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ScienceDirect
The Social Science Journal 46 (2009) 192–200
The SOCIAL SCIENCE JOURNAL
www.elsevier.com/locate/soscij

Modeling perceived job productivity and its antecedents considering gender as a moderator

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Abstract

This study proposes a conceptual model for examining the formation of perceived job productivity and its antecedents. In the model, leader–member exchange and job satisfaction both directly and indirectly influence perceived job productivity, with the latter effect occurring through the mediation of organizational commitment. Gender moderates each model path. The moderating effects are simultaneously tested using data from 344 engineering staff of a large Taiwanese high-tech manufacturer. Lastly, the empirical findings and their implications are discussed.

Organizational commitment is a psychological state in which an employee identifies with his or her organization and organizational goals and desires to maintain membership with the organization (Lin & Ma, 2004). Various studies have noted that organizational commitment is an important influence on job productivity, and that the relationship between the two constructs is positive and significant (Baugh & Roberts, 1994). Job productivity was examined in previous research using different self-reported measures in terms of productivity change, performance rating, absenteeism, and work time used for personal matters (Joo & Garman, 1998). That such job productivity differs across the genders has been discussed somewhat in studies related to gender issues (e.g., Greenhaus & Parasuraman, 1993; Sinangil & Ones, 2003). An individuals' job productivity is an important indicator of the entire organizational productivity given that

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doi:10.1016/j.soscij.2008.12.013

employees' perceived job productivity is critical and influential to the overall effectiveness of their organization (Elmuti, 1996; Frohman, 1978). Despite significant social science research over the past two decades on the development of organizational commitment, the potential moderating impact of gender on the relationship among organizational commitment, perceived job productivity and other factors (e.g., job satisfaction) has received far less attention than it deserves. Thus, this study complements previous research by comparing work-related attitudes and perceptions among females and males in high-tech occupations.

A gendered analysis is essential to learn and delineate the process of global restructuring, which reflects heightened international competition, a greater emphasis on markets, and rapid high-tech change (Macdonald, 1991). Nevertheless, very little is known about the differing work attitudes between females and males in the high-tech industry. Although many studies have examined the attitudes of high-tech staff in industrial society, they have focused mainly on males. Moreover, much of the early literature on the work of females studied middle-class, blue-collar females. Investigating whether or not gender differences exist in staff reactions to their workplace (such as organizational commitment) and jobs (such as perceived job productivity). This study differs from previous works in two different crucial aspects. First, previous studies have made gender comparisons for blue-collar workers (e.g., Loscocco, 1990) and publishing firm sales representatives (Russ & McNeilly, 1995), but the applicability of these findings for high-tech white-collar professionals is uncertain. This study incorporates gender as a moderator and uses a sample from various engineering departments of a leading high-tech manufacturer in Taiwan. Particularly, the findings of this study based on the surveyed staff from engineering departments are likely extrapolated to a range of white-collar professions. Second, gender has been discussed in most studies from the perspective of its main effects rather than of its moderating effects. This study complements previous studies and thus provides critical managerial implications related to gender.

1. Conceptual model

This study reports a conceptual model drawn and modified directly from previous literature (Lin & Ma, 2004) and hypothesizes the moderating effects of gender on each model path. In the model, individual job satisfaction is considered a positive emotional state caused by the assessment of job experiences, while leader–member exchange (LMX) refers to supervisor–staff dyadic transactions, involving various social exchange relationships between supervisors and subordinates (Lee, 1999). Note that the role of gender in this study has not been discussed in previous research by Lin and Ma (2004) or others.

Previous research finds that females experience life differently than males (Russ & McNeilly, 1995), suggesting substantial differences in affect, attitudes, and perception. In this study, perceived job productivity is influenced by staff attitudes regarding LMX, organizational commitment, and job satisfaction. Thus, the study of staff attitudes is essential to understand the choices engineering supervisors have to make in setting goals for improved engineering productivity (Lin & Ma, 2004). Nevertheless, attitudes are a complex construct, and differ for different genders. Particularly, significant gender differences have been found in self-image and social factors such as the need to impress others and the importance attached to the opinions

of others (Oumil & Erdem, 1997). Feminine traits reflect care for others, the importance of relationships, and compromise and negotiation in conflict resolution (Hofstede, 1991). Male traits are dominated by the need for material success and progress, and the importance of money and possessions, as evidenced by the tendency by males to use force to resolve conflict. The relevant sociological and psychological literature reveals a strong tendency for men to rate advancement and earning power highly, while women rate interpersonal aspects highly (for example, LMX). Previous work (Oumil & Erdem, 1997) offers insight into the origins of sex differences in thinking and behavior, in turn suggesting why underlying staff gender differences might exist in high-tech industries.

Gender may affect staff workplace perceptions and attitudinal reactions to organizations, while the influences of organizational practices on organizational commitment and perceived job productivity may differ between males and females (Ngo & Tsang, 1998). Females have higher work and family-role demands than males (Higgins, Duxbury, & Lee, 1994). Such gender role differentiation and the resultant work–family conflicts then affect individual work outcomes and well being. Another major reason for gender acting as a moderator of the formation of job attitudes may be the recurring, finding that females attach strong importance to social relationships (Russ & McNeilly, 1995). Specifically, given the disadvantages female face in the labor market (Loscocco, 1990), good quality LMX in an organization is a major accomplishment and influences organizational commitment and perceived job productivity more strongly among females than males. Meanwhile, the influence of job satisfaction on both organizational commitment and perceived job productivity might be stronger for males than for females, as males attach more importance to the nature of their work than do females (Russ & McNeilly, 1995).

The relationship between LMX and perceived job productivity may be potentially moderated by gender, because females, compared to males, are more likely to expect change in their communication patterns in the high LMX (Lee, 1999), which they perceive as facilitating (or improving) their productivity. These results show that the effect of the LMX quality on perceived productivity depends on the gender of the employees. Consequently, females have been found to be more relationally sensitive and skillful in their job contents (e.g., Rosener, 1990), and thus their perceived productivity is more likely boosted under the circumstances of good quality of LMX.

Collectively, even though considerable research has been undertaken on the attitudinal patterns linked to gender differences (e.g., Russ & McNeilly, 1995), the moderating effects of gender on the paths of the proposed model in high-tech engineering contexts have been relatively neglected. Therefore, the following five hypotheses (H_1–H_5) considering gender as a moderator are tested as below.

H_1: The relationship between organizational commitment and perceived job productivity is moderated by gender, and this relationship is stronger among females than males.

H_2: The relationship between LMX and perceived job productivity is moderated by gender, and this relationship is stronger among females than males.

H_3: The relationship between LMX and organizational commitment is moderated by gender, and this relationship is stronger among females than males.

H_4: The relationship between job satisfaction and perceived job productivity is moderated by gender, and this relationship is stronger among males than females.

H_5: The relationship between job satisfaction and organizational commitment is moderated by gender, and this relationship is stronger among males than females.

2. Methods

Most previous quantitative studies tested the moderating effect using exploratory analysis such as multiple regression and MANOVA. However, the practice of applying a moderated regression or MANOVA to data and hypotheses that are actually reflective of latent-variable systems can be somewhat misleading (Chiu, Lin, & Tang, 2005). This work thus attempts to complement past studies by investigating the moderating effect using a complete SEM model.

2.1. Subjects

The study subjects were staff of various engineering departments at a leading TFT-LCD manufacturer in Taiwan. The sample characteristics are presented in Table 1. Data analysis was performed using three groups—namely, total sample, male sample, and female sample, respectively. Note that TFT-LCD is a variant of liquid crystal display which applies the technology of thin film transistor to improve image quality such as addressability, contrast, etc., and it is very important in Taiwan's economic development.

2.2. Measures

The constructs and dataset adopted in this study are the same ones used in the previous research by Lin and Ma (2004). Perceived job productivity with four items was originally designed by Singh (2000). Organizational commitment with six items was originally from

Table 1
Characteristics of the sample.

Characteristic	Total (N = 343)		Male (N = 159)		Female (N = 184)	
Age						
20 years or less	70	20.41%	32	20.13%	38	20.65%
21–30 years	95	27.70%	43	27.04%	52	28.26%
31–40 years	117	34.11%	57	35.85%	60	32.61%
41–50 years	33	9.62%	15	9.43%	18	9.78%
51 years or above	28	8.16%	12	7.55%	16	8.70%
Tenure						
Less than 1 year	94	27.41%	50	31.45%	44	23.91%
1–5 years	215	62.68%	94	59.12%	121	65.76%
6 years or more	34	9.91%	15	9.43%	19	10.33%
Marriage						
Single	158	46.06%	80	50.31%	78	42.39%
Married	185	53.94%	79	49.69%	106	57.61%

Table 2
Goodness-of-fit indices for the measurement model.

Group	χ^2	d.f.	p-Value	NFI	NNFI	CFI	GFI	AGFI	RMR
Total sample	45.21	29	.03	.98	.99	.99	.97	.95	.02
Male sample	50.64	29	.01	.95	.96	.98	.94	.89	.02
Female sample	35.63	29	.19	.97	.99	.99	.96	.93	.03

Wayne, Shore, and Liden (1997). Leader–member exchange (LMX) with six items was drawn from Scandura and Graen (1984). Job satisfaction with four items was drawn from Rich (1997) and Hackman and Oldham (1975).

2.3. Data analysis

Structural equation modelling (SEM) with a two-step procedure proposed by Anderson and Gerbing (1988) is used to perform data analysis. The reliabilities for all constructs in this study exceed .7 for three groups, satisfying the general requirement of reliability for research instruments. The overall goodness-of-fit indices shown in Table 2 (RMR smaller than .05, χ^2/d.f. smaller than 2.0, CFI, NFI, NNFI, GFI, and AGFI all greater than .9 except one value of AGFI slightly lower than .9) indicate that the fits of the models are all satisfactory (Lin & Ma, 2004). All factor loadings for indicators measuring the same construct are also statistically significant according to test results, showing that convergent validity is obtained. Accordingly, since the χ^2 difference statistics for every two constructs all exceed 11.58 (i.e., overall .01 significance level) the Bonferroni method, discriminant validity is successfully achieved.

3. Results

This study uses the analytical strategy of Singh (1995) to examine the existence of the moderating effect on the proposed model of this study. The χ^2 statistics for the unconstrained

Table 3
Path coefficients and t value for three models respectively.

Hypothesis	Total		Male		Female	
	Standardized coefficient	t-Value	Standardized coefficient	t-Value	Standardized coefficient	t-Value
OC → PJP	.30**	3.72	.29	2.55	.26*	1.78
LMX → PJP	.20**	2.64	−.07	−.69	.26*	1.84
LMX → OC	.54**	7.92	.24**	2.27	.73**	6.30
JS → PJP	.24**	3.91	.47**	3.15	.21**	2.88
JS → OC	.26**	4.37	.50**	4.07	.12*	1.73

F1 = perceived job productivity (PJP); F2 = organizational commitment (OC); F3 = leader–member exchange (LMX); F4 = job satisfaction (JS).

* Significant at the .10 overall significance level.

** Significant at the .05 overall significance level.

Table 4
Hypothesis results.

Hypothesis	Unconstrained model	Constrained model[a]	χ^2 difference	Male vs. female	Conclusion
H_1	$\chi^2 = 86.28$ (d.f. = 58)	$\chi^2 = 86.66$ (d.f. = 59)	.38 (d.f. = 1)	Male = female	Not supported
H_2	$\chi^2 = 86.28$ (d.f. = 58)	$\chi^2 = 89.89$ (d.f. = 59)	3.61* (d.f. = 1)	Male < female	Supported
H_3	$\chi^2 = 86.28$ (d.f. = 58)	$\chi^2 = 88.90$ (d.f. = 59)	2.62 (d.f. = 1)	Male = female	Not supported
H_4	$\chi^2 = 86.28$ (d.f. = 58)	$\chi^2 = 91.05$ (d.f. = 59)	4.77** (d.f. = 1)	Male > female	Supported
H_5	$\chi^2 = 86.28$ (d.f. = 58)	$\chi^2 = 101.63$ (d.f. = 59)	15.35*** (d.f. = 1)	Male > female	Supported

[a] The subjective path coefficient is constrained equally for cross-group datasets.
* $p < .10$.
** $p < .05$.
*** $p < .01$.

model and constrained model are, respectively, 86.28 (d.f. = 58) and 111.15 (d.f. = 63). Their difference is 24.87 with 5 degrees of freedom. The significant difference (at the 1% level) indicates that the moderating effects do exist.

Table 3 illustrates the result of the analysis. All five paths are significant for the total sample. Therefore, the test results successfully achieve the goal of confirmatory analysis for this study.

Table 4 describes the tests results of the moderating effect for each individual path. From Table 4, the influences of organizational commitment on perceived job productivity and of LMX on organizational commitment are similar for both groups (H_1 and H_3 are not supported), while the influence of LMX on perceived job productivity is stronger for the female group than male group (H_2 is supported). Finally, the influence of job satisfaction on both organizational commitment and perceived job productivity are stronger for the male group than the female group (H_4 and H_5 are supported).

4. Discussion and limitations

This research examines the applicability of perceived job productivity by simultaneously understanding LMX, job satisfaction, and organizational commitment and distinguishing gender differences among the construct relationships. The findings of this study are in part consistent with previous studies on the relationships among LMX, job satisfaction, organizational commitment, and perceived job productivity. The evidence supporting the significant relationships in the proposed model for the entire sample can encourage engineering supervisors to pursue stable and high perceived job productivity to benefit both staff and firms. Staff enjoying high quality exchanges with their supervisors display enhanced organizational commitment and perceived job productivity. This phenomenon has been similarly emphasized by Graen and Uhl-Bien (1995) in the "leadership making" model of LMX theory in which they recommended that leaders should "offer the opportunity to develop a high-quality relationship to all of their subordinates". The findings of this study regarding the moderating effects of gender are unique to management practice. The major implications related to the moderating effects confirmed in this study (H_2, H_4 and H_5) are further discussed below.

The stronger influence of LMX on perceived job productivity for female staff (H_2) than for male staff reflects females' concern with establishing a personal identity through interdepen-

dent and nurturing relations with others (e.g., Cook, 1993). Specifically, females in the low LMX are likely to be the most "disadvantaged" workers (e.g., poor perceived job productivity), due to the sensitive influence of LMX on perceived job productivity. Furthermore, this finding suggests that it is more critical for females than for males to have an enthusiastic supervisor who treats their subordinates as good friends, given the stronger influence of LMX on perceived job productivity among females than among males. The above finding also indicates that strengthening social ties to maintain good LMX may be an appropriate technique for supervisors to use to significantly increase perceived job productivity among female staff. In other words, the present findings may cause supervisors to give more affective consideration to female staff than to male staff from the social networking perspective.

This finding can be generalizable to discussions of interpersonal communication—that is, the perceived job productivity of females changes significantly with differences in the level of perceived quality of their communication and exchange relationships with supervisors. Supervisors seeking to obtain a high LMX may have to place greater emphasis on interpersonal relationships and find innovative ways to make supervisor-to-staff relationships more closely resemble friendships. Supervisors can make the management more interpersonally oriented to female staff.

Because the influences of job satisfaction on organizational commitment and perceived job productivity are stronger for males than females (H_4 and H_5), males may be very sensitive to job satisfaction, significantly influencing organizational commitment and perceived job productivity. This possibility provides additional support for the statement that male socialization leads them to identity themselves as independent, assertive, and goal-directed (Cook, 1993), and to view their job roles as central to their self-perception. For instance, it was concluded that job satisfaction might reflect the affective response of individuals to the organizational exchange relationship, and the equity–satisfaction relationship in a job is stronger for males than for females (Brockner & Adsit, 1986). The finding of this study also implies that males are more work-oriented than females. At the same time, whenever male staff are found to perceive low job satisfaction, supervisors should consult with them and attempt to act on their complaints to eliminate the causes of their job dissatisfaction. Should management neglect the job satisfaction of male staff, they are more likely than females to react with low organizational commitment and perceived job productivity. For instance, supervisors must make an effort to understand how job restructuring is specifically affecting male staff. Moreover, supervisors should make managerial policies different across gender to increase the staff's organizational commitment and job productivity. For example, promotions, rewards, and career growth are the major sources of job satisfaction. Consequently, engineering a training policy for male staff may be based on offering incentives related to future career growth or job rewards so as to increase their enthusiasm toward jobs, because male staff tend to be motivated by material success, progress, and money according to the typical male traits. When managerial policy is well designed as above, male staff will promptly respond with markedly increased organizational commitment and perceived job productivity.

It is important to note some limitations of this study. First, while the findings of this study support the view that these relationships vary across gender, longitudinal research designs that measure the focal variables at multiple points in time are essential. Second, it is important to

note that this study measured perceived job productivity that was self-reported by employees themselves rather than job productivity as evaluated by their supervisors, which may lead, more or less, to a bias towards employees' job productivity in their organization. To sum up, this feature of the model could be modified. For example, there may be other potential moderators that influence the model paths of this study.

Acknowledgement

This work was supported financially by the National Science Council, Republic of China.

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