



Digital Transformation Capability and School Agility toward Educational Quality: The Mediating Role of Organizational Learning

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Abstract

Digital transformation has become a strategic imperative for vocational schools seeking to improve educational quality in an increasingly dynamic and technology-driven environment. However, empirical evidence regarding the interplay between Digital Transformation Capability (DTC), School Agility (SA), Organizational Learning (OL), and Educational Quality (EQ) remains limited, particularly in the context of vocational education. This study investigates the direct effects of DTC and SA on EQ and examines the mediating role of OL. A quantitative approach employing an explanatory research design was adopted. Data were collected from 200 teachers of vocational high schools (SMK) in Serang City, Indonesia, and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The measurement model demonstrated satisfactory psychometric properties, with all 40 indicators meeting the recommended thresholds for convergent validity, discriminant validity, and reliability. Furthermore, the structural model exhibited a high level of overall model adequacy, as indicated by a high Goodness-of-Fit (GoF) index and an excellent Standardized Root Mean Square Residual (SRMR), confirming an excellent model fit. The structural model results revealed that School Agility exerted the strongest influence on Organizational Learning, while Digital Transformation Capability emerged as the most influential determinant of Educational Quality. All direct hypotheses were found to be positive and statistically significant. However, the indirect effect analysis revealed that Organizational Learning did not mediate the relationship between Digital Transformation Capability and Educational Quality. These findings suggest that digital transformation capabilities contribute directly to educational quality rather than through organizational learning processes, whereas school agility primarily enhances organizational learning within vocational schools. This study contributes to the digital transformation and educational management literature by providing empirical evidence on the distinct roles of digital capability, organizational agility, and organizational learning in improving educational quality and offers practical implications for school leaders and policymakers in accelerating sustainable educational transformation.

Keywords:

Digital Transformations Capabilities, School Agility, Organizational Learning, Educational Quality, Vocational High Schools

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INTRODUCTION

Digital transformation has emerged as one of the primary forces reshaping education systems worldwide. The rapid advancement of digital technologies, including artificial intelligence (AI), big data, cloud computing, learning



management systems (LMS), and learning analytics, has fundamentally transformed the way schools manage teaching and learning processes, administrative operations, communication, and decision-making (Kolemen, 2024). In the context of twenty-first-century education, digital transformation is no longer perceived merely as the adoption of digital technologies; rather, it represents a strategic organizational transformation that integrates technology, human resources, organizational culture, and leadership to create adaptive, innovative, and sustainable educational systems capable of enhancing learning quality (McCarthy et al., 2023). The OECD (2024) further emphasizes that educational digitalization should be viewed as a systemic transformation requiring the strengthening of organizational capabilities, school leadership, and teachers' professional development to continuously improve student learning outcomes.

An organization's capability to implement digital transformation is commonly referred to as Digital Transformation Capability (DTC). This concept reflects a school's ability to strategically integrate digital technologies into organizational strategies, operational processes, human resource development, and instructional innovation (Konopik et al., 2022; Baiyere et al., 2025). Drawing upon Dynamic Capability Theory, organizations possessing dynamic capabilities are better equipped to integrate, build, and reconfigure internal and external resources, thereby enabling them to respond rapidly and effectively to environmental changes. Consequently, successful digital transformation depends not only on technological investment but also on an organization's ability to develop digital competencies, digital leadership, an innovation-oriented culture, and effective organizational learning mechanisms (Chahal & Gupta, 2024).

Beyond digital transformation capability, educational organizations are also required to develop school agility, defined as a school's ability to sense environmental changes, make timely decisions, respond effectively to stakeholders' evolving needs, and continuously foster instructional innovation (Taktak & Özgenel, 2023). The increasingly dynamic educational landscape, characterized by rapid technological advancement, policy reforms, and growing societal expectations regarding educational quality, has positioned agility as a critical strategic capability for schools. Empirical evidence suggests that organizational agility positively influences organizational performance, particularly when supported by technological capabilities and organizational learning (Chahal & Gupta, 2024).

Ultimately, the primary objective of educational transformation is to enhance educational quality. Educational quality extends beyond students' academic achievement and encompasses the effectiveness of teaching and learning processes, teacher competencies, school leadership, organizational governance, instructional innovation, stakeholder satisfaction, and schools' ability to prepare graduates equipped with twenty-first-century competencies (Halfon, 2025). Previous studies consistently demonstrate that improvements in educational quality require the synergistic integration of digital technologies, adaptive leadership, an innovation-oriented culture, and continuous organizational learning (OECD, 2024).

From the perspective of Organizational Learning Theory, organizations capable of collective learning are more likely to generate innovation, enhance members' competencies, and sustain competitive advantage. Argyris and Schön

(1978) argue that organizational learning enables organizations to improve processes, policies, and strategies through continuous reflection and learning, while Senge (2006) conceptualizes the learning organization as one in which learning serves as the fundamental driver of organizational transformation. Accordingly, organizational learning is expected to function as a critical mechanism through which digital transformation capability and school agility are translated into improvements in educational quality.

Although the relationships among digital transformation, organizational learning, and organizational performance have been extensively investigated within business settings, empirical evidence in educational organizations remains relatively limited. Existing studies have predominantly focused on the influence of digital leadership, teachers' digital competence, or the implementation of digital learning platforms on instructional effectiveness. In contrast, research integrating Digital Transformation Capability, School Agility, Organizational Learning, and Educational Quality into a single conceptual framework remains scarce, particularly within primary and secondary education in developing countries. Furthermore, recent studies indicate that the influence of agility on educational organizational performance is frequently mediated by learning capability, technological capability, and collaborative knowledge creation, highlighting the need for further investigation into these mediating mechanisms.

In Indonesia, the government continues to accelerate educational digital transformation through initiatives such as the Merdeka Belajar policy, the Platform Merdeka Mengajar (PMM), the Education Report Card (*Rapor Pendidikan*), school digitalization programs, and the strengthening of teachers' professional learning communities. These reforms are intended to improve learning quality, strengthen teachers' competencies, and cultivate collaborative cultures within schools. Nevertheless, several reports indicate that digital transformation implementation continues to face significant challenges, including insufficient digital competencies among teachers, limited ICT infrastructure, unequal internet accessibility, and underdeveloped organizational learning cultures within schools. The OECD (2024) highlights that strengthening professional learning communities, enhancing school leadership, and promoting collaborative learning constitute essential prerequisites for the successful implementation of educational transformation in Indonesia.

UNESCO (2024) also reports that Indonesia has made considerable progress through the implementation of various digital education platforms, engaging millions of teachers as active users. Nevertheless, the success of digital transformation ultimately depends on schools' organizational capacity to cultivate digital leadership, foster an innovation-driven culture, and sustain collective organizational learning. These findings underscore that digital technologies alone are insufficient to improve educational quality unless accompanied by an organization's continuous capacity to learn, adapt, and innovate in response to evolving educational challenges.

Serang City, the capital of Banten Province, represents one of the regions in Indonesia that has actively implemented educational digitalization policies. Many schools have adopted school information systems, digital learning platforms, and technology-based administrative applications to support educational management and instructional activities. Nevertheless, the level of digital transformation

readiness varies considerably across schools. While some schools have successfully integrated digital technologies into teaching and learning processes as well as organizational governance, others continue to encounter substantial challenges related to teachers' digital competencies, organizational culture, internal coordination, and collaborative learning practices. This variation makes Serang City an appropriate empirical setting for examining the relationships among Digital Transformation Capability (DTC), School Agility, Organizational Learning, and Educational Quality.

Based on the existing body of literature, several research gaps can be identified. First, the majority of previous studies have primarily examined the direct relationship between digital transformation and organizational performance without investigating the mediating role of organizational learning. Second, research on school agility has predominantly focused on higher education institutions or business organizations rather than primary and secondary schools. Third, empirical studies integrating Digital Transformation Capability, School Agility, Organizational Learning, and Educational Quality into a single conceptual framework remain scarce, particularly within the context of Indonesian schools. Fourth, limited empirical evidence is available regarding the implementation of this integrated model in the context of regional educational digitalization policies, especially in Serang City.

This study offers several noteworthy contributions. From a theoretical perspective, it integrates Dynamic Capability Theory and Organizational Learning Theory to explain how educational quality can be enhanced through digital transformation capability and school agility. From an empirical perspective, this study investigates the mediating role of Organizational Learning in the relationships between Digital Transformation Capability, School Agility, and Educational Quality, addressing an underexplored mechanism in the Indonesian school context. By examining these relationships within schools in Serang City, the study provides empirical evidence on how organizational learning facilitates the translation of digital transformation capabilities and school agility into improved educational quality..

The findings are expected to enrich the international literature on digital educational management while providing strategic implications for local governments, education authorities, and school leaders in strengthening digital transformation capability, organizational learning, and school agility as key drivers of educational quality improvement. Based on these theoretical and empirical considerations, the objective of this study is to examine the effects of Digital Transformation Capability and School Agility on Educational Quality, with Organizational Learning serving as a mediating variable among primary and secondary schools in Serang City, Indonesia.

METHODS

This study employed a quantitative research approach using an explanatory research design to examine the causal relationships among Digital Transformation Capability (DTC), School Agility (SA), Organizational Learning (OL), and

Educational Quality (EQ). An explanatory design was adopted because the study aimed to empirically test a conceptual model developed based on Dynamic Capability Theory (Teece et al., 1997) and Organizational Learning Theory (Argyris & Schön, 1978; Senge, 1990).

The research adopted a cross-sectional survey design, whereby data were collected at a single point in time using a structured questionnaire. A survey approach was considered appropriate because the study measured respondents' perceptions of latent constructs that cannot be directly observed. Furthermore, the study was grounded in the positivist research paradigm, in which hypotheses were empirically tested using inferential statistical techniques through Partial Least Squares Structural Equation Modeling (PLS-SEM). PLS-SEM was selected because it is particularly suitable for prediction-oriented research, theory development, complex structural models, and datasets that may not satisfy the assumption of multivariate normality (Hair & Alamer, 2022).

The study was conducted in public vocational high schools (SMK Negeri) located in Serang City, Banten Province, Indonesia. Serang City was selected because it serves as the provincial capital and has actively implemented various educational digital transformation initiatives in recent years, including the adoption of the Platform Merdeka Mengajar (PMM), school information systems, digital administrative services, and technology-enhanced teaching and learning practices. Data collection was scheduled to take place between January and April 2026, following the research implementation timeline.

The target population consisted of all civil servant (ASN) teachers employed in public vocational high schools in Serang City who had experience using digital technologies in instructional and administrative activities. Given the relatively large and geographically dispersed population across multiple schools, the study employed a probability sampling approach using proportionate stratified random sampling, thereby ensuring that each school was proportionally represented in the sample. The required sample size was determined based on the recommendation of Hair and Alamer (2022), who suggest that PLS-SEM studies should include at least five observations for each indicator in the measurement model. Since the research instrument comprised 40 measurement indicators, the minimum required sample size was calculated as:

$$40 \text{ indicators} \times 5 = 200 \text{ respondents.}$$

Primary data were collected using a structured questionnaire measured on a five-point Likert scale, ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The questionnaire items were adapted from internationally validated measurement instruments that have demonstrated satisfactory validity and reliability in previous studies. Prior to the main survey, the instrument underwent content validity assessment by experts in educational management, followed by a pilot study and preliminary reliability testing to ensure the clarity, validity, and internal consistency of the measurement items.

In addition to primary data, the study utilized secondary data obtained from the Serang City Education Office, Statistics Indonesia (BPS), school documents, and national educational policy reports. Data were analyzed using SmartPLS 3 through the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. This analytical technique was selected because it effectively estimates

complex models involving multiple latent constructs and mediating relationships while emphasizing predictive accuracy rather than model fit, making it particularly appropriate for theory development and prediction-oriented research (Hair & Alamer, 2022). The operational definitions, dimensions, and measurement indicators of the research variables are presented in the following section.

Table 1. Operational Definition of Research Variables

Variable	Dimension	No	Indicator	References
Digital Transformation Capability (DTC)	Digital Leadership	1	Teachers have a clear digital vision	Baiyere et al (2022);
		2	Teachers promote a digital culture	
	Digital Technology Capability	3	Adequate ICT infrastructure	Schallmo et al (2022);
		4	Learning activities are supported through a Learning Management System (LMS)	
	Employee Digital Capability	5	Teachers possess strong digital competencies	Verhoef et al (2021)
		6	Teachers can use AI and digital tools	
	Digital Dynamic Capability	7	Ability to respond to technological changes	
		8	Ability to develop innovative teaching practices	
	Digital Investment Capability	9	Availability of a budget for digital transformation	
		10	Capability to invest in digital infrastructure and devices	
School Agility (SA)	Responsiveness	1	Ability to respond quickly to curriculum changes	Lopez et al (2026); Felipe et al (2019);
		2	Ability to respond rapidly to technological developments	
	Flexibility	3	Flexibility in the teaching and learning process	Dubey et al (2020); Gong & Ribiere (2022)
		4	Flexibility in school policies	
	Innovation	5	Development of innovative teaching methods	
		6	Development of innovative school services	
	Competency	7	Staff competency in responding to change	
		8	Continuous professional development for teachers	

Organizational Learning (OL)	Speed	9	Speed of decision implementation	Zheng et al (2026); Hanson et al (2021);
		10	Speed of system adaptation	
	Managerial Commitment	1	School leaders support organizational learning	
		2	School leaders provide opportunities for professional learning	
	Systems Perspective	3	All school members share a common vision	
		4	Coordination across organizational units	
	Openness and Experimentation	5	Openness to new ideas	
		6	Willingness to experiment with new approaches	
		7	Readiness to embrace change	
	Knowledge Transfer and Integration	8	Knowledge sharing among teachers	
9		Professional discussions and collaboration		
10		Documentation of best practices		
Educational Qulaity (EQ)	Teaching Quality	1	Quality of teaching and learning	UNESCO (2015); OECD (2019)
		2	Effective integration of technology in learning	
	Learning Outcomes	3	Student competencies	
		4	Student academic achievement	
	School Management	5	School governance	
		6	Quality of academic services	
	Stakeholder Satisfaction	7	Student satisfaction	
		8	Industry stakeholder satisfaction	
	Continuous Improvement	9	Continuous evaluation	
		10	Continuous improvement in accreditation quality	

Source: Developed by the authors based on a synthesis of the reviewed journal articles and related reports (2026)

Digital Transformation Capability represents a school's ability to integrate digital technologies into instructional, administrative, and decision-making processes. It encompasses capabilities such as digital leadership, digital infrastructure, digital skills, digital culture, technology integration, and data-driven decision-making. Previous studies indicate that digital transformation can strengthen organizational learning by facilitating knowledge creation, collaboration, information sharing, and adaptive processes (Abbasi et al., 2024; Konopik et al., 2022; Lameiro, 2025). Therefore, schools with stronger digital

transformation capabilities are expected to demonstrate higher levels of organizational learning.

H1: Digital Transformation Capability has a positive and significant effect on Organizational Learning among public vocational high schools (SMK Negeri) in Serang City.

School Agility refers to the ability of schools to sense environmental changes and respond rapidly through flexibility, responsiveness, innovation, competency, and speed. Agile schools are expected to develop stronger learning processes because adaptation to curriculum changes, technological developments, and changing student needs requires continuous reflection, experimentation, knowledge sharing, and organizational adaptation. Previous evidence has linked organizational agility with organizational learning, knowledge development, collaboration, and innovation (Boerma et al., 2025; Nguyen et al., 2025; Asghar et al., 2026). In educational settings, agile organizational practices have likewise been associated with more dynamic learning cultures and instructional innovation (Wijayanti et al., 2021).

H2: School Agility has a positive and significant effect on Organizational Learning among public vocational high schools (SMK Negeri) in Serang City.

Digital Transformation Capability is also expected to contribute directly to Educational Quality. The effective integration of digital technologies can improve instructional processes, personalized learning, assessment, administrative efficiency, data utilization, and evidence-based decision-making. Empirical studies have reported positive relationships between digital transformation and educational or school quality through improvements in instructional quality, operational efficiency, inclusiveness, and educational service delivery (Rahayu et al., 2025; Consoli et al., 2025; Jubaidi & Rahmawati, 2025; Rohbiyatun et al., 2025).

H3: Digital Transformation Capability has a positive and significant effect on Educational Quality among public vocational high schools (SMK Negeri) in Serang City.

School Agility is expected to improve Educational Quality because schools capable of responding rapidly and flexibly to environmental changes are better positioned to maintain and improve instructional and organizational performance. Agility facilitates timely responses to curriculum reforms, technological developments, stakeholder expectations, and changing student needs. Previous research has associated school and organizational agility with academic achievement, organizational effectiveness, innovation, and service quality (Taktak & Özgenel, 2026; Nguyen et al., 2025; Garipağaoğlu, 2025).

H4: School Agility has a positive and significant effect on Educational Quality among public vocational high schools (SMK Negeri) in Serang City.

Organizational Learning is expected to function as an important organizational mechanism for improving Educational Quality. Through continuous knowledge acquisition, knowledge sharing, reflection, experimentation, and application of knowledge, teachers and educational staff can improve instructional practices and develop innovative solutions to educational challenges. Previous studies have shown that organizational learning culture contributes to school improvement, organizational effectiveness, instructional quality, and educational service quality (Ertsås & Irgens, 2023; Salabi et al., 2023; Batool & Saeed, 2025).

H5: Organizational Learning has a positive and significant effect on Educational Quality among public vocational high schools (SMK Negeri) in Serang City.

Building on Dynamic Capability Theory, the proposed model further assumes that organizational capabilities generate superior outcomes through organizational processes that enable adaptation and continuous improvement. Organizational Learning is therefore hypothesized to mediate the effects of Digital Transformation Capability and School Agility on Educational Quality. Digital transformation provides schools with technological and informational resources that facilitate knowledge sharing, collaboration, and data-driven learning, while school agility encourages adaptation, experimentation, and responsive organizational behavior. These processes are expected to strengthen Organizational Learning, which subsequently contributes to Educational Quality. Accordingly, the following mediation hypotheses are tested:

H6: Organizational Learning positively mediates the relationship between Digital Transformation Capability and Educational Quality among public vocational high schools (SMK Negeri) in Serang City.

H7: Organizational Learning positively mediates the relationship between School Agility and Educational Quality among public vocational high schools (SMK Negeri) in Serang City.

RESULTS

The evaluation of the measurement model (outer model) demonstrated that all indicators achieved factor loading values greater than 0.70, indicating that each indicator strongly reflects its respective latent construct and satisfies the criterion for convergent validity. Furthermore, all constructs obtained Average Variance Extracted (AVE) values exceeding 0.50, suggesting that each construct explains more than 50% of the variance of its indicators. These results confirm that the convergent validity requirement has been satisfactorily fulfilled. The assessment of discriminant validity further revealed that the loading value of each indicator on its corresponding construct was higher than its cross-loadings on other constructs. This finding indicates that each indicator represents its intended construct more effectively than any other construct, thereby confirming adequate discriminant validity and demonstrating that no substantial overlap exists among the latent variables in the research model. Overall, these findings confirm that the measurement instrument possesses a high level of construct validity, indicating that all measurement indicators are appropriate for retention in the subsequent structural model (inner model) analysis. Therefore, the measurement model satisfies the recommended criteria for the PLS-SEM approach and provides a robust foundation for examining the causal relationships among the research variables. The complete measurement model is presented in Figure 1.

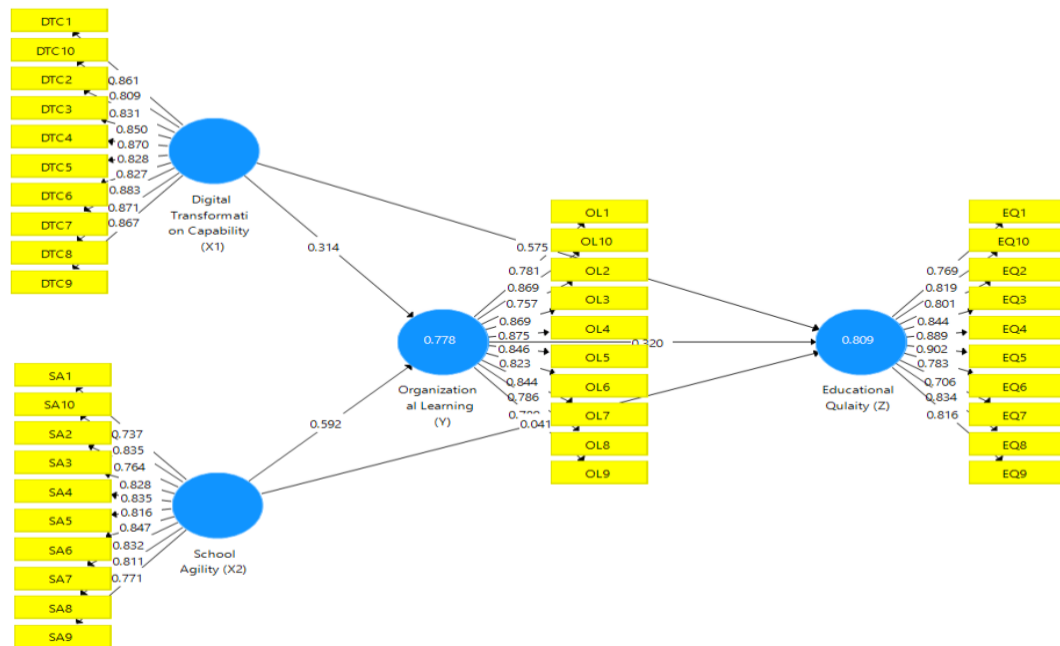


Figure 1. PLS-SEM Algorithm Results

The discriminant validity of the measurement model was further assessed using the Fornell–Larcker criterion. As presented in Table 1, the square root of the Average Variance Extracted ($\sqrt{\text{AVE}}$) for each construct exceeded its correlations with all other constructs, confirming satisfactory discriminant validity. Specifically, the $\sqrt{\text{AVE}}$ values were 0.889 for Digital Transformation Capability, 0.839 for Educational Quality, 0.871 for Organizational Learning, and 0.890 for School Agility, all of which were greater than the corresponding inter-construct correlations. These findings indicate that each construct explains its own indicators more effectively than it explain other constructs, demonstrating that the latent variables are both empirically and conceptually distinct. Consequently, the measurement model satisfies the Fornell–Larcker criterion, providing further evidence of construct validity and supporting the suitability of the model for structural analysis. The complete results are presented in Table 1.

Table 2. Results of the Fornell–Larcker Criterion Assessment

	Digital Transformation Capability (X1)	Educational Qulaity (Z)	Organizational Learning (Y)	School Agility (X2)
Digital Transformation Capability (X1)	0,889			
Educational Qulaity (Z)	0,881	0,839		
Organizational Learning (Y)	0,840	0,818	0,871	
School Agility (X2)	0,850	0,831	0,825	0,890

Source: Authors' analysis using PLS-SEM (2026)

The Composite Reliability (CR) assessment indicates that all constructs exhibit excellent reliability. The Composite Reliability values were 0.963 for Digital Transformation Capability, 0.953 for Educational Quality, 0.955 for Organizational Learning, and 0.950 for School Agility. All values substantially exceed the recommended threshold of 0.70, indicating a high level of internal consistency reliability among the indicators measuring each latent construct. These findings demonstrate that the measurement instrument provides stable and consistent measurements with minimal measurement error.

Furthermore, the Composite Reliability values ranging from 0.95 to 0.96 suggest that each construct possesses excellent reliability, supporting the retention of all constructs for subsequent structural model analysis. Overall, these results confirm that the measurement model satisfies the recommended internal consistency reliability criteria in PLS-SEM, thereby providing a reliable basis for interpreting the structural relationships among the latent constructs.

The reliability of the measurement model was further supported by the Cronbach's Alpha assessment. The Cronbach's Alpha values were 0.957 for Digital Transformation Capability, 0.944 for Educational Quality, 0.947 for Organizational Learning, and 0.941 for School Agility. All values were well above the recommended threshold of 0.70, indicating excellent internal consistency across all constructs.

These findings suggest that the indicators consistently measure their respective latent constructs and produce reliable measurement outcomes. The high Cronbach's Alpha values also indicate that the measurement instrument possesses strong stability and a relatively low level of measurement error. Therefore, all constructs satisfy the recommended internal consistency reliability criterion and are appropriate for further structural model analysis using the PLS-SEM approach.

The path coefficient analysis reveals that all structural relationships exhibit positive coefficients, indicating that an increase in each independent variable is associated with an increase in its corresponding dependent variable. Among the direct effects, Digital Transformation Capability demonstrates the strongest direct influence on Educational Quality, with a path coefficient of 0.575. This finding indicates that schools with stronger digital transformation capabilities are more likely to achieve higher educational quality. In addition, Digital Transformation Capability has a positive effect on Organizational Learning ($\beta = 0.314$), suggesting that digital transformation initiatives contribute to strengthening organizational learning processes. However, this effect is weaker than the influence of School Agility on Organizational Learning.

The results further indicate that School Agility exerts the strongest influence on Organizational Learning, with a path coefficient of 0.592. This finding suggests that a school's ability to respond rapidly, remain flexible, and foster innovation plays a critical role in developing a strong organizational learning culture. Accordingly, agile schools are better positioned to facilitate knowledge sharing, collaborative learning, and continuous organizational improvement. Furthermore, Organizational Learning has a positive effect on Educational Quality, with a path coefficient of 0.320, indicating that improvements in organizational learning contribute to enhancing educational quality. By contrast, the direct effect of School Agility on Educational Quality is relatively small ($\beta = 0.041$). Although the

relationship is positive, its magnitude is considerably weaker than the other structural paths in the model.

Overall, the path coefficient results demonstrate that Digital Transformation Capability is the primary determinant of Educational Quality, whereas School Agility is the most influential determinant of Organizational Learning. These findings suggest that improving educational quality depends not only on strengthening schools' digital transformation capabilities but also on enhancing organizational learning through greater school agility. The complete path coefficient results are presented in Figure 2.

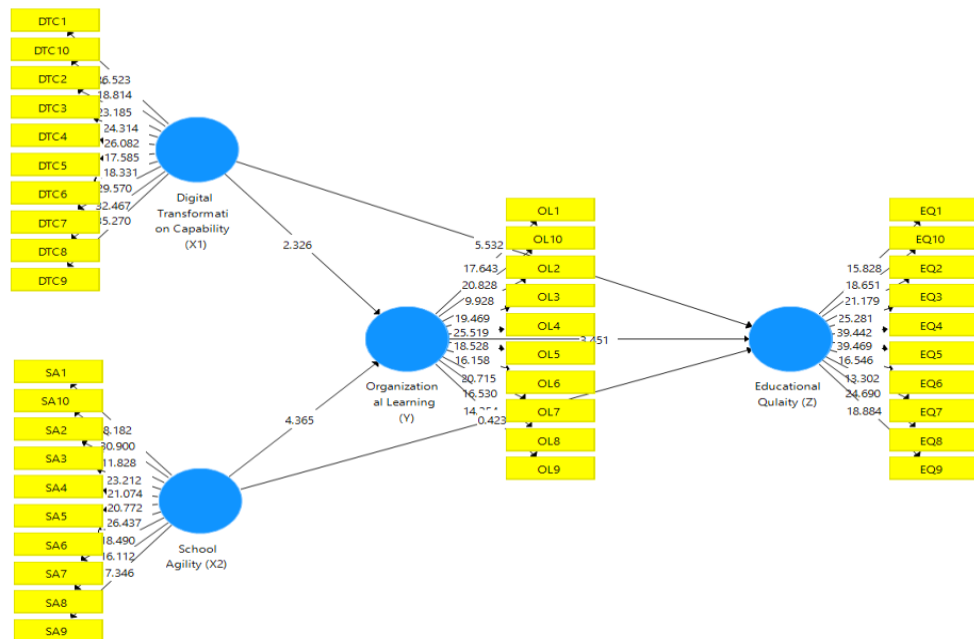


Figure 2. PLS-SEM Bootstrapping Results

The evaluation of the coefficient of determination (R^2) indicates that the structural model demonstrates substantial explanatory power for the endogenous constructs. The R^2 value for Organizational Learning is 0.778, indicating that 77.8% of the variance in Organizational Learning is jointly explained by Digital Transformation Capability and School Agility, while the remaining 22.2% is attributable to factors outside the proposed model. Likewise, the R^2 value for Educational Quality is 0.809, indicating that 80.9% of the variance in Educational Quality is explained by Digital Transformation Capability, School Agility, and Organizational Learning, whereas the remaining 19.1% is explained by variables not included in this study.

According to the evaluation criteria proposed by Hair et al. (2022), an R^2 value of 0.75 or higher indicates substantial explanatory power. Therefore, the R^2 values obtained in this study demonstrate that the proposed structural model possesses strong explanatory capability in predicting both Organizational Learning and Educational Quality. These findings confirm that the combination of Digital Transformation Capability, School Agility, and Organizational Learning constitutes a significant determinant of educational quality in vocational high schools in Serang City. Consequently, the structural model exhibits strong

predictive accuracy and explanatory power in explaining the investigated phenomenon.

The Goodness-of-Fit (GoF) index was calculated to evaluate the overall quality of the proposed model. The analysis yielded a GoF value of 0.736. According to Wetzels et al. (2009), GoF values of 0.10, 0.25, and 0.36 represent small, medium, and large model fit, respectively. Therefore, the GoF value obtained in this study substantially exceeds the recommended threshold of 0.36, indicating an excellent overall model fit.

These findings suggest that the proposed model successfully integrates both the measurement model (outer model) and the structural model (inner model) in explaining the relationships among Digital Transformation Capability, School Agility, Organizational Learning, and Educational Quality. The high GoF value further indicates that the model adequately represents the empirical data and is appropriate for examining the proposed causal relationships. Accordingly, the structural model demonstrates an excellent level of overall model fit in explaining educational quality improvement in vocational high schools in Serang City.

The evaluation of model fit using the Standardized Root Mean Square Residual (SRMR) indicates that the SRMR value is 0.062 for both the Saturated Model and the Estimated Model. Since these values are below the recommended threshold of 0.08, the results indicate an excellent model fit.

The identical SRMR values obtained for the Saturated and Estimated Models suggest that the proposed structural relationships accurately reproduce the empirical covariance structure, resulting in only minor discrepancies between the observed and predicted correlation matrices. These findings confirm that the structural model linking Digital Transformation Capability, School Agility, Organizational Learning, and Educational Quality adequately fits the observed data. Therefore, the model specification can be considered appropriate for testing the proposed causal relationships and interpreting the subsequent hypothesis testing results.

The hypothesis testing results reveal that all direct relationships proposed in the structural model are positive and statistically significant, indicating that all research hypotheses are supported. Hypothesis 1 (H1) demonstrates that Digital Transformation Capability has a positive and significant effect on Educational Quality ($\beta = 0.675$, $t = 6.765$, $p < 0.001$). This finding suggests that schools with stronger digital transformation capabilities are more likely to achieve higher educational quality.

Hypothesis 2 (H2) indicates that Digital Transformation Capability positively influences Organizational Learning ($\beta = 0.314$, $t = 2.326$, $p = 0.020$), implying that digital transformation initiatives contribute significantly to strengthening organizational learning processes within schools. Hypothesis 3 (H3) confirms that Organizational Learning has a positive and significant effect on Educational Quality ($\beta = 0.320$, $t = 3.451$, $p = 0.001$). This result indicates that schools characterized by stronger organizational learning capabilities tend to demonstrate higher educational quality.

Furthermore, Hypothesis 4 (H4) shows that School Agility positively influences Educational Quality ($\beta = 0.231$, $t = 2.251$, $p = 0.025$). This finding suggests that a school's ability to respond rapidly and effectively to environmental changes contributes significantly to improving educational quality. Finally,

Hypothesis 5 (H5) reveals that School Agility has a positive and significant effect on Organizational Learning ($\beta = 0.592$, $t = 4.365$, $p < 0.001$). Among all predictors of Organizational Learning, this represents the strongest direct effect, highlighting school agility as the primary driver of organizational learning capability.

Overall, the hypothesis testing results confirm that Digital Transformation Capability and School Agility are strategic antecedents of both Organizational Learning and Educational Quality. Specifically, Digital Transformation Capability emerges as the strongest determinant of Educational Quality, whereas School Agility represents the most influential predictor of Organizational Learning. The detailed hypothesis testing results are presented in Table 3.

Table 3. Results of the Direct Hypothesis Testing

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Digital Transformation Capability (X1) → Educational Quality (Z)	0,675	0,660	0,100	6,765	0,000
Digital Transformation Capability (X1) → Organizational Learning (Y)	0,314	0,299	0,135	2,326	0,020
Organizational Learning (Y) → Educational Quality (Z)	0,320	0,314	0,093	3,451	0,001
School Agility (X2) → Educational Quality (Z)	0,231	0,247	0,103	2,251	0,025
School Agility (X2) → Organizational Learning (Y)	0,592	0,608	0,136	4,365	0,000

Source: Authors' analysis using SmartPLS (2026)

The mediation analysis indicates that Organizational Learning does not mediate the relationship between Digital Transformation Capability and Educational Quality, whereas it significantly mediates the relationship between School Agility and Educational Quality. For the indirect relationship between

Digital Transformation Capability and Educational Quality through Organizational Learning, the analysis produced an indirect effect coefficient of 0.100, with a t-value of 1.776 and a p-value of 0.076, which exceeds the significance threshold of 0.05. Therefore, the indirect effect is not statistically significant, and the mediation hypothesis is not supported. This finding suggests that improvements in Educational Quality are primarily driven by the direct effect of Digital Transformation Capability rather than through the mediating mechanism of Organizational Learning. In other words, schools with stronger digital transformation capabilities can enhance educational quality directly without relying on organizational learning as an intermediary process.

In contrast, the indirect relationship between School Agility and Educational Quality through Organizational Learning was found to be statistically significant. The indirect effect coefficient was 0.190, with a t-value of 2.814 and a p-value of 0.005, supporting the proposed mediation hypothesis. These results indicate that Organizational Learning serves as a significant mediator linking School Agility to Educational Quality. This finding implies that schools capable of responding rapidly, adapting flexibly, and fostering innovation improve educational quality by strengthening organizational learning processes, including knowledge sharing, collaborative learning, and continuous professional capacity development.

Overall, the mediation analysis demonstrates that Organizational Learning functions as a significant mediating mechanism only in the relationship between School Agility and Educational Quality, but not in the relationship between Digital Transformation Capability and Educational Quality. These findings suggest that improvements in educational quality are more effectively achieved through the direct enhancement of Digital Transformation Capability, while the positive effects of School Agility are realized through strengthened organizational learning processes. The detailed mediation analysis results are presented in Table 4.

Table 4. Results of the Indirect Hypothesis Testing

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Digital Transformation Capability (X1) → Organizational Learning (Y) → Educational Quality (Z)	0,100	0,096	0,057	1,776	0,076
School Agility (X2) → Organizational Learning (Y) → Educational Quality (Z)	0,190	0,188	0,067	2,814	0,005

Source: Authors' analysis using SmartPLS (2026).

Discussion

The findings of this study provide several important managerial implications for school principals, vocational school administrators, and educational policymakers in their efforts to enhance educational quality in the era of digital transformation. The results indicate that Digital Transformation Capability exerts the strongest direct influence on Educational Quality, suggesting that improvements in educational quality depend not only on the availability of digital technologies but also on schools' strategic capability to manage digital transformation effectively. Consequently, school leaders should develop a comprehensive digital transformation roadmap aligned with the school's vision and strategic objectives. Such a roadmap should include investments in digital infrastructure, the implementation of integrated school information systems, optimization of Learning Management Systems (LMS), utilization of data analytics to support evidence-based decision-making, and the integration of Artificial Intelligence (AI)-enabled technologies into both teaching and administrative processes. Furthermore, strengthening the digital competencies of teachers and educational staff should become a strategic priority to ensure that digital transformation generates sustainable value for educational service quality.

The study also demonstrates that School Agility is the strongest determinant of Organizational Learning. This finding suggests that schools capable of responding rapidly to environmental changes, technological advancements, industry demands, and educational policy reforms are better positioned to cultivate a sustainable organizational learning culture. Therefore, school management should foster an adaptive organizational culture by promoting flexible decision-making, accelerating responses to curriculum changes, strengthening teacher collaboration, establishing school innovation teams, and encouraging teachers to experiment with innovative instructional practices without fear of failure. Such an agile organizational environment facilitates continuous learning, accelerates knowledge diffusion, and enhances the school's capacity for continuous improvement.

Furthermore, the results reveal that Organizational Learning positively influences Educational Quality and significantly mediates the relationship between School Agility and Educational Quality, whereas it does not mediate the relationship between Digital Transformation Capability and Educational Quality. This finding implies that organizational learning primarily functions as a mechanism through which school adaptability is translated into improvements in educational quality, rather than serving as the pathway through which digital transformation exerts its influence. Accordingly, schools should strengthen their knowledge management practices by establishing Professional Learning Communities (PLCs), implementing lesson study programs, promoting peer coaching, facilitating reflective professional discussions, documenting best teaching practices, and utilizing digital platforms to support institutional knowledge sharing. These initiatives are expected to accelerate collective learning processes and improve the school's capability to respond effectively to emerging educational challenges.

The insignificant mediating role of Organizational Learning in the relationship between Digital Transformation Capability and Educational Quality

also suggests that the benefits of digital transformation are realized primarily through direct improvements in educational service delivery. Consequently, schools should move beyond simply fostering a learning culture and ensure that digital technologies are fully integrated into core educational processes, including instructional planning, digital assessment, real-time student progress monitoring, integrated school administration, and effective communication with parents and industry partners. Such an approach is likely to accelerate improvements in educational quality without depending solely on gradual changes in organizational culture.

From a policy perspective, these findings highlight the need for educational authorities to formulate policies that extend beyond the provision of digital infrastructure toward strengthening schools' organizational capabilities for managing change. Strategic initiatives may include professional development programs on digital transformational leadership for school principals, continuous enhancement of teachers' digital competencies, incentive schemes for schools demonstrating successful educational innovation, and stronger partnerships between vocational schools and industry. Moreover, school evaluation systems should incorporate indicators related to Digital Transformation Capability, School Agility, and Organizational Learning as essential components of school performance assessment to support sustainable educational quality improvement.

Overall, the findings suggest that improving educational quality in vocational schools requires a holistic management approach that integrates Digital Transformation Capability, School Agility, and Organizational Learning into school governance and strategic planning. While Digital Transformation Capability serves as the primary driver of educational quality, School Agility provides the organizational foundation for developing continuous learning capabilities that strengthen schools' capacity to respond to rapidly changing educational environments. Therefore, successful educational transformation in the digital era depends not only on technological adoption but also on schools' ability to adapt, learn continuously, and manage organizational change systematically to deliver high-quality, innovative, and competitive educational services.

This study has several limitations that should be considered when interpreting the findings. First, the study employed a cross-sectional research design, which captures relationships among variables at a single point in time. Consequently, the study cannot fully explain causal relationships or examine the dynamic evolution of Digital Transformation Capability, School Agility, Organizational Learning, and Educational Quality over time. Future studies are therefore encouraged to adopt longitudinal research designs to investigate how these relationships develop and evolve throughout different stages of digital transformation.

Second, the study involved 200 vocational high school teachers in Serang City, Indonesia, which may limit the generalizability of the findings to other educational levels, geographical regions, or countries with different institutional characteristics, educational systems, and levels of digital transformation maturity. Future research should therefore include more diverse educational contexts and larger samples to enhance the external validity of the findings.

Third, all research data were collected through self-reported questionnaires, which may introduce common method bias and respondent subjectivity despite the

satisfactory validity and reliability demonstrated by the measurement model. Future studies are encouraged to employ multiple data sources, including interviews, classroom observations, school performance records, and longitudinal administrative data, to reduce potential measurement bias and strengthen the robustness of empirical findings.

Finally, although the structural model demonstrates substantial explanatory power and excellent model fit, Educational Quality is inherently influenced by numerous organizational and contextual factors that were not incorporated into the present model. These factors include instructional leadership, school culture, teachers' digital competence, innovation climate, government policy, stakeholder engagement, resource availability, and institutional support. Future studies are therefore encouraged to incorporate these additional variables, examine potential moderating mechanisms, and conduct comparative analyses across different educational levels, school types, and national contexts to provide a more comprehensive understanding of the determinants of educational quality in the era of digital transformation.

CONCLUSION

This study demonstrates that improving educational quality in vocational high schools requires more than the adoption of digital technologies; it depends on the organizational capabilities that enable schools to adapt, learn, and continuously improve. The findings answer the research question by showing that Digital Transformation Capability and School Agility are important strategic capabilities for strengthening Educational Quality, although they operate through partly different pathways.

Digital Transformation Capability contributes to educational quality primarily through a direct pathway, suggesting that access to and effective integration of digital technologies can generate improvements without necessarily depending on Organizational Learning as an intermediate mechanism. In contrast, the effect of School Agility on Educational Quality is strengthened through Organizational Learning. This indicates that the capacity to respond rapidly, adapt flexibly, and innovate becomes more consequential when schools are able to institutionalize learning, knowledge sharing, reflection, and continuous improvement.

The central implication is therefore that digital transformation and organizational learning should not be treated as interchangeable strategies. Schools need to combine technological capability with adaptive organizational practices, while ensuring that learning processes convert agility into sustained improvements in educational quality. For school leaders, this means pursuing digital transformation alongside Professional Learning Communities, collaborative knowledge sharing, peer learning, lesson study, and continuous professional development. At the policy level, educational authorities should support this integration through policies, infrastructure, and capacity-building programs that strengthen both digital capability and organizational learning.

Future research may test the proposed relationships across different

educational levels and geographical settings and employ longitudinal designs to examine how these capabilities evolve over time. Further studies could also incorporate complementary organizational factors, such as digital leadership, school culture, teacher digital competence, innovation capability, and knowledge management, to provide a broader explanation of educational quality in digitally transforming schools.

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