

## **Meta-Analysis: Job Satisfaction and Job Performance Moderated by National Economic Development and Performance Scales**

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*Job satisfaction and job performance are some of the most researched topics in the organizational literature. These have prompted academics to test the strength of this relationship with meta-analysis. However, some academics state that job satisfaction contributes to job performance while others say that it might be that job performance leads to job satisfaction. The most probable explanation is that this relationship is affected by moderators and mediators. This paper tests the moderators of national economic development (developed vs developing countries) and the moderator of self vs other-rated job performance in a meta-analysis study.*

**Keywords:** meta-analysis, job satisfaction, job performance, national economic development, developed and developing countries, performance scales, self-reported scale, supervisory scales

### **INTRODUCTION**

The topics of job satisfaction and job performance are considered some of the most popular in the organizational literature, prompting scholars to conduct meta-analysis (Petty, Mcgee, & Cavender, 1984; Iaffaldano & Muchinsky, 1985; Judge, Thoresen, Bono, & Patton, 2001; Bowling, 2007) because job satisfaction affects job performance and job performance affects organizational effectiveness (Harrison, Newman, & Roth, 2006). Previous research has shown that the two variables are weekly (Iaffaldano & Muchinsky, 1985) or moderately correlated (Judge et al., 2001) because attitudes such as job satisfaction cause corresponding behaviours such as job performance (Strauss, 1968). However, other researchers have stated that behaviours or job performance can lead to attitudes or job satisfaction (Lawler & Porter, 1967). Another group of researchers stated that this relationship is spurious, which means that both are affected by a third or more unmeasured variables requiring more investigations such as researching moderators of this relationship (Judge et al., 2001; Fisher, 2003; Bowling, 2007).

While mediators and moderators can be tested to understand the seriousness of this relationship, Judge et al., (2001) specifically suggested investigating moderators (variables that can weaken or strengthen this relationship) to better explain this relationship between job satisfaction and job performance. Some of the mediators tested within the job satisfaction-performance relationship are role ambiguity (Brown & Peterson, 1993), trust in management (Rich, 1997), personality (Gardner & Pierce, 1998) and locus of control (Bowling, 2007) while some of the moderators are well being (Wright, Cropanzano & Bonett, 2007), role ambiguity (Abramis, 1994), organizational stress (Sullivan & Bhagat, 1992), fairness perceptions (Janssen, 2001), organizational communication (Pettit, Goris & Vaught, 1997) and job ambivalence (Ziegler, Hagen & Diehl, 2012).

However, there are still many moderators to be examined in this relationship and this paper will examine the moderating effect of developing and developed countries as well as the moderating effect of the self reported versus supervisors-reported job performance. Although some scholars have investigated the moderator of self vs supervisor or other report of job performance (Petty et al., 1984; Iaffaldano & Muchinsky, 1985), there have been no recent examinations of this moderator for the job satisfaction-performance relationship. Therefore, this study aims to test the relationship between job satisfaction and job performance while considering moderators such as developed vs developing countries and (the scale of) self vs supervisory ratings for job performance. In that regard, the paper will examine the following research questions:

- Is the effect from job satisfaction–job performance relationship different (stronger or weaker) among developed versus developing countries?
- Does the strength of the job satisfaction–job performance relationship change for self-reported versus supervisors-reported job performance?

It is important to address these questions and learn more about job satisfaction and job performance relationship conditions. Scholars have pointed out that the relationship of attitude- outcome could be affected by culture and have shown that power distance changed the relationships of perceived organizational support to job performance such that it was stronger for those low in power distance (Farh, Hackett, & Liang, 2007). Similarly, Blaauw et al. (2013) found that there are differences in job satisfaction between health workers in Tanzania, Malawi, and South Africa. Therefore, the relationship of job satisfaction and job performance may differ across developing and developed countries. In addition to this broad cross-countries level categorization of this relationship, it is also possible that the relationship may be affected of the self vs supers reported job performance.

In this paper I will first discuss the concepts of job satisfaction and job performance as well as their relationship, followed by method and results from meta-analysis of this relationship and the moderators of economical development and scale of self/supervisor- reported job performance and ending with practical implications, future research, and limitations.

## LITERATURE REVIEW

One of the earlier meta-analyses with 16 studies have shown moderate correlation of the relationship between job satisfaction and performance Petty et al. (1984) and another with 74 studies have shown week (.17) correlation (Iaffaldano & Muchinsky, 1985). This tells us that more studies are needed to understand the true strength of this relationship and factors (such as moderators) that are affecting it. While Petty et al. (1984) examined the relationship between individual job satisfaction, overall job satisfaction, and individual performance, Iaffaldano and Muchinsky (1985) also studied moderators on this relationship. More specifically, Iaffaldano and Muchinsky (1985) examined the following moderators of the job satisfaction and performance relationship; white-collar vs blue-collar occupations, specific vs general satisfaction, qualitative vs quantitative performance, self report vs other for performance, and subjective (ratings) vs objective (units of production) performance. Investigating the strengths in the job satisfaction-performance relationship requires knowing more about these two constructs, therefore, the following sections describe these two constructs.

### Job Satisfaction

Job satisfaction is considered one of the most research topics in the organizational literature although some disagreements have defined this construct (Bowling, 2007). For example, Brief & Roberson (1989) pointed out that there are two ways of viewing the components of attitude: with three components including affective, cognitive, and behavioral, or with two components, affective and cognitive. In addition, there have been opinions on using only one of these components. For example, Locke (1976) states that job satisfaction is more of an affective rather than cognitive evaluation of an employee towards their job, while Wright and Cropanzano (2000) have suggested that “job satisfaction is a relatively narrow construct that is

usually operationalized cognitively” (p. 85). However, it seems that many scholars have referred to it as employees’ cognitive and affective evaluations of key aspects of their job (Brief, 1998; Locke, 1976).

### **Job Performance**

Just as there are different opinions about job satisfaction, there have been different opinions about job performance. Some scholars have referred to job performance as exerted effort, including skill and outcomes (Behrman & Perreault 1984) and others have referred to it as employees’ behaviors and task-specific effort that led to the achievement of organizational goals (Rotundo & Sackett, 2002). In general, “[a] performance measure was defined as any type of measure of productivity (objective or subjective)” (Iaffaldano and Muchinsky, 1985, p. 254) and more specifically, “researchers have equated job performance with the performance of specific job tasks” (Judge et al., 2001, p. 381).

Scholars that conducted meta-analysis of the relationship of job satisfaction-performance and found positive correlations among the two meaning that as one variable increase the other increases as well (Bowling, 2007; Bowling, Khazon, Meyer & Burrus, 2015; Iaffaldano & Muchinsky, 1985; Judge, Thoresen, Bono, & Patton, 2001; Petty, Mcgee, & Cavender, 1984). More recently, other academics investigated the relationship of job satisfaction -performance across many job levels (executive, manager, supervisor, non-management) and “found that job levels had positive relationships with job satisfaction and task performance” (Kim, Ra, Park & Kwon, 2017, p. 641). Therefore:

***Hypothesis 1: There is a significant relationship between job satisfaction and job performance.***

### **Developed and Developing Countries as Moderator**

While Blaauw et al (2013) found that there are differences in job satisfaction between health workers in three countries in Africa (Tanzania, Malawi, and South Africa), van de Vliert and Janssen (2002) examined the differences in job satisfaction in 42 countries. They found that national or economical development “did not convincingly account for additional variance in satisfaction” (p. 390).

The economic development of a country influences the income and education level and life expectancy and with that the national level of life satisfaction, however, the presence of competition in developing countries can level out or reduce this satisfaction (van de Vliert and Janssen, 2002). Based on this research and national happiness research that shows mostly the developed countries are happier (Veenhoven, 1995), this meta-analysis will investigate if the job satisfaction -performance relationship is moderated by national development. Therefore:

***Hypothesis 2: The relationship between job satisfaction and job performance will be stronger for developed (vs. developing) countries.***

### **Self Versus Supervisory Reported Job Performance as a Moderator**

Measuring performance correctly is important because it serves as basis for management making decisions for promotions (or letting go) of employees. There has been a debate about measuring job performance (Randall, Ferguson, & Patterson, 2000) with some scholars saying that the supervisory ratings are more credible (Conway and Lance, 2010) and others saying that the self-ratings are valid measures for job performance (Frayne & Geringer, 2000). Furthermore, van de Vliert, E., & Janssen (2002) found that there are clusters among countries around the world in relation of how they test job performance. For example, they found that “South American countries (Argentina, Brazil, Chile, Columbia, Mexico, and Venezuela)” use mostly self-reported measures, “Arab countries (Egypt, Iraq, Jordan, Syria, and United Arab Emirates)” use mainly other reported measures, and “West-European countries (Belgium, France, Germany, Great Britain, Iceland, Ireland, Norway, Portugal, Spain, Sweden, and Switzerland)” use both although slightly more the other-reported measures (van de Vliert, E., & Janssen, 2002, p. 388). In addition, they clarify that only self-reported measures in developed countries appear to be higher than in other countries and consequently, people in these countries did not like other report performance measures which support individualism in these countries (van de Vliert & Janssen, 2002).

Academics has criticized using self-report measurements of job performance because of potential common method bias and with people reporting all negative or all positive results (Spector, Dwyer, & Jex, 1988), however, self-reported measures have become the dominant way because there are rarely objective other measures at work (Frayne & Geringer, 2000). The fact that self-report measures are taken as valid measure (instead of supervisory report) indicate individualism, respecting employees' voice, and autonomy at work which may affect job satisfaction and with that the job performance. Therefore:

*Hypothesis 3: The relationship between job satisfaction and job performance will be stronger for self-rated vs supervisor-rated job performance.*

### Literature Search

Since there were a couple of meta-analyses for the job satisfaction- performance relationship till 2007 (Petty et al., 1984; Iaffaldano & Muchinsky, 1985; Judge et al., 2001; Bowling, 2007), I searched for articles from 2007 till 2020 to analyse the job satisfaction-performance relationship with more recent studies. Only one meta-analysis study after 2007 had examined the situational strength of the job satisfaction–performance relationship (Bowling et al., 2015); however, the only overlapping article that study and this study is by Rich et al (2010). This is because the meta-analysis by Bowling et al., 2015 ranges from 1965 till 2011 with fewer studies since 2007. Therefore, this meta-analysis study articles in have not been part of other meta-analyses before.

My inclusion criteria were articles dating from 2007 till 2020 that had the correlation table of the variables job satisfaction and job performance to have at least 10 studies in my meta-analysis. Furthermore, my inclusion criteria in terms of the moderators involved stating the country of their data collection and whether job performance was self or supervisor- rated.

The industrialized or developed countries (considered developed) as per the Human Development Index were coded 1, and developing countries were coded 2. In addition, I coded for scales used to measure job performance in terms of self-reported (coded 1) and supervisor-reported (coded 2) performance. I tried to code for scales for job satisfaction, however, it appears that most studies have used different scales with only one scale -by Williams & Anderson (1991) - repeating twice. Other information added to the data collection was the sample size, the effect size estimates of the studied relationship, and the reliability or Cronbach's alpha coefficient.

To find studies with these inclusion criteria I searched by the words “job satisfaction and performance” in databases and Google Scholar search browser selecting the year since 2007-2020. I collected and entered 14 studies, and the analysis was done in software R. The average number of participants per study in this meta-analysis is 631 with total participants N=8835 for 14 entries. The average reliabilities for job satisfaction was  $\alpha = .84$  and for job performance  $\alpha = .83$ . The summary of studies and coding are presented in Table 1.

**TABLE 1**  
**STUDIES COLLECTED FOR JOB SATISFACTION-PERFORMANCE META-ANALYSIS**

Study	N	r	x_alpha	y_alpha	country	m_ind/dev	jp scale	n_sefl/sups
Rich et al (2010)	245	0.29	0.83	0.9	USA	1	sups	1
Dinc et al (2018)	274	0.58	0.91	0.81	B & H	2	self	2
Wyland et al (2016)	170	0.26	0.9	0.89	USA	1	sups	1
Wright & Bonett (2007)	112	0.08	0.77	0.91	USA	1	sups	1
Rowold et al (2014) profit	1258	0.24	0.82	0.86	Germany	1	self	2
Rowold et al (2014) nonprofit	713	0.07	0.82	0.84	Germany	1	self	2
Olsen et al (2017)	2946	0.28	0.73	0.78	Norway	1	self	2
Kim et al (2017)	342	0.53	0.74	0.9	South Korea	1	self	2
Heidemeier & Moser (2019)	747	0.19	0.84	0.92	Germany	1	sups	1
Giri & Kumar (2010)	380	0.42	0.81	0.6	India	2	self	2
Giacopelli et al (2013)	237	0.33	0.94	0.74	USA	1	self	2
Bouckenooghe et al (2013)	321	0.47	0.87	0.77	Pakistan	2	sups	1
Li et al (2018)	881	0.44	0.93	0.95	China	1	self	2
Chen & Silverthorne (2008)	209	0.2	0.81	0.75	Taiwan	2	self	2

N = sample size, r = effect size/correlation, x\_alpha= reliability of job satisfaction, y\_alpha= reliability of job performance, m\_ind/dev= industrial -1 vs developing countries -2, jp scale=job performance scale, self-rated -1, supervisor-rated -2.

### Method and Results

For the statistical analyses, I used the statistical software R because it offers better and faster calculations than doing it in excel. In addition, this software shows the random effects model which is commonly used for meta-analysis. Since studies used for meta-analyses are not identical in their sample size, characteristics, and data analysis, it can show variability or heterogeneity between the true effects.

The random effect method treats the heterogeneity as random and that the true effects are normally distributed. It uses REML (random effects using the restricted maximum likelihood estimator).

The Q statistics measures the heterogeneity in effect sizes and show if the assumption that all the effect sizes are assessing the same population mean. If it shows that is statistically significant, it means there is heterogeneity, and we can investigate potential moderators. The Q statistics in this meta-analysis is highly significant,  $\chi^2(14) = 169.95$ ,  $p < .001$ , therefore the effect sizes don't come from the same population mean and there are moderators involved.

The estimate of the total amount of heterogeneity is  $\tau^2 = 0.03$  (SE = 0.01; 95% CI: 0.01 to 0.08) and the proportion of variability due to heterogeneity  $I^2 = 94.21\%$  (95% CI: 88.57 to 97.86) which means there is a lot of variability reflected in the population mean.

The summary effect size and its 95% confidence interval are  $\mu = 0.33$  (95 % CI: 0.24 to 0.43) which effect is statistically significant  $z=7.02$ ,  $p < .001$ ), therefore there is a substantial variation in effect sizes overall.

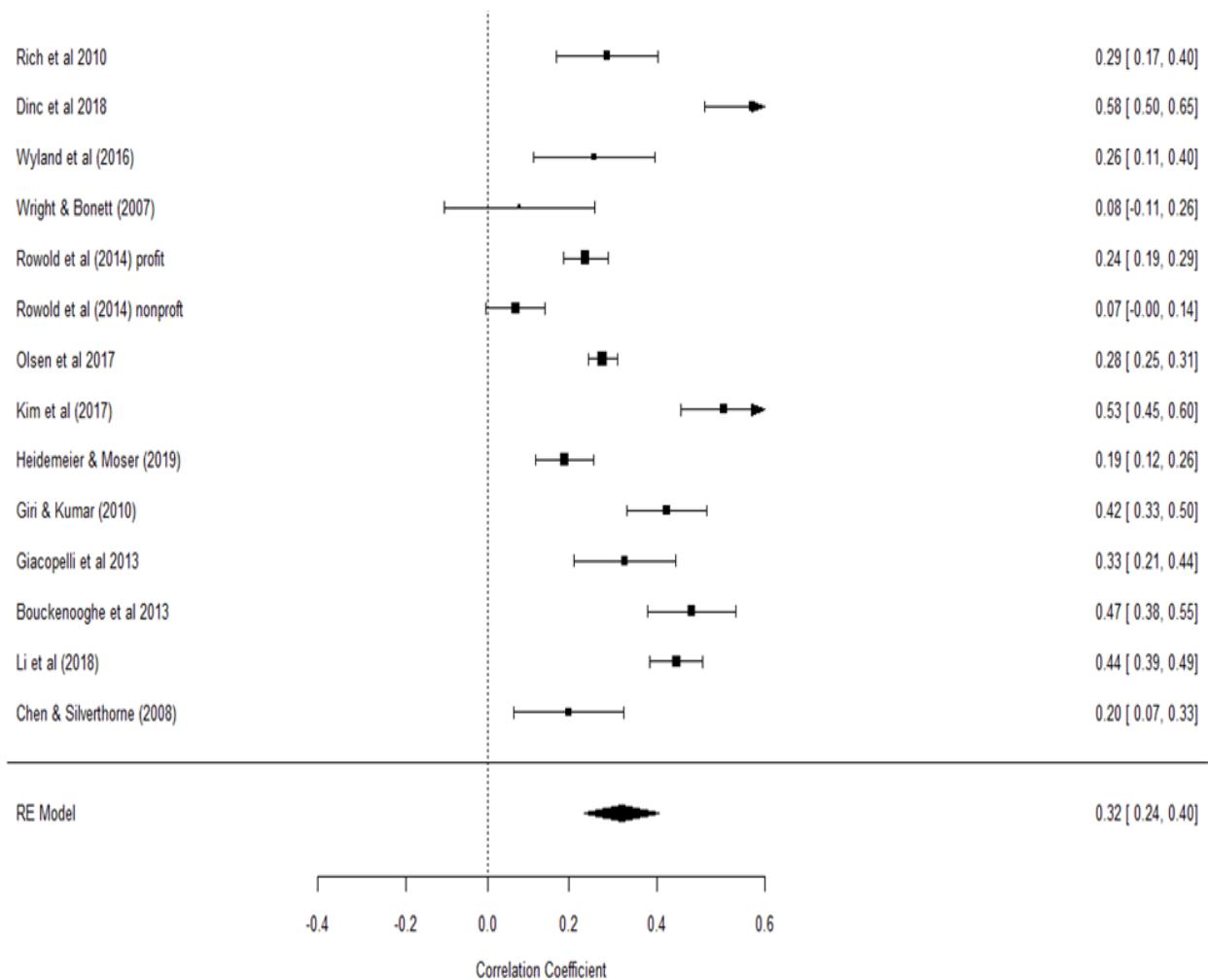
Fisher's z transformation back to r is normalizing or variance stabilizing transformation to ensure that those assumptions are true; in this case  $\mu = 0.32$  (95% CI: 0.24 to 0.40) which suggest that there is a positive relationship between job satisfaction and job performance, and we can reject the null hypothesis (which is translated that there is no relationship).

While there is evidence for heterogeneity based on the Q test and heterogeneity test, they don't tell us specifically which studies may be influencing the heterogeneity and for that examination we can look at the Baujat plot. Therefore, the studies with ID 4, 12, and 16 (located at the top right corner) contribute to the overall heterogeneity and the overall results. To find more accurate information about potential outliers and potential influential observations, we look at the plot diagnostic for it. Based on Cook's distance ( $4/14=0.29$ ) values there are no influential observations in this data set.

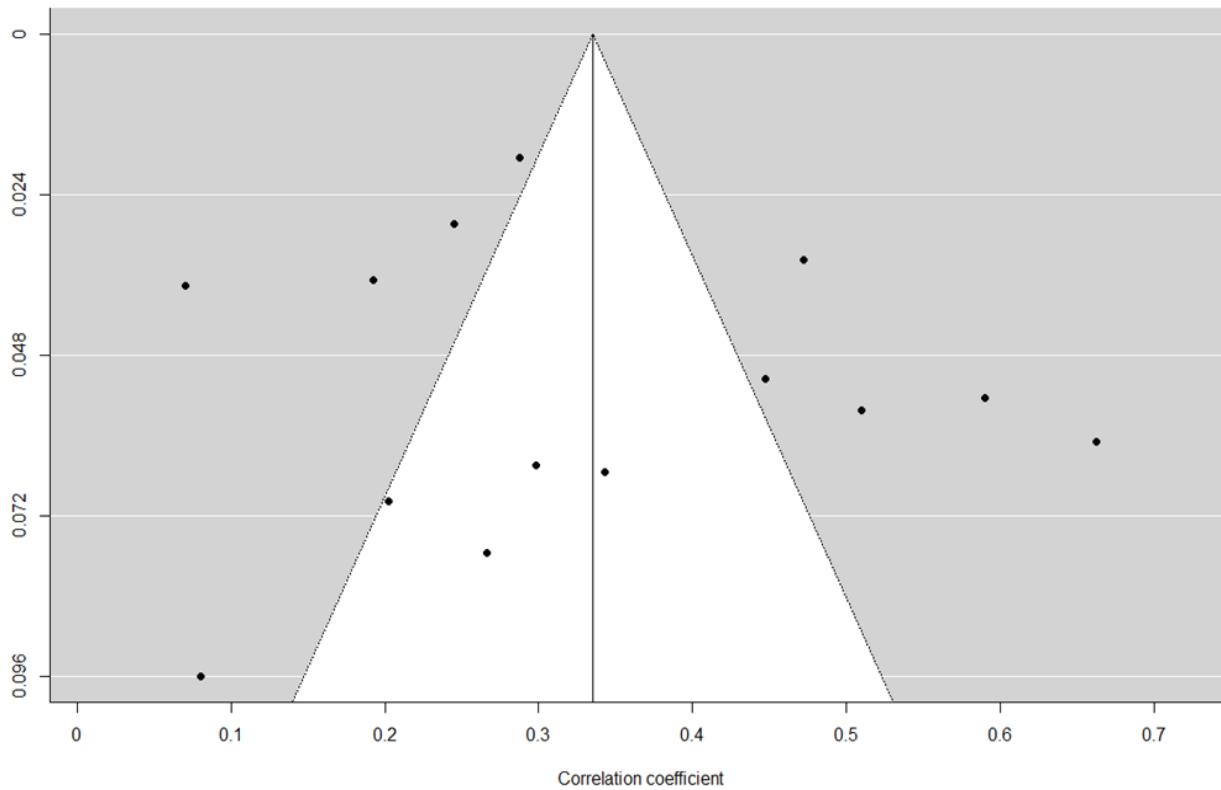
The forest plot is useful for summarizing the studies and the forest plot for this meta-analysis presented with Figure 1 shows all 14 studies, the 95% CI for each study, and the summary effect (for all of them at the bottom). The summary effect size and its 95% confidence interval shown at the bottom are  $\mu = 0.32$  (95 % CI: 0.24 to 0.40), therefore there are no studies with effect sizes bellow zero (the doted line).

In addition, the random effects model (without moderators) can be shown with a funnel plot. It is useful for detecting the existence of true heterogeneity of effect sizes and possibly a publication bias or that they may be moderators. "An unbiased sample would ideally show a cloud of data points that is symmetrical around the population effect size and has the shape of a funnel" (Field, 2013, p. 327). The funnel plot is presented at Figure 2. Testing for publication bias we can see that neither Egger's regression test ( $p=.89$ ) nor Rank correlation test ( $p=1.0$ ) for funnel plot asymmetry are statistically significant; therefore, there is no evidence of publication bias.

**FIGURE 1**  
**FOREST PLOT OF STUDIES USED IN JOB SATISFACTION-PERFORMANCE RELATIONSHIP**



**FIGURE 2**  
**FUNNEL PLOT**



When there is variability in effect sizes it is useful to try to explain this with theoretical predictors (Field, 2013). In this data set, I have coded for industrial/developed countries (coded 1) and developing countries (coded 2) that can be used as moderators and test if they can explain more of the heterogeneity.

Testing the job satisfaction-performance relationship for only **industrial/developed countries**.

The total amount of heterogeneity  $\tau^2 = 0.02$  (with 95% CI: 0.01 to 0.08) is less than before ( $\tau^2 = 0.03$ ) meaning that this moderator has explained some variance.

The proportion of variability due to heterogeneity  $I^2 = 93.72\%$  (95% CI: 85.92 to 98.20) shows a lot of variability reflected in this population mean, which means that there might be more moderators involved or other explanatory factors.

The Q statistics for the data set 1 (dat1) with industrialized/developed countries is significant,  $\chi^2(9) = 109.026$ ,  $p < .001$  which means that the effect sizes don't come from the same population mean and that this moderator (data set with industrial countries) is a predictor of effect sizes.

The summary effect size (from model results) is  $\mu = 0.29$  (95 % CI: 0.19 to 0.37) and this is statistically significant ( $z=5.72$ ,  $p < .001$ ) meaning that there is still a variation in effect sizes. And to check if these assumptions are true, we use Fisher's z transformation back to r, thus  $\mu = 0.28$  (95% CI: 0.19 to 0.37) suggesting that the null hypothesis can be rejected because this predictor can explain something. In other words, a positive relationship exists between job satisfaction and job performance in developed countries.

Testing the job satisfaction-performance relationship for only **developing countries**.

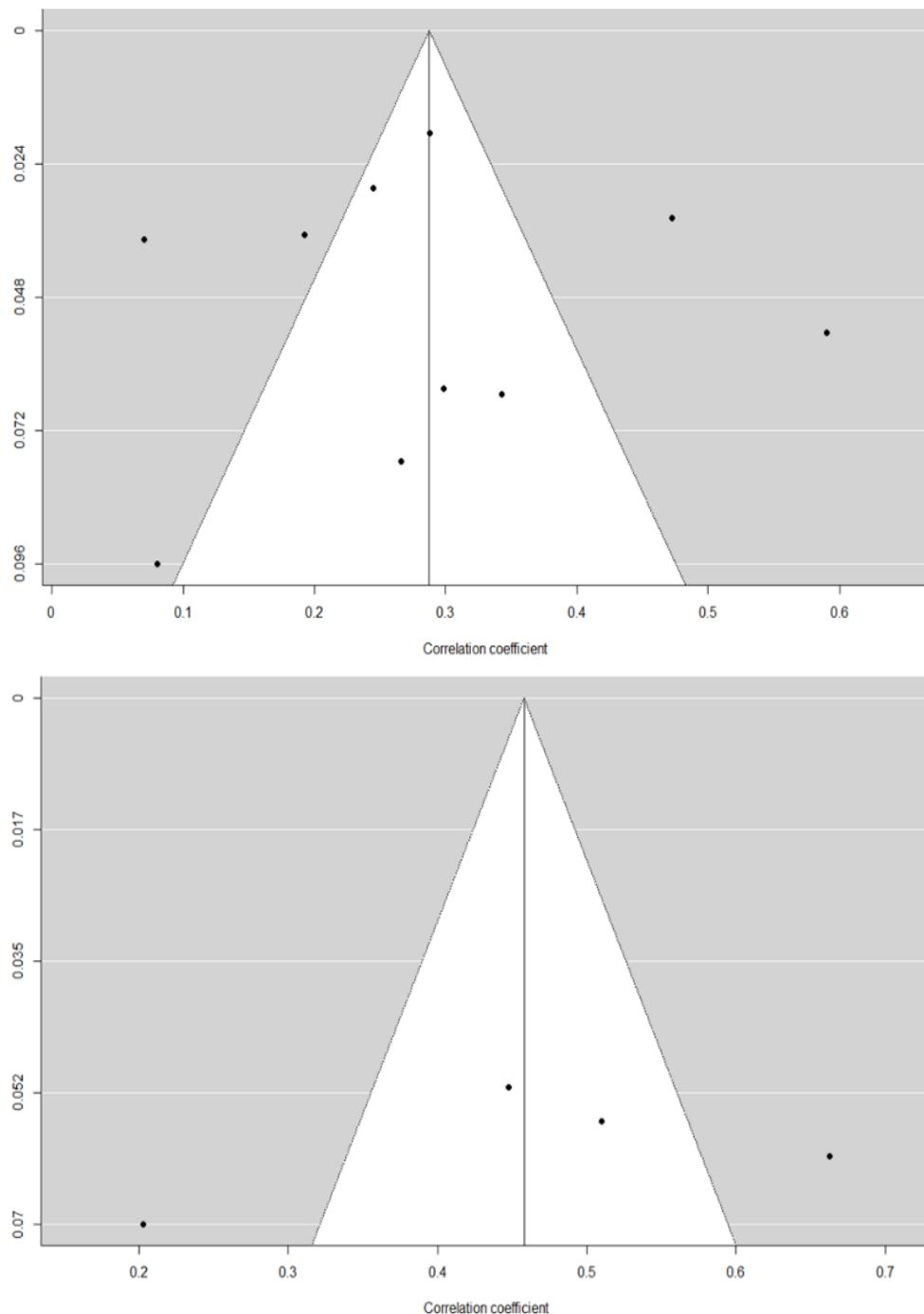
The total amount of heterogeneity for this data set is  $\tau^2 = 0.03$  and the variance due to heterogeneity  $I^2 = 90.07\%$  showing that there is a variability although less than for the previous data set (dat1).

The Q statistics for the data set 2 (dat 2) with developing countries is highly significant,  $\chi^2(3) = 25.445$ ,  $p < .001$ , meaning there is still variability to be explained and may be more moderators or other explanatory factors involved.

The model results for the summary effect size  $\mu = 0.46$  (95 % CI: 0.27 to 0.64) is statistically significant ( $z=4.89$ ,  $p < .001$ ) meaning that there is a variability in effect sizes. Checking the same hypotheses for the developing countries,  $\mu = 0.43$  (95% CI: 0.27 to 0.57) there is a positive relationship between job satisfaction and job performance in developing countries as well.

The funnel plots of both data sets are presented in Figure 3.

**FIGURE 3**  
**FUNNEL PLOTS OF JOB SATISFACTION-PERFORMANCE RELATIONSHIP IN DEVELOPED  
 VS DEVELOPING COUNTRIES**



These differences between the two groups of countries are small and both are significant, however, we will need a statistical comparison to determine if there is a statistically significant difference between them. Comparing the two estimates (with test for moderators), it appears that there is still residual heterogeneity  $\chi^2(12) = 134.475$ ,  $p < .001$ , and that the difference between the two estimates is not statistically significant ( $p=0.08$ ). At this point, hypothesis 2 does not seem supported because there is no difference between the industrial and developing countries in the effect of the relationship between job satisfaction and job performance.

Testing the job satisfaction-performance relationship for only **supervisor-rated** (coded 1) job performance.

The total amount of heterogeneity for this data set  $\tau^2 = 0.02$  (with 95% CI: 0.005 to 0.20) is low and close to zero, but the proportion of variability due to heterogeneity  $I^2 = 84.73\%$  (95% CI: 55.56 to 98.24) shows that there is still a lot of variability reflected in this population mean, which means that more moderators may be involved.

The Q statistics for this data set with studies only with supervisor-rated job performance is significant,  $\chi^2(4) = 26.932$ ,  $p < .001$ , thus the effect sizes don't come from the same population mean and that this data set with supervisor-rated performance is a good predictor of effect sizes.

The summary effect size  $\mu = 0.28$  (95 % CI: 0.13 to 0.41) is statistically significant ( $z=3.94$ ,  $p < .001$ ) showing that there is still a variability in effect sizes.

This is true with Fisher's transformation as well ( $\mu = 0.28$ , 95% CI: 0.19 to 0.37), therefore, the null hypothesis can be rejected. In other words, there is a positive relationship between job satisfaction and job performance for supervisor-rated job performance.

Testing the job satisfaction-performance relationship for only **self-rated** (coded 2) job performance.

The total amount of heterogeneity shows  $\tau^2 = 0.03$  and the proportion of variability due to heterogeneity  $I^2 = 95.90\%$  meaning that there is still a lot of variability, which may be more factors explaining this relationship.

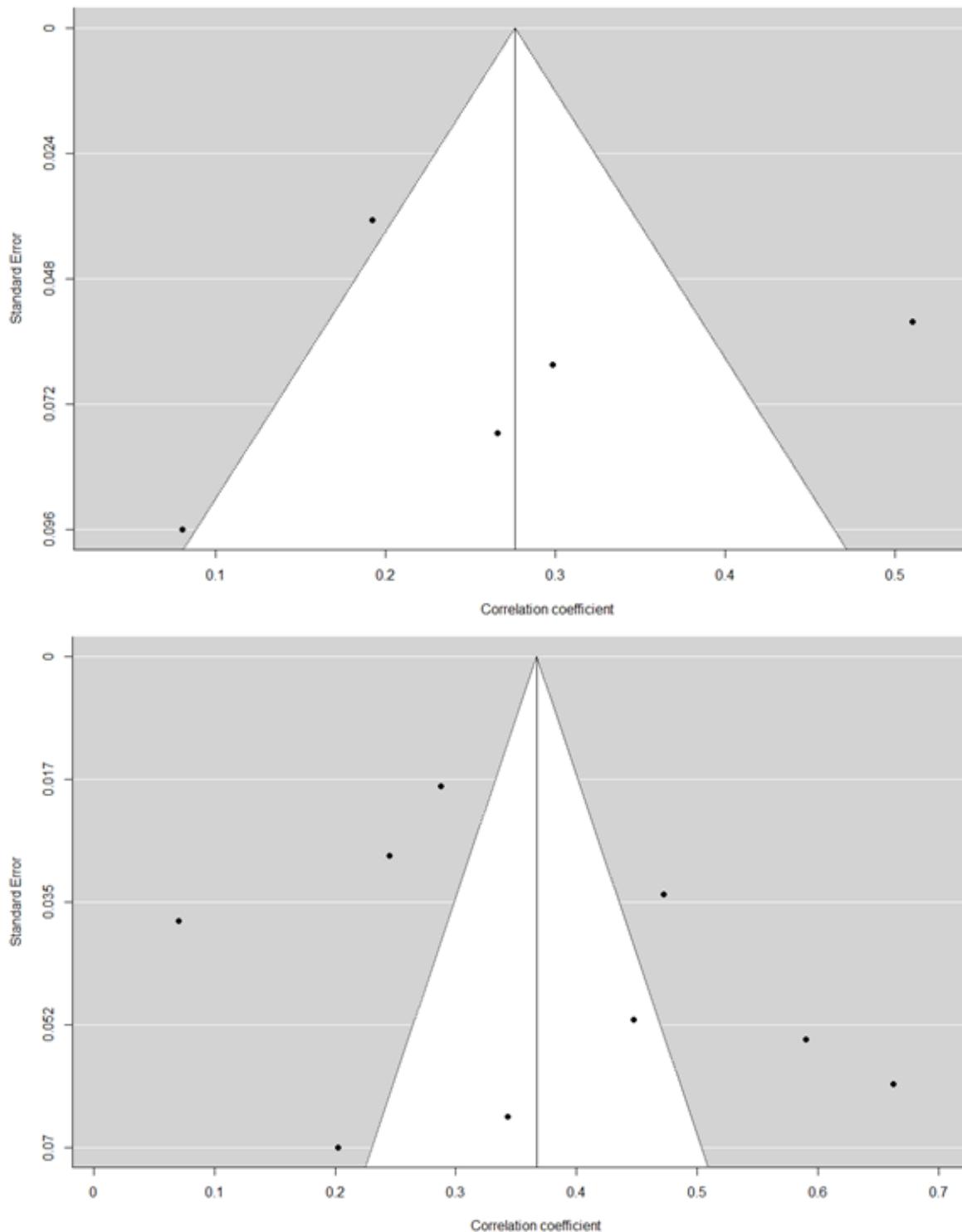
The Q statistics for studies with only self-rated job performance is significant,  $\chi^2(8) = 140.429$ ,  $p < .001$ , therefore this data set with studies from self-rated job performance is a good predictor of effect sizes.

The summary effect size  $\mu = 0.37$  (95 % CI: 0.24 to 0.49) is statistically significant ( $z=5.80$ ,  $p < .001$ ) showing that there is still a variability in effect sizes. This is also true with Fisher's calculations ( $\mu = 0.35$ , 95% CI: 0.24 to 0.46); therefore, the null hypothesis is rejected, there is a positive relationship between job satisfaction and job performance for studies with self-rated job performance.

Comparing the differences between the two studies with self-rated and supervisor-rated performance is not statistically significant (according to the test of moderators  $\chi^2(1) = 0.820$ ,  $p = 0.365$ ), therefore it appears that hypothesis 3 is not supported.

The funnel plots of both studies with supervisor-rated and self-rated job performance are presented in Figure 4.

**FIGURE 4**  
**FUNNEL PLOTS OF JOB SATISFACTION-PERFORMANCE RELATIONSHIP BETWEEN  
 SELF VS SUPERVISOR RATED PERFORMANCE**



In addition, for further comparison of the full meta-analysis and their subsets of tested moderators, Table 1 shows the summary effects of each analysis (in the column named estimate values), their standard

errors (s.e.), standardized test statistics (zval), alpha values (p), and total amount of heterogeneity for each data set ( $\tau^2$ ).

The summary effect of the relationship between job satisfaction and job performance is the highest in developing countries, followed by self-rated job performance.

**TABLE 1**  
**SUMMARY OF META AND SUBFILES ANALYSIS**

N	Countries datasets	estimate	s.e.	zval	p	$\tau^2$
1	Full dataset	0.335	0.05	7.021	<.001	0.029
2	Industrial	0.288	0.05	5.717	<.001	0.022
3	Developing	0.458	0.09	4.894	<.001	0.031
4	Supervisor-rated	0.276	0.07	3.938	<.001	0.020
5	Self-rated	0.367	0.06	5.796	<.001	0.034

## CONCLUSION

The random effects model is commonly used for meta-analysis (Hall & Brannick 2002); therefore random effects model of meta-analysis was used to test the relationship between job satisfaction and job performance while considering moderators such as developed vs developing countries and (the scale of) self vs supervisory ratings for job performance. Overall, there was a significant positive relationship between job satisfaction and job performance which results are similar to those obtained by Judge et al., (2001), who found a correlation between job satisfaction and job performance of .30.

The random effects model for the full meta-analysis showed considerable variation in effect sizes and two moderators were tested; however, the difference between the groups was not statically significant although different effects were detected between them. Therefore, the main relationship and hypothesis 1 was supported and the moderator analyses (hypotheses 2 and 3) were not supported.

Future research can examine these moderators with larger sample size and can use same or different moderators such as profit, non for profit, private and public sectors, culture, industry type, and organizational size.

Some of the limitations of the study is the number of studies, as well as the exclusion of studies from unpublished studies, doctoral dissertations, working papers, reports which increases the possibility of publication bias.

In summary, understanding the relationship between job satisfaction and job performance and its mediators and moderators is important for managerial implications because managers and leaders often use findings and insights to make important decisions for hiring, letting go of employees, and promotions. This study's findings show that there is a positive relationship between job satisfaction and job performance. However, there is no difference between the developed and developing countries in the effect of this relationship (although a big sample size might show different results because the p value p=0.08 was close to the significant cut off for p=0.05). There is also no difference in the effect or strength of this relationship regarding taking self vs supervisory reported measures for job performance.

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