Exploring the Mediating Role on Distributive and Instructional Leadership of Teacher Organizational Satisfaction to Commitment: A Structural Equation Model

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ABSTRACT

Leadership is a vital part of any institution. It involves the ability to motivate and inspire others to achieve their goals. Leaders come in all shapes and sizes, each with their unique style of leadership. This study hypothesized a structural equation model which highlights the direct and indirect influence of university heads leadership style which is distributive and instructional to teacher organizational satisfaction and commitment. In addition, the study explores the mediating roles of teacher organizational satisfaction in two leadership concepts (distributive and instructional) on teacher organizational commitment. Covariance-Based Structural Equation Modeling was employed to analyze the data from 504 faculty and evaluate the hypothesized model. From the investigation, three (3) equivalent models are generated. Among these 3 generated models, one model that is supported by literature was chosen to be the best model. This model shows that the distributive leadership of university heads was predicted by their instructional leadership. Moreover, the relationship between instructional leadership and teacher satisfaction is completely mediated by distributive leadership. Similarly, the relationship between instructional leadership and teacher organizational commitment is fully mediated by distributive leadership and teacher organizational satisfaction. The predictive relationship between distributive leadership and teacher organizational commitment was fully mediated by teacher organizational satisfaction, which was predicted by distributive leadership. Finally, teacher organizational satisfaction predicts teacher organizational commitment.

Keywords: Distributive Leadership, Instructional Leadership, Teacher Organizational Satisfaction, Teacher Organizational Commitment, Structural Equation Model

INTRODUCTION

Effective and responsive school leadership plays a crucial role in enhancing student, teacher, and school performance (Agasisti et al., 2019; Hallinger et al., 2019; Zhang et al.,2020). This imply that effective school leadership improves organizational structures, student learning, and teacher practices. This has been supported by various studies such as those conducted by Leithwood et al. (2010), Liu &Hallinger (2018), and Seashore Louis et al. (2010). Leithwood, Sun, and Schumacker (2020) suggest that school administrators indirectly affect academic outcomes (Liu et al., 2021; Hallinger, 2018; Leithwood et al., 2020). Current research identifies distributive and instructional leadership as factors that impact teachers' commitment and satisfaction, as previously found by Torres (2019), Lui et al. (2020), and Hosseingholizadeh et al. (2020). In their study, Bellibas, Gumus, and Lui (2021) demonstrate that instructional leadership presently has a direct influence on the quality of instruction. On the other hand, distributed leadership has an indirect effect that is mediated by teacher collaboration and work satisfaction. Lui et al. (2021) found that instructional and distributive leadership have a positive impact on teachers' self-efficacy and work satisfaction. Distributed leadership has a positive indirect impact on teacher work satisfaction and self-efficacy, while instructional leadership indirectly affects job satisfaction through teacher collaboration.

Current literature emphasizes the delegation of leadership responsibilities among employees at different levels within the school organization, challenging the concept of singular heroic leadership (Gumus et al., 2018). Enhancing teachers' academic capacity is the key approach through which distributive leadership practices can enhance student learning outcomes. Distributive leadership practices play a vital role in promoting student achievement, as suggested by various studies (Heck &Hallinger, 2009; Harris & Spillane, 2008; Leithwood et al., 2008). Academic optimism, leader and teacher commitment, and satisfaction are positively associated with distributed leadership. (Hulpia& Devos, 2010; Angelle, 2010; Mascall et al., 2009). The findings suggest that educators exhibit distinct responses in formal, hierarchical leadership environments versus supportive

administrative leadership and collaborative opportunities with informal leaders. Research suggests that distributive leadership can impact the attitudes of principals and teachers. This is supported by evidence indicating that principals spend most of their time collaborating with colleagues rather than working independently and that the attitudes of both groups are significantly influenced by their interactions with each other (Sebastian et al., 2018; Price, 2012). On the other hand, to raise the standard of school administration and education in general, instructional leadership has progressively come to be acknowledged as one of the principals' core responsibilities (Hallingeret al, 2015). Instructional leadership emphasizes the improvement of student outcomes by directing teachers' professional development towards the technical core of education, which is teaching and learning (Kaparou& Bush 2015).

Several studies have established a direct and positive correlation between the instructional and distributive leadership of administrators and the job satisfaction and self-efficacy of teachers (Liu &Printy, 2017; Duyar, Gumus, &Bellibas, 2013; Liu &Werblow, 2019). However, limited research has investigated the direct or indirect impacts of distributive and instructional leadership concepts. Most available research focuses on separate analyses of distributive and instructional leadership. It is uncertain whether different leadership approaches or models employed by administrators have varying impacts on teachers' dedication and contentment. Similarly, whether teacher satisfaction a mediator between distributive and instructional leadership and teacher organizational commitment, rather than being considered an outcome on the same level as teacher organizational commitment.

The literature has not yet explicitly addressed the correlation between instructional leadership (IL) and distributive leadership (DL) in relation to the leadership of university heads, and administrators, and teacher's job satisfaction and commitment through school-level factors. This study aims to examine the correlation between distributive leadership and instructional leadership, with a focus on multi-objective, as well as teacher organizational commitment and satisfaction. The study aims to investigate the potential mediating effects of teacher organizational satisfaction on the relationships between distributive leadership, instructional leadership, and teacher organizational commitment.

Theoretical Background for the Model

The concept of distributed leadership facilitates comprehension of how various stakeholders exert leadership within an organization. Researchers can investigate the impact of leadership distribution on outcomes and enhance their comprehension of leadership as a dynamic process rather than a fixed role. Distributed leadership theory posits that individuals can collectively engage in leadership tasks to attain shared goals within a shared context, with differing levels of leadership distribution (Gronn, 2002; Spillane, 2006). This perspective on leadership differs from those that emphasize formal titles or individual leaders. Leadership can exist in a network structure, as opposed to a rigid hierarchy or pyramid.

Distributed leadership has been interpreted in various ways by users (Mayrowetz, 2008). The idea of exploring leadership in schools using this approach surfaced over 15 years ago. Distributed leadership theory was adopted by school practitioners to model workplace culture and administration. Mayrowetz (2008) identified four uses of distributed leadership: as a research framework, to promote democracy in schools, to improve school outcomes, and to encourage professional learning. Spillane, Halverson, and Diamond (2001, 2004) and Gronn (2002) developed distributed leadership theory. The authors differentiate it from a specific leadership style or category and use it to comprehend a process that exists in all leadership activities to some extent. Spillane (2006) and Gronn (2002) view it as a "perspective" and "unit of analysis," respectively, which differs from how school practitioners have traditionally understood it. This terminology aligns with Mayrowetz's (2008) research on distributed leadership.

Instructional theory was utilized in the study. Instructional theory can improve learning outcomes. Instructional theory focuses on organizing content to enhance education, particularly among adolescents. Instructional leadership involves supporting and guiding teachers to improve their teaching, enhance student learning, and increase achievement.

The proposed framework is based on literature exploring how different leadership types can enhance teachers' organizational satisfaction and commitment (Bellibaş et al., 2021; Devos et al., 2014; Hulpia& Devos, 2010; Hulpia et al., 2011, 2012; Halingger et al., 2017; Liu et al., 2020).

Distributed leadership predicts teachers' job satisfaction through professional collaboration. Despite the positive link between distributed leadership and teachers' organizational commitment, there is a lack of research on teachers' job satisfaction as an outcome. Distributed leadership is considered an organizational quality, not an individual quality, and is crucial to teachers' job attitudes.

Research has explored how school administrators can impact educational outcomes. Principal leadership is linked to teacher job satisfaction and commitment (Aydin et al., 2013; Khany&Amoli, 2013; Omidifar, 2013; Sayadi, 2016). Hallinger and Lu (2014) defined organizational commitment as a person's emotional attachment to an organization's objectives, principles, and operations. Teacher dedication and principal leadership have been extensively studied (Hallinger and Lu, 2014; Marshall, 2015). Research shows that various leadership

styles, including instructional, transformational, and distributed leadership, can positively affect teachers' organizational commitment (Hallinger and Lu, 2014; Marshall, 2015). Limited studies have shown that distributed leadership positively affects teachers' organizational commitment. Studies by Devos et al. (2014) and Hulpia and Devos (2010, 2011) investigated the relationship between distributed school leadership and teacher organizational commitment. The study investigated distributed leadership patterns based on Gronn's (2002) and Spillane's (2006) definitions, resulting in an empirical understanding of leadership distribution.

Research on school leadership supports the findings on principal instructional leadership. Liu et al. (2021) found a positive relationship between instructional and distributed leadership and teacher job satisfaction.
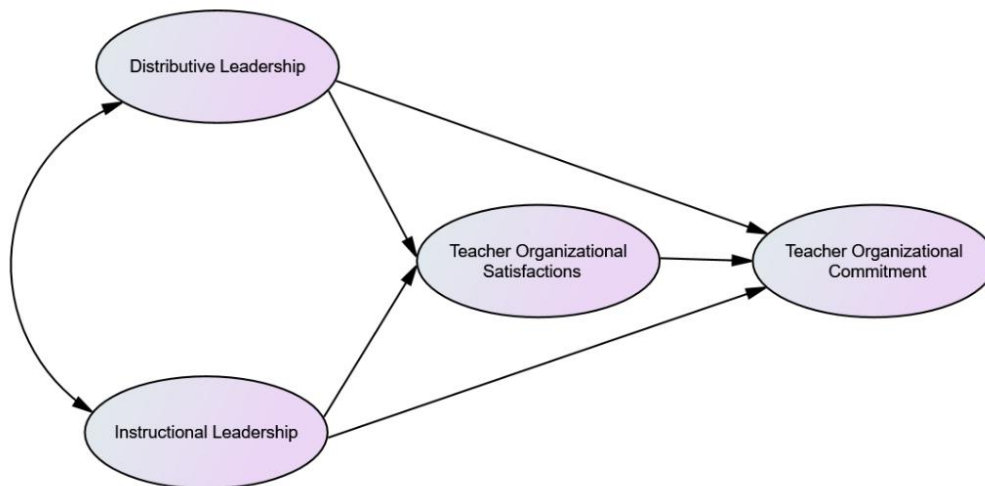
Figure 1: A model showing the hypothesized direct and indirect effects of leadership concepts and teacher organizational satisfaction on teacher organizational commitment.

METHODOLOGY
Research Design
This study was exploratory in nature which aimed to investigate relationships among distributive leadership, instructional leadership, organizational satisfaction, and organizational commitment. Since this study desired to develop a model in which both variables are evaluated jointly, the researcher used Co-variance Based Structural Equation Modeling (CB-SEM) design. SEM is a quantitative research method that also allows for the use of qualitative techniques. Typically, SEM validates multiple statistical correlations simultaneously (Dash & Paul, 2021). The approach involves combining multiple regression analyses and factor analyses simultaneously (Sarstedt et al., 2017; Hair Jr et al., 2017). SEM focuses on understanding the relationship between latent constructs reflected by different measurements. It is known as covariance structure analysis and latent variable analysis. The approach is confirmatory rather than exploratory.

Sample
The respondents of the study were 504 randomly selected faculty members of Universities in the Province of Iloilo.Ninety-eight or 19.4% from university 1, 120 (23.8%) from university 2, 146 (29.0%) from university 3 and 140 (27.8%) from university 4.

Table 1: Demographic Profile of the Respondents

	Respondents	Valid Sample (%)
University 1	98	19.4
University 2	120	23.8
University 3	146	29.0
University 4	140	27.8
Total	504	100

Instruments
The study used the following instruments:

Distributive Leadership Inventory (DLI)
Hulpia, Devos, and Rosseel (2009) developed the Distributive Leadership Inventory. The survey consists of a Likert scale with three constructs. The support, supervision, and leadership team constructs had high internal consistency with Cronbach's alpha values of 0.93, 0.89, and 0.95 respectively. The respondents marked their level of agreement on a scale of 1 to 4.

Instructional Leadership Questionnaire (ILQ)
The Instructional Leadership Questionnaire was adapted from Akram et al. (2017). The instrument consists of 7 constructs: maintain resource provider, maintain visible presence, professional development, maximize instructional time, monitoring student progress, feedback on teaching and learning, and curriculum implementation. The Cronbach's alpha values for these constructs are 0.92, 0.93, 0.96, 0.89, 0.93, 0.91, and 0.93, respectively. Participants rated their responses on a scale of 1 to 5, with 1 indicating "Never" and 5 indicating "Always."

Teacher job satisfaction (TJSENVS, TJSPROS and TJOBSATS)
The Teacher Job Satisfaction Questionnaire was adapted from the Talis 2013 technical report at OECD (2014) for this study. The questionnaire consists of two factors: satisfaction with current work environment (Cronbach's alpha = 0.81) and satisfaction with profession (Cronbach's alpha = 0.75). The survey used a 10-item Likert scale, with responses ranging from 1 (Strongly Agree) to 4 (Strongly Disagree). Some items were reverse-coded.

Organizational Commitment Questionnaire (OCQ)
The Commitment to Teach Questionnaire is a revised version of Allen and Meyer's (1990) questionnaire, updated by Jaros (2007). The survey consisted of a 34-item Likert scale, with response options ranging from 1 (Disagree) to 4 (Strongly Agree). Some items were reversely coded. The instrument comprises three scale items. The study measured three types of commitment: Affective (8 items), Continuance (6 items), and Normative (6 items). The Cronbach's alpha values were 0.77, 0.79, and 0.77, respectively.

Data Analysis
Data were collected from 217 participants. Preliminary SEM analysis included checking for missing data, outliers, and testing for normality, linearity, homoscedasticity, and multicollinearity.
Goodness-of-fit indices were used to evaluate model fit in the measurement model for CFA and structural model, based on the criteria suggested by the authors. The study used established criteria for model fit: CMIN/df < 5 (Wheaton, 1987), CFI, IFI, and TLI > 0.95 (Hu & Bentler, 1999; Schreiber et al., 2006). To indicate close fit, the model should have SRMR and RMSEA values less than 0.08 (Hu & Bentler, 1999; Browne & Cudeck, 1993). GFI and NFI should exceed 0.9 (Joreskog & Sorbom, 1996; Bentler & Bonett, 1980). A more parsimonious model may be preferred for model comparison. AIC and BIC were used as parsimonious fit indices, following Kenny (2020) and Raftery (1995). Lower AIC and BIC values indicate better model fit.

Ethical Considerations
Before implementing the study, formal approval from university presidents or administrators were obtained. The identified respondents' participation was entirely voluntary. The research participants were informed of the study's objectives, and precautions were taken to ensure that they were not coerced or injured during the research. All collected information was treated with strict confidentiality and used solely for research purposes.

RESULTS AND DISCUSSION
A correlation analysis was performed to examine the association between distributive leadership, instructional leadership, teacher organizational satisfaction, and commitment. The study found significant positive correlations between distributive and instructional leadership, distributive leadership and teacher organizational satisfaction and commitment, instructional leadership and teacher organizational satisfaction and commitment, and teacher organizational satisfaction and commitment.

Table 2: Descriptive Information about the Variables contained in the Model and a Correlation Matrix

		1	2	3	4
1. Distributive Leadership	r	1	.65**	.28**	.31**
	p		.000	.000	.000
2. Instructional Leadership	r	.65**	1	.20**	.28**
	p	.000		.000	.000
3. Teacher Organizational Satisfaction	r	.28**	.20**	1	.42**
	p	.000	.000		.000
4. Teacher Organizational Commitment	r	.31**	.28**	.42**	1
	p	.000	.000	.000	

**p <0.01

Hypothesized Model Testing and Analysis

The hypothesized model (Model A) was tested using SEM (see Figs. 1 and 3). Model A did not meet the minimum requirements for model fit based on the absolute and incremental fit indices (Table 7), with a χ^2 = 660.070, df = 84, p<.001, χ^2/df = 7.858, GFI = .852, SRMR = .028, RMSEA = .117, NFI = .879, CFI = .892, IFI = .893, TLI = .866.

Table 3: Fit Indices of Hypothesized Model

Absolute Fit Indices							Incremental Fit Indices			
χ^2	Df	p	$\frac{\chi^2}{df}$	GFI	SRMR	RMSEA	NFI	CFI	IFI	TLI
660.070	84	p<.001	7.858	.852	.028	.117	.879	.892	.893	.866

To improve the model test statistics some suggested modification indices with positive par change were applied such as possible covariance modification indices and removing non-significant path as suggested in the Maximum Likelihood Estimate (Regression Weight). From this modification, the new value of the model test statistics and approximate fit indices for model A (Table 9) improved, χ^2 = 217.300, df = 69, p<.001, χ^2/df = 3.149, GFI = .946, SRMR = .023, RMSEA = .0.65, NFI = .960, CFI = .972, IFI = .972, TLI = .958. Moreover, table 8 shows the result for the recursive path of the model. A positive relationship between distributive leadership and teacher organizational satisfaction (β = 0.403, SE = 0.088, CR = 4.595, p < .001) was noted in the model, with a coefficient of 0.403. The study found no significant relationship between instructional leadership and teacher organizational satisfaction and commitment (p = .575 and p = .971, respectively). Furthermore, the recursive path from distributive leadership to teacher organizational commitment was not significant (p = .694). Teacher organizational satisfaction is positively related to teacher organizational commitment (β = 0.930, SE = 0.071, CR = 13.085, p < .001). A 1-point increase in teacher organizational satisfaction results in a 0.071 increase in teacher organizational commitment. Lastly, distributive and instructional leadership are positively correlated (β = 0.180, SE = 0.016, CR = 11.049, p < .001).Despite reaching acceptable fit, exploration of related models to confirm findings of acceptable model fit as the developed models were found to be non-nested in the hypothesized model (Model A), and a model comparison was subsequently performed.

Table 4: Results of the Hypothesized Model's Direct Effects based on Structural Equation Modeling

|	β	S.E.	C.R.	p
TOS ← DL	.403	.088	4.595	p<.001
TOS ← IL	-.028	.050	-.561	p=.575
TOC ← DL	.030	.077	.394	P=.694
TOC ← IL	.002	.042	.037	P=.971
TOC ← TOS	.930	.071	13.085	p<.001
IL ↔ DL	.180	.016	11.049	p<.001

Note: Distributive Leadership (DL), Instructional Leadership (IL), Teacher Organizational Satisfaction (TOS), Teacher Organizational Commitment (TOC)

Model Testing and Comparing

Model A achieved acceptable fits based on its absolute and incremental fit indices (see Figs. 1 and 4). Model B (see Fig. 5) has a better model fit than Model A based on its absolute and incremental fit indices, $\chi^2 = 217.833$, df = 72, p<.001, $\chi^2/df = 3.025$, GFI = .946, SRMR = .023, RMSEA = .0.63, NFI = .960, CFI = .973, IFI = .973, TLI = .960. Model B (AIC = 313.833, BIC = 516.516) had a better fit than model A (AIC = 319.300, BIC = 534.652) based on the parsimony fit indices. Models C and D (Figures 6 and 7) showed equivalent absolute and incremental fit indices, as well as parsimony indices. Models B, C, and D are equivalent. However, among these equivalent models, Model C was identified as the optimal choice for describing the data. This determination was supported by previous research and the relationship between instructional leadership and distributed leadership (Amzat et al., 2022). The findings highlight that distributed leadership is not self-sufficient and functions as a means to execute leadership actions (Howard, 2016). It is suggested that instructional leadership plays a significant role in adopting a distributed approach. Moreover, practicing instructional or distributed leadership in isolation can be challenging. The study further emphasizes the positive impact of distributive leadership on various aspects, including organizational change, teacher leadership, learning communities, teacher self-efficacy, and school morale (Bellibas& Liu, 2018).
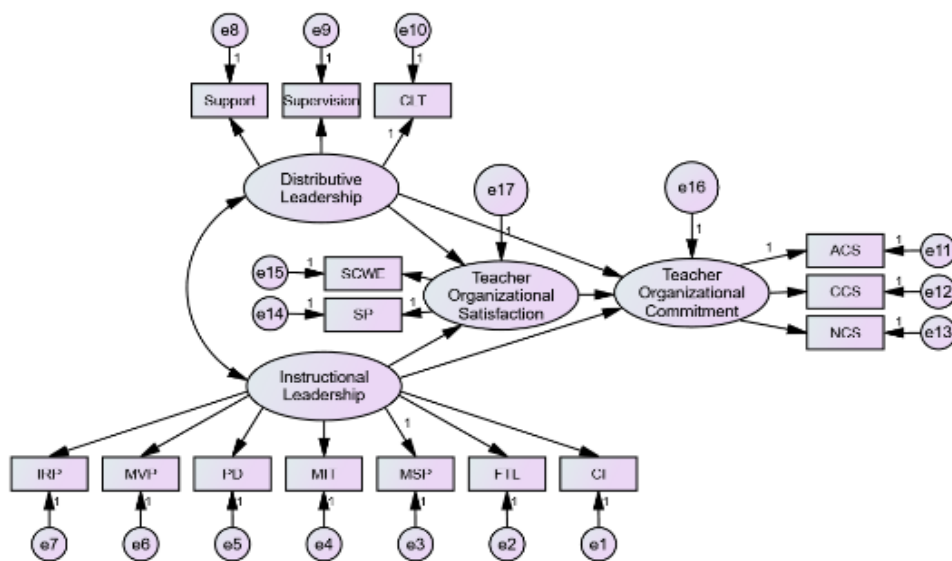
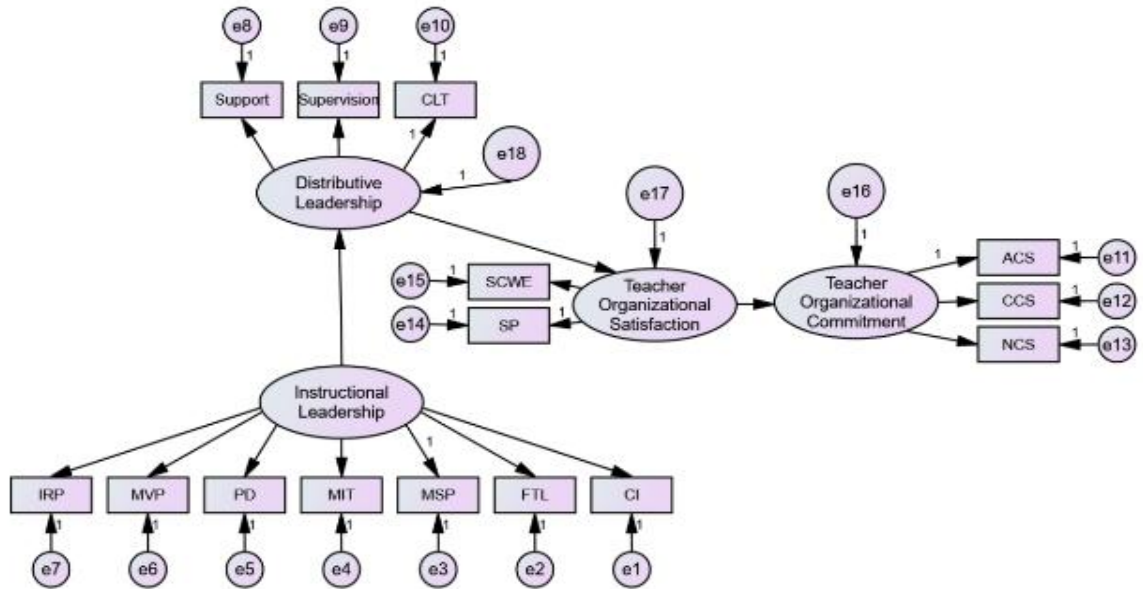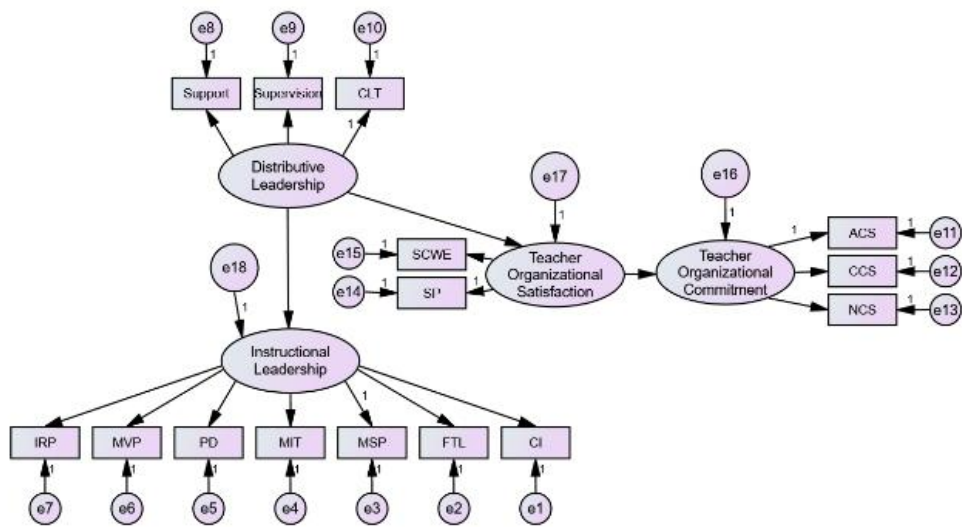**Figure 4: Model A**
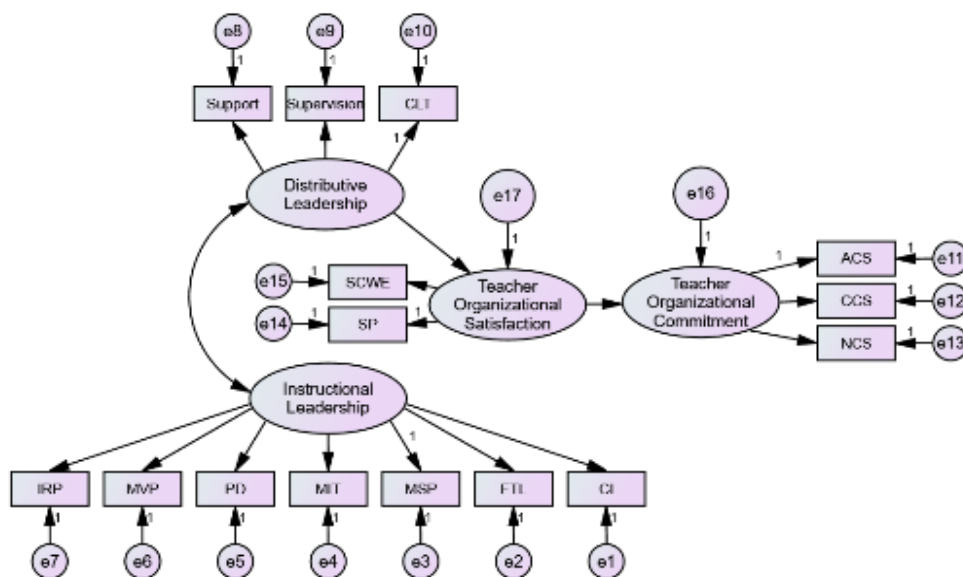
Figure 5: Model B

Figure 6: Model C

Figure 7: Model D

Table 5: Fit Indices of the SEM Structural Models

		Model A	Model B	Model C	Model D
	χ^2	217.300	217.833	217.833	217.833
Absolute Fit Indices	Df	69	72	72	72
	P	p<.001	p<.001	p<.001	p<.001
	$\frac{\chi^2}{df}$	3.149	3.025	3.025	3.025
	GFI	.946	.946	.946	.946
	SRMR	.023	.023	.023	.023
	RMSEA	.065	.063	.063	.063
Incremental Fit Indices	NFI	.960	.960	.960	.960
	CFI	.972	.973	.973	.973
	IFI	.972	.973	.973	.973

	TLI	.958	.960	.960	.960
Parsimony Fit Indices	AIC	319.300	313.833	313.833	343.883
	BIC	534.652	516.516	516.516	516.516

Table 10 displays the direct and covarying effects of Model B, C, and D using structural equation modeling. Model B found a positive correlation (0.180) between distributive leadership and instructional leadership. The standard error was approximately 0.016. The covariance estimate based on its critical ratio (C.R.) is significant (p<.001) at 10.601 standard errors above zero. Model C shows a significant positive relationship between instructional leadership and distributive leadership (β = 0.446, S.E. = 0.029, C.R. = 15.214, p < .001). An increase of 1 in instructional leadership corresponds to a 0.446 increase in distributive leadership. Model D shows a significant positive relationship between distributive leadership and instructional leadership (β = 1.167, S.E. = 0.078, C.R. = 14.988, p < .001). A positive correlation was found between instructional leadership and distributive leadership, with a coefficient of 0.1.167. Distributive leadership is positively related to teacher organizational satisfaction (β = 0.375, SE = 0.054, CR = 6.930, p < .001) in models B, C, and D. Teacher organizational satisfaction is significantly and positively related to teacher organizational commitment (β = 0.951, SE = 0.066, CR = 14.494, p < .001). A positive correlation was found between distributive leadership and organizational satisfaction (0.375) and between organizational satisfaction and commitment (0.951). Overall, the findings indicate a positive correlation between distributive leadership and instructional leadership. Furthermore, distributive leadership is positively related to teacher organizational satisfaction, and teacher organizational satisfaction is positively associated with teacher organizational commitment. These relationships were consistently observed across Models B, C, and D.

Table 6: Direct and Covarying Effects Based on Model B, C, and D Structural Equation Modeling

		β	S.E.	C.R.	p
Model B	DL ↔ IL	.180	.016	10.981	p<.001
Model C	DL ← IL	.446	.029	15.214	p<.001
Model D	IL ← DL	1.167	.078	14.988	p<.001
Common Path of Model B, C and D	TOS ← DL	.375	.054	6.930	p<.001
	TOC ← TOS	.951	.066	14.494	p<.001

Note: Distributive Leadership (DL), Instructional Leadership (IL), Teacher Organizational Satisfaction (TOS), Teacher Organizational Commitment (TOC)

Interpreting Model C
The results of the analysis revealed that the instructional leadership displayed by university heads had a significant and positive influence on their distributive leadership. This suggests that as instructional leadership increases, so does the tendency for university heads to adopt a distributive approach to leadership.
Furthermore, the relationship between instructional leadership and teacher organizational satisfaction was found to be indirectly and fully mediated by distributive leadership. This means that the impact of instructional leadership on teacher organizational satisfaction operates through its effect on distributive leadership. In other words, when university heads exhibit strong instructional leadership, it leads to higher levels of distributive leadership, which, in turn, contributes to increased teacher organizational satisfaction.
Similarly, instructional leadership was found to have an indirect relationship with teacher organizational commitment, fully mediated by both distributive leadership and teacher organizational satisfaction. This implies that the influence of instructional leadership on teacher organizational commitment is exerted through its impact on both distributive leadership and teacher organizational satisfaction. When university heads demonstrate effective instructional leadership, it results in higher levels of distributive leadership, which subsequently enhances teacher organizational satisfaction, leading to increased teacher organizational commitment.
Moreover, the results indicated that distributive leadership significantly and positively predicted teacher organizational satisfaction. This suggests that when university heads adopt a distributive leadership approach, it contributes to higher levels of teacher organizational satisfaction among the faculty. In addition, teacher organizational satisfaction was found to be a significant and positive predictor of teacher organizational commitment. This implies that higher levels of teacher organizational satisfaction are associated with greater levels of teacher organizational commitment. In other words, when teachers experience higher satisfaction with their organization, they are more likely to exhibit stronger commitment to their work and the institution.
Overall, the findings demonstrate that instructional leadership significantly predict distributive leadership. They also highlight the mediating role of distributive leadership in the relationship between instructional leadership and teacher organizational satisfaction, as well as its role, along with teacher organizational satisfaction, in

mediating the relationship between instructional leadership and teacher organizational commitment. Moreover, the results underscore the positive predictive relationships between distributive leadership and teacher organizational satisfaction, as well as between teacher organizational satisfaction and teacher organizational commitment.
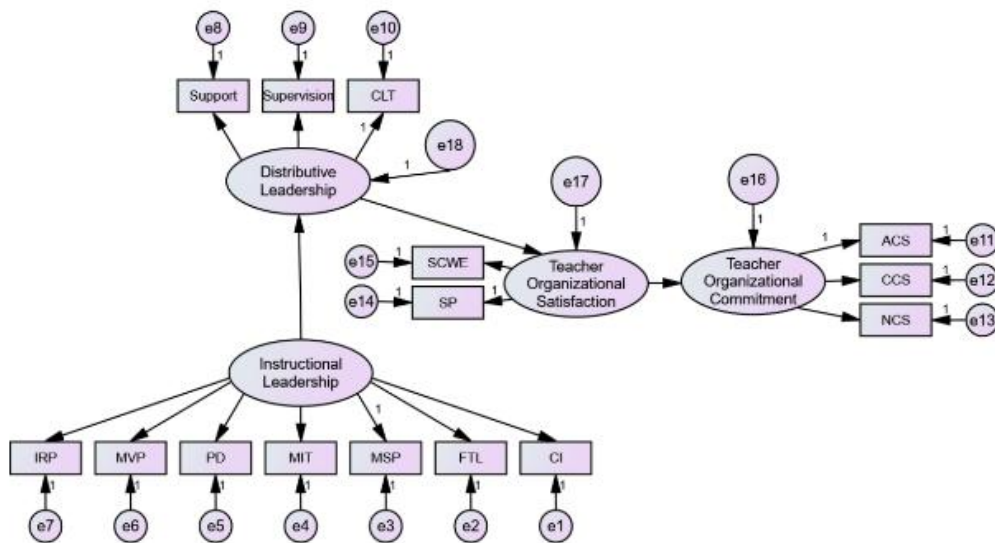

Figure 8: Diagram of the Final SEM Model (Model C)

CONCLUSION

Faculty personnel in higher education tend to be committed and satisfied in their positions. The findings suggest that it is crucial to understand why faculty members aren't entirely content with their work and what can be done to improve their levels of dedication. The positive correlations between distributed leadership, instructional leadership, organizational satisfaction, and commitment of teachers show that if one measure improves, the others also tend to do so. This indicates that when faculty feel supported by their leaders and are satisfied by their organization, they are more likely to be committed to the institution's goals. This has significant ramifications for educational institutions, which must ensure they are providing the right assistance and resources to maintain their staff members' commitment and satisfaction. Their instructional leadership predicted the distributive leadership of university heads. Additionally, the association between instructional leadership and teacher organizational satisfaction is fully mediated by distributive leadership. Comparably, the association between instructional leadership and teacher organizational commitment is totally mediated by distributive leadership and teacher organizational satisfaction. Teacher organizational satisfaction, which was predicted by distributive leadership, served as the whole mediator in the link between distributive leadership and teacher organizational commitment. Last but not least, teacher organizational commitment is predicted by teacher organizational satisfaction.

This study proved that distributive leadership was predicted by instructional leadership. Additionally, it supports the idea that distributive leadership directly influences teacher organizational commitment and that teacher organizational commitment directly influences teacher organizational satisfaction. The study's findings refute the idea that distributive leadership, rather than instructional leadership, has a direct influence on teachers' organizational commitment and satisfaction. Similarly, this study did not support the idea that distributive leadership had a direct impact on teacher organizational commitment; rather, teacher organizational satisfaction acted as the study's significant mediator.

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