,55
3	Career and Promotion Opportunities (C3)	4,5,6, 46,47

Table 9. Dimensions of Job satisfaction and Question Numbers in the final Questionnaires (continued)

Sl No	Dimensions of Job satisfaction	Question number in the Questionnaires
4	Leadership style (C4)	8,9,10, 60,61
5	Communication and Job clarity (C5)	31,32, 58,59
6	Work life balance (C6)	48,49,50, 51,52
7	Training and Development (C7)	41,42,43,44
8	Teamwork and Job security (C8)	56,57, 63, 64

7. Conclusions

A measure of Job satisfaction of employees is very difficult because it depends on so many factors, and these factors are dynamic in nature. According to Maslow's hierarchy of needs theory, once the low-level needs fulfil, high-level needs will actuate. Because of the change in technology due to Liberalization, Globalization and Privatization, employee living standards also vary. Once living standards of employees changes, employees need also varies, if it is fulfilled employees will be satisfied otherwise they will be dissatisfied. This satisfaction level of employees will effect on the retention rate, performance, absenteeism and many more. Nowadays in the competitive business environment retaining a talented employee is the biggest challenges to the organization. In this context employers/ researchers need to check the status of employee job satisfaction by considering many factors.

Many researchers used a different instrument to measure Employee Job satisfaction, these instruments measure less than 60 percent of variations in the measurement of Job satisfaction. It is necessary to develop a suitable scale to measure the employee Job satisfaction and validate the same.

The present study is an attempt to design a job satisfaction measuring instrument and validate the same. The following 18 significant dimensions were identified through the EFA they were: Compensation, Promotion, Leadership Style, Benefits, Welfare Facilities, Recognition/Rewards, Relation & Cooperation, Communication, Working Condition, Training & Development, Career Development Opportunities, Work-Life Balance, Work Stress, Organization Culture, Team Work, Job Clarity, Participative management, Job security. Further analysis revealed that these 18 dimensions together explained 87.04 percent of the total variance.

Using CFA 8 components were extracted and validated for the instrument and they were: Compensation and welfare benefits, Work environment, Career and promotion opportunities, Leadership style, Communication and job clarity, Work life balance, Training and development, Teamwork and job security. These eight items address 82.35 percent of the total variance.Structural Equation and Modeling reveals that chi-square statistics was 2425.89 (df = 1233 and p = 0.000), $\chi 2$ /df ratio=1.967, GFI=.988, AGFI=.905, IFI=.912, TLI=.905, CFI=.959 and RMSEA=0.04. All the important fit indices of the CFA model indicated a good fit and model proposed for Job satisfaction consisting of 8 factors with 52 items has construct validity.The designed instruments have shown both high reliability andhigh validity.

Many researchers used a different instrument to measure Employee Job satisfaction, these instruments measure less than 60 percent of variations in the measurement of Job satisfaction. It is essential to develop an appropriate scale to measure the employee

Job satisfaction and validate the same. The present instrument explained 82.35 percent of the total variance.

The scale developed in this study focused on Manufacturing, Construction, Nursing, IT industries employees and therefore, it has limited use. As per the labor market situation and different culture components may be added and delete and the sample size was 697 respondents from 140 firms. It is, therefore, necessary to keep modifying the scale to improve its applicability by testing it at facilities of different sizes and with large samples.

The research outcome will help the employers / Researchers to measure the status of Employee job satisfaction in any sector with small modification according to their demographic characteristics.

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Appendix 1:

Table 6. Discriminate Validity

Dimensions	D_1	D_2	D_3	D_4	D_5	D_6	D_7	D_8	D_9	D_{10}	D_{11}	D_{12}	D_{13}	D_{14}	D_{15}	D_{16}	D_{17}	D_{18}
D_1	**0.65**																	
D_2	0.26	**0.78**																
D_3	-0.04	0.00	**0.28**															
D_4	0.12	0.13	-0.01	**0.40**														
D_5	0.20	0.38	-0.07	0.11	**0.80**													
D_6	0.19	0.28	-0.01	0.10	0.25	**0.40**												
D_7	0.08	0.09	-0.02	0.03	0.11	0.06	**0.34**											
D_8	-0.16	-0.05	0.05	-0.05	-0.07	-0.06	-0.02	**0.52**										
D_9	0.13	0.17	-0.01	0.09	0.17	0.11	0.03	-0.04	**0.51**									
D_{10}	0.14	0.34	-0.04	0.13	0.34	0.18	0.06	-0.03	0.20	**0.69**								
D_{11}	0.14	0.26	-0.02	0.11	0.26	0.15	0.05	-0.04	0.23	0.34	**0.53**							
D_{12}	0.14	0.26	-0.02	0.11	0.26	0.15	0.05	-0.04	0.23	0.34	0.29	**0.53**						
D_{13}	0.14	0.28	-0.03	0.12	0.28	0.16	0.05	-0.03	0.22	0.39	0.31	0.31	**0.57**					
D_{14}	0.14	0.27	-0.02	0.11	0.27	0.15	0.05	-0.03	0.23	0.37	0.30	0.30	0.32	**0.55**				
D_{15}	0.14	0.28	-0.03	0.12	0.28	0.16	0.05	-0.03	0.22	0.38	0.30	0.30	0.33	0.31	**0.56**			
D_{16}	0.05	0.06	-0.04	0.01	0.09	0.04	0.03	0.02	0.02	0.06	0.04	0.04	0.05	0.04	0.05	**0.83**		
D_{17}	0.11	0.20	-0.03	0.08	0.21	0.12	0.04	-0.02	0.16	0.27	0.21	0.21	0.23	0.22	0.23	0.26	**0.48**	
D_{18}	0.08	0.13	-0.03	0.05	0.15	0.08	0.04	0.00	0.09	0.16	0.13	0.13	0.14	0.13	0.14	0.48	0.25	**0.60**

Appendix 2:

I. General Information

1. Name of the Industrial unit/ firm .....

Address .....
.....
.....

Telephone No. .....
Fax .....
Email .....
Year of Establishment .....

2. Name of the person interviewed .....
Designation .....
Age .....
Experience .....

Gender Male ☐ Female ☐

3. Level of Education Technical ☐ Non-Technical ☐
Post Graduation ☐
Graduation ☐
Diploma ☐
ITI ☐
Others Specify.....

4. Cost of the Project (current value of the plant and machinery)
1 to 10 Lakhs ☐
11 to 25 Lakhs ☐
26 to 50 Lakhs ☐
51 Lakhs to 1 Crore ☐

5. Number of Employees working in the Plant
02 to 10 ☐
11 to 25 ☐
26 to 50 ☐
51 to 100 ☐
Others Specify.....

6. Average salary paid
Less than 5000 ☐
5000 to 10 000 ☐
10,000 to 20,000 ☐
More than 20,000 ☐
Other Specify.....

Appendix 3:

II Job Satisfaction

Ranking: 5 - Strongly agree, 4 - Agree, 3 - uncertain, 2 - Disagree, 1 - Strongly disagree

1. I feel I am being paid a fair salary for the work I do	**5**	**4**	**3**	**2**	**1**
2. I am satisfied with my annual salary increments	**5**	**4**	**3**	**2**	**1**
3. I am satisfied with allowances	**5**	**4**	**3**	**2**	**1**
4. Our company follows a fair promotion policy	**5**	**4**	**3**	**2**	**1**
5. In our company, performance is one of the important factors for promotion.	**5**	**4**	**3**	**2**	**1**
6. I am satisfied with my chances for promotion.	**5**	**4**	**3**	**2**	**1**
7. People get ahead as fast here as they do in other places.	**5**	**4**	**3**	**2**	**1**
8. My supervisor is unfair to me.	**5**	**4**	**3**	**2**	**1**
9. My supervisor shows too little interest in the feelings of subordinates.	**5**	**4**	**3**	**2**	**1**
10. Our superior believed that development of Subordinates is an important part of the job	**5**	**4**	**3**	**2**	**1**
11. My superior take a decision without consulting People working under him.	**5**	**4**	**3**	**2**	**1**
12. My superior encourages me to participate in Decision Making and express my ideas and opinions.	**5**	**4**	**3**	**2**	**1**

13. I am not satisfied with benefits what I receive.	5	4	3	2	1
14. The benefits we receive are as good as other Organizations offer.	5	4	3	2	1
15. The benefits packages that I receive from my company are on par and comparable with those of my co-workers.	5	4	3	2	1
16. I am satisfied with the benefits provided by the company to the accident victims.	5	4	3	2	1
17. I am satisfied with the recreational facilities provided by my company	5	4	3	2	1
18. I am satisfied with the canteen facilities provided by my company	5	4	3	2	1
19. I am satisfied with the medical benefits provided by my company	5	4	3	2	1
20. I am satisfied with the transport facilities provided by my company	5	4	3	2	1
21. When I do a good Job, I receive the recognition from my company.	5	4	3	2	1
22. I do not feel that the work I do is appreciated.	5	4	3	2	1
23. I don't feel my efforts are rewarded the way they should be	5	4	3	2	1
24. In our company, there is a mechanism to reward good work done by employees	5	4	3	2	1
25. Recognition and reward system practised in our company is fair and justified.	5	4	3	2	1

26. I like the people I work with.	5	4	3	2	1
27. I find I have to work harder at my job because of the incompetence of people I work with	5	4	3	2	1
28. I enjoy with my co-workers.	5	4	3	2	1
29. There is too much bickering and fighting at work.	5	4	3	2	1
30. I have a smooth relationship with my superior and co-worker	5	4	3	2	1
31. Communication seems good within the organization.	5	4	3	2	1
32. Work assignments are not fully explained.	5	4	3	2	1
33. The goals of the organization are not clear.	5	4	3	2	1
34. I often feel that I do not know what is going on within the organization	5	4	3	2	1
35. I have too much to do at work.	5	4	3	2	1
36. Many of my company rules and procedures make doing a good job difficult.	5	4	3	2	1
37. I am satisfied with the working conditions	5	4	3	2	1
38. The company provides all the safety wearable's and equipment	5	4	3	2	1
39. The company follows all statutory norms with respect to working hours and break time	5	4	3	2	1

40. The training and development programs have increased my confidence	5	4	3	2	1
41. My company arranges a sufficient number of training programs	5	4	3	2	1
42. The training and development programs have increased my morale.	5	4	3	2	1
43. The training and development programs have helped me in attaining better technical ability.	5	4	3	2	1
44. The training and development programs have helped me in adapting to change easily.	5	4	3	2	1
45. The training and development programs have increased my job satisfaction.	5	4	3	2	1
46. Our company provides ample opportunities for professional advancement for employees.	5	4	3	2	1
47. I am satisfied with the career opportunities available in our company	5	4	3	2	1
48. My job prevents me from giving the time I want to my spouse or family or friends	5	4	3	2	1
49. I don’t get much support from my organization which is most important to pay attention to family responsibilities.	5	4	3	2	1
50. My job responsibility does not allow me to get enough sleep, exercise and healthy food	5	4	3	2	1
51. I can't see the final outcome of my work as expected	5	4	3	2	1

52. I am not happy with what my company is making me work on which I don't like to do	5	4	3	2	1
53. I am stressed because my manager gives me unachievable deadlines	5	4	3	2	1
54. There is cooperation among all the departments for achieving the goals.	5	4	3	2	1
55. I feel free to offer comments and suggestions on my performance.	5	4	3	2	1
56. There are a good teamwork and cooperation in my organization.	5	4	3	2	1
57. Sufficient encouragement is provided by the teammates at work.	5	4	3	2	1
58. I have a clear understanding of the goals and objectives of my organization	5	4	3	2	1
59. My job/responsibility is clearly described	5	4	3	2	1
60. My manager encourages decision making power from employees	5	4	3	2	1
61. Manager/supervisor consider employees input into organisational decisions.	5	4	3	2	1
62. I have the freedom to make important decisions regarding my work	5	4	3	2	1
63. I feel I am secured in this organization	5	4	3	2	1
64. I feel quite secure about my job	5	4	3	2	1