MEDIATING EFFECTS OF ORGANIZATIONAL SUPPORT ON RELATIONSHIP BETWEEN ADMINISTRATORS' SERVANT LEADERSHIP AND TEACHERS' COMPETENCIES IN HIGHER VOCATIONAL COLLEGES IN JINAN, SHANDONG PROVINCE

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Abstract

The objectives of this research were: (1) To examine the components of administrators' servant leadership, teachers' competencies and organizational support.; (2) To develop the model of mediating effects of organizational support on relationship between administrators' servant leadership, and teachers' competencies in higher vocational colleges in Jinan, Shandong province. (3) To study direct and indirect effects of administrators' servant leadership on teachers' competencies through mediating effects of organizational support. This research adopts a quantitative research approach. The research population consists of 7,563 in-service teachers from 15 higher vocational colleges in Jinan, Shandong Province. The required sample size was decided using G*Power program, and a total of 368 teachers were selected as the sample through proportional stratified random sampling. A semi-structured questionnaire was employed as the measurement instrument. Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) were conducted to examine the reliability and validity of the measurement model and to assess the overall fit of the hypothesized structural model.

The results indicated that: 1) Administrators' servant leadership had 5 components: (1) Emotional Healing, (2) Empowerment, (3) Modeling, (4) Putting Others First, (5) Trust. Teachers' competencies had 5 components: (1) Instructional Design and Implementation Competency,(2)Educational Research and Reflective Competency, (3) Professional Development and Lifelong Learning Competency, (4) Digital Technology and Innovation Competency, (5) Communication and Collaboration Competency, and Organizational support had 3 components: (1) Work Support,(2) Emotional Support, (3) Respect/Recognition Support; 2) after modifying the measurement model, the model fitted well with the empirical data ($X^2/df = 60$, CFI = 0.975, TLI = 0.969, RMSEA=0.078); and 3) Administrators' servant leadership has a significant positive direct effect on teachers' competencie (0.23), and also exerts a significant indirect effect through organizational support (0.263), the estimated value of the mediating effect for the path ASL⟶OS⟶TC is 0.064, with a 95% confidence interval (CI) of [0.026, 0.114] and a significance level of $p < 0.001$.
Keywords : Administrators' Servant Leadership, Teachers' Competencies, Organizational Support

Background and significance of the problem

Amid globalization and digital transformation, China's higher vocational education faces growing pressure to cultivate high-quality technical professionals. National policies, including the Opinions on Comprehensively Deepening the Reform of Teacher Team Building in the New Era (2018) and China Education Modernization 2035, emphasize that improving educational quality depends fundamentally on strengthening teachers' competencies.

As the capital of Shandong Province, Jinan is home to many higher vocational colleges important for skilled talent development. Yet problems including management-oriented leadership, inadequate

administrative support, and low teacher engagement restrict professional motivation and long‑term faculty growth, which are closely related to institutional leadership practices. In response to such dilemmas, national policies have emphasized the importance of strengthening institutional support and advancing the professional development of teachers in vocational education (Central Committee of the Communist Party of China & State Council of the People's Republic of China, 2018, 2019). Improving leadership mechanisms and organizational support is therefore critical to boosting teacher initiative and sustainable faculty development in vocational colleges.

Administrators'servant leadership, rooted in Robert K. Greenleaf's theory, emphasizes listening, empathy, empowerment, and prioritizing faculty development. Prior research (e.g., Eisenberger and Rhoades, 2002) indicates that perceived organizational support significantly influences employee attitudes and performance, suggesting it may mediate the relationship between leadership behaviors and teacher development outcomes.

Accordingly, this study examines the impact of administrators' servant leadership on teachers' competencies in higher vocational colleges in Jinan, with perceived organizational support as a mediating variable. Addressing gaps in vocational and mid-level leadership research and in multidimensional competency assessment, it proposes a mechanism linking leadership behaviors to teacher development within China's vocational education context.

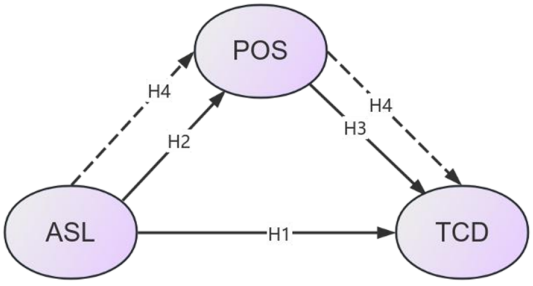
Research objectives

1. To examine the components of administrators' servant leadership, teachers' competencies and organizational support.

2. To develop the model of mediating effects of organizational support on relationship between administrators' servant leadership, and teachers' competencies in higher vocational colleges in Jinan, Shandong province.

3. To study direct and indirect effects of administrators' servant leadership on teachers' competencies through mediating effects of organizational support.

Conceptual Framework



ASL (Administrators' Servant Leadership) OS (Organizational Support) TC (Teachers' Competency)

Figure 1 Conceptual Framework

Research Hypothesis

H1: Administrators' servant leadership has a direct effect on teachers' competencies.

H2: Administrators' servant leadership has direct effect on organizational support.

H3: Organizational support has direct effect on teachers' competencies.

H4: Administrators' servant leadership has indirect effect on teachers' competencies through organizational support.

Research Methodology

Research Design

Research design of this research adopts the quantitative research method which emphasized on causal relationship model by using the Structural Equation Modelling (SEM) which was a statistical technique used to analysed the relationships among multiple variables. It combines aspects of CFA and Path Analysis to allow for the estimation of a series of interrelated dependence relationships simultaneously. SEM is especially valuable for testing theoretical models that involve complex relationships among observed and latent variables

Population and Sample

Population of this research consists of 7,563 teachers from 15 school in higher vocational colleges in Jinan, Shandong Province. The sample of this research were 368 teachers using G*Power software to determine the sample size, and the specific parameters were set as follows. Effect size W= 0.30, $\propto$ error prob = 0.05, the degrees of freedom = 61, in order to obtain the statistical power of .80 by using the chi-square test, obtained by proportional stratified random sampling method.

Research Instruments

The data were collected through a two-part questionnaire. The first part gathered demographic information (gender and age), and the second part used a five-point Likert scale to measure administrators' servant leadership, organizational support, and teachers' competencies, developed based on relevant theories and adapted standardized scales. Five experts evaluated the content validity using the IOC index, with values ranging from 0.60 to 1.00, and the instrument was revised accordingly. A pilot test with 30 teachers from 15 higher vocational colleges in Jinan City, Shandong Province. The reliability of the questionnaire (Cronbach's alpha coefficients) was 0.967, and construct validity was further confirmed through Confirmatory Factor Analysis (CFA).

Data Collection

The researcher distributed a five-points Likert questionnaire to 368 teachers in 15 higher vocational colleges in Jinan City, Shandong Province, through an online survey platform (Wenjuanxing).

Data Analysis

Statistical analyses were performed using SPSS and AMOS. Descriptive statistics included frequencies and percentages for demographics, and mean, standard deviation, coefficient of variation, skewness, kurtosis, Mardia's coefficient, and Pearson correlations for quantitative variables.

Inferential analyses employed CFA and SEM. Model fit was evaluated using χ^2/df, SRMR, RMSEA, CFI, TLI, and Pclose. Measurement quality was assessed via composite reliability (CR), Average Variance Extracted (AVE), and the Fornell–Larcker criterion. Hypotheses were tested using SEM, with direct effects examined by critical ratios and indirect effects by bootstrapping.

Research Result

1. Research objective 1

1) Data descriptive analysis on mean, standard deviation, Skewness and Kurtosis from the questionnaires, as the table 2.

Table 2: mean, standard deviation, Skewness and Kurtosis

Variable list	$\bar{x}$	S.D.	Sk.	Ku.	Level
1. Emotional Healing (ASL1)	3.71	1.24	-.94	-.77	High
2. Empowerment (ASL2)	3.69	1.24	-.94	-.78	High
3. Modeling (ASL3)	3.69	1.23	-.93	-.76	High
4. Putting Others First (ASL4)	3.72	1.23	-.95	-.71	High
5.Trust (ASL5)	3.71	1.23	-.98	-.66	High
1. Instructional Design and Implementation Competency (TC1)	3.77	1.26	-.88	-.90	High
2. Educational Research and Reflective Competency (TC2)	3.71	1.24	-.86	-.91	High
3. Professional Development and Lifelong Learning Competency (TC3)	3.67	1.26	-.88	-.89	High
4. Digital Technology and Innovation Competency (TC4)	3.67	1.24	-.90	-.90	High
5. Communication and Collaboration Competency (TC5)	3.70	1.23	-.90	-.92	High
1. Work Support (OS1)	3.52	1.27	-.63	-1.4	High
2. Emotional Support (OS2)	3.52	1.32	-.63	-1.2	High
3. Respect/Recognition Support (OS3)	3.55	1.25	-.65	-1.3	High

Mean values ranged from 3.52 to 3.72 (moderate level) with standard deviations of 1.11–1.32, indicating acceptable dispersion. Skewness (< |3|) and kurtosis (< |8|) suggested approximate normality. Although the Shapiro–Wilk test was significant ($p < 0.01$), robust estimation methods were employed in subsequent SEM analyses to reduce potential bias from non-normality.

2) The Intercorrelation Between Latent Variables, as the table 3.

Table 3: Intercorrelation Between Latent Variables

Variable	ASL	TC	OS
ASL	1		
TC	0.276**	1	
OS	0.247**	0.290**	1

As shown in Table 3, ASL, OS, and TC are positively and significantly correlated ($p < 0.01$), with coefficients ranging from 0.247 to 0.290 (all < 0.30). This suggests moderate but limited associations and relative independence among the constructs. The significant yet low correlations provide a suitable basis for testing the mediating role of OS in the relationship between ASL and TC.

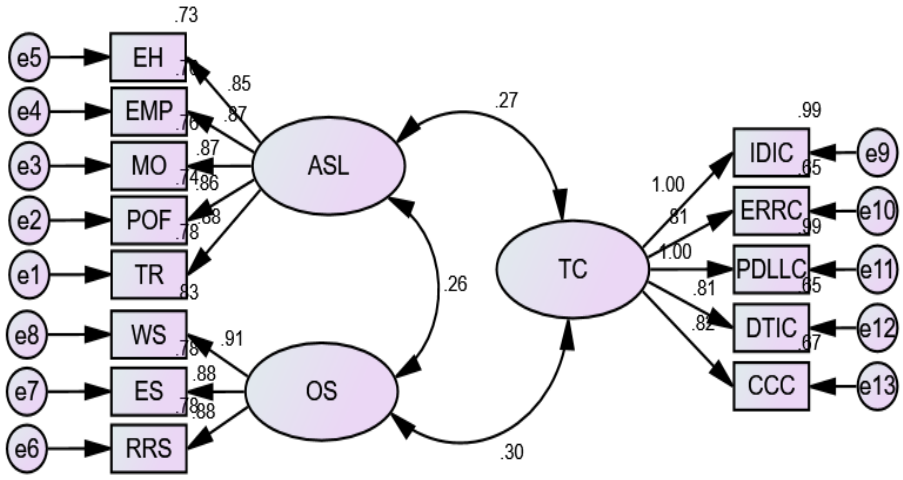
Table 4: Measurement Model: Factor loadings in unstandardized and standardized for each factor

Relationship			Unstandardized	S.E.	Standardized	C.R.	P
TR	<---	ASL	1		0.882		
POF	<---	ASL	0.977	0.043	0.858	22.659	***
MO	<---	ASL	0.987	0.042	0.873	23.452	***
EMP	<---	ASL	0.999	0.043	0.871	23.338	***
EH	<---	ASL	0.976	0.044	0.852	22.331	***
RRS	<---	OS	1		0.883		
ES	<---	OS	1.053	0.045	0.881	23.165	***
WS	<---	OS	1.045	0.043	0.911	24.299	***
IDIC	<---	TC	1		0.996		
ERRC	<---	TC	0.798	0.031	0.808	26.02	***
PDLLC	<---	TC	1.006	0.007	0.996	146.525	***
DTIC	<---	TC	0.796	0.031	0.806	25.857	***
CCC	<---	TC	0.809	0.03	0.821	27.308	***

As shown in Table 4, all standardized factor loadings for ASL, OS, and TC exceed 0.80 ($p < 0.001$), indicating strong explanatory power of the indicators for their respective latent variables. ASL loadings range from 0.852 to 0.882, OS from 0.881 to 0.911, and TC from 0.806 to 0.996. These results demonstrate stable performance and strong convergent validity of the scale.

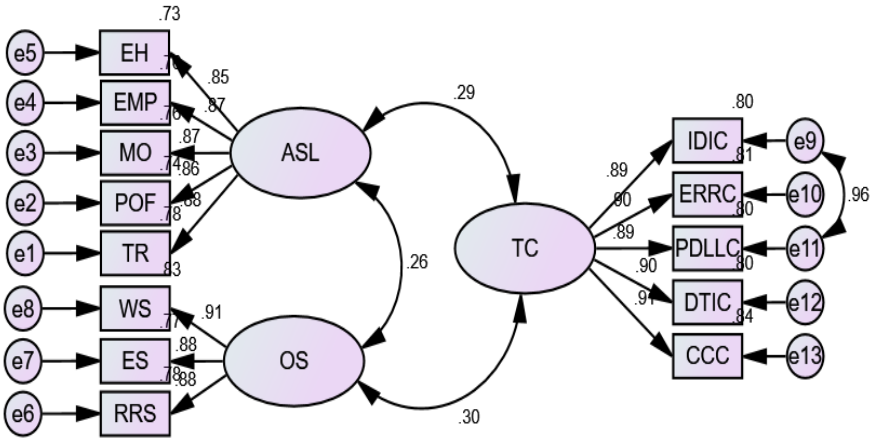
2. Research objective 2

1) CFA Model specification



Chisquare=417.961, df=62, CFI=0.935, TLI=0.919, SRMR=0.065, RMSEA=0.125

Figure 2 Measurement Model (Unstandardized estimates)



Chisquare=196.469, df=61 ,CFI=0.975, TLI=0.969, SRMR=0.045, RMSEA=0.078

Figure 3 Respecified Measurement Model (Standardized estimates)

Confirmatory Factor Analysis (CFA) assessed the consistency between latent variables and observed indicators. The initial model showed acceptable relative fit (CFI = 0.935; TLI = 0.919; SRMR = 0.065) but poor absolute fit (CMIN/DF = 6.741; RMSEA = 0.125; Pclose = 0.000), necessitating modification. After respecification in AMOS, model fit improved significantly (CMIN/DF = 3.221; RMSEA = 0.078; CFI = 0.975; TLI = 0.969; SRMR = 0.045), indicating good overall fit.

All standardized factor loadings for ASL, OS, and TC exceeded 0.80 (most > 0.85, $p < 0.001$), confirming strong indicator reliability and convergent validity. Overall, the revised measurement model demonstrates satisfactory reliability and construct validity.

2) Model validity and reliability analysis

Table 5 : Composite reliability (CR), average variance extracted (AVE), and factor correlation matrix

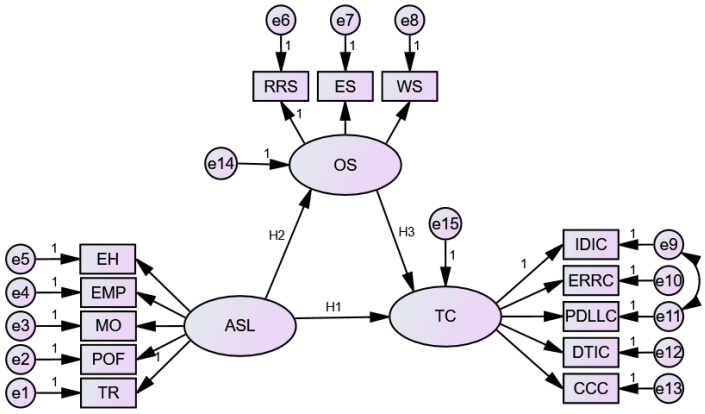
Factors	CR	AVE	ASL	TC	OS
ASL	0.938	0.752	0.867		
TC	0.921	0.795	0.290	0.892	
OS	0.956	0.809	0.260	0.300	0.890

Table 5 shows that all standardized factor loadings exceed 0.50 (excluding fixed parameters) and are statistically significant, indicating good model quality.

Consistent with criteria proposed by Claes Fornell and Joseph F. Hair, composite reliability (CR) values for ASL (0.938), TC (0.921), and OS (0.956) all exceed 0.70, demonstrating strong internal consistency. Average Variance Extracted (AVE) values (0.752–0.809) are above 0.50, confirming convergent validity.

Moreover, the square roots of AVE (0.867–0.892) exceed inter-construct correlations (max = 0.300), supporting good discriminant validity among the three constructs.

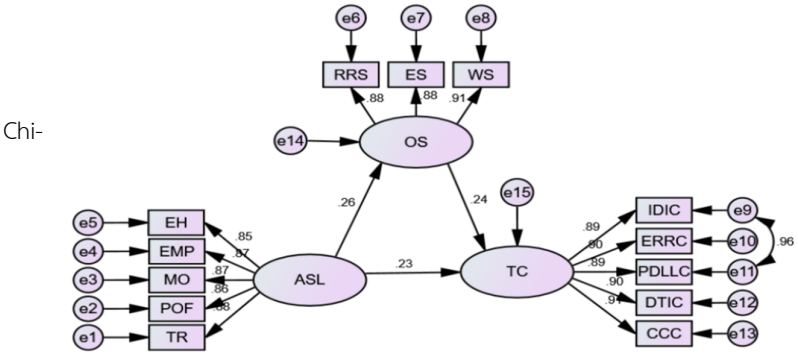
3. Model evaluation



Chisquare=196.469, df=61, CFI=0.975, TLI=0.969, SRMR=0.045, RMSEA=0.078

Figure 4 Structural equation model and unstandardized path coefficients with model fit indices

To further verify the research hypotheses, this study adopted Structural Equation Modeling (SEM) to analyze the relationships among administrators' servant leadership, organizational support, and teachers' competencies. Figure 4 presents the structural equation model of this study, which includes three latent variables:administrators' servant leadership,organizational support, and teachers' competencies .



Chi-

square=196.469, df=61, CFI=0.975, TLI=0.969, SRMR=0.045, RMSEA=0.078

Figure 5 Structural equation model and standardized path coefficients with model fit indices

From Figure 5, it was summarized that the analysis of structural equation model in standardized on the purpose of hypothesis testing, and effect decomposition.

Table 6 : Structural equation model fit evaluation

Measure	Estimate	Threshold	Interpretation
CMIN	196.469	--	--
DF	61	--	--
CMIN/DF	3.221	1-3 Excellent, 3-5 Acceptable	Acceptable
CFI	0.975	>0.95 Excellent, >0.9 Acceptable	Excellent
TLI	0.969	>0.95 Excellent, >0.9 Acceptable	Excellent
SRMR	0.045	<0.05 Excellent, <0.08 Acceptable	Excellent
RMSEA	0.078	<0.05 Excellent, <0.08 Acceptable	Acceptable
Pclose	0.000	>0.05	Not Estimated

The model fitting results in Table 6 generally indicate a good model fit. The CMIN/DF value is 3.221, which falls between 3 and 5, reaching an acceptable level. The comparative fit indices perform prominently: CFI = 0.975 and TLI = 0.969, both higher than 0.95, suggesting that the model achieves an excellent level in terms of structural explanatory power. In terms of absolute fit indices, SRMR = 0.045, which is less than 0.05, meeting the excellent standard and further supporting the rationality of the model.

Overall, the model performs excellently in core indices such as CFI, TLI, and SRMR, with a relatively high overall fit.

3. Research objective 3

1) Testing for direct effects hypothesis as the table 7

Table 7 Results of the Path Model

Relationship			Unstandardized	Standardized	S.E.	C.R.	P	Hypothesis
OS	<---	ASL	0.268	0.263	0.056	4.76	***	H2
TC	<---	OS	0.24	0.237	0.056	4.292	***	H3
TC	<---	ASL	0.237	0.23	0.056	4.197	***	H1
TR	<---	ASL	1	0.882				
POF	<---	ASL	0.977	0.858	0.043	22.661	***	
MO	<---	ASL	0.987	0.873	0.042	23.447	***	
EMP	<---	ASL	1	0.871	0.043	23.344	***	
EH	<---	ASL	0.976	0.852	0.044	22.328	***	
RRS	<---	OS	1	0.884				
ES	<---	OS	1.047	0.877	0.045	23.05	***	
WS	<---	OS	1.047	0.914	0.043	24.451	***	
IDIC	<---	TC	1	0.893				
ERRC	<---	TC	0.994	0.901	0.038	26.08	***	
PDLLC	<---	TC	1.006	0.893	0.007	138.374	***	
DTIC	<---	TC	0.987	0.895	0.038	25.714	***	
CCC	<---	TC	1.006	0.915	0.037	27.008	***	

** P<0.01 level. *** P<0.001 level.

The path analysis results in Table 7 show that administrators' servant leadership has significant positive effects on organizational support (β = 0.268) and teachers' competencies (β = 0.237). Organizational support also significantly influences teachers' competencies (β = 0.240). These findings indicate that servant leadership not only directly promotes teachers' professional development but also indirectly enhances their competencies through strengthened organizational support.

Moreover, all observed indicators load significantly on their respective latent constructs, confirming the reliability, rationality, and overall effectiveness of the measurement and structural model.

2) Testing for indirect effects hypothesis

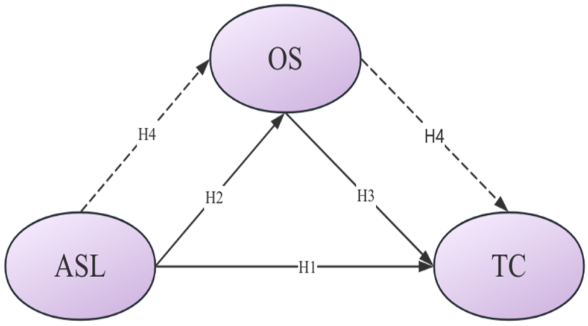
Testing for indirect effects hypothesis as the table 8

Table 8 Hypothesis testing of indirect effects

Relationships	Estimate	Lower	Upper	P	Hypothesis
ASL⟶OS⟶TC	0.064	0.026	0.114	0.000	H4

To examine the mediating role of organizational support (OS) between administrators' servant leadership (ASL) and teachers' competencies (TC), a mediation analysis was conducted. The results (Table 4.18) show that the indirect effect of ASL ⟶ OS ⟶ TC is significant (β = 0.064, 95% CI [0.026, 0.114], p < 0.001), with the confidence interval not including zero. This indicates that organizational support plays a significant mediating role, whereby administrators' servant leadership enhances teachers' competencies indirectly by strengthening perceived organizational support. The findings support the hypothesis that organizational support functions as an important mediator between servant leadership and teachers' competency development.

3) Summary of Hypothesis Testing



Chisquare=196.469, df=61, CFI=0.975, TLI=0.969, SRMR=0.045, RMSEA=0.078

Figure 6 Shows a path diagram of hypotheses testing

Table 9 Summary of Hypothesis Testing Results

Hypothesis	Content	Results
H1	Administrators' servant leadership has a positive effect on teachers' competencies .	Support
H2	Administrators' servant leadership has a positive effect on organizational support.	Support
H3	Organizational support has a positive effect on teachers' competency.	Support
H4	Organizational support mediates the relationship between administrators' servant leadership and teachers' competencies .	Support

This study tested the hypotheses using Structural Equation Modeling (SEM), and the following is a summary of the test results for each hypothesis:

Hypothesis 1 (ASL=>TC) : The direct path coefficient of administrators' servant leadership (ASL) on teachers' competencies (TC) is 0.237 (C.R. = 4.197, $p < 0.001$), indicating a significant positive impact. Therefore, Hypothesis H1 is supported.

Hypothesis 2 (ASL=>OS) : Administrators' servant leadership has a significant impact on organizational support (OS), with a path coefficient of 0.263 (C.R. = 4.760, $p < 0.001$). This shows that servant leadership can effectively enhance organizational support, so Hypothesis H2 is supported.

Hypothesis 3 (OS=>TC) : Organizational support exerts a significant impact on teachers' competencies , with a path coefficient of 0.240 (C.R.= 4.292, $p< 0.001$), demonstrating that organizational support has a positive effect on teachers' competencies. Thus, Hypothesis H3 is supported.

Hypothesis 4 (ASL=>OS=>TC) : The results of the mediating effect test show that the mediating effect of the path ASL⟶OS⟶TC is 0.240, with a 95% confidence interval (CI) of [0.026, 0.114] and a p-value of 0.001 ($p < 0.01$). This indicates that organizational support plays a significant mediating role between administrators' servant leadership and teachers' competencies. Therefore, Hypothesis H4 is supported.

Based on the above test results, all hypotheses have been verified. This indicates that administrators' servant leadership not only has a direct impact on teachers' competencies but also indirectly affects teachers' competencies through the mediating variable of organizational support.

Conclusion

Conclusion of Objective 1

Drawing on 20 key studies per dimension, this study identified 13 elements across three core variables-ASL, TC, and OS—to construct a conceptual framework for examining the mediating role of organizational support in higher vocational colleges in Jinan, Shandong.

ASL includes emotional healing, empowerment, modeling, putting others first, and trust; TC covers instructional design and implementation, research and reflection, professional development, digital innovation, and collaboration; OS comprises work, emotional, and recognition support.

Skewness and kurtosis values fell within acceptable ranges (Kline, 2015), supporting SEM application.Correlation analysis showed significant positive relationships among ASL, TC, and OS ($r = 0.247–0.290$, $p < 0.01$), confirming theoretical coherence and statistical validity, and providing a sound basis for subsequent CFA and SEM analysis.

Conclusion of Objective 2

To accomplish Research Objective 2, confirmatory factor analysis (CFA) was conducted using AMOS, with iterative modifications guided by SEM principles to improve model fit and construct validity.

The initial model showed inadequate fit (CMIN/DF = 6.741; RMSEA = 0.125), but after revision, all indices reached acceptable or excellent levels (CMIN/DF = 3.221; RMSEA = 0.078; CFI and TLI > 0.95; SRMR < 0.05), indicating strong alignment between theory and data.

All standardized factor loadings for ASL, OS, and TC exceeded 0.85 ($p < 0.001$), with CR > 0.90 and AVE > 0.75, confirming strong convergent validity, reliability, and explanatory power.

Overall, the revised model meets fit and psychometric standards, providing a robust foundation for subsequent structural analysis.

Conclusion of Objective 3

Structural equation modeling (SEM) results support Research Objective 3, confirming both direct and indirect effects of administrators' servant leadership (ASL) on teachers' competencies (TC). ASL has a significant

positive direct effect on TC (β = 0.23, $p < 0.001$) and on organizational support (OS) (β = 0.263, $p < 0.001$). OS also significantly promotes TC (β = 0.24, $p < 0.001$).

Mediation analysis indicates that OS plays a significant mediating role in the ASL–TC relationship (indirect effect = 0.064, 95% CI [0.026, 0.114], $p < 0.001$), supporting all proposed hypotheses.

Model fit indices (CFI = 0.975, TLI = 0.969, SRMR = 0.045, RMSEA = 0.078) demonstrate acceptable to excellent fit, confirming the robustness of the findings. Overall, administrators' servant leadership enhances teachers' competencies both directly and indirectly through strengthening organizational support, revealing a dual-path mechanism of influence.

Discussions

Discussion of Objective 1

Research Objective 1 established the theoretical framework and examined the preliminary validity of key variables. Three core constructs-ASL, TC, and OS-comprising 13 elements were identified to form a conceptually grounded model for higher vocational education.

ASL is rooted in servant leadership theory proposed by Greenleaf (1977) and further operationalized by Liden, et al. (2008). TC draws on competency-based education theory and the framework of professional teacher knowledge (Shulman, 1987; OECD, 2018). OS is grounded in Eisenberger's perceived organizational support theory (Eisenberger, et al., 1986; Rhoades and Eisenberger, 2002).

Supported by established theory, empirical evidence, and confirmed through normality and correlation analyses, the framework demonstrates theoretical coherence and statistical adequacy (Kline, 2015), providing a solid basis for subsequent measurement and structural model testing.

Discussion of Objective 2

Research Objective 2 aimed to refine and validate the measurement model. Model fit improved substantially-from poor initial indices (CMIN/DF = 6.741; RMSEA = 0.125) to acceptable or excellent levels (CMIN/DF = 3.221; RMSEA = 0.078; CFI = 0.975; TLI = 0.969; SRMR = 0.045)-demonstrating the iterative SEM process highlighted by Thakkar and Arbuckle (2012) and aligning with methodological guidance from Hair, et al. (2019).

Convergent validity and reliability were strong: factor loadings exceeded 0.85 ($p < 0.001$), CR values were above 0.90, and AVE values exceeded 0.75, meeting criteria proposed by Fornell and Larcker (1981).

Overall, the validated measurement model strengthens methodological rigor and provides a solid basis for subsequent structural analysis.

Discussion of Objective 3

Research Objective 3 validated the structural relationships among administrators' servant leadership (ASL), organizational support (OS), and teachers' competencies (TC).

Consistent with Robert K. Greenleaf's servant leadership theory, ASL exerts a significant direct effect on TC, promoting teachers' professional growth. In line with Robert Eisenberger's organizational support theory, ASL also enhances OS, which in turn positively influences TC.

Moreover, OS serves as a significant mediator, indicating that servant leadership fosters teachers' competencies both directly and indirectly by cultivating a supportive organizational climate. Supported by satisfactory model fit, these findings highlight a dual-path mechanism through which leadership advances teacher development in higher vocational colleges.

Recommendations

Recommendations for Practical Application

Drawing on the validated direct and mediating effects among ASL, OS, and TC, three focused recommendations are proposed.

1. Institutionalize administrators' servant leadership in governance through transparent management, shared academic decision-making, and sustained attention to teachers' developmental needs.

2. Strengthen organizational support via structured policies such as innovation funding, flexible workload arrangements, mentoring and psychological support, and diversified recognition systems.

3. Build an integrated ASL–OS–TC coordination and evaluation mechanism with regular monitoring and feedback to ensure continuity and effectiveness.

Together, these measures translate empirical findings into systematic pathways for enhancing teachers' competencies.

Recommendations for Further Research

Although this study verifies the mediating role of OS between ASL and TC, several avenues merit further exploration.

1. Future research should extend beyond higher vocational colleges in Jinan to broader regional, national, or international samples to improve generalizability.

2. Mixed-methods designs incorporating qualitative inquiry could provide deeper contextual and experiential insights beyond SEM findings.

3. Additional variables—such as organizational culture, alternative leadership styles, and policy contexts—may enrich the explanatory model.

4. Longitudinal studies are needed to capture dynamic changes and strengthen causal inferences.

Expanding research scope, methods, and variables will advance a more comprehensive understanding of teacher development mechanisms in higher vocational education.

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