

An Application of Moderation Analysis: The Situation of School Size in the Relationship among Principal's Leadership Style, Decision Making Style, and Teacher Job Satisfaction

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Abstract- *The main purpose of this research is to illustrate that school size a moderator can effect on the relationship among principal's leadership style (PLS), principal's decision making style (PDMS), and teacher job satisfaction (TJS). Moreover, in this article, some hypotheses have been proposed to verify the existing relations among TJS, PLS, and PDMS. Based on samples randomly chosen from primary, secondary and high schools in Chinese educational systems in China, the required data are gathered through a mail survey, and the proposed hypotheses are tested via moderation analysis and structural equation modeling.*

Keywords- *Moderation Analysis; Structural Equation Modeling; Principal's leadership style; principal's decision making style; teacher job satisfaction; school size.*

1. INTRODUCTION

Roles of principals and teachers of an educational institute are significant factors in determining the quality of education in that institute [1]. However, the role that teachers play regarding student's achievement is more important since they are directly involved in educational activities carried out in class and are in more contact with students than any other staff of the educational system [2]. Therefore, taking into consideration that the staff that have high job satisfaction, tend to work more effectively with high performance level, for which the significance of the TJS in educational success and improvement of student learning will be more understandable [3]. Teachers, who are satisfied with their job, are more enthusiastic and interested in devoting more energy and time to student achievement [4]. Therefore, understanding the important factors affecting the TJS is vital to attain the required information to support an educational system to succeed in its objectives [5]. In this respect, numerous studies have been conducted on the relationship between TJS with PLS

[6], PDMS [7], and both PLS and PDMS [8]. This study is improvement study Hui, Jenatabadi [8] which was concentrated the relationship among PLS, PDMS, and TJS. In this study we tested the impact school size on this relation. Therefore, the main contribution the paper is to examine the moderation effect of school size in the research model.

2. MATERIALS AND METHODS

Panel Data [9-11], ANOVA [12-14], and Regression [15-17] are the most familiar methodology which is used in so many studies related to operations research area. In recent years, SEM has attracted the attention of many researchers as a commonly adopted method used in various disciplines like Management [18-24], Transportation [25-29], and Computer Science [30-33].

2.1 Research Design

In this study, a system perspective is utilized that considers the PLS as a significant input, the PDMS as an essential process, and the TJS as an ultimate output. As per the

relevant literature, the current study builds up a framework for research as displayed in Figure 1.

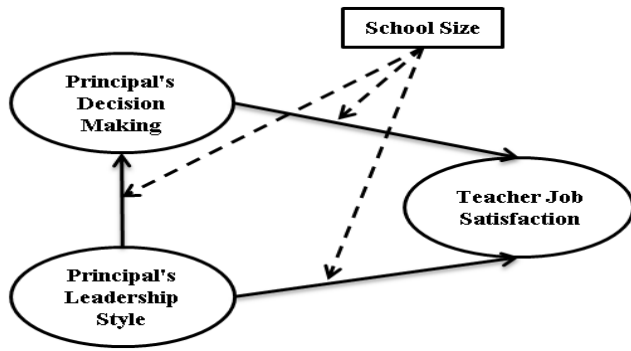


Figure 1: Research Model

Based on research model we propose the following hypotheses:

- H₁: The PLS affects the PDMS.
- H₂: The PLS relates positively to TJS
- H₃: The PDMS relates positively to TJS.
- H₄: The PDMS is a mediator between the PLS and the TJS.
- H₅: School size is a moderation in the relationship among PLS, PDMS, and TJS.

2.2 Sample and Data Collection

According to Jöreskog and Sörbom [34], SEM requires a large size of sample cases to be able to get reliable estimations. As Kline [35] suggests, estimation reliability is based on the number of selected sample cases, i.e., below 100 samples is considered as small; between 100 and 200 represents an average reliability level, and above 200 samples is taken as large. The prepared questionnaire was mailed to the randomly selected participants in this survey. A total of 539 copies of the questionnaire were posted to teachers in 180 elementary schools, 172 secondary schools, and 187 high schools situated within the province of Xinjiang in China. Of the total questionnaires delivered only 210 copies were completed and returned, which make up 38% of the total posted questionnaires. The participants were from a wide variety of demographic backgrounds with their specific characteristics for each. The majority of the respondents, i.e., 84%, were female teachers. Around 83% of the participants were university graduates with the Bachelor's degree, 13% were the college graduates, and the rest held a Master's degree. In terms of age, 72% of the teachers were between 30 and 40 at the time of responding, 21% were less than 30 years old, and the rest were over 40 years old. The work experience of only 46% of the teachers was between 10-20 years, while 32% had less than 10 years job experience, and 23% had over 20 years of experience.

2.3 Measures

This study is a quantitative research in which a survey, specifically prepared for this topic, was employed to collect the required data for the underlying analysis. The questionnaire that prepared and employed for the current

research, consisted of four sections. The first section contained some general questions about the respondent's, principal's or teacher's, demographic background, while the second part contained some questions related to the employed leadership style. This section was prepared in accordance with the researches and conclusions achieved by Bass and Avolio [36]. According to Bass and Avolio's definition, the two dimensions in leadership style, are transactional and transformational leadership styles. The third section included questions about the PDMS based on the researches conducted by Scott and Bruce [37] who defined five dimensions in decision making style, namely, rational, dependent, intuitive, avoidant, and spontaneous. The last section concerned job satisfaction based on the TJS, suggested by Lester [38]. The two significant factors explored in TJSQ were: supervision and working conditions..

3. ANALYSIS

3.1 Validity and Reliability

As it is seen from Table 1, all factor loadings, other than the avoidant factor, could meet the recommended norms and standards, which mean that the proposed construct convergent validity of the measurement model is adequate. However, the avoidant factor was required for further investigation, since the correlation rate of this item with other items in the construct (dependent items) was significant, i.e., ($r = .30, p < .01$).

Table 1. Results for the measurement model.

Latent Variable	Item	Factor Loading (>.70)*	AVE (>.50)*	Composite reliability (>.70)*
PLS			.91	.71
	PLS1	.99		
	PLS2	.92		
PDMS			.51	.78
	PDMS1	.74		
	PDMS2	.70		
	PDMS3	.73		
	PDMS4	.43		
TJS			.81	.88
	TJS1	.92		
	TJS2	.87		

As shown, in Table 2, the AVEs square roots have been substituted with the diagonal elements of the correlation matrix. Therefore, the resulting Discriminant validity for all constructs seems to be adequate enough and satisfactory.

Table 2. Discriminant validity for the measurement model.

	PLS	PDMS	TJS
PLS	(.91)		
PDMS	.26	(.51)	
TJS	.23	.45	(.81)

3.2 Measurement and Structural Model

For assessment of the strength, the outcomes and the model stability, SEM with AMOS 16 was employed, for which the estimated parameters and suitability of indicators have been illustrated in Table 3. As the results support, this structure suits the data satisfactorily: $\chi^2(23, n = 210) = 91.166, p < .01, CFI = .943, TLI = .911, IFI = .944, NFI = .926, RMSEA = .019$. The displayed results in Table 3 further support the Hypothesis 1. Therefore, there is a significant positive relationship between the PLS and the PDMS: $\beta = .26, C.R. = 2.284, p < .05$. The data in Table 3 also provides sufficient support for Hypotheses 2 and 3. Therefore, the PLS and TJS are significantly and positively related to each other: $\beta = .69, C.R. = 9.179, p < .01$. A further positive and significant relationship exists between the PDMS and the TJS: $\beta = .39, C.R. = 3.320, p < .01$.

Table 3. Estimating research parameters

Hypotheses	Path	Standardized coefficient	C. R.	p-value	Result
H ₁	PLS → PDMS	.51	6.480	< .01	Supported
H ₂	PLS → TJS	.17	2.195	< .05	Supported
H ₃	PDMS → TJS	.60	7.058	< .01	Supported
	$\lambda^2(23) = 91.166$	CFI=.943	TLI=.911		
	RMSEA=.019	IFI=.944	NFI=.926		

Finally, as per H₅, school size plays the role of moderator on the relationships among the variables PLS, PDMS, and TJS. To assess the moderation effects of school size, this paper utilizes the two-group comparison of path model. For this purpose, the database is divided into two types of schools along each factor level median. Therefore, schools with moderators of higher grades are involved in one group, call it bigger, and those with lower grade moderators are categorized in another group which is called smaller. To examine the differences in the firm size and the age among the regression weights, the Critical Ratio (C.R.) test ($> \pm 1.96, p < .05$) should be used to obtain the statistics of the critical ratio for the differences among regression weights of subjects of lower and higher sizes or ages [39]. As Arbuckle and Wothke [40] state, the critical ratio of an estimate pair, tests the hypothesis to arrive at confirmation of the two parameters equality. Table 4 demonstrates that the relationships among three main constructs are significantly positive in case of all groups, and the three variables in question, affect the intensity level of these relationships. Therefore, the variable of school size plays a role of the moderators in the model which, in turn, supports the H₅ proposed in this research.

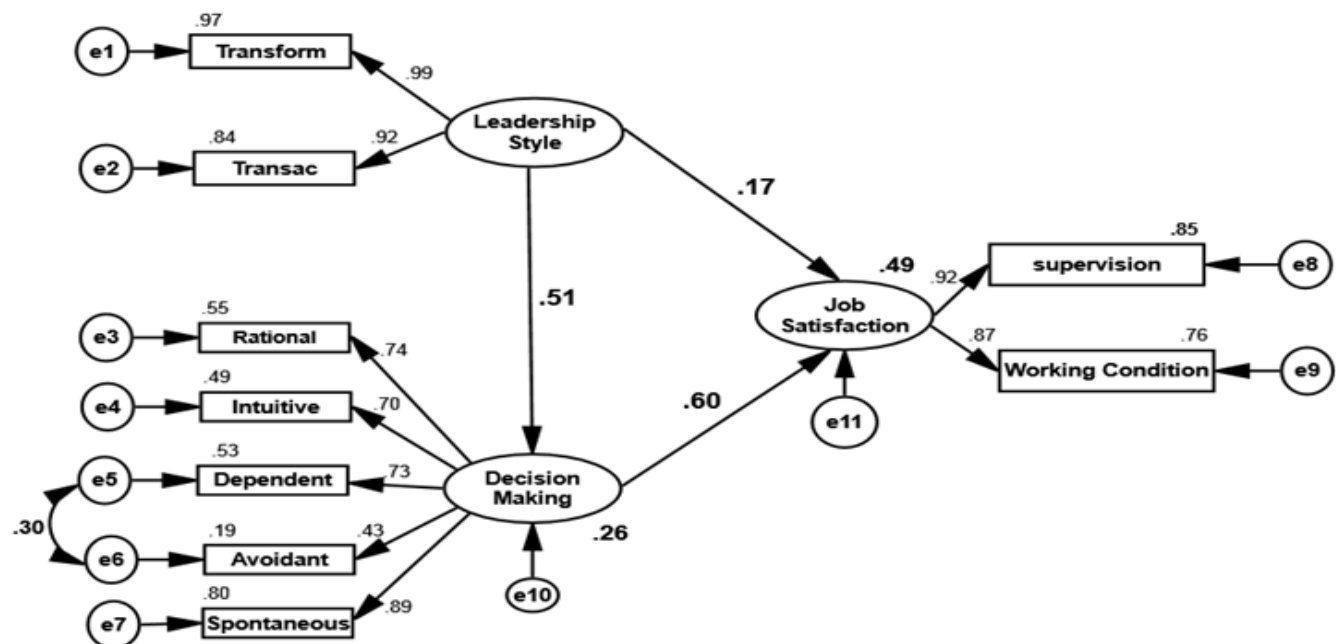


Figure 2: Conceptual Model Result

Table 4. Moderating test for research model

Path	Overall model	Low	High	C.R. (difference)
School Size				
PLS → PDMS	0.51**	0.29**	0.66**	7.14**
PLS → TJS	0.17*	0.21*	0.06	3.16*
PDMS → TJS	0.60**	0.55**	0.71**	5.39**

*P < 0.05; **P < 0.01.

4. DISCUSSION

The style of leadership has been practiced in various environments recently. The efficiency of the style, however, is dependent from a variety of important factors. The main objective of this study is an attempt to declare the significance of the relationships that exist among leadership style, decision making style and TJS. As the achieved empirical evidence substantiates, a thorough implementation of leadership style is required. In addition, the leadership style should accompany the decision making style, which will finally result in TJS. In case the decision making stage is neglected by a school, the employed leadership style can hardly lead to the promotion of TJS. Therefore, the role that decision making style plays is to bridge the leadership style and the TJS, linking the weak points to the leadership style to obtain the optimal result. Concisely, schools cannot achieve TJS through the implementation of leadership style alone and must utilize the decision making style, which mediates the relationship between the two other variables, i.e., the PLS and the TJS. This study intended to illustrate and examine the significance of leadership style and its interrelation between TJS and decision making, as well as the relationship between job satisfaction and decision making. Based on a sample of 210 teachers in a province in China, structural equation modeling was implemented to evaluate the framework of the research and the proposed hypotheses. As the outcomes supported, the PLS is an essential input and the TJS is the resulting output, which are mediated and interconnected through the PDMS. According to the achieved conclusions, overall, the employed leadership style significantly affects the TJS. However, with the application of a suitable decision making style, the impact of the PLS on the TJS will be significantly increased. Therefore, in order to enhance the TJS, and, consequently, work efficiently in a school, the developmental plans of the school should consider embedding a suitable PDMS into the management system as an independent process, since, through implementation of the PDMS, the PLS will result in TJS.

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