

# **The Role of Digital Transformation on the Performance of Public Elementary Schools in the Industrial Revolution 4.0 and Society 5.0 Era**

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## **Abstract**

This study aims to test the effect of digital transformation on the performance of elementary schools. Digital transformation and innovation are in the spotlight in the Industrial Revolution 4.0 and Society 5.0 eras that influence and change many things in the field of education. This study uses a quantitative approach. Data collection uses a survey through the distribution of questionnaires. The respondents of this study were 234 elementary school teachers. The hypothesis testing of this study uses Partial Least Square-Structural Equation Modeling (PLS-SEM) processed with SmartPLS. The results of the study show that digital transformation has a positive effect on school performance. The findings of this study prove that digital transformation has a positive effect on school performance which can encourage schools to continue to strive for their competitive advantage in providing educational services.

**Keywords:** Digital Transformation, School performance, elementary school

## **Introduction**

One of the missions of elementary schools is to create an excellent educational institution that is open to global developments [1]. Therefore, in facing the digital transformation in the era of the Industrial Revolution 4.0, Society 5.0, elementary schools encourage every teacher and employee to use technology in various teaching and learning activities and administration. Teachers and employees are encouraged to be able to face various challenges and problems by utilizing various innovations that were born in the era of the Industrial Revolution 4.0, Society 5.0 [2]. Teachers and employees are equipped with basic literacy skills, namely first, data literacy is the ability to read, analyze, and use information (big data) in the digital world. Second, technological literacy is understanding how machines and technology applications work. Finally, human literacy is humanity, communication, and design. This is done to provide maximum service to students in creating an excellent educational institution that is open to global developments [3].

The existence of digital transformation not only improves the ability of teachers and employees to adapt to utilizing new technologies, but also encourages innovation to integrate digital solutions into education[4]. The innovation carried out encourages skills and competencies to improve organizational performance, which is one of the most important goals for organizations. The influence of digital transformation and innovation on organizational performance is an important issue that continues to receive great attention because it has a positive impact on organizations[5]. Digital transformation and innovation support organizations to use digital connections to access computerized information and data, presenting new practices and creative impulses in their business activities. Simply put, with digital transformation and innovation, it will facilitate the practice of learning processes and school administration to run smoothly. In this study, digital transformation refers to the process of change based on creativity and innovation through digital technology. These changes will encourage organizations to continue to improve and develop into changes that advance the organization on the basis of innovation that facilitates teaching and learning activities and administration in order to create value[6]. For example, the implementation of digital transformation and innovation is online learning or blended learning or the use of learning management systems in the world of education which can be opportunities and challenges, these two opposing things depend on how educational institutions respond to digital transformation and innovation in the school environment[7]. Digital transformation and innovation enable the development or improvement of new services for customers, namely students and parents of students more efficiently and can fundamentally improve organizational performance to achieve competitive advantage.

## Method

This study uses a quantitative approach. Data collection using a survey through the distribution of questionnaires. The respondents of this study were 234 elementary school teachers. The hypothesis testing of this study used Partial Least Square-Structural Equation Modeling (PLS-SEM) processed with SmartPLS Before testing the hypothesis, the researcher conducted a validity test to ensure that the measurement scale used in the study was in accordance with the conceptual, operational definition and reliability specified. The validity tests carried out were convergent validity and discriminant validity as outer model testing. The convergent validity test can be said to be valid when the standard value of the factor load reaches a score of 0.4 to 0.7 and above. Meanwhile, discriminant validity is related to the principle that measurements of different constructs should not correlate with high. The discriminant validity test is assessed based on the cross loading of the measurement with each construct. A construct has discriminant validity if the construct indicator has the highest loading value in its own construct group. The next evaluation is by comparing the AVE root value for each construct with the correlation between the construct and other constructs in the model. The construct will be said to meet discriminant validity when the value of the AVE square root of the construct is greater than the largest correlation value between the construct and other constructs. Another test conducted by the researcher is the reliability test. Reliability is the reliability or consistency of an attribute measurement. The reference used to see the adequacy of the level of reliability is by using the Cronbach's alpha and composite reliability values. The criteria for fulfilling the reliability of the questionnaire instrument by

looking at the Cronbach's alpha value greater than 0.6 and the composite reliability value greater than 0.7 (Hair et al., 2014). Furthermore, the structural model test (inner model) is to test the causal relationship between latent variables or variables that cannot be measured directly by looking at the R-square value in the construct. After that, to measure the support of the hypothesis, the researcher measured the p-value and compared the T-table and T-statistic values (Hair et al., 2014). The research hypothesis is said to be supported if the p-value is  $<0.05$  (significant at the 5% level) and if the T-statistic value is higher than the T-table value with a 95% confidence level (alpha 5 percent) then the T-table value for the hypothesis (two tailed) is  $\geq 1.96$ .

## Discussion

The Impact of Digital Transformation on School Performance At the organizational level, digital transformation is a powerful weapon for organizations to build and maintain competitive advantage in the digital era. Digital transformation plays an important role in the operations of organizations that continue to grow to improve customer satisfaction and reduce operational costs[7]. The implications of digital transformation show that digitalization can positively affect organizational performance. Other studies also state that successful digital transformation depends on whether the organization can develop several capabilities in various fields and these capabilities differ depending on the specific sector and the specific needs of the organization[8]. The existence of digital integration in each value chain can reduce coordination costs, operational costs, and other costs through increased communication, transparency, and monitoring which ends in improving organizational performance[9].

Based on the results of the analysis, it shows that digital transformation has a positive and significant effect on organizational performance based on the T-statistic value of 5,654, which is greater than the T-table value of 1.96 and the p-value is  $0.000 < 0.05$ . With these results, it can be concluded that the first hypothesis is supported. The results of this study are in line with research that digital transformation has proven to be productive in improving organizational performance[10]. The role of digital technology makes internal organizational operations run quickly and easily. In this case, digital transformation is not only effective in streamlining business operations processes, but also presents opportunities for value creation and business growth, thereby improving organizational performance to achieve competitive advantage[11].

In the ever-evolving digital era, digital transformation has brought significant changes in various sectors, including education. Schools around the world are increasingly adopting information and communication technology to improve the efficiency and effectiveness of learning[12]. One of the key tools in digital transformation in schools is the education information system website. This article will explain the importance of implementing an information system website in the context of education and how it can contribute to educational success. In a digitalized educational environment, an education

information system website provides easy and fast access to information for all stakeholders, including students, teachers, parents, and school staff. Through this website, information about class schedules, absences, assignments, announcements, and exam results can be accessed easily and at any time. This eliminates dependence on slow physical or paper communication and makes it easier for all parties involved to get the information they need. [13].

An education information system website helps schools manage various administrative processes efficiently. Features such as online registration, student data management, attendance management, and lesson scheduling can be automated through this website [14]. This reduces the administrative workload and allows school staff to focus on more strategic activities and support the learning process. The education information system website facilitates close collaboration between students, teachers, and parents. Through features such as discussion forums, chat rooms, or private messages, students can interact with their teachers and classmates [15]. Parents can also track their children's academic progress, communicate with teachers, and get information about their child's assignments, attendance, and achievements through the website. This enhanced collaboration creates a holistic educational environment and strengthens the relationship between all stakeholders. The education information system website allows for continuous measurement and monitoring of student progress. Teachers can upload assignments, collect student work, and provide direct feedback through the platform. In addition, the website can also provide detailed grade reports, attendance records, and student progress evaluations. With this easily accessible information, teachers can monitor student progress, identify individual needs, and provide timely support [16]. The education information system website facilitates effective management of educational resources. Course materials, teaching materials, links to educational resources, and e-books can be uploaded and shared through the platform. This allows students and teachers to access educational resources easily, increasing efficiency in learning, and reducing dependence on printed materials. In addition, this website can also provide access to a digital library and a wider database of educational resources. The education information system website provides tools for in-depth data evaluation and analysis. Data collected through this platform can be used to monitor student performance, analyze learning trends, and identify areas for improvement. With the information and insights gained through data analysis, schools can take appropriate steps to improve the quality of education and optimize teaching strategies.

## Conclusion

In conclusion, the findings of this study support and prove the results of previous studies that digital transformation positively affects organizational performance and innovation, and confirms the direct influence of innovation on organizational performance. The contribution of this study is aimed at various literatures related to the role of digital transformation and innovation on organizational performance. As for the practical implications, with the existence of digital transformation and innovation can improve organizational performance, especially for schools. With the results of the study, it is hoped that it can

further strengthen the efforts of school to further equip teachers and employees in taking advantage of opportunities in the digital era, especially to reach wider services to their students. In addition, this study still has limitations that must be improved in further research. First, the number of respondents in this study is limited to teachers. Further research is expected to involve more respondents from the Education sector so that the research results are more diverse. Second, the collection of data for this study through a survey with a questionnaire, the answers are very much based on the respondents' perceptions so that the exploration of respondent information is limited. Further research is expected to further explore information from respondents by adding in-depth interviews with respondents so that research bias can be minimized.

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