

Relationship between Job Satisfaction & Job Performance: a Meta-analysis

S.C. Davar & RanjuBala

Studies suggest that there is a significant relationship between job satisfaction and job performance. A meta-analysis of 48 correlations produces a mean correlation of the order ($\rho = 0.30$ approx.). However, the moderator variables viz., foreign studies vs. Indian studies, occupation-type vs. scale of measurement for job satisfaction affect the magnitude of the relationship between job satisfaction and job performance. This study shows that to obtain a valid estimate of mean correlation and true variance, we must correct correlation coefficients for the measurement errors.

S.C. Davar is Professor & Ex. Chairman, Department of Commerce, Kurukshetra University, Kurukshetra. **Ranju Bala** (ranjusobti@gmail.com) is Assistant Professor & Off. Principal, M.P.M.S.D. Girls College, Ismailabad, Kurukshetra.

Introduction

Job satisfaction plays an important role for an employee in terms of health and well being (Kornhaurser, 1965; Khaleque, 1981) and for an organization in terms of its productivity, efficiency, employee relations, absenteeism and turnover (Vroom, 1964; Locke, 1976; khaleque, 1984). Job satisfaction is a complex variable and influenced by situational factors of the job as well as the dispositional characteristics of the individual (Sharma & Ghosh, 2006). It can be captured by either a one dimensional concept of global job satisfaction or a multifaceted construct capturing different aspects of job satisfaction that can vary independently.

Research examining the relationship between job satisfaction and job performance has been conducted since at least as early as 1945 (e. g., Brody, 1945) and methodology utilized has varied greatly. Some researchers used established scales to measure job satisfaction, while some developed their own. Some used self-report ratings to assess performance, while others used peer or supervisor ratings.

Over the years, scholars examined this idea that a happy worker is a productive worker; however, evidence is not yet conclusive in this regard.

The idea that job satisfaction leads to better performance is supported by Vroom's (1964) work which is based on the notion that performance is natural product of satisfying the needs of employees. The study relating to the relationship between job satisfaction and job performance has now become a research tradition in industrial-organizational psychology. The relationship between job satisfaction and job performance has been described as the "Holy Grail" of industrial psychologists (Landy, 1989). Many organizational theories are based on the notion that organizations that are able to make their employees happy will have more productive employees. Over the years, scholars examined this idea that a happy worker is a productive worker; however, evidence is not yet conclusive in this regard. Empirical studies have produced several conflicting viewpoints on the relationship between job satisfaction and job performance. Strauss (1968) commented, "Early human relationists viewed the morale – productivity relationship quite simple: higher morale would lead to improved productivity". Siegel & Bowen (1971) and Bagozzi (1980) suggested that job performance leads to job satisfaction but not the reverse. Anderson (1984) indicated that autonomy and feedback from the job is significantly correlated with the performance.

Keaveney and Nelson (1993) found a non-significant correlation coefficient between job satisfaction and job performance. Manjunath (2008) found job satisfaction of agricultural scientists significantly correlated with their scientific productivity. Ravindran (2007) found that job satisfaction is non-significantly correlated with job performance.

There are conflicting viewpoints on the relationship between job satisfaction and job performance. The proposed study is to synthesize the results of different studies relating to the relationship between job satisfaction and job performance.

Meta-analytic Studies

Petty et al (1984) provided a limited meta-analysis of the job satisfaction-job performance relationship. They confined their analysis to 16 studies that were published in five journals from 1964 to 1983. Higher and more consistent correlations between overall job satisfaction and performance were indicated than those previously reported. Relationships between job descriptive index measures of job satisfaction and performance were not as high or as consistent as those found between overall job satisfaction and performance. They reported a mean corrected correlation of 0.31 between the constructs.

Laffaldano and Muchinsky (1985) analyzed 217 correlations from 74 studies and found a substantial range in satisfaction-performance correlations across the job satisfaction facets, rang-

ing from a mean “true score” correlation of 0.06 for pay satisfaction to 0.29 for overall job satisfaction. For their primary analysis they averaged the facets performance correlations and reported an average true score correlation of 0.17 between job satisfaction and job performance. In discussing their findings, the authors only made reference to the 0.17 correlation, concluding that job satisfaction and job performance were “Only slightly related to each other”.

Because of limitations in the prior analysis, Judge et al. (2001) conducted a new meta analysis on 312 samples. The true correlation between overall job satisfaction and job performance was estimated to be 0.30. Meta analysis was conducted by five facets in the job descriptive index (Smith, Kendall & Hulin, 1969) and found that the average corrected correlation was 0.18 a figure identical to Laffaldano and Muchinsky’s (1985) overall estimate. Even with updated meta analysis the facet substantially underestimate the relationship of overall job satisfaction to job performance.

What is Meta-analysis ?

A meta-analysis is used to synthesize the results of different studies relating to the relationship between job satisfaction and job performance. Glass (1976) defined meta-analysis as “The statistical analysis of a large collection of studies results for the purpose of integrating the findings”. Meta-analysis is regarded as an accurate and objective way to assimilate research findings in the present era.

It is a way to summarize, integrate and interpret selected descriptive statistics (e.g., sample correlations) produced by sample studies or experimental outcomes (e.g., d- statistics). There are different methods of meta- analysis. The framework of Rosenthal and Rubin’s (1978), Hunter, Schmidt and Jackson (1982), Hedges and Olkin (1985); Davar (2004). Hunter, Schmidt and Jackson (1982) is a popular method used to compute true variance i.e. observed variance net of the measurement error, sampling error and range-restriction. Davar (2004) modified the formulas given by HSJ (1982) framework and provided us with ‘An Improved Version’ of HSJ (1982). The formulas for two models are given below:

The formulas

Chart –A:

The formulas for true variance models

Hunter, Schmidt and Jackson (1982) framework	Davar (2004)
--	--------------

$\bar{r} = \frac{\sum [N_i r_i]}{\sum N_i}$	$\rho = \frac{\sum [r_i]}{k}$
---	-------------------------------

$$\sigma_r^2 = \frac{\sum [N_i (r_i - \bar{r})^2]}{\sum N_i}$$

$$\sigma_r^2 = \frac{\sum_{i=1}^k (r_i - \rho)^2}{k}$$

$$\sigma_e^2 = \frac{(1 - \bar{r}^2)^2 / k}{N}$$

$$\sigma_e^2 = \frac{(1 - \rho^2)^2}{k}$$

$$\sigma^2 = \sigma_r^2 - \sigma_e^2 \quad \sigma^2 = \sigma_r^2 - \sigma_e^2$$

r^- = Mean correlation; σ_r^2 = Observed variance; σ_e^2 = Sampling error variance; σ^2 = True variance and k = number of studies; $N = \sum N_i$; N_i = number of observations in a sample study.

Objectives of the Study

The first objective of the study is to generate a meta-analytic estimate for the general relationship between job satisfaction and job performance. This estimate indicates the general magnitude of relationship and is computed as a mean estimate from a set of sample studies. Generally, moderator variables cause differences in sample correlations i.e the extent of relationship may vary from one setting to another. Therefore, we need to know the moderator or contextual factors. Hence, the second objective is to find out the contextual variables that influence the magnitude of relationship.

The Data-set

The data-set for the study has been collected from journals incorporating business and psychological studies, Psychological Bulletin, Indian Applied Psychology & Psychological Abstracts from the Journals section of Kurukshetra University, Kurukshetra. Various online journals like JSTORE, QUESTA, and The Free Online Library have also been visited. 49 correlations have been found

Statistical Terms & Notations

Sample statistics – The statistics (e.g. correlation co-efficient) based on the sample data is called a sample statistics.

Meta-analytic statistics – The statistics computed with the help of sample statistics produced by different studies is known as meta-analytic statistics, e.g., common correlation (ρ).

Measurement error – It is the error in the measurement of postulates (variables). Generally, the measurement error arises on account of the lack of construct validity and attenuates the magnitude of a sample correlation coefficient.

Observed variance – It is meta-analytic statistics that measures the extent of variation in the sample correlation coefficients across studies.

Sampling error variance – It is meta-analytic statistics that reflects the amount of sampling error in the data-set of sample correlation coefficients.

True variance– The observed variance net of the sampling error variance ($\sigma_r^2 - \sigma_e^2$) is termed as true variance (see HSJ, 1982). It is a meta-analytic statistic.

from 12 studies from 1971 to 2008. One of the studies reported a negative corre-

lation which has been ignored for two reasons. First, we cannot find the logic for a negative relationship between job satisfaction and job performance. Second, it is incorrect to perform mathematical operations on bipolar coefficients for the determination of mean correlation, observed variance and sampling error variance (Davar, 2004).

Results & Discussion

Table-1 shows the results of a comparative analysis of the above two meta-analysis procedures.

Mean Correlation: HSJ (1982) Procedure uses weighing- based formula of mean correlation. But Davar (2004) gave non weighing based formula of mean correlation. Both methods suggest that correlation coefficients should be corrected for measurement error. HSJ (1982) procedure produces a mean correlation ($\bar{r}$) =0.24818 (when sample correlations were uncorrected for measurement error) and $\bar{r}$ =0.29222 (when sample correlations were corrected for measurement error). In the same way, Davar (2004) procedure produces a mean correlation ($\bar{r}$) =0.25083 (when sample correlations were not corrected for measurement error) and $\bar{r}$ =0.29729 (when sample correlations were corrected for measurement error). The above analysis shows that correction of the individual correlation coefficients for measurement error improves the mean correlation. In the same way weighing of sample correlations (HSJ method) distorts the mean value. It can be explained

by taking the figure of mean correlations as computed with Davar (2004) and HSJ (1982) procedure.

Table 1 Mean Correlation Coefficients for the Relationship between Job Satisfaction and Job Performance

Number of Studies=48	Uncorrected	Corrected
Non- weighted Mean Davar (2004)	0.25083	0.29729
t-value	1.757	2.112*
Weighted Mean (HSJ 1982)	0.24818	0.29222
t-value	1.738	2.072*

*significant at 5% ($\alpha_{.05}=1.96$)

The respective t-values for non-weighted corrected mean correlation coefficient is 2.112 and for weighted corrected mean correlation is 2.072 are more than the table value i.e. 1.96 at $\alpha_{.05}$, Thus we can conclude that there is a significant association between job satisfaction and job performance. Estimates of t-value of mean correlation coefficient based on uncorrected sample correlation coefficients in both cases suggest that there is no (insignificant) relationship between job satisfaction and job performance. These results suggest that in order to obtain a correct picture of the mean correlation, we must use the measurement corrected correlation coefficients.

In order to obtain a correct picture of the mean correlation, we must use the measurement corrected correlation coefficients.

True variance estimate tells whether there are moderator factors that dilute or increase the relationship between job satisfaction and performance. Zero true variance implies that there are no mod-

erator or contextual factors. If there is a true variance, it suggests that one or more moderator/extraneous factors influence the relationship between two specified postulates.

Table 2 Davar (2004) vs. HSJ (1982) Procedures: A Comparative Analysis

Number of studies (k) =48			
	Uncorrected for measurement error	Corrected for measurement error	
Mean Correlation (non-weighted)	0.25083	0.29729	Davar (2004)
Mean Correlation (weighted)	0.24818	0.29222	HSJ (1982)
Observed Variance	0.02639	0.03772	Davar(2004)
	0.0191	0.02649	HSJ (1982)
Sampling Error Variance	0.01829	0.01731	Davar (2004)
	0.00409	0.00388	HSJ(1982)
True Variance	0.0081	0.02041	Davar (2004)
	0.01501	0.02261	HSJ(1982)

It is clear from Table 2 that meta-analysis of uncorrected correlation coefficients with Davar (2004) procedure as well as with HSJ (1982) procedure generates lesser value of true variance as compared to meta-analysis of corrected correlation coefficients. Table 2 shows that once the observed correlation coefficients are corrected for measurement error, true variance rises to the level of 0.02041 vis-à-vis 0.0081 in the case of Davar (2004) procedure, and 0.02261 vis-à-vis 0.01501 in case of HSJ (1982) procedure. Significant true variance indicates that there is a significant variation in effect sizes of job satisfaction. It means there could be one or more moderators which influence the level of effect size of job satisfaction.

Moderator Analysis

As stated earlier, the true variance in the case of corrected correlations for

Davar (2004) procedure is 0.02041 and as per HSJ (1982), it is 0.02261. Significant true variance suggests that one or more moderator variables do exist. It means there is substantial variation in the individual correlations across 48 studies. Here, we examine five possible moderators (for example, foreign vs. Indian studies to know the reasons of such variation in the individual correlations. These are shown in further tables.

Foreign Studies vs. Indian Studies:

Table 3 shows that out of the 48 studies 34 are foreign and 14 are Indian. The mean correlation for foreign studies is 0.25715 and for Indian studies it is 0.39479. Thus Indian studies have a significant correlation between job satisfaction & job performance and foreign studies find insignificant average correlation. Further, foreign studies reveal a negative true variance (-0.00773)

whereas Indian studies show a positive true variance (0.0215). It means one subset generates significant true variance and other subset generate insignificant true variance. Overall, the difference in mean correlation and true variance indicates that there is great likelihood that foreign studies vs. Indian studies act as important moderator for the relationship between job satisfaction & job performance. The relationship varies across foreign settings vis a vis Indian settings.

Table 3 Moderator Analysis: Foreign Studies vs. Indian Studies

	Foreign Studies	Indian Studies
Number of Studies (k)	34	14
Mean Correlation	0.25715	0.39479
Observed Variance	0.01792	0.0724
Sampling Error Variance	0.02565	0.0509
True Variance	-0.00773	0.0215

Occupation Type: Table 4 shows the differences in the satisfaction-perfor-

mance relationship across occupations of employees. The most significant mean correlation was observed for managers and officers i.e. 0.35705. The weakest correlation was observed by mixed employees (executives and non-executives) i.e. 0.23635. True variance 0.0046 is positive for managers and officers and the rest four subsets (categories) show negative true variance i.e. -0.32593 for telephone operators, -0.00926 for mixed employees (executives and non-executives), -0.05141 for teachers and researchers, -0.06616 for nurses. We treat them as insignificant estimates (negative value of true variance is assumed to be close to zero and hence insignificant). Thus one subset shows significant positive relationship and other subsets show insignificant relationship between job satisfaction and job performance. It means occupation – type (managers vs. others act as a moderator variable for the relationship between job satisfaction and job performance.

Table 4 Moderator Analysis: Occupation- Type

	Managers & Officers	Telephone Operators	Mixed Employees	Teachers & Researchers	Nurses
Number of Studies	14	3	14	9	7
Mean Correlation	0.35705	0.29721	0.23635	0.3516	0.27234
Observed Variance	0.05898	0.00154	0.03239	0.03393	0.00801
Sampling Error Variance	0.05438	0.32747	0.04165	0.08534	0.07417
True Variance	0.0046	-0.32593	-0.00926	-0.05141	-0.06616

Overall Satisfaction vs Facet Satisfaction

In the column of ‘Facet Satisfaction’ in Table 5, we include those studies which found the relationship between different facets of satisfaction and performance

individually like security need, social need, esteem need, autonomy need, self actualization need, work itself, promotion, pay, co-workers, supervision etc. And in the column of overall job satisfaction those studies are included which measures the relationship between overall job

Table 5 Moderator Analysis: Variable Used for Measuring Job Satisfaction

	Overall Satisfaction	Facet Satisfaction
Number of Studies	21	27
Mean Correlation	0.35801	0.25007
Observed Variance	0.06495	0.01145
Sampling Error Variance	0.03619	0.03255
True Variance	-0.0632	-0.0211

satisfaction and job performance. Table 5 shows that both the subsets generate negative true variance i.e. -0.0632 for overall job satisfaction and -0.0211 for facet satisfaction. It reveals that both the subsets show insignificant relationship between job satisfaction and job performance. Therefore, variable used for

measuring job satisfaction cannot be taken as moderator variable for the relationship between job satisfaction and job performance.

Variable used for measuring job satisfaction cannot be taken as moderator variable for the relationship between job satisfaction and job performance.

Measurement Scales

The studies measured job satisfaction with JSQ, JDI, JSS and MSQ. Both MSQ and JDI show different values of mean correlations. True variance is positive only when job satisfaction is mea-

Table 6 Moderator Analysis: Measurement of Job Satisfaction with Different Scales

	JSQ	JDI	JSS	MSQ	MSQ & JDI	OTHERS
Numbers of Studies	10	12	12	7	3	4
Mean Correlation	0.26730	0.19242	0.39926	0.27234	0.29721	0.42471
Observed Variance	0.01198	0.01176	0.06477	0.00801	0.00154	0.09419
Sampling error variance	0.08622	1.56358	0.05888	0.12245	0.27705	0.16794
True variance	0.07424	-1.55182	0.00589	-0.11444	-0.27551	-0.07375

JSQ(PORTER)- Porter(1961)'s job satisfaction questionnaire, measure need satisfaction, contained 12 items based upon Maslow's theory of motivation.

MSQ- Minnesota Satisfaction Questionnaire contained 20 items measure overall satisfaction and intrinsic versus extrinsic satisfaction.

JDI(S, K&H) - Job Description Index developed by Smith, Kendall and Hullin(1969) measure job satisfaction with five facets of the job: the work itself, their supervisor, pay, promotion opportunities and co-workers. The scores on the five sub scale can be summed to obtain an overall measure of job satisfaction.

JSS (P&A) -Pelz and Andrew's (1966) job satisfaction scale measure satisfaction through different aspects of the job satisfaction.

JSS (B&R) -Brayfield - Rothe Scale measures overall job satisfaction.

JAS (J&B) - Job Attitude Scale of Jayan and Balachandran (2004) contains three domains of Job Attitude: Job Involvement, Job Commitment and Job Satisfaction-The items are designed to include intrinsic attributes of the job as well as extrinsic attributes.

JSS (Likert) - Likert's five point scale measures both intrinsic and extrinsic job satisfaction.

INDSALES (C, F &W) - INDSALES, a scale created by Churchill, Ford and Walker (1974) measures job satisfaction over several dimensions.

sured through JSS scale. And it is negative for all other subsets i.e. -0.07424 when job satisfaction is measured with JSQ scale, -1.55182 with JDI scale, -0.11444 with MSQ scale, -0.27551 with both MSQ and JDI and -0.07375 with

other scales. As one subset in the last column of Table 6, scales for two studies are not known and for other two studies, JAS (J&B) & INDSALES (C, F&W) scales were used respectively.

Table 7 Moderator Analysis: Measuring Job Performance through Different Raters

	Peer Rating	Other Measures	Supervisor's Rating	Self Rating
Number of Studies	19	3	16	10
Mean Correlation	0.30723	0.31290	0.24602	0.35576
Observed Variance	0.02415	0.14652	0.02674	0.04056
Sampling Error Variance	0.04316	0.27126	0.05516	0.07629
True Variance	-0.01901	-0.12474	-0.02842	-0.03573

Table 7 shows that mean correlation is stronger i.e. 0.35576 for those studies which measure job performance through self rating and weaker i.e. 0.24602 for those studies which measure job performance through supervisor's rating. True variance is negative for all four subsets i.e. -0.01901 for peer rating, -0.12474 for other measures, -0.02842 for supervisor's rating, -0.03573 for self rating. There are insignificant variations between all the subsets. Thus measuring job performance through different raters cannot be taken as moderator variable for the relationship between job satisfaction and job performance.

Conclusions

The mean corrected correlation improves when it is computed with corrected correlations i.e. 0.29222. On the basis of t-value of mean corrected correlation computed with both HSJ and Davar formulae, we may say that there is positive and significant relationship between job satisfaction and job perfor-

mance. Moderator variables: foreign studies vs. Indian studies, occupation type and measurement-scale for job satisfaction with different scales affect the magnitude of the relationship between job satisfaction and job performance. The present review, however, has been based on a limited number of studies. To generalize the results number of studies may be increased for a meta-analysis. In the same way, limited moderator analysis could be made due to limited number of studies. Some other moderators like sex of sample, job complexity, job permanency etc. may also be analyzed in future research. According to Rosenthal (1995:190), the overall goal of a meta-analysis is to answer the question: "Where are we now that this meta-analysis has been conducted?"

References

- Anderson, Carol H. (1984), "Job Design: Employee Satisfaction and Performance in Retail Stores", *Journal of Small Business Management*, 22: 4.

- Bagozzi, R. P. (1980), "Performance and Satisfaction in an Industrial Sales Force: An Examination of Their Antecedents and Simultaneity", *Journal of Marketing*, 44: 65-77.
- Bhuyan, B. & Choudhary, M. (2002), "Correlates of Job Satisfaction among College Teachers", *Indian Journal of Psychometry and Education*, XXXIII (2):143-46.
- Biswas, P.C. & De, T. (1994), "A Study of Job Satisfaction of Secondary Teachers in Relation to Variables", *Journal of Educational Research and Extension*, 33: 153-63
- Brief, (1998) cited in Weiss, H.M (2002), "Deconstructing Job Satisfaction Separating Evaluations, Beliefs and Affective Experiences", *Human Resources Management Review*, 12: 173-94.
- Brody, M. (1945), The Relationship between Efficiency and Job Satisfaction, Unpublished Master's Thesis. New York University, New York.
- Chandraiah, K. (1994), "Effects of Age on Job Satisfaction among College Teachers", *The Creative Psychologist*, VI (1&2): 53-56.
- Davar, S.C. (2004). "Meta Analysis: An Improved Version of Hunter, Schmidt and Jackson (1982) Framework", *Decision*, 31(2): 210-38.
- Davar, S.C. (2006), "Meta-Analysis of Sample Correlations: The Validity of Hunter, Schmidt and Jackson (1982) Framework", *Decision*, 33(2): 111-40.
- Fried, Y. & Ferris, G.R. (1987), "The Validity of the Job Characteristics Model: A Review and Meta-analysis", *Personnel Psychology*, 40(2): 287-322.
- Glass Gene V. (1976), "Primary, Secondary and Meta-analysis of Research", *Educational Researcher*, 5: 3-8.
- Hunter, John E, Frank L. Schmidt & Gregg B. Jackson (1982), Meta-analysis: Cumulating Research Finding across Studies, New Delhi, Sage Publication India Pvt. Ltd.
- Judge, Timothy A., Thoreson C.J., Bono J.E. & Patton G.K. (2001), "The Job Satisfaction-Job Performance Relationship: A Qualitative and Quantitative Review", *Psychological Bulletin*, 127(3): 376-407
- Keaveney, S. M. & Nelson, J. E. (1993), "Coping with organizational Role Stress: Intrinsic Motivational Orientation, Perceived Role Benefits, and Psychological Withdrawal", *Journal of the Academy of Marketing Science*, 21:113-24.
- Khaleque, A. (1981), "Job Satisfaction Perceived Effort and Heart Rate in Light Industrial Work", *Ergonomics*, 24:735- 42.
- Khaleque, A. (1984), Job Satisfaction and Work in Industry, (5th edition), Dhaka, Alamgir Art Press.
- Kornhauser, A (1965). Mental Health of the Industrial Worker, New York: John Wiley
- Kotharai. C.R. 1(985), Research Methodology: Methods and Techniques: New Delhi: Wiley Eastern Limited. Laffaldano,
- Landy, F. J. (1989), Psychology of Work Behavior, Pacific Grove, CA: Brooks/Cole.
- Locke, A.A. (1976), The Nature and Causes of Job Satisfaction. In M.D. Dunnette (ed.), Handbook of Industrial and Organizational Psychology, Publisher & Place of Publication?
- Michelle T. & Muchinsky P.M. (1985), "Job Satisfaction & Job Performance: A Meta-analysis". *Psychological Bulletin*, 97(2): 251-73.
- Manjunath L., Tyagarajan S., Kumar Vasant J. & Ansari M.R. (2008), "Determinants of Scientific Productivity of Agricultural Scientists", *Journal of Agriculture Science*, 21(3): 466-68.
- Pal, Yash & S.C. Davar (2001). "Meta-analysis in Research-An Introduction", in P.P. Arya Yash Pal (ed), Research Methodology In Management, New Delhi, Deep & Deep Publications.

- Petty M.M., Mcgee G.W., Cavender J.W. (1984), "A Meta Analysis of the Relationships between Individual Job Satisfaction and Individual Performance, *Academy of Management Review*, 9(4): 712-21.
- Ravindran C. (2007), "Study of Factors Influencing The Work Output of Human Resource in Revised National Tuberculosis Control Program" (RNTCP)", *Pulmon*, 9(3): 88-96.
- Schmidt, L. & Hunter, J.E. (1999), "Comparison of Three Meta-analysis Methods Revisited: An Analysis of Johnson, Mullen and Salas", *Journal of Applied Psychology*, 84:144-48.
- Sharma, M. & Ghosh, A. (2006), "Perception of Organizational Climate and Job Satisfaction in Nursing Staff Personnel", *Indian Journal of Social Work*, 67(3): 263-74.
- Siegel. J. P.& Bowen, D. (1971), "Satisfaction and Performance: Causal Relationships and Moderating Effects", *Journal of Vocational Behavior*, 1: 263-69.
- Strauss, G. (1968), "Human Relations—1968 Style", *Industrial Relations*, 7: 262-76.
- Vroom, V. H. (1964), *Work and Motivation*, New York: Wiley.

Annexure I

Summary of Studies Included in Meta-analysis

Sr. No.	Study	N	R	r _{xx} for J.S.	r _{yy} for J.P.	Sex	Ave-age (years)	Citizen-ship	Occu-pation	Instrument used for measuring J.S.	Instrument used for measuring J.P.	Variable used for measuring J.S.	Variable used for measuring J.P.
1	Slocum jr. (1971)	87	0.13	0.80	0.87	M&F	Un-known	Foreign	First-line Managers	JSQ (Porter)	JPS	Security need	Peer rating
2	Slocum jr. (1971)	123	0.11	0.80	0.87	M&F	Un-known	Foreign	Middle & Top level Managers	JSQ (Porter)	JPS	Security need	Peer rating
3	Slocum jr. (1971)	87	0.17	0.80	0.87	M&F	Un-known	Foreign	First-line Managers	JSQ (Porter)	JPS	Social need	Peer rating
4	Slocum jr. (1971)	123	0.19	0.80	0.87	M&F	Un-known	Foreign	Middle & Top level Managers	JSQ (Porter)	JPS	Social need	Peer rating
5	Slocum jr. (1971)	87	0.17	0.80	0.87	M&F	Un-known	Foreign	First-line Managers	JSQ (Porter)	JPS	Esteem need	Peer rating
6	Slocum jr. (1971)	123	0.26	0.80	0.87	M&F	Un-known	Foreign	Middle & Top level Managers	JSQ (Porter)	JPS	Esteem need	Peer rating
7	Slocum jr. (1971)	87	0.19	0.80	0.87	M&F	Un-known	Foreign	First-line Managers	JSQ (Porter)	JPS	Autonomy need	Peer rating
8	Slocum jr. (1971)	123	0.38	0.80	0.87	M&F	Un-known	Foreign	Middle & Top level Managers	JSQ (Porter)	JPS	Autonomy need	Peer rating
9	Slocum jr. (1971)	87	0.24	0.80	0.87	M&F	Un-known	Foreign	First-line Managers	JSQ (Porter)	JPS	Self actualisation	Peer rating
10	Slocum jr. (1971)	123	0.39	0.80	0.87	M&F	Un-known	Foreign	Middle & Top level Managers	JSQ (Porter)	JPS	Self actualisation	Peer rating

(contd...)

11	Wanaus (1974)	80	0.3*	0.84	0.87	F	Un-known	Foreign	Telephone MSQ Operator & JDI	JPS	Intrinsic	Supervisor's rating
12	Wanaus (1974)	80	0.21	0.76	0.87	F	Un-known	Foreign	Telephone MSQ Operator & JDI	JPS	Extrinsic	Supervisor's rating
13	Wanaus (1974)	80	0.24	0.83	0.87	F	Un-known	Foreign	Telephone MSQ Operator & JDI	JPS	Overall J.S.	Supervisor's rating
14	Baird (1976)	51	0.35**	0.84	0.96	M&F 41		Foreign	Mixed Empl- (S,K&H)	JPS	Work itself	Supervisor's rating
15	Baird (1976)	116	0.01	0.84	0.96	M&F 41		Foreign	Mixed Empl- (S,K&H)	JPS	Work itself	Supervisor's rating
16	Baird (1976)	51	Nega- tive	n.a.	n.a.	M&F 41		Foreign	Mixed Empl- (S,K&H)	JPS	Promotion	Supervisor's rating
17	Baird (1976)	116	0.22**	0.84	0.96	M&F 41		Foreign	Mixed Empl- (S,K&H)	JPS	Promotion	Supervisor's rating
18	Baird (1976)	51	0.28*	0.84	0.96	M&F 41		Foreign	Mixed Empl- (S,K&H)	JPS	Pay	Supervisor's rating
19	Baird (1976)	116	0.24**	0.84	0.96	M&F 41		Foreign	Mixed Empl- (S,K&H)	JPS	Pay	Supervisor's rating
20	Baird (1976)	51	0.07	0.89	0.96	M&F 41		Foreign	Mixed Empl- (S,K&H)	JPS	Co- workers	Supervisor's rating
21	Baird (1976)	116	0.11	0.89	0.96	M&F 41		Foreign	Mixed Empl- (S,K&H)	JPS	Co- workers	Supervisor's rating
22	Baird (1976)	51	0.21	0.89	0.96	M&F 41		Foreign	Mixed Empl- (S,K&H)	JPS	Supervision	Supervisor's rating

(contd...)

23	Baird (1976)	116	0.26**	0.89	0.96	M&F 41	Foreign	Mixed Emple- yees	JDI (S,K&H)	JPS	Supervision Supervisor's rating
24	Anand & Sohal (1981)	116	0.22*	0.77	0.87	M&F Un-known	Indian	Resear- chers	JSS (P&A)	JPQ	Average J.S. Selection of research problem (Peer rating)
25	Anand & Sohal (1981)	24	0.43	0.77	0.87	M&F Un-known	Indian	Teachers	JSS (P&A)	JPQ	Average J.S. Selection of research problem (Peer rating)
26	Anand & Sohal (1981)	22	0.24	0.77	0.87	M&F Un-known	Indian	Extension Workers	JSS (P&A)	JPQ	Average J.S. Selection of research problem (Peer rating)
27	Anand & Sohal (1981)	116	0.26**	0.77	0.87	M&F Un-known	Indian	Resear- chers	JSS (P&A)	JPQ	Average J.S. Sources of selection of research problem (Peer rating)
28	Anand & Sohal (1981)	24	0.5**	0.77	0.87	M&F Un-known	Indian	Teachers	JSS (P&A)	JPQ	Average J.S. Sources of selection of research problem (Peer rating)
29	Anand & Sohal (1981)	22	0.52	0.77	0.87	M&F Un-known	Indian	Extension Workers	JSS (P&A)	JPQ	Average J.S. Sources of selection of research problem (Peer rating)
30	Anand & Sohal (1981)	116	0.18	0.77	0.87	M&F Un-known	Indian	Resear- chers	JSS (P&A)	JPQ	Average J.S. Publication (Peer rating)

(contd...)

31	Anand & Sohal (1981)	24	0.19	0.77	0.87	M&F	Un-known	Indian	Teachers (P&A)	JSS	JPQ	Average J.S.	Publication (Peer rating)
32	Anand & Sohal (1981)	22	0.05	0.77	0.87	M&F	Un-known	Indian	Extension Workers	JSS (P&A)	JPQ	Average J.S.	Publication (Peer rating)
33	Md. Mosharraf	440	0.64**	0.87	0.87	M&F	Un-known	Foreign	Mixed Bank Employees	JSS (B&R)	Un-known	Overall J.S.	Supervisor's rating
34	Michell (2006)	80	0.14	0.68	0.81	M&F	28.2	Foreign	Mixed Employees	JDI (S,K&H)	JPS (Wright & Bonett)	Different facet	Supervisor's rating
35	Michell (2006)	81	0.07	0.68	0.89	M&F	28.2	Foreign	Mixed Employees	JDI (S,K&H)	OCBS (Bateman & Organ)	Different facet	Supervisor's rating
36	Michell (2006)	80	0.08	0.68	0.9	M&F	28.2	Foreign	Mixed Employees	JDI (S,K&H)	JPS & OCBS	Different facet	Supervisor's rating
37	Jayan (2006)	204	0.04	0.84	0.84	M	43	Indian	Managers	JAS (J&B)	PRS (J&D)	Intrinsic & Extrinsic	Average rating (Self, Peer, & Supervisor's rating)
38	S.G, H & Natikar (2007)	35	0.5**	0.83	0.87	M&F	40	Indian	Officers	Unknown	JPS (Sunderaswamy)	Overall J.S.	Self rating
39	S.G,H & Natikar (2007)	65	0.71**	0.83	0.87	M&F	40	Indian	Inspectors	Unknown	JPS (Sunderaswamy)	Overall J.S.	Self rating
40	Ravindran C. (2007)	75	0.03	0.76	0.87	M&F	37	Indian	Mixed Employees	JSS (Likert)	JPQ	Intrinsic & Extrinsic	Unknown
41	Turner (2007)	115	0.2	0.89	0.87	M&F	41	Foreign	Insurance agents	INDSALES (C,F&W)	Performance Questionnaire	Overall J.S.	Self rating

(contd...)

42	Al- Ahmadi (2008)	923	0.31**	0.87	0.83	M&F 35	Foreign	Nurses	MSQ	PAF	Overall J.S.	Self rating
43	Al- Ahmadi (2008)	923	0.24**	0.87	0.83	M&F 35	Foreign	Nurses	MSQ	PAF	Supervision	Self rating
44	Al- Ahmadi (2008)	923	0.2**	0.87	0.83	M&F 35	Foreign	Nurses	MSQ	PAF	Promotion	Self rating
45	Al- Ahmadi (2008)	923	0.08*	0.87	0.83	M&F 35	Foreign	Nurses	MSQ	PAF	Pay	Self rating
46	Al- Ahmadi (2008)	923	0.2**	0.87	0.83	M&F 35	Foreign	Nurses	MSQ	PAF	Work condition	Self rating
47	Al- Ahmadi (2008)	923	0.32**	0.87	0.83	M&F 35	Foreign	Nurses	MSQ	PAF	Job itself	Self rating
48	Al- Ahmadi (2008)	923	0.27**	0.87	0.83	M&F 35	Foreign	Nurses	MSQ	PAF	Relationship at work	Self rating
49	Tapan K. Panda	150	0.69*	0.75	0.87	M&F 35	Indian	Executives	JSS (B&R)	Unknown	Overall J.S.	Unknown

*Significant at 5%

**Significant at 1%

Note:- Mixed Employees comprises executives & non-executives.

JSQ(PORTER)- Porter(1961)'s job satisfaction questionnaire, measure need satisfaction, contained 12 items based upon Maslow's theory of motivation.

MSQ- Minnesota Satisfaction Questionnaire contained 20 items measure overall satisfaction and intrinsic versus extrinsic satisfaction.

JDI(S, K&H)- Job Description Index developed by Smith, Kendall and Hulin(1969) measure job satisfaction with five facets of the job: the work itself, their supervisor, pay, promotion opportunities and co-workers. The scores on the five sub scale can be summed to obtain an overall measure of job satisfaction.

JSS (P&A) -Pelz and Andrew's (1966) job satisfaction scale measure satisfaction through different aspects of the job satisfaction.

JSS (B&R) -Brayfield – Rothe Scale measures overall job satisfaction.

JAS (J&B) – Job Attitude Scale of Jayan and Balachandran (2004) contains three domains of Job Attitude: Job Involvement, Job Commitment and Job Satisfaction. The items are designed to include intrinsic attributes of the job as well as extrinsic attributes.

JSS (Likert) –Likert's five point scale measures both intrinsic and extrinsic job satisfaction.

INDSALES (C,F &W) – INDSALES, A scale created by Churchill, Ford and Walker (1974) measures job satisfaction over several dimensions.