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Examining Moderating Effects of Gender between Role Stress and Job Satisfaction among Software Employees

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Abstract

Role stress has been extensively studied in organizational psychology and the present study focused on two types of role stress: role conflict and role ambiguity. The purpose of the study is to examine the moderating effect of gender in the relationship between role stress and job satisfaction for software professionals which had received little attention in Indian context. A Structural Equation Modeling (SEM) is used to analyze the data which includes confirmatory factor analysis (CFA), path analysis and multi-group moderation analysis . The results of the study revealed that there was slight increase in negative effect of role conflict on job satisfaction and slight decrease in negative effect of role ambiguity on job satisfaction among female employees. In case of male there was no increase or decrease in negative effect of role conflict and role ambiguity on job satisfaction. This study found invariant moderation effect of gender on relationship between role stress (role conflict and role ambiguity) and job satisfaction. Research implications, suggestions for role stress management and scope for future research are provided.

1.Introduction

Indian software industry is one of the fastest growing sectors of Indian economy. The Indian software industry has contributed into GDP growth of India and has been consistently growing. In present scenario, software industry is facing intense competition, rapid growth and technological advancements. To sustain in such highly competitive environment, software professionals need to perform various roles not only within an organizations but also outside the organization referred to as boundary spanning activity (Guimaraes and Igbaria, 1992).Such boundary spanning activities (BSA) often lead tohigh role conflict (Kahn et al.,1964;Miles,1976; Miles and Petty,1975)and high role ambiguity due to vague and ambiguous roles expectations. Other than boundary spanning activities, software professionals also need to do a project in a shorter period of time and competing demands placed by the superiors, peers or subordinates resulting in role stress at workplace (Kahnet al., 1964). Generally role stress is discussed in terms of role conflict and role ambiguity in organizational psychology (Jackson and Schuler,1985).Rizzo et al. (1970) defined role conflict as the incompatibility of requirements and expectations from the role, where compatibility is judged based on a set of conditions that impact role performance. Role ambiguity arises when individual do not have role clarity to perform the assigned job (Rizzo et al., 1970; Ivancevich & Matteson, 1980; Kahn et al., 1964) .Individual's having unclear plans and objective ,lack of clarity of one's duty and uncertainty about the amount of authority to perform assignment (Rizzo et al.,1970) .

Job satisfaction has been one of the major outcome variable affected by role conflict and role ambiguity among software /information system professionals (Gumiraes & Igbaria,1992; Li & Shani,1991;Sethi et al., 1999).Software industry is a male dominant industry gender may acts likes a moderator on the relationship between role stress (role conflict and role ambiguity) and job

satisfaction. In addition, few research had been conducted on the moderating effect of gender among software professionals .The purpose of the study is to examine moderating effect of gender in the relationship between role stress and job satisfaction.

2.Literature Review and Hypothesis Formulation

Researchers determined that role conflict and role ambiguity commonly exists in IT environment which were antecedents of job stress, job satisfaction, organizational commitment and turnover intentions. Jack J. Baroudi (1985) studied 229 Information Systems (IS) employees from wide variety of industries to find out antecedents of job satisfaction, organization commitment and turnover intention. He identified that role ambiguity is more influential variable, accounting for 22% of the variance in job satisfaction, compared to role conflict, which accounted for only 7% of the variance in job satisfaction. In contrast, Li and Shani (1991) studied the relationship of organizational characteristics, job satisfaction and work stress among 109 Information System (IS) managers from a wide variety of industries including banking, EDP (electronic data processing) services, education, government, insurance, manufacturing, medical, printing, retailing, utilities, wholesaling, etc. They found that role ambiguity, having the lowest mean composite score (2.87) among the four stressors (work overload-5.0,role conflict -4.5,job induced anxiety-3.2 and role ambiguity-2.87) perceived by the Information System (IS) managers, is significantly influenced job satisfaction factors. However, the research also shows positive relationship of role ambiguity and role conflict with job stress. Ivancevich et al. (1983) had a similar finding that role ambiguity was not a major stressor perceived by the Information System (IS) personnel; it was the fifth highest mean score among the seven stressor scales used in their study.

The contradictory findings of these two studies were due to some differences in terms of the research design. Baroudi's participants were programmers, analysts/programmer, analysts, and project leaders from a wide variety of industries such as commercial banking, insurance, brokerage, public accounting, investment banking and electronic manufacturing. On the other hand, Li and Sahni's participants were all Information System(IS) managers(70 were top-level managers, while 20 were middle-level and 19 operating-level managers)from a wide a wide variety of industries including banking, EDP (electronic data processing) services, education, government, insurance, manufacturing, medical, printing, retailing, utilities, wholesaling, etc. Second the scales were used to measure role conflict, role ambiguity and job satisfaction. They used Rizzo et al (1970) scale to measure role conflict and role ambiguity. But in case of Baroudi's research, the role ambiguity scale was expanded and recommended the addition of task and reward ambiguity items. In case of job satisfaction they used different measures, Li and Sahini assessed job satisfaction by 8 items adopted from Hoy (1983) and Baroudi used Job Descriptive Index (JDI) to measure job satisfaction. Thus, it is difficult to conclude whether the different impacts of Role conflict and Role ambiguity on job satisfaction are due to the nature of these two constructs.

Most of the researchers found, role conflict and role ambiguity negatively correlated with job satisfaction except two studies have shown positive correlation between role stress (role conflict and role ambiguity) and job satisfaction (Igbaria et al., 1994; King & Xia,2001) shown in Table1.

Table1: The empirical studies of correlations of role conflict and role ambiguity with job satisfaction

S.No	Researchers	Year	Sample	Findings
1	Jack J.Baroudi	1985	He studied 229 Information Systems (IS) personnel including application programmers employed within several industries to find out antecedents of job satisfaction, organization commitment and turnover intention.	He found coefficient of correlation® of role ambiguity with job satisfaction was -0.51 and role conflict with job satisfaction was -0.39.
2	Tor Guimares and MagidIgbaria	1992	They conducted research on job satisfaction among sample of 209 sample of which 76 Information centre employees (IC) and other 133 Information System (IS) employees .	They found coefficient of correlation® of role ambiguity with job satisfaction was -0.46 and role conflict with job satisfaction was -0.36
3.	Bostorm	1981	He found negative correlation between role conflict and role ambiguity and their job satisfaction of sample of 75 Software engineers	He identified coefficient of correlation® of role ambiguity with job satisfaction was -0.45 and role conflict with job satisfaction was -0.34
4.	Goldstein and Rockart	1984	They conducted research amongst analysts and programmers in 3 companies in Northeast U.S,and one company in Midwest U.S of sample size 119	They identified coefficient of correlation® of role ambiguity with job satisfaction was -0.57 and role conflict with job satisfaction was -0.40.
5.	Igbaria and Chidambaram	1997	Presents results, based on the survey responses of about 348 employees in the IS field, which suggest that significant gender differences exist.	They identified coefficient of correlation® of role ambiguity with job satisfaction was -0.50 and role conflict with job satisfaction was -0.41.
6.	Li and Shani	1991	Li and Shani's sample were all 109 IS managers.	They identified coefficient of correlation® of role ambiguity with job satisfaction was -0.63 and role conflict with job satisfaction was -0.41
7.	Lee	2000	They conducted research on sample size 273 IT professionals .	Job satisfaction to be a mediating variable on the effect of the motivating potential of a job, role conflict and role ambiguity on IT turnover intention He found coefficient of correlations® of role ambiguity and job satisfaction -.44 and correlations between role conflict and job satisfaction-.17.

8.	DK Goldstein	1982	Conducted research on 25 Programmers/analyst at an insurance company .	He found strong correlations (r) between role ambiguity and job satisfaction -.72 and slightly weaker correlations between role conflict and job satisfaction-.57.
9.	Igbaria, Parasuraman, and Badawy	1994	Conducted research on 224 IT Professionals	They found correlations (r) between role ambiguity and job satisfaction 0.39 and between role conflict and job satisfaction .43.
			Conducted research on 214 IT Professionals.	They found correlations (r) between role ambiguity and job satisfaction 0.54 and between role conflict and job satisfaction .46.
10.	King and Xia	2001	Conducted research on 187 newly hired information system professional.	They identified coefficient of correlation® of role ambiguity with job satisfaction was 0.15 and role conflict with job satisfaction was -0.50.

Source: Shen .Y (2005): Meta-Analysis of Role Ambiguity and Role Conflict on Information System Professional Job Satisfaction

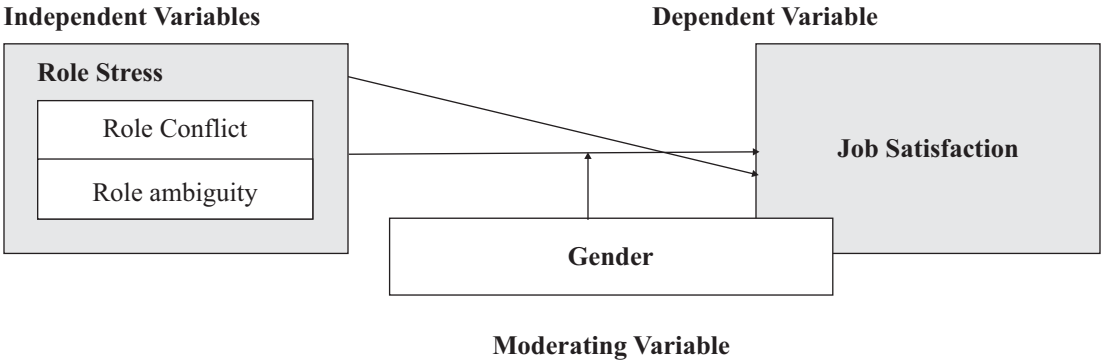
Gender as a Moderator

Baron and Kenny(1986) defined moderator is a variable that affects the direction and /or strength of the relationship between independent and dependent variable. Among demographic characteristics variables gender may be considered as an interesting and important demographic moderator among researchers because the role of gender as a potential moderator remains unclear on the relationship between role stress (role conflict and role ambiguity) and job satisfaction. Boles et al (2003) found conflicting result on the moderating effect of gender on the relationship between role stress and different facets of job satisfaction. They found negative relationship between role stress and some dimension of job satisfaction among male B2B sales person not in female B2B sales person. On the other hand, Karatepe et al. (2006) failed to show moderating role of gender between role ambiguity and job satisfaction in banking sector They also found that gender significant moderates the effect of role conflict on job satisfaction. Forgarty (1996) found that effects of both role conflict and role ambiguity have a significant negative effect on job satisfaction among male and female employees in public accounting firms.

Scope of the Research

On the basis of literature review, researchers found conflicting result on the effect of gender as a moderator between role stress and job satisfaction. In addition researchers also confirmed variations in impact of role stress on job satisfaction among software /information system professionals. On the basis of these types of conflicting results suggested to develop role stress models for software professionals.

Fig.1. Conceptual Framework for the study



Hypotheses Formulation:

The following hypothesis can be formulated on the basis of literature review:

H1: Role conflict will have a negative impact on job satisfaction among software professionals.
H 2: Role ambiguity will have a negative impact on job satisfaction among software professionals.
H 3: Role conflict will be negatively correlated with job satisfaction among software professionals
H 4: Role ambiguity will be negatively correlated with job satisfaction among software professionals
H5: Gender moderates the impact of role conflict and role ambiguity on job satisfaction among female software employees.
H 6: Gender moderates the impact of role conflict and role ambiguity on job satisfaction among male software employees.

3.Methodology

3.1. Sampling Procedure

The present study based on the software companies' sample of 403 software professionals (programmers, system analysts, software developers and network specialist).The questionnaires comprised independent variables - role conflict and role ambiguity and dependent variable -job satisfaction.

Table1. DemographicVariables (N=403)

Age	20-30yrs (188)	31-40yrs (210)	41-50 (5)		
Gender	Male (339)	Female (64)			
Education	Undergraduate (29)	Graduate (280)	Postgraduate (94)		
Experience	0-5 yrs (197)	6-10 yrs (161)	11-15 yrs (40)	16-20 yrs (4)	More than 20 yrs (1)
Level of Management	Lower-level (194)	Middle-level (206)	Upper-level (3)		

3.2. Reliability & Measures

Cronbach alpha test was performed to check the reliability. Reliability as measured by using Crohnbach's alpha in statistics indicates the inter item consistency between the items. According to Nunnally and Bernstein(1994), the reliability is larger than .70 or .80, regard as the benchmark for acceptable reliability values. The Crohnbach's alpha in this study ranged from 0.833 to 0.860 indicating a good consistency mentioned in Table2.

Table 2: Details of measures used for the variables in the study and Cronbach alpha of each variable

Variable Name	Variable Type	Source of scale	No. of items	Response type	Cronbach's Alpha
Role Conflict (RC)	Independent Variable (IV)	Rizzo, House, & Lirtzman (1970)	6	Seven point raging from "strongly disagree" to "strongly agree	0.858
Role ambiguity (RA)	Independent Variable (IV)	Rizzo, House, & Lirtzman (1970)	6	Seven point raging from "strongly disagree" to "strongly agree	0.860
Job Satisfaction (JS)	Dependent Variable (DV)	Hackman & Oldham's JDS(1974,1975)	5	Seven point raging from "strongly disagree" to "strongly agree	0.833

3.3 Structural Equation Modeling (SEM):

3.3.1 Validation of the Measurement Model

This study used confirmatory factor analysis (CFA) to assess the convergent and discriminant validity Validation of the measurement model depends on establishing acceptable levels of goodness-of-fit and finding specific evidence of construct validity. The validity indicates that how accurately the constructs used in the questionnaire measure what they are purported to measure. For the convergent validity Average Variance Extracted(AVE) should exceed 0.50 (Fornell and Larcker;1981) and Composite reliability should be equal to or greater than .7 (Hair et al.,1998).In Table 3 AVE greater than 0.50,thus the constructs were valid and CR greater than 0.7 . Discriminant validity is assessed by comparing the shared variance (squared correlation) between each pair of constructs against the average of the AVEs for these two(Fornell and Larcker;1981)The proof of discriminant validity is presented in Table 3. The diagonal items in the table represent the square root of AVE's, which is a measure of variance between construct and its indicators, and the off diagonal items represent squared correlation between constructs.

Table 3:The Results of Convergent and Discriminant Validity Analyses
Composite reliabiliy(CR) and Average Variance Eplained(AVE)

	CR	AVE	MSV	MaxR(H)	RA	RC	JS
RA	0.858	0.502	0.198	0.861	**0.708**		
RC	0.862	0.514	0.207	0.933	0.083	**0.717**	
JS	0.834	0.502	0.207	0.950	0.445	0.455	**0.708**

Note: Diagonal elements are the square root of the average variance extracted (AVE).

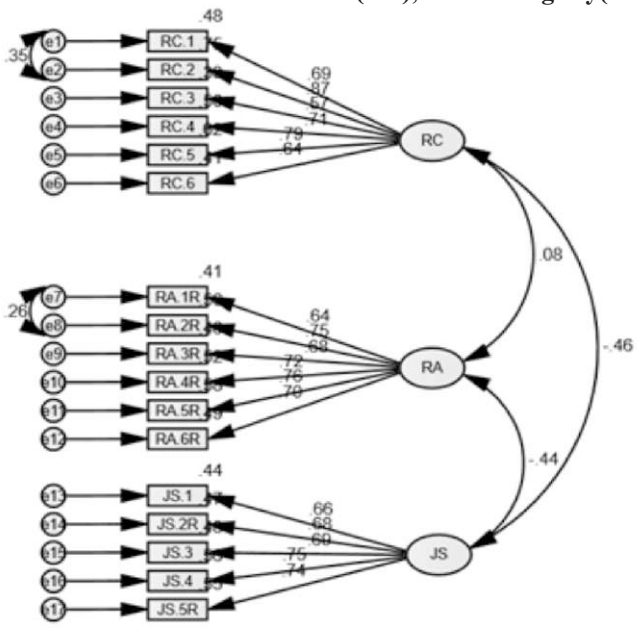
3.3.2 Confirming the Measurement Model Using CFA

After validation of the measurement instrument was satisfied, the results of the Confirmatory Factor Analysis (CFA) using AMOS 19 was used on the items of role conflict, role ambiguity and job satisfaction to evaluate the model fit of the measurement model to confirm the hypothesized structure. The parameters of the model were estimated using the maximum likelihood method .The resulting indices suggest an acceptable fit.

Table 4: Measurement Model Fit Indices

		Comment
chi-squre/df (cin/df)	1.192	<3good;<5sometimesperissible
p-vale formodel	0.08	>0.05
CFI	0.992	>.95great;>.90traditional;>.80sometimes permissible
GFI	0.962	>.95
AGFI	0.949	>.80
SRMR		<0.09
RMSEA	0.022	<0.05 good; 0.05 -0.10 moderate;>.10 bad
PCLOSE	1	> .05

Figure1: Construct Measurement Model of Role conflict (RC), Role ambiguity(RA) and Job Satisfaction(JS)



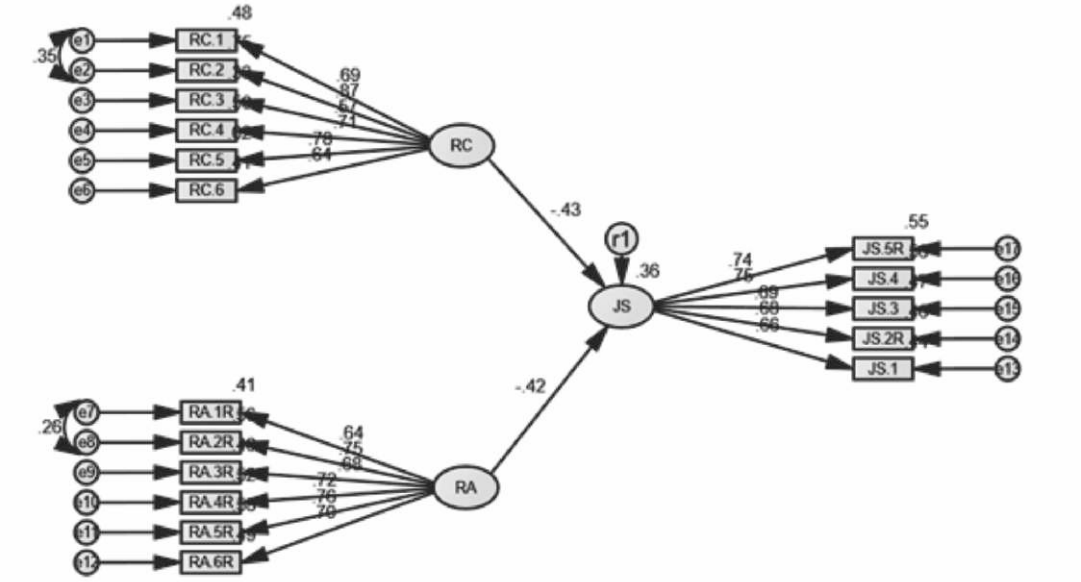
3.3.3 SEM Analysis of Proposed Model

The Path Diagram was used on the items of role conflict, role ambiguity and job satisfaction using AMOS19 shown in Figure 2.The influences of unobserved variables such as role conflict, role ambiguity on job satisfaction were analyzed and goodness –of-fit of the research model was tested. The path analysis model showed a reasonable fit.

Table 5: Path Diagram Model Fit Indices

		Comment
chi-squre/df (cin/df)	1.199	<3good;<5sometimesperissible
p-vale formodel	0.072	>0.05
CFI	0.992	>.95great;>.90traditional;>.80sometimes permissible
GFI	0.962	>.95
AGFI	0.949	>.80
SRMR		<0.09
RMSEA	0.022	<0.05 good; 0.05 -0.10 moderate;>.10 bad
PCLOSE	1	> .05

Fig 2: Structural Path Diagram of Role conflict(RC), Role ambiguity(RA) and Job satisfaction(JS)



4. Results and Discussion

4.1 Hypothesis Testing

4.1.1

H1: Role conflict will have a negative impact on job satisfaction among software professionals.

H 2: Role ambiguity will have a negative impact on job satisfaction among software professionals.

The path analysis was used to test the hypothesis 1 and 2 shown in Fig2.The value of path coefficients from role conflict to job satisfaction was β= -.430 and path coefficient from role ambiguity to job satisfaction was β= -.419. H1 and H 2 are supported.

4.1.2

H 3: Role conflict will be negatively correlated with job satisfaction among software professionals

H 4: Role ambiguity will be negatively correlated with job satisfaction among software professionals

To test the hypothesis 3 and 4, Table 2 showed negative correlation between role conflict and job satisfaction r-

0.455, and also found negative correlation between role ambiguity and job satisfaction is r-0.445. H3 and H 4 are supported.

4.1.3

H 5: Gender moderates the impact of role conflict and role ambiguity on job satisfaction among female software employees.

H 6: Gender moderates the impact of role conflict and role ambiguity on job satisfaction among male software employees.

To test the hypothesis H5 and H6 multi-groupmoderation analysis had been done by using AMOS18.Fig 4 showed there was slight increase in negative effect of role conflict on job satisfaction and slight decrease in negative effect of role ambiguity on job satisfaction among female employees.Fig5 showed that there was no increase or decrease in negative effect of role conflict and role ambiguity on job satisfaction among male employees and failed to show moderating effect of gender on relationship between role stress (role conflict and role ambiguity) and job satisfaction. So, H5 and H6 are rejected.

Fig3:Path coefficient (β) value without moderator

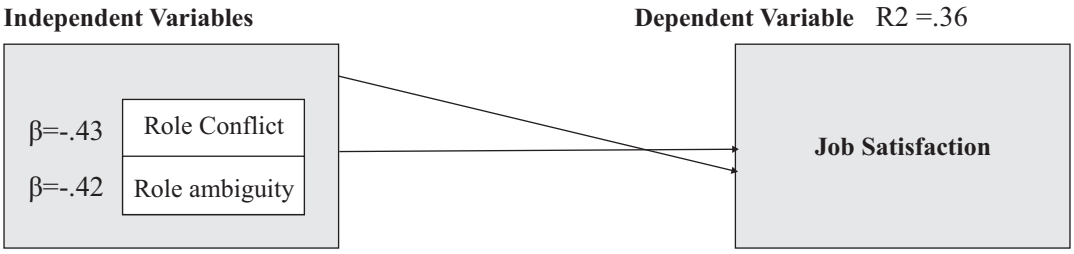


Fig4:Path coefficient (β) value with moderator Female

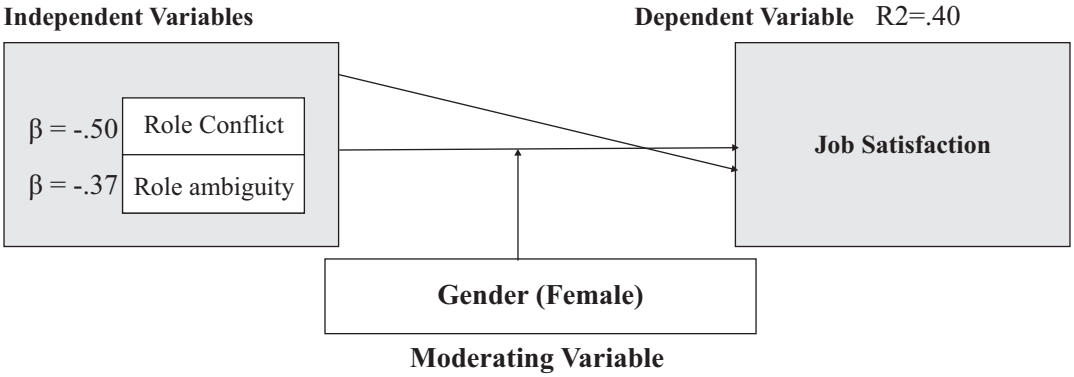
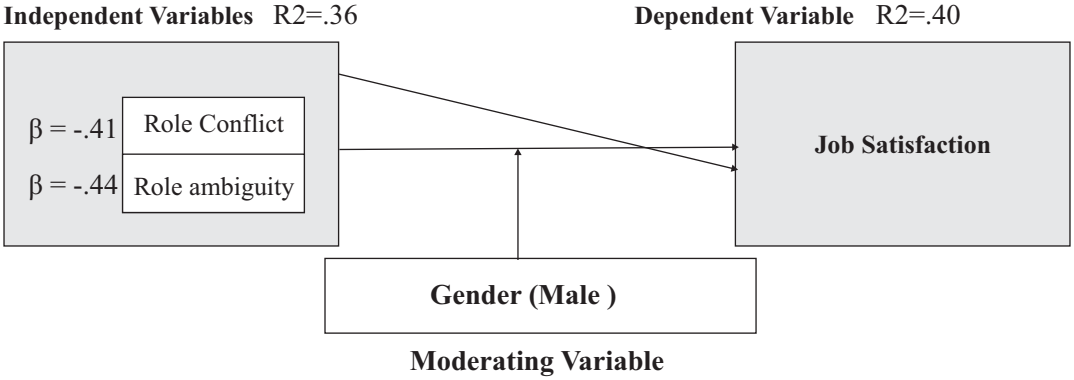


Fig5:Path coefficient (β) value with moderator Male



5. Conclusion and Implications

The path analysis confirmed the negative impact of role conflict and role ambiguity on job satisfactions and it also examined that invariant moderation effect of gender on relationship between role stress (role conflict and role ambiguity) and job satisfaction. The findings of the present research suggested that there was slight increase in negative effect of role conflict on job satisfaction and slight decrease in negative effect of role ambiguity on job satisfaction among female employees. In case of male there was no increase or decrease in negative effect of role conflict and role ambiguity on job satisfaction.

Researchers found that role stress (role conflict and role ambiguity) result in lower level of job satisfaction, fatigue, tension and decreased performance (Kahn & Boysiere, 1992; Beehr, 1995). It is very necessary to minimize role stress for organizational effectiveness. The suggestions are recommended on the basis of study. Firstly the present study found that male and female employees both have a problem of role clarity. Role ambiguity can be prevented by explaining clear responsibilities and giving clear information about expectations to employees. Secondly, study found role conflict was slightly more in female employees, management can reduce role conflict by recognizing importance of work-life balance by allowing working from home, giving flexibility in work schedule to take care of non-work demand such as sick child or elderly parents.

Lastly, there should be a stress management program for both male and female employees at workplace such as mediation, relaxation yoga, might have positive additional values in reducing stress among employees.

6. Scope for Future Research

The present study examined the moderating effect of gender on relationship between role stress and job satisfaction within software industry. Other inconsistent findings of moderating effect of gender on relationship between role stress and job satisfaction due to cultural differences (Karatep et al ,2006) .The conceptual framework of role stress can be studied in other country also by introducing more numbers of role stress variables because the present study focused on only two role stress variables- role conflict and role ambiguity.

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