



DIGITAL TRANSFORMATIONAL LEADERSHIP AND WORK MOTIVATION ON TEACHER PERFORMANCE: THE MEDIATING ROLE OF JOB SATISFACTION IN VOCATIONAL EDUCATION

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ABSTRACT

Digital transformation and educational disruption driven by the rapid integration of digital learning technologies require vocational high school teachers to continuously adapt in maintaining work motivation, job satisfaction, and performance. In this context, Digital Transformational Leadership, reflected through digital vision, technology integration, innovation support, and inspirational digital communication, plays an important role in supporting teacher effectiveness. This study aims to analyze the effect of Digital Transformational Leadership on teacher performance, with work motivation and job satisfaction as mediating variables. The study involved 51 vocational high school teachers using a quantitative survey approach. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), which is suitable for predictive and mediation models with relatively small sample sizes. The results showed that Digital Transformational Leadership positively and significantly affected work motivation and job satisfaction. In addition, work motivation and job satisfaction positively influenced teacher performance, while job satisfaction significantly mediated the relationship between Digital Transformational Leadership and teacher performance. These findings emphasize the importance of strengthening digital leadership practices and technology-based school management strategies to improve teacher performance during educational disruption.

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1. INTRODUCTION

The rapid development of digital technology has fundamentally transformed the educational landscape. Educational institutions are currently facing an era of educational disruption characterized by the integration of digital learning technologies, online educational platforms, artificial intelligence-based systems, and changing competency demands for educators. These transformations require schools to adapt their organizational systems, learning approaches, and leadership practices to remain competitive and effective in delivering educational services. Vocational high schools (SMK) are among the educational institutions most affected by this transformation because they are responsible not only for providing theoretical instruction but also for preparing graduates with practical and industry-relevant competencies. Therefore, teachers are expected to continuously adapt, innovate, and maintain high performance in responding to dynamic educational changes.

Teacher performance has become a strategic issue in improving educational quality and institutional competitiveness. However, teacher performance in vocational education remains a concern. According to the 2023 Regional Education Balance Sheet issued by the Ministry of Education and Culture, the average performance rating for vocational high school teachers and staff was 62.27, lower than the average performance rating for senior high school teachers and staff, which reached 71.04. This condition indicates that vocational education institutions continue to face challenges related to teacher effectiveness, professionalism, and organizational commitment. These issues are likely influenced by various organizational and psychological factors, including leadership quality, work motivation, and job satisfaction.

These problems are increasingly evident at SMK XYZ. Initial observations identified several indicators of declining teacher performance, including delays in teaching module preparation, low participation in Subject Teacher Consultation Forum (MGMP) activities, and limited involvement in professional development programs. Internal school data for the 2023/2024 academic year revealed that only 52% of teachers and staff achieved the annual performance targets established by school management. Furthermore, the accuracy of teaching module preparation declined from 70% in the 2021/2022 academic year to 61% in 2023/2024, while participation in MGMP activities decreased from 65% to 52%. These findings suggest a decline in professional commitment and work engagement among teachers and staff.

Several studies have demonstrated that teacher performance is strongly influenced by both psychological and organizational factors, particularly work motivation and job satisfaction. Teachers with high work motivation tend to demonstrate greater discipline, innovation, and responsibility in carrying out their professional duties. Hakim et al. (2023) found that work motivation positively influences teacher performance, especially in improving discipline and learning innovation. In addition, job satisfaction remains an important issue within vocational education institutions. The 2023 Teacher and Staff Satisfaction Index Survey conducted by the Ministry of Education and Culture indicated that more than 50% of vocational high school teachers perceived inadequate institutional support in terms of facilities and welfare. Similarly, data from the Indonesian Teachers

Association revealed that approximately 40% of teachers considered their workload disproportionate to the compensation received. Research by Yong et al. (2023) further confirmed that supportive work environments, open communication, career clarity, and managerial involvement significantly improve job satisfaction and organizational loyalty.

In educational organizations, leadership plays a critical role in creating a supportive work environment and improving teacher performance. Transformational leadership is considered highly relevant because it encourages organizational members through vision, intellectual stimulation, inspirational motivation, and individualized consideration. However, in the era of digital disruption, leadership practices can no longer rely solely on conventional approaches. Educational leaders are required to adopt Digital Transformational Leadership, which refers to leadership practices that encourage digital vision development, technology integration, innovation support, and digital communication within educational institutions. Through this leadership approach, school leaders are expected to facilitate teachers' adaptation to digital transformation and encourage continuous professional improvement.

Previous studies have demonstrated the importance of transformational leadership in improving employee and teacher performance. Babakhozhayev and Reyes (2024) reported that transformational leadership positively affects teacher performance and student learning outcomes. Likewise, Zhao et al. (2025) found that visionary school leadership improves teacher engagement and organizational performance through supportive managerial practices. Nevertheless, preliminary interviews conducted at SMK XYZ indicated that interactions between school leaders and teachers remain predominantly administrative and instructional, rather than inspirational and transformative. This condition suggests that digital-based transformational leadership practices have not yet been optimally implemented within the institution.

Although numerous studies have examined the relationship among transformational leadership, work motivation, job satisfaction, and employee well performance, several important gaps remain. First, most previous studies were conducted in general organizational or educational contexts, while studies specifically focusing on Digital Transformational Leadership in vocational secondary schools remain limited. Second, prior research generally examined work motivation and job satisfaction separately rather than integrating both variables into a comprehensive mediation model. Third, limited studies have investigated these relationships within the context of educational disruption and digital transformation. Therefore, this study offers novelty by examining the effect of Digital Transformational Leadership on teacher performance through work motivation and job satisfaction as mediating variables in vocational secondary schools.

Based on these considerations, this study aims to analyze the effect of Digital Transformational Leadership on teachers performance through Work Motivation and Job Satisfaction among teachers and staff at SMK XYZ. This study is expected to contribute theoretically to the development of human resource management and educational leadership literature, particularly regarding Digital Transformational Leadership in vocational education. Practically, the findings are expected to assist school management in designing

digital leadership strategies to improve teacher motivation, job satisfaction, and performance in the era of educational disruption.

2. RESEARCH METHODS

This study employed a quantitative approach using a survey method to examine the relationship among Digital Transformational Leadership, Work Motivation, Job Satisfaction, and Teacher Performance. A quantitative design was selected because it enables the systematic examination of causal relationships among variables and the testing of mediation effects within the proposed conceptual framework. Data analysis was conducted using Structural Equation Modeling based on Partial Least Squares (PLS-SEM). PLS-SEM was considered appropriate because the study focused on predictive relationships, involved multiple latent constructs, and utilized a relatively small sample size. In addition, PLS-SEM is widely recommended for exploratory and mediation-based models that do not require strict data normality assumptions.

This study was conducted at SMK XYZ during the 2024/2025 academic year. The population consisted of all active teachers and educational staff employed at the institution, totaling 51 respondents. Due to the relatively limited population size, this study applied a census method using total sampling, in which all members of the population were included as respondents. The use of total sampling minimizes sampling bias and ensures comprehensive representation of the study population.

This study investigated four main variables: Digital Transformational Leadership (X1), Work Motivation (X2), Job Satisfaction (Z), and Teacher Performance (Y). All variables were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire items were adapted from previously validated theoretical constructs and empirical studies to ensure measurement validity and reliability.

Digital Transformational Leadership was measured using indicators reflecting digital vision, digital communication, innovation support, technology facilitation, and digital empowerment. Work Motivation was measured through indicators related to enthusiasm, engagement, responsibility, achievement orientation, and persistence. Job Satisfaction was assessed through dimensions involving the work itself, supervision, promotion opportunities, compensation, and coworker relationships. Teacher Performance was measured using indicators including work quality, work quantity, timeliness, effectiveness, and interpersonal impact.

Data collection was conducted through the direct distribution of structured questionnaires to teachers and educational staff at SMK XYZ. Prior to the main data collection process, the research instrument underwent content validation through expert judgment to evaluate the clarity, relevance, and appropriateness of each questionnaire item. This procedure was conducted to improve measurement quality and reduce potential response bias.

Data analysis was performed in two stages using the PLS-SEM approach, namely measurement model evaluation (outer model) and structural model evaluation (inner model). The outer model evaluation included convergent validity, discriminant validity, and

reliability testing. Convergent validity was considered acceptable when factor loading values exceeded 0.70 and Average Variance Extracted (AVE) values exceeded 0.50. Discriminant validity was assessed using the Fornell–Larcker criterion and cross-loading analysis. Reliability testing was evaluated using Composite Reliability and Cronbach’s Alpha values above 0.70. Furthermore, the inner model evaluation included path coefficient analysis, coefficient of determination (R^2), predictive relevance (Q^2), and hypothesis testing through the bootstrapping procedure to determine the significance of direct and indirect relationships among variables.



Figure 1. Theoretical Framework

H1: Digital Transformational Leadership has a positive and significant effect on Job Satisfaction among teachers at SMK XYZ.

H2: Digital Transformational Leadership has a positive and significant effect on Teacher Performance at SMK XYZ.

H3: Work Motivation has a positive and significant effect on Job Satisfaction among teachers at SMK XYZ.

H4: Work Motivation has a positive and significant effect on Teacher Performance at SMK XYZ.

H5: Job Satisfaction has a positive and significant effect on Teacher Performance at SMK XYZ.

H6: Job Satisfaction mediates the effect of Digital Transformational Leadership on Teacher Performance.

H7: Job Satisfaction mediates the effect of Work Motivation on Teacher Performance

3. RESULTS AND DISCUSSION

The findings of this study are presented through structural model evaluation to explain the relationships among Digital Transformational Leadership, Work Motivation, Job Satisfaction, and Teacher Performance. The presentation focuses on the final results and interpretation of the proposed research model. Prior to examining the structural relationships among variables, discriminant validity was assessed to ensure that each construct represented a distinct conceptual dimension within the model.

Table 1. Discriminant Validity (HTMT Criterion)

	Digital Transformational Leadership	Job Satisfaction	Teacher Performance	Work Motivation
Digital Transformational Leadership				
Job Satisfaction	0.802			
Teacher Performance	0.814	0.807		
Work Motivation	0.681	0.806	0.735	

Source: Author's own work (2026)

The results show that all HTMT values are below the recommended threshold of 0.90, indicating that each construct in the study has adequate discriminant validity. The HTMT value between Digital Transformational Leadership and Job Satisfaction was 0.802, while the value between Digital Transformational Leadership and Teacher Performance was 0.814. In addition, the HTMT value between Job Satisfaction and Teacher Performance was 0.807, whereas the values involving Work Motivation ranged from 0.681 to 0.806. These findings confirm that Digital Transformational Leadership, Work Motivation, Job Satisfaction, and Teacher Performance represent conceptually distinct constructs and can be reliably differentiated from one another within the structural model. Therefore, the measurement model used in this study is considered valid and suitable for further structural analysis

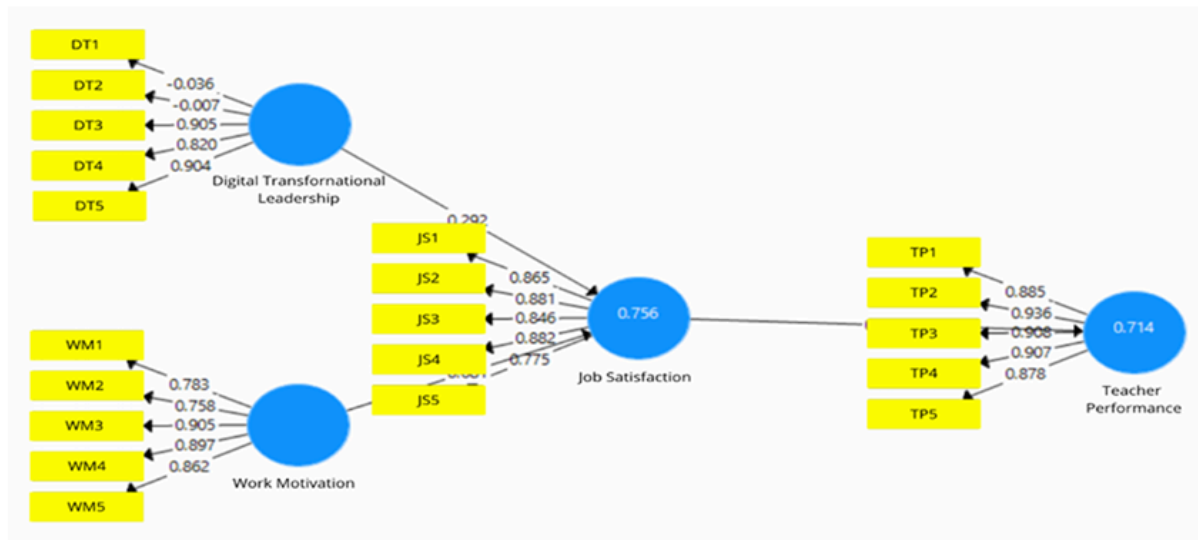
**Figure 2.** Structural Model Results

Figure 1 shows positive relationships among all constructs in the proposed research model. The model indicates that both Digital Transformational Leadership and Work Motivation contribute to Teacher Performance either directly or indirectly through Job Satisfaction. These findings suggest that leadership and motivational factors play important roles in enhancing employee outcomes within educational institutions undergoing organizational and technological changes. Following the examination of the structural

relationships illustrated in Figure 1, the predictive capability of the model was further assessed using the coefficient of determination (R^2) to determine the extent to which the endogenous variables could be explained by the proposed model.

Table 2. Coefficient of Determination

	R-Square	R-Square (adjusted)
Job Satisfaction	0.768	0.765
Teacher Performance	0.814	0.812

Source: Author's own work (2026)

The R-Square value for Job Satisfaction was 0.768, meaning that 76.8% of the variance in Job Satisfaction can be explained by Digital Transformational Leadership and Work Motivation. Meanwhile, the R-Square value for Teacher Performance was 0.814, indicating that 81.4% of the variance in Teacher Performance can be explained by Digital Transformational Leadership, Work Motivation, and Job Satisfaction. According to SEM-PLS evaluation criteria, these values indicate strong explanatory and predictive capabilities of the proposed structural model. This suggests that the variables included in the study substantially contribute to explaining teacher performance in vocational secondary education settings.

Table 3. Path Coefficient Results

	Original Sample (O)	Sample Mean (M)	(STDEV)	T Statistic	P Values
Digital Transformational Leadership → Job Satisfaction	0.615	0.616	0.057	10.784	0.001
Digital Transformational Leadership → Teacher Performance	0.312	0.313	0.064	4.857	0.001
Job Satisfaction → Teacher Performance	0.845	0.845	0.137	6.190	0.001
Work Motivation → Job Satisfaction	0.350	0.349	0.062	5.652	0.001
Work Motivation → Teacher Performance	0.214	0.215	0.058	3.690	0.001

Source: Author's own work (2026)

The findings show that all direct relationships among variables are positive and statistically significant, as indicated by T-statistics greater than 1.96 and p-values below 0.05. Digital Transformational Leadership was found to have a positive and significant effect on Job Satisfaction, with a path coefficient value of 0.615, T-statistic of 10.784, and p-value of 0.001. This result indicates that leadership practices emphasizing digital adaptation,

innovation support, technology integration, and inspirational communication significantly improve teachers' job satisfaction.

Furthermore, Digital Transformational Leadership also had a positive and significant effect on Teacher Performance, with a path coefficient value of 0.312, T-statistic of 4.857, and p-value of 0.001. This finding suggests that school leaders who are adaptive to technological developments and capable of encouraging innovation can improve teachers' effectiveness, productivity, and professional commitment in vocational education.

Job Satisfaction was found to positively and significantly influence Teacher Performance, with a path coefficient value of 0.845, T-statistic of 6.190, and p-value of 0.001. This result indicates that teachers who experience supportive working conditions, positive communication, and organizational support tend to demonstrate stronger performance and greater engagement in educational activities. In addition, Work Motivation had a positive and significant effect on Job Satisfaction, with a path coefficient value of 0.350, T-statistic of 5.652, and p-value of 0.001. This finding demonstrates that motivated teachers are more likely to experience greater enthusiasm, commitment, and satisfaction in carrying out their professional responsibilities.

Work Motivation also positively and significantly affected Teacher Performance, with a path coefficient value of 0.214, T-statistic of 3.690, and p-value of 0.001. This result suggests that teachers with strong motivation tend to demonstrate higher discipline, initiative, creativity, and commitment in improving learning quality and professional performance. Overall, the hypothesis testing results confirm that Digital Transformational Leadership, Work Motivation, and Job Satisfaction play important roles in improving Teacher Performance within vocational secondary schools during the era of educational disruption.

Table 4. Indirect Effect

	Original Sample	P-Value
Digital Transformational Leadership → Job Satisfaction → Teacher Performance	0.520	0.001
Work Motivation → Job Satisfaction → Teacher Performance	0.296	0.001

Source: Author's own work (2026)

The indirect effect analysis examines the mediating role of Job Satisfaction in the relationship between Digital Transformational Leadership, Work Motivation, and Teacher Performance. The results indicate that all indirect relationships are positive and statistically significant, as reflected by p-values below 0.05.

The indirect effect of Digital Transformational Leadership on Teacher Performance through Job Satisfaction produced a coefficient value of 0.520 with a p-value of 0.001. This finding indicates that Job Satisfaction significantly mediates the relationship between Digital Transformational Leadership and Teacher Performance. In other words, digital-oriented leadership practices become more effective in improving teacher performance when teachers experience positive psychological conditions, satisfaction, and emotional attachment within their work environment. The relatively stronger indirect effect compared

to the direct effect also suggests that Job Satisfaction serves as a substantial mediating mechanism in explaining how Digital Transformational Leadership influences Teacher Performance in vocational secondary education settings.

Furthermore, the indirect effect of Work Motivation on Teacher Performance through Job Satisfaction produced a coefficient value of 0.296 with a p-value of 0.001. This result confirms that Job Satisfaction significantly mediates the relationship between Work Motivation and Teacher Performance. The finding suggests that motivated teachers are more likely to demonstrate optimal performance when they also experience supportive working conditions and higher levels of job satisfaction. Therefore, motivation alone may not be sufficient to improve teacher performance without positive work experiences and organizational support.

Overall, the mediation analysis demonstrates that Job Satisfaction plays an important psychological and organizational role in strengthening the influence of Digital Transformational Leadership and Work Motivation on Teacher Performance. These findings indicate that improving teacher performance in vocational secondary schools requires not only effective leadership and strong motivation, but also supportive organizational environments that enhance teachers' satisfaction and professional well-being during educational disruption.

Discussion

The findings of this study demonstrate that Digital Transformational Leadership plays a crucial role in improving teacher performance both directly and indirectly through work motivation and job satisfaction. In the context of vocational secondary education, digital-oriented leadership has become increasingly important due to the rapid transformation of educational systems, technology integration, and evolving industrial competency demands. Teachers in vocational schools are expected not only to deliver theoretical knowledge but also to adapt to technological innovation and industry-based learning approaches. Therefore, leadership practices that encourage digital adaptation, innovation, and continuous professional development are essential in strengthening teacher effectiveness during educational disruption.

The results reveal that Digital Transformational Leadership has a positive and significant effect on Job Satisfaction among teachers at SMK XYZ. This finding indicates that school leaders who promote digital vision, technology integration, innovation support, and effective digital communication are able to create a more supportive and psychologically positive work environment. Teachers who perceive strong leadership support tend to experience greater satisfaction because they feel more valued, facilitated, and empowered in adapting to educational transformation. This finding reinforces transformational leadership theory, which emphasizes that leadership practices can influence employees' emotional and psychological conditions through inspiration, support, and empowerment. The result is consistent with Assaf and Antoun (2024), who found that transformational leadership positively contributes to employee satisfaction and motivation. However, this study extends previous findings by specifically demonstrating that digital-based

transformational leadership is particularly relevant in vocational education settings where teachers face high technological adaptation demands. Practically, this finding suggests that school principals should strengthen digital leadership competencies through technology-oriented communication, innovation facilitation, and supportive digital work environments to improve teachers job satisfaction.

Furthermore, Digital Transformational Leadership was found to have a positive and significant effect on Teacher Performance. This finding suggests that school leaders who are adaptive to technological change and capable of encouraging digital innovation can improve teachers' effectiveness, productivity, and professional commitment. In vocational education, where teachers are required to continuously adjust teaching methods according to industrial and technological developments, digital-oriented leadership becomes increasingly important. This result supports the findings of Babakhozhayev and Reyes (2024), who reported that transformational leadership significantly improves teacher performance and educational outcomes. Nevertheless, this study contributes additional empirical evidence by emphasizing the role of digital transformational leadership specifically within vocational secondary schools during educational disruption. The findings imply that school management should not only focus on administrative supervision but also prioritize digital capability development, technology-based training programs, and innovation-oriented leadership practices to improve teacher performance.

The findings also demonstrate that Work Motivation has a positive and significant effect on Job Satisfaction. Teachers with strong motivation tend to demonstrate greater enthusiasm, commitment, and engagement in carrying out their professional responsibilities, which ultimately increases their satisfaction with work. Motivated teachers are generally more willing to participate in professional development activities, adapt to curriculum changes, and contribute actively to organizational goals. This finding supports Self-Determination Theory, which explains that intrinsic motivation contributes significantly to psychological well-being and satisfaction. The result is also consistent with Prayudi and Komariyah (2023), who found that work motivation positively influences employee satisfaction. However, this study highlights that within vocational schools, work motivation becomes particularly important because teachers are required to continuously adapt to technological developments and changing industry standards. Practically, school leaders should develop motivational strategies such as recognition systems, career development opportunities, collaborative work environments, and continuous professional support to maintain teachers motivation and satisfaction.

In addition, Work Motivation was found to have a positive and significant effect on Teacher Performance. This finding indicates that motivated teachers are more likely to demonstrate discipline, creativity, initiative, and commitment in performing teaching responsibilities. Teachers with high motivation tend to actively improve teaching materials, participate in training activities, and seek innovative learning approaches to enhance educational quality. This result is consistent with Hakim et al. (2023), who found that work motivation significantly improves employee performance and work effectiveness. From a practical perspective, vocational school management should strengthen teacher motivation

through performance appreciation, competency development programs, supportive supervision, and participatory organizational cultures that encourage professional engagement.

The results further show that Job Satisfaction has a positive and significant effect on Teacher Performance. Teachers who experience higher job satisfaction tend to demonstrate stronger organizational commitment, greater engagement, and better work outcomes. Supportive working conditions, positive communication, fair compensation, and leadership support contribute significantly to improving teachers' satisfaction and performance. This finding aligns with Novitasari (2020), who emphasized that job satisfaction positively affects employee well-being and organizational performance. However, this study provides additional evidence that job satisfaction plays a strategic role within vocational education institutions facing educational disruption and technological change. Therefore, improving teacher performance requires not only technical competence but also supportive organizational environments that enhance teachers' psychological well-being and professional satisfaction.

This study also confirms that Job Satisfaction mediates the relationship between Digital Transformational Leadership and Teacher Performance. This finding suggests that digital transformational leadership becomes more effective when teachers experience positive emotional responses and satisfaction within their work environment. In other words, leadership practices influence teacher performance not only directly but also indirectly through psychological mechanisms such as satisfaction and emotional attachment to the organization. This finding strengthens transformational leadership theory by confirming that leadership effectiveness depends partly on employees' psychological conditions. Compared to previous studies, this research provides a more comprehensive explanation by integrating job satisfaction as a mediating mechanism within the context of vocational secondary education and digital transformation.

Moreover, Job Satisfaction mediates the relationship between Work Motivation and Teacher Performance. This indicates that motivated teachers who also experience high job satisfaction are more likely to demonstrate optimal performance. Motivation alone may not be sufficient to improve performance if teachers do not feel psychologically supported and satisfied within their working environment. Therefore, job satisfaction acts as an important psychological mechanism that strengthens the influence of motivation on teacher performance. This finding contributes academically by emphasizing the sequential relationship between motivation, satisfaction, and performance in vocational education settings, which has received limited attention in previous studies.

Overall, this study highlights the importance of Digital Transformational Leadership in strengthening teachers' motivation, job satisfaction, and performance during educational disruption. Academically, this study contributes to the development of educational leadership literature by extending transformational leadership theory into the context of digital transformation and vocational secondary education. The study also enriches previous research by integrating work motivation and job satisfaction within a comprehensive mediation model. Practically, the findings suggest that school leaders should adopt adaptive,

innovative, and technology-oriented leadership strategies, provide continuous digital competency training, strengthen collaborative organizational cultures, and improve supportive working conditions to enhance teacher performance in the era of digital transformation.

4. CONCLUSION

This study examined the influence of Digital Transformational Leadership and Work Motivation on Teacher Performance through the mediating role of Job Satisfaction within vocational secondary education institutions during the era of educational disruption. The findings demonstrate that Digital Transformational Leadership and Work Motivation positively and significantly affect Teacher Performance both directly and indirectly through Job Satisfaction. The results further confirm that Job Satisfaction functions as a substantial psychological mechanism that strengthens the influence of leadership and motivation on teacher performance. The stronger indirect effects found in this study indicate that teacher performance improvement is not determined solely by leadership practices or motivational factors, but also by teachers' psychological satisfaction and emotional attachment to their work environment.

In the context of vocational secondary education, where teachers are required to continuously adapt to technological developments, digital learning systems, and industry-oriented competencies, Digital Transformational Leadership becomes increasingly important. This study highlights the novelty of integrating Digital Transformational Leadership, Work Motivation, and Job Satisfaction within a comprehensive mediation model in vocational education settings experiencing educational disruption. Unlike many previous studies conducted in general educational contexts, this research specifically emphasizes the psychological mechanism through which digital-oriented leadership and work motivation influence teacher performance.

Theoretically, this study extends transformational leadership and motivational theories by demonstrating the strategic role of Job Satisfaction in strengthening teacher performance within digital transformation environments. Practically, the findings suggest that school leaders and policymakers should strengthen digital leadership competencies through continuous technology-based training, provide supportive digital infrastructure, encourage collaborative and innovation-oriented organizational cultures, and implement motivational and participatory leadership strategies to improve teachers' satisfaction and professional performance.

This study has several limitations. First, the relatively small sample size and the focus on a single vocational secondary school limit the generalizability of the findings to broader educational contexts. Second, the use of self-reported questionnaires may increase the potential for common method bias because respondents assessed all variables using the same instrument. Third, the cross-sectional design limits the ability to examine changes in leadership practices, motivation, and teacher performance over time. Therefore, future studies are recommended to involve larger and more diverse samples, compare different educational institutions, and apply longitudinal research designs to obtain deeper insights

into the dynamics of Digital Transformational Leadership and teacher performance during educational transformation.

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