Manual For JOB DESIGN Scale

JDS-MNKMSPMD

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INTRODUCTION

The concept of job design and its effects on employees' job satisfaction is not a recent phenomenon in research (Hom and Kinicki, 2001; Lu and Lin 2002; Bernhard and Sverke, 2003). Jobs in any organization are designed following established procedures. These procedures were arranged or design by managers in the organization who are professionals or experts in any specific job type. The more these procedures saves time, effort, and improve output quality, the better for the organization and their employees as it increases employee job satisfaction, and reduces labour turnover in any organization. Job design is a very important issue in human relations.

After all, designing work so employees achieve a sense of task identity and task significant and are provided with skills variety, autonomy and feedback stimulate motivation and by extension, job satisfaction (Hodgetts and Hegar, 2005).

The objective of this research program was to develop a comprehensive and reliable measure of effectiveness of *Job Design* systems and practices adopted by the organization. This measure is designed to help researchers and practitioners to assess the current state of various dimensions of *Job Design* on account of and with the presence of various Strategic Human Resources Management (SHRM) systems, policies and practices. The measure can also be used for training of Managers, Supervisors and other employees as a part of Human Resource Development (HRD) for appraising and modifying SHRM systems, policies and practices. Other uses of the scale are : self-analysis, for individual counselling, to develop organizational strategies to improve SHRM.

Work arrangement or rearrangement aimed at reducing or overcoming job dissatisfaction and employee alienation arising from repetitive and mechanistic tasks. Through job design, organization try to raise productivity levels by offering non-monetary rewards such as greater satisfaction from a sense of personal achievement in meeting the increased challenge and responsibility of one's work. Job enlargement, job enrichment, job rotation, and job simplification are the various techniques used in a job design exercise.

Work is an effort directed toward producing or accomplishing results. Job is a grouping of tasks, duties, and responsibilities that constitutes the total work assignment for an emloyee. In other sense job/work design is a grouping of tasks, duties, and responsibilites that constitutes the total work assignment for an employee and person-job fit is matching characteristics of people with characteristics of jobs.

Job Design Scale provides measures of six empirically derived dimensions of *Job Design*. Reliability, validity and stability data, based on responses from 725 employees, has shown that the *Job Design* measure has quite satisfactory characteristics. Measures of *Job Design* are common in group-level, organization-level and multi-level studies and gaining the momentum for design and implementation of SHRM systems, policies and practices.

The process of job design has been defined as, "....specification of the contents, methods, and relationships of jobs in order to satisfy technological and organizational requirements as well as the social and personal requirements of the job holder." (Buchanan, 1979).

Development of the Scale

In the initial stage experts in the fields of Management, Human Resource Management, Psychology, Education and Sociology were contacted and the objective of developing the scale explained to them. Incorporating their inputs, six dimensions of *Job Design* were finalized, and were :

1. Job Characteristics
2. Task Identity
3. Autonomy
4. Job Empowerment
5. Job Enlargement
6. Skill Multiplicity

OPERATIONAL DEFINITIONS

Job Characteristics

Aspects specific to a job, such as knowledge and skills, mental and physical demands, and working conditions that can be recognized, defined, and assessed. This is also called as job factors.

Task Identity

Task identity is defined as extent to which a job involves doing a complete from beginning to end and identifiable piece of work with a visible outcome, as opposed to doing only a portion of the job. Task identity is an important component of job satisfaction.

Autonomy

A degree or level of freedom and discretion allowed to an employee over his or her job. As a general rule, jobs with high degree of autonomy endanger a sense of responsibility and greater job satisfaction in the employees. Not every employee, however, prefers a job with degree of responsibility.

Job Empowerment

Empowerment is the process of enhancing the capacity of individuals or groups to make choices and to transform those choices into desired actions and outcomes. Central to this process are actions which both build individual and collective assets, and improve the efficiency and fairness of the organizational and institutional context which govern the use of these assets.

Job Enlargement

Job enlargement is a job design techniuqe wherein there is an increase in the number of tasks associated with a certain job. In other words, it means increasing the scope of one's duties and responsibilities. The increase in scope is quantitative in nature and not qualitative and at the same level.

Skill Multiplicity

Skill multiplicity is usually defined as number of varied skills possessed by an employee and which is countable. Multiplicity is lots of some skills.

First Draft of the Scale & Item Analysis

In the first phase, a pool of 40 items keeping in consideration the operational definition of proposed construct was prepared with Likert type, 5-point response, viz., ***Strongly Agree, Agree, Neutral, Disagree*** *and* ***Strongly Disagree.*** This scale was administered on a representative sample of 250 employees working in industrial/ organizational sector in India who were above 25 years of age.

After scoring the scale, the sheets were arranged in the order of highest scoring to lowest scoring. From this order, two groups, one of 27% from highest scoring and other of 27% from the lowest scoring were selected. In these two groups inter-correlation matrix was examined in order to overcome existence of multicollinearity and singularity in the scale. In addition to inter-correlation matrix, 'Determinant' of the R-matrix was estimated and it was greater than 0.00001, which is pre-requisite. Sampling adequacy through Kaiser-Meyer-Olkin (KMO) test was also carried out and found to be greater than 0.50. On this basis 14 items having multicollinearity and singularity were rejected and the final manuscript of the scale had 26 items distributed across six dimensions emerged through Exploratory Factor analysis. The distribution of items and dimensions is given in Table 1.

TABLE 1

Job Design dimensions and No. of items

No.	Dimensions	Items	Total No. of items
I.	Job Characteristics	1, 2, 3, 4, 5, 6, 7	7
II.	Task Identity	14, 15, 18, 21, 25, 26	6
III.	Autonomy	10, 11, 12, 13, 16, 20	6
IV.	Job Empowerment	17, 19, 24	3
V.	Job Enlargement	8, 9	2
VI.	Skill Multiplicity	22, 23	2
		Total Items	**26**

Scoring System

TABLE 2 : *Scoring System*

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

The test sheets were scored as per scoring system given in table 2. The responses of the corresponding items were added to generate individual *Job Design* dimension scores and summing-up all 26 items to generate overall *Job Design* score. Thus, the minimum possible score will be 26 and the maximum 130. Higher the score indicates high level of agreement with the *Job Design* facet and lower the score indicates low degree of agreement.

Instructions for Administration

Instructions for administration have been printed on the cover of the scale. The scale can be administered on an individual or on a group (preferably not more than 30 at a time) on adult male population.

Standardization of the Scale

The *Job Design Scale* has been standardized on 725 participants selected from fourteen industries/organizations situated in Gujarat and Madhya Pradesh states of India. Their age varied from 25 to 62 with mean age 35.40 years. Working experience varied from 1 to 31 years with mean 9.60 years. In qualification they were ITI, Diploma in Engineering, Graduate and Postgraduates in Engineering. The demographic characteristic of the employees participated in the standardization of scale are shown in Table 3.

TABLE 3 : *Demographic characteristics of Participants*

Demographic Characteristics	Sub-Characteristics	No. of Subjects		Percent
Age (Years)	Below 35	502	725	69.2
	35 & above	223		30.8
Working Experience (Years)	Below 10	454	725	62.6
	10 & above	271		37.4
Qualification	Technical	564	725	77.8
	Non Technical	161		22.2

Reliability

The considerations of reliability and validity typically are viewed as essential elements for determining the quality of any standardized test. However, professional and practitioner associations frequently have placed these concerns within broader contexts when developing standards and making overall judgments about the quality of any standardized test as a whole within a given context. For establishing the internal consistency reliability: Cronbach's alpha is estimated item/scale wise and is shown in Table 4A & 4B.

TABLE 4A : *Descriptive Statistics of items, Scale and Alpha*

Item No.	Descriptive Statistics for items				Descriptive Statistics for Scale			
	Range	Mean	SD	Var	Scale Mean if Item deleted	Scale Variance if item Deleted	*Item total Correlation	*Alpha if item deleted
JD_1	4	3.41	.909	.826	93.92	96.054	.448	.858
JD_2	4	3.34	1.005	1.009	93.99	95.985	.400	.860
JD_3	4	3.02	.987	.973	94.31	98.294	.286	.864
JD_4	4	3.47	.903	.816	93.86	97.706	.356	.861
JD_5	4	3.62	.858	.736	93.71	96.589	.447	.858
JD_6	4	3.27	.911	.830	94.06	98.386	.313	.863
JD_7	4	3.78	.742	.550	93.55	97.011	.500	.857
JD_8	4	3.80	.745	.555	93.54	98.180	.416	.859
JD_9	4	3.93	.702	.493	93.40	99.157	.373	.860
JD_{10}	4	3.79	.763	.582	93.54	96.796	.499	.857
JD_{11}	4	3.71	.835	.697	93.62	97.057	.433	.859
JD_{12}	4	3.47	.914	.835	93.86	96.837	.400	.860
JD_{13}	4	3.59	.784	.615	93.74	97.619	.428	.859
JD_{14}	4	3.32	.659	.435	93.02	99.410	.382	.860
JD_{15}	4	3.34	.717	.514	92.99	98.250	.430	.859
JD_{16}	4	3.88	.846	.716	93.45	96.431	.465	.858
JD_{17}	4	3.80	.839	.705	93.53	97.004	.433	.859
JD_{18}	4	3.97	.836	.700	93.36	97.379	.411	.859
JD_{19}	4	3.50	.935	.875	93.84	95.361	.473	.857
JD_{20}	4	3.80	.870	.758	93.53	95.802	.488	.857
JD_{21}	4	4.29	.665	.442	93.04	99.421	.378	.860
JD_{22}	4	3.89	.838	.703	93.44	97.797	.384	.860
JD_{23}	4	3.84	.772	.596	93.49	100.137	.268	.863
JD_{24}	4	3.68	.850	.722	93.65	96.087	.484	.857
JD_{25}	4	4.04	.701	.491	93.29	98.226	.443	.859
JD_{26}	4	3.78	.760	.578	93.56	97.670	.441	.859

** r = .08 (p<.05); .10 (p<.01)*

TABLE 4B

Descriptive Statistics of Scale and Reliability (Cronbach's Alpha)

Statistics for Scale	Mean	Variance	Std. Deviation	Alpha Coefficient	N of items
	97.33	104.871	10.241	0.86	26

One of the most commonly used reliability coefficient i.e. Cronbach's Alpha was calculated and was 0.86, significant at 0.001 levels. The internal consistency of the scale is quite high and this gives a support that the scale is highly reliable. Inter-correlations among dimensions of the scale are given in Table 5.

TABLE 5

Descriptive Statistics and inter-correlation among Job Design dimensions

Dimensions	Descriptive Stats				Correlations*							
	Range	Mean	SD	Var	α	X1	X2	X3	X4	X5	X6	X7
Job Characteristics (X1)	25	23.92	4.13	17.06	0.77	1						
Task Identify (X2)	19	24.73	2.93	8.56	0.76	.23	1					
Autonomy (X3)	21	22.24	3.35	11.25	0.75	.35	.43	1				
Job Empowerment (X4)	11	10.98	1.98	3.94	0.62	.30	.47	.54	1			
Job Enlargement (X5)	7	7.73	1.23	1.51	0.61	.38	.28	.31	.29	1		
Skill Multiplicity (X6)	8	7.72	1.30	1.69	0.66	.15	.46	.28	.31	.19	1	
Job Design Overall (X7)	67	97.33	10.24	104.87	0.86	.70	.70	.77	.70	.54	.49	1

*r = .08 (p<.05); .10 (p<.01)

Validity

Content Face and Logical validity of the scale was verified by number of experts, academicians and professionals. Good correspondence was found to exist between the scale results and the considered judgments of experienced observers.

There are various methods to establish construct validity of the tool. Hence, quite a few of them are having limitations as role of time and existence of subjectivity in experts' ratings. To overcome these limitations, Exploratory Factor analysis with Varimax rotation was used to establish the construct validity of the tool. Data screening carried out in order to overcome existence of multicollinearity (i.e. items that are correlated with many) and singularity (i.e. items that are not correlated with any) in the scale.

TABLE 6 : *Factorial Validity : Factor loadings, percent of variance and cumulative percent of variance for each dimension*

Item	Factors					
	1	2	3	4	5	6
JD_2	.748					
JD_1	.722					
JD_5	.665					
JD_3	.647					
JD_4	.579					
JD_6	.475					
JD_7	.412					
	Job Characteristics					
JD_{15}		.763				
JD_{14}		.673				
JD_{21}		.615				
JD_{25}		.603				
JD_{18}		.535				
JD_{26}		.427				
		Task Identity				
JD_{11}			.686			
JD_{13}			.677			
JD_{12}			.667			
JD_{10}			.561			
JD_{20}			.547			
JD_{16}			.433			
			Autonomy			
JD_{19}				.679		
JD_{17}				.625		
JD_{24}				.488		
				Job Empowerment		
JD_9					.721	
JD_8					.721	
					Job Enlargement	
JD_{23}						.718
JD_{22}						.627
						Skill Multiplicity
PCT of Variance	**11.66**	**10.81**	**9.98**	**8.40**	**6.22**	**5.82**
Cum. Variance	**11.62**	**22.48**	**32.46**	**40.86**	**47.08**	**52.91**

Using a more structured method, confirmatory factor analysis presents evidence of the measures' convergent and discriminant validity. Six factors emerged and confirmed in the factor analysis. The percent of variance accounted by factors varies from 6.22 to 11.66%. In summing up all six factors explained 52.91% of the total variance. The factorial validity of the scale is highly satisfactory.

Norms

Standard (z - Score)

The standard score (more commonly referred to as z-score) is a very useful statistic, as it enables us to compare two scores that are from normal distribution. Standard (z-scores) scores can be calculated using the descriptive statistics (Mean = 97.33, SD = 10.24 with N = 725) as given in Table 5 and using following formula :

$$Z = \frac{(X - \mu)}{\sigma}$$

Where; X is the raw score of *Job Design*, μ is the mean and σ is the standard deviation.

On the basis of descritive statistics z-score norms have been prepared which are valid for adult population only. The same have been given in Table 7.

TABLE 7 : *Z-Score Norms for Job Design*

Mean : 97·33 **SD : 10·24** **N = 725**

RAW Score	z-Score	RAW Score	z-Score	RAW Score	z-Score	RAW Score	z-Score
66	–3·00	82	–1·50	98	+0·07	114	+1·63
67	–2·96	83	–1·40	99	+0·16	115	+1·73
68	–2·86	84	–1·30	100	+0·26	116	+1·82
69	–2·77	85	–1·20	101	+0·36	117	+1·92
70	–2·67	86	–1·11	102	+0·46	118	+2·02
71	–2·57	87	–1·01	103	+0·55	119	+2·12
72	–2·47	88	–0·91	104	+0·65	120	+2·21
73	–2·38	89	–0·81	105	+0·75	121	+2·31
74	–2·28	90	–0·72	106	+0·85	122	+2·41
75	–2·18	91	–0·62	107	+0·94	123	+2·51
76	–2·08	92	–0·52	108	+1·04	124	+2·57
77	–1·99	93	–0·42	109	+1·14	125	+2·70
78	–1·89	94	–0·33	110	+1·24	126	+2·80
79	–1·79	95	–0·23	111	+1·33	127	+2·90
80	–1·69	96	–0·13	112	+1·43	128	+3·00
81	–1·59	97	–0·03	113	+1·53		

Interpretation of the level of the *Job Design* may be seen in Table 8.

TABLE 8

Z-Score Norms and interpretation of the Job Design **(N = 725)**

Sr. No.	Range of z-Scores	Grade	Level of Job Design
1.	**+2·01 and above**	**A**	**Extremely High**
2.	+1·26 to + 2·00	B	High
3.	+0·51 to + 1·25	C	Above Average
4.	**–0·50 to + 0·50**	**D**	**Average/Moderate**
5.	–1·25 to – 0·51	E	Below Average
6.	–2·00 to – 1·26	F	Low
7.	**–2·01 and below**	**G**	**Extremely Low**

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