

Job Satisfaction parameter selection using PCA (Principal Component Analysis): A case study on Kashmir division of Jammu and Kashmir.

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ABSTRACT:

Job satisfaction is the degree to which one is pleased through their occupation hence an employee's readiness to achieve at an finest level (Hoffman-Miller 2013). The capabilities that provoke gratification in employees comprises of thankfulness of their potentials, liberation, amenities, job safety, place and other employee's reimbursements to appraise the influence of major influences contributing to the job satisfaction. The present study was directed through a questionnaire on different Government & Private department's/organisation's in Kashmir division of Jammu & Kashmir. The study objects to recognize the key aspects of job satisfaction by means of a sample of 100 employees drawn randomly from several professions from Kashmir Valley to assess their Job Satisfaction. Moreover, with the help of (PCA) I was able to reduce the number of Job Satisfaction parameters from 15 to 9. The results show that major factor that are responsible for the job satisfaction in Kashmir division of Jammu and Kashmir are Safety standards, Lighting and ventilation, Training, Opportunities to advance professional skills, Positive attitude towards work & Physical Environment.

Key Words: Principal Component Analysis, Job Satisfaction, Kashmir, Minnesota Satisfaction Questionnaire (MSQ), Behaviour, Environment, Kaiser-Meyer-Olkin (KMO), Opportunities

1-INTRODUCTION:

Job satisfaction is the beneficial or detrimental by which the worker sights his effort. It demonstrates the quantity of promise among one's trust of the occupation and the prizes that the occupation offers. It is a amalgamation of two words, Job and satisfaction. Job contains professional activity performed by an individual in return for a financial reward while satisfaction is a word, which is not enhancing up the morale of the employees (Jange & Gavali, 2014). Memon & Jena, (2017) are of the view that job satisfaction is the main aspect of accomplishment and all-round progress of employees of any company or organisation and is measured as a buzzword of explore in management studies.

Workers are precise and innovative when they are fulfilled and these delighted representatives mark the customer satisfaction and hierarchical profitability, for 100% fulfilment of the representative there is no constraint to arrive at that and it might contrast from worker to worker. Rarely they need variety in their behaviours to actualize their specialists all the more capably to rise better employment fulfilment, thinking about great dealings with the associates, significant pay, good working circumstances, exercise and training possibilities, vocation developments or any additional benefits might be connected with the expanding of job satisfaction.

1.1 OBJECTIVES

- 1) To use PCA (Principal Component Analysis) to reduce the job satisfaction components.
- 2) To recognize the magnitude of job satisfaction amongst employed professionals among different organisations of Kashmir.

2. TECHNIQUE & DATA COLLECTION

2.1. Research area

The current investigation has been completed on the example of 100 representatives squeezed discretionarily from different callings from Kashmir Valley to survey their Job Satisfaction. Most of the contributors were from 4 districts (Pulwama, Anantnag, Kulgam, Srinagar (City), & Baramullah) and for this analysis data was collected from 31st October 2020 - 25th November 2020. Fig. 1 displays the place of specimen in the Kashmir division of Jammu and Kashmir.



Fig.1 : Map Of Jammu & Kashmir, Arrows indicating Sample collection sites

2.2. COLLECTION & PREPARATION OF DATA

Survey technique was carried out and for information collection questionnaire was used as a instrument, which was constructed on various constraints like demographic features, intrinsic and extrinsic aspects of job satisfaction. Furthermore, Likert 5-point scale was used to inspect the job satisfaction of respondents. Also questionnaire was framed using “Google Forms”

and link of questionnaire was send to selected professionals via email and other social media platform’s like WhatsApp, Facebook & Instagram.

Total sum of questionnaires sent to professionals was 140 out of which only 100 questionnaires were received. Hence, the respondent rate is 71.43 %.

The first portion of the questionnaire comprised questions about the sociodemographic characteristics and work conditions. Questions on

sociodemographic features included age, gender, marital status, education level, category of employee and job type. Table.:1

The next part of the questionnaire was the short form of the MSQ (Minnesota Satisfaction Questionnaire). There were 10 objects in this MSQ

that were appropriate to a size of job aspect. Employees were requested to indicate their degree of agreement based on five-point liker type scale, where 5 indicates totally satisfied, 4 indicates very satisfied, 3 indicates satisfied, 2 indicates less satisfied, and 1 indicates dissatisfied. Fig.:2 Response Scale.



Fig.:2 Response Scale

Sociodemographic Character	n=100	%
Gender		
	Count	%
Male	85	85%
Female	15	15%
Age		
<18 Years	0	0
18-25 Years	24	24%
25-35 Years	49	49%
Above 35 Years	27	27%
Marital Status		
Married	37	37%
Unmarried	58	58%
Divorced	5	5%
Category of Employee		
Permanent Employee	40	40%
Probational Employee	41	41%
Part Time Employee	13	13%
Job Type		
Government	53	53%
Private	47	47%
Department/ Organisation		
Animal husbandry	4	4%
Construction Department	15	15%
Department of Education	33	33%
HDFC Bank	2	2%
Department of Health	17	17%
Jammu & Kashmir Police	10	10%
JKPWD	9	9%
Revenue Department	5	5%
Sheep Husbandndry Departme	1	1%
IT	1	1%
Youth services and sports	3	3%

Table.1: Sociodemographic characteristics of all the 100 respondents.

Table (1) shows that 85 % of the respondent employees were Male and 15 % were females. Concerning the age of the employees 24 % belongs to the age group 18-25 Years, 49% belongs to 25-

35 Years and 27 % belongs to age group of above 35 Years. The majority of the employees were unmarried (58%) followed by married (37%) & 5 % were divorced. In view of the type of

employment 40% were permanent employee, 41 % were probational employees and 13 % were part time employees. The employment type was Government for 53 % and 47 % were private employees. As regards the Department/Organisation, the highest respondents were from Education Department (33%), Department of Health (17%), Construction Department (15%), Jammu & Kashmir Police (15%) and rest of the departments were having the individual weightage of less than 10%.

3- Selection & Reduction in Job Satisfaction Parameters using Principal Component Analysis (PCA):

Normalization carries all the limitations to a common remain with a mean of 0 (zero) & standard deviation of 1 (one). Be that as it may, even now as the quantity of boundaries is 15, it would be a monetary weight to appraise the file an incentive after investigation of 15 boundaries. Subsequently, succeeding advance is expected for boundary decrease, to make this file all the more efficiently feasible. One of the most comprehensively agreeable techniques for parameter decrease is PCA that plays out the occupation without loss of much data .. All numerical methods have been affirmed out utilizing the product XLSTAT. PCA is a factual instrument used to diminish extents of multivariate dataset. It holds extraordinary enlightening estimation of the info information vital while attempting to diminish its measurements. PCA lessens the information that is conveyed in a few measurements into a reduced number of sizes that are not associated. PCA is a broadly worthy reasonable system for self-sufficient variable determination and by disposing of repetitive or exceptionally connected boundaries. It recognizes the fluctuation inside an enormous dataset of associated factors as far as few new pseudo

variables called Principal Components (PCs) With the use of PCA, the number has been concentrated from 15 to 8 for this study.

Overall phases for PCA procedure are mentioned as:

- i. Calculating the relationship network if the connection distinguished among explicit markers results high, the information is generally used for execution PCA.
- ii. Recognize the no. of head segment to be estimated on premise of % fluctuation illuminated by them.
- iii. Variation of angles to build their explanation (by augmenting stacking on explicit impacts by explicit pointers).

Subsequently executing PCA, the constraints providing supreme (> 0.70 ; + or -) to the 1st 5 PC's are accepted first. It comprises of 8 variables, namely I feel positive and Up most of the time when I am occupied, I am happy by working in pleasant physical Environment, I am satisfied with the Implementation of safety norms in the organization, I am satisfied with the lighting and ventilation facilities at the work place, Training was useful to acquire knowledge and skills, Instructor was knowledgeable in the subject matter being taught, I have adequate opportunities to develop my professional skills, I am satisfied I have the opportunities to apply my talent and expertise.

4. RESULTS AND DISCUSSIONS

The purpose behind this investigation was to perceive the significant reasons of employment fulfilment in different branches of Kashmir division of J & K by analysing survey data using principal component analysis (PCA). To look at the rightness of the current information for PCA,

Kaiser–Meyer–Olkin (KMO) and Bartlett's trial of Sphericity have been carried out. The KMO is a level of example decency that assigns the measure of change which is brought about by essential Principal Components. A higher rate (more like 1) generally determines that the informational collection might be utilized for PCA, which is the circumstance in this informational collection: KMO=0.628. For the most part, KMO test esteem is under 0.5, determines that the dataset won't be gainful for PCA. Then again, Bartlett's trial of Sphericity investigates whether the connection grid is a character network. In the event that the relationship framework is a personality lattice, at that point completely factors create divergent creation PCA model unacceptable and unseemly measurable instrument for cutting edge information investigation. The Null Hypothesis of

Bartlett's test receives that Correlation Matrix is a character framework (for example there is no opportunities for dimensionality drop). The centrality level which is 0.000 (under 0.05) for the current case, rejects Null Hypothesis and dispenses that there are basic relationship in the midst of the limits. Finally, PCA has been done on regularized data using Varimax turn with Kaiser Normalization hence the covariance cross section matches with the association matrix (Table 4). Together of these tests have been dropped by using XLSTAT programming.

Eigen values are displayed in Table-2, distinct variance & collective discrepancy and hereafter choice of first 11 PCs as they count 98.35 % for cumulative % of the entire variance & consume separate eigen value >1.

Table 2: Eigenvalues of 100 sample dataset

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15
Eigenvalue	7.506	1.898	1.546	0.950	0.746	0.639	0.441	0.365	0.326	0.185	0.152	0.105	0.073	0.048	0.022
Variability (%)	50.040	12.654	10.303	6.331	4.975	4.258	2.941	2.432	2.171	1.230	1.013	0.697	0.485	0.319	0.149
Cumulative %	50.040	62.695	72.998	79.330	84.305	88.563	91.505	93.936	96.107	97.338	98.350	99.048	99.532	99.851	100.000

Table (3)

Rotated Factor loadings for job satisfaction questionnaire data

	F1	F2	F3	F4	F5
I look forward to going to work on Monday.	0.624	0.129	0.534	-0.052	-0.090
I have energy at the end of each day to engage in personal interests.	0.495	0.619	0.096	0.326	-0.107
I feel positive and Up most of the time when I am working.	0.750	-0.307	0.255	0.476	-0.031
My team members trust me and extend their full cooperation.	0.651	-0.498	-0.083	0.298	-0.149
I get decent income for the job I perform.	0.608	0.641	-0.093	0.275	0.074
I am satisfied with my insurance benefits.	0.661	0.368	-0.489	0.031	-0.025
I am happy by working in pleasant physical Environment.	0.742	-0.156	0.422	0.146	0.275
I am satisfied with the Implementation of safety norms in the organization.	0.816	0.301	-0.054	-0.028	0.314
I am satisfied with the lighting and ventilation facilities at the work place.	0.740	0.098	-0.081	-0.412	0.334
I am satisfied with the amount of training that I received to my job.	0.682	0.353	0.257	-0.355	-0.317
Training was useful to acquire knowledge and skills.	0.838	-0.325	-0.116	-0.092	-0.274
Instructor was knowledgeable in the subject matter being taught.	0.716	-0.155	0.481	-0.301	-0.141
Management's support for my efforts to improve my weaknesses.	0.668	-0.426	-0.093	-0.021	0.404
I have adequate opportunities to develop my professional skills.	0.767	-0.167	-0.496	-0.173	-0.083
I am satisfied I have the opportunities to apply my talent and expertise.	0.774	-0.146	-0.423	0.043	-0.215

Table 4

Correlation analysis between 8 shortlisted parameters

	I feel positive and Up most of the time when I am working.	I am happy by working in pleasant physical Environment.	I am satisfied with the Implementation of safety norms in the organization.	I am satisfied with the lighting and ventilation facilities at the work place.	Training was useful to acquire knowledge and skills.	Instructor was knowledgeable in the subject matter being taught.	I have adequate opportunities to develop my professional skills.	I am satisfied I have the opportunities to apply my talent and expertise.
I feel positive and Up most of the time when I am working.	1	0.778	0.501	0.321	0.686	0.552	0.434	0.541
I am happy by working in pleasant physical Environment.	0.778	1	0.553	0.534	0.548	0.639	0.348	0.414
I am satisfied with the Implementation of safety norms in the organization.	0.501	0.553	1	0.780	0.531	0.499	0.583	0.530
I am satisfied with the lighting and ventilation facilities at the work place.	0.321	0.534	0.780	1	0.530	0.529	0.602	0.562
Training was useful to acquire knowledge and skills.	0.686	0.548	0.531	0.530	1	0.635	0.769	0.779
Instructor was knowledgeable in the subject matter being taught.	0.552	0.639	0.499	0.529	0.635	1	0.435	0.356
I have adequate opportunities to develop my professional skills.	0.434	0.348	0.583	0.602	0.769	0.435	1	0.847
I am satisfied I have the opportunities to apply my talent and expertise.	0.541	0.414	0.530	0.562	0.779	0.356	0.847	1

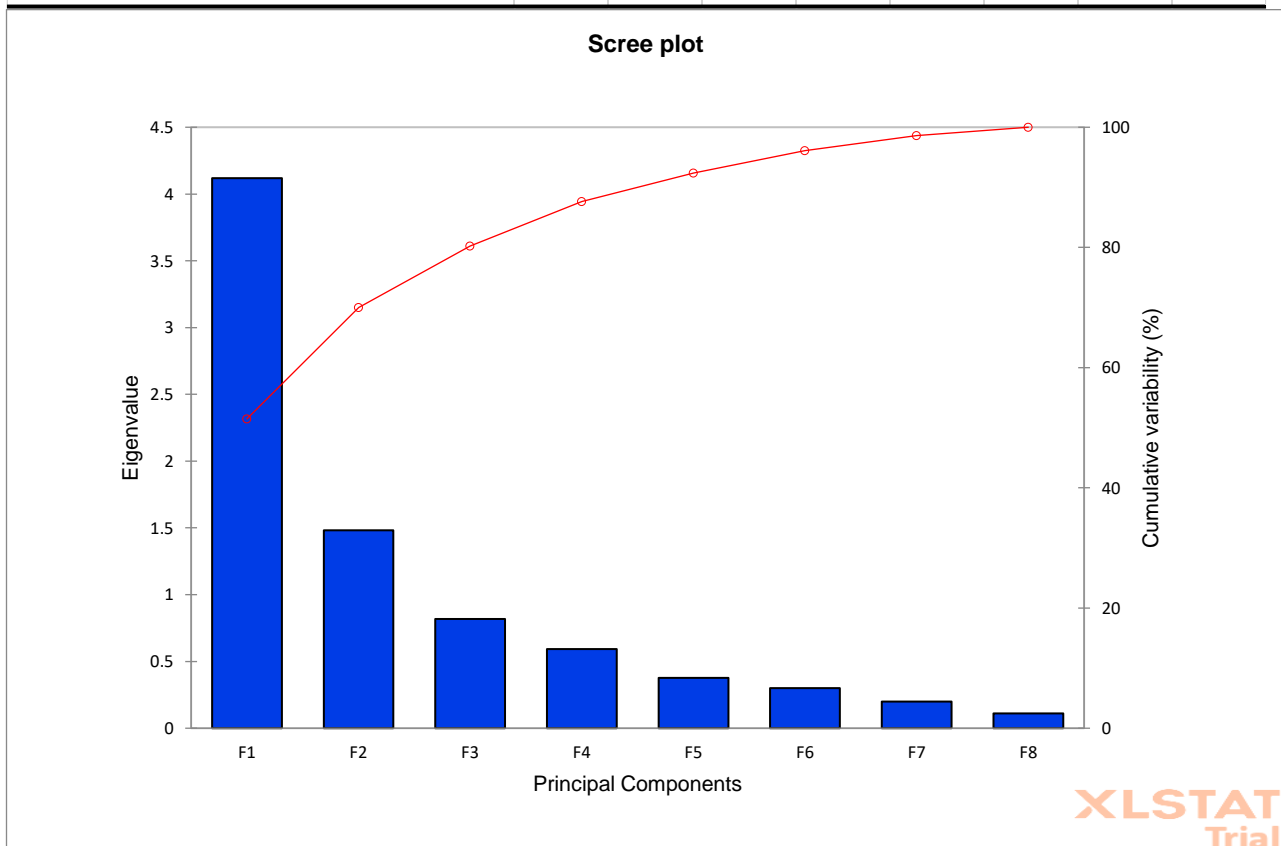


Fig.3: Scree Plot of variance of PCs.

Fig. 3 describes a Scree plot indicating the % adjustment and total change. This scree plot just shows the initial 9 parts that clarify > 96% of the complete change. Nonetheless, the main factor without anyone else clarifies < 60% of the difference, so more parts may be required. The initial eight head parts clarify > 94% of the all-out fluctuation in the uniform evaluations, so initial 8 head segments have been reasonably saved to diminish the measurements further.

6- CONCLUSIONS:

The study is associated to diverse types of professions in government and private sectors in Kashmir division of Jammu & Kashmir. It is obvious that the MSQ-Short Version is a legal and dependable gauge for the dimension of job satisfaction. Specified the implication of job satisfaction of employees in organisations, many investigators have progressively engrossed on the finest ways for enlightening it. Behaviour of personalities in organisation is prejudiced by the HR practices of that organisation (*Krishnaveni, 2008, p.59*). It is significant to know about the behaviour of the individuals and thus what kind of action or involvements should be useful, can be determined. HR experts should take into account and concentration upon individual need and

The connection among the primary 2 & 3 PCs contributing extraordinary to the complete fluctuation can be found in Figs. 5 and 6 independently. The entirety of the factors in the 2D bi-plot (Fig. 5) are portrayed by a direction. The bearing and length of the direction show the impact of every factor to the 2 head parts in the biplot

necessities while articulating policies and practices for enhancing organisational efficiency (*Krishnaveni, 2008, p.60*). The PCA helped to decrease 15 boundaries to 8 boundaries, while connecting with them into various gatherings (PCs). The various factors influencing the satisfaction in different departments of Kashmir division of Jammu and Kashmir are Positive attitude towards work, Physical Environment, Safety norms, Lighting and ventilation, Training & opportunities to develop professional skills. Having satisfaction with job employees can work efficiently for the betterment of their department/organisation. Furthermore, highly satisfied employee has a minimum number of job switching is observed due to the level of satisfaction which will ultimately benefit the department/organisation.

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5-Various comparisons of demographic features with job satisfaction components:

Fig.5 Comparison of Job type & Gender with factor that I have energy at the end of each day to engage in personal interests.

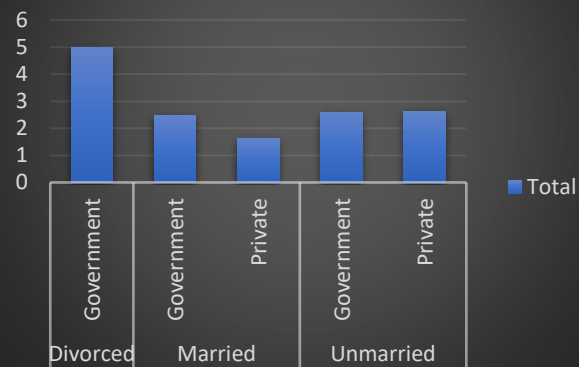


Fig.3 Comparison of I feel positive and Up most of the time when I am working. by Department /Organizatin's

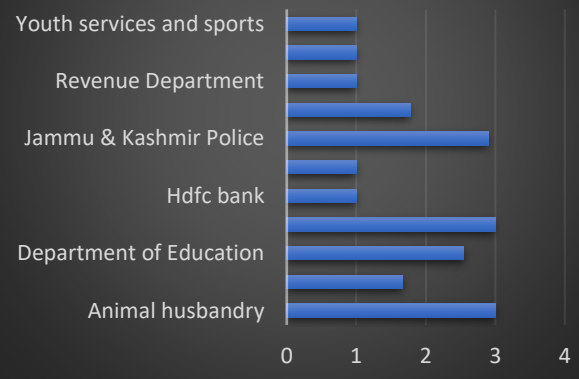


Fig.4 Comparison of I look forward to going to work on Monday. by Govt. & Pvt. Organisation's.

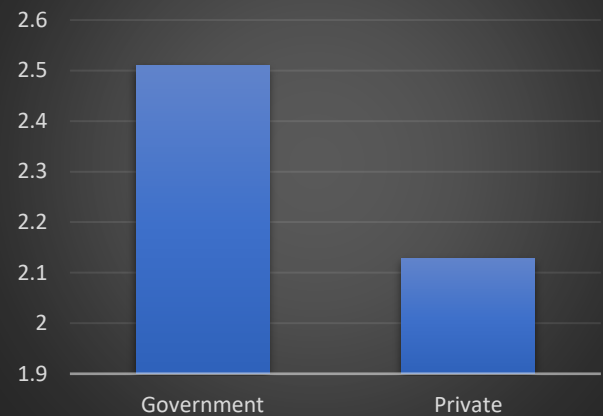


Fig.6 Sum of Management's support for my efforts to improve my weaknesses. by Category of Employee

