

**THE ROLE OF DIGITAL TRANSFORMATION AND INNOVATION ON
ORGANIZATIONAL PERFORMANCE: AN EMPIRICAL STUDY ON INDONESIAN
SCHOOLS**

Fitria Martanti

Universitas Wahid Hasyim, Semarang, Indonesia
Corresponding email: fitriamartanti.@unwahas.ac.id

Sugiyem

Universitas Negeri Yogyakarta, Yogyakarta, Indonesia

Jumintono

Pascasarjana Pendidikan, Universitas Sarjanawiyata Tamansiswa, Yogyakarta, Indonesia

Bernadeth Tongli

Universitas Atma Jaya Makassar, Indonesia

Sudadi

Universitas Islam Negeri Sultan Aji Muhammad Idris Samarinda, Indonesia

Darsita Suparno

UIN Syarif Hidayatullah, Jakarta, Indonesia

Tri Susanti

Regional Development Planning, Research and Innovation Agency, West Bangka Regency,
Indonesia

Anak Agung Ngurah Gunawan

Universitas Udayana, Bali, Indonesia

Abstract

The aim of this research is to analyze the relationship between digital transformation and school performance, analyze the relationship between digital transformation and school innovation, analyze the relationship between innovation and school performance. This research uses a quantitative approach. The respondents used in this research were 450 teachers who were determined using a simple random sampling method from elementary school to high school level. The time given for filling out the questionnaire is 2 weeks. The measurement instrument used to measure research variables uses a seven-point Likert scale starting with point 1 (strongly disagree) to point 7 (strongly agree). Data was obtained from distributing questionnaires via social media. Data analysis used structural equation modeling (SEM) partial least squares with SmartPLS 3.0 software tools. The data testing stage is the convergent validity test which can be said to be valid

when the standard value of the factor loadings reaches a score of 0.4 to 0.7 and above. Test 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. Next, test the structural model (inner model) to test the causal relationship between latent variables or variables that cannot be measured directly by looking at the R-square value of the construct. The hypothesis of this research 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 confidence level of 95% (alpha 5 percent) then the T-table value for the hypothesis (two tailed) is ≥ 1.96 . The results of this research are that digital transformation has a positive and significant relationship to school performance, digital transformation has a positive and significant relationship to innovation, innovation has a positive and significant relationship to school performance.

Keywords: Digital Transformation, Innovation, Organizational Performance, Schools

Introduction

In this digital era, digital transformation is important in the school environment. Digital transformation can be defined as a process that aims to improve an entity by making significant changes to its characteristics through the application of information, computing, communication and connectivity technology. Digital transformation will provide opportunities for organizations to innovate operational performance. According to Kaputa et al. (2022) digital transformation affects three main parts of an organization, namely customer experience, operational processes, and business models. With digital transformation, businesses definitely need the right infrastructure, technology and platforms to implement. The goal of business transformation is to increase organizational capacity according to the needs of the business environment. According to Heubeck et al. (2023) Digital transformation cannot just happen but requires in-depth understanding and effective digital transformation management. The tighter the competition, the more companies will consider human resources as the main factor influencing organizational development. In an increasingly digital era, business capabilities have expanded to include the ability to apply and use digital technology effectively. The concept of corporate capabilities refers to the skills, knowledge, processes, and resources available to a company to achieve its strategic goals. Business capabilities involve the ability to synergistically integrate various business elements, such as human resources, technology, business processes, and policies. This involves developing and strengthening critical aspects that enable a business to operate effectively and efficiently.

According to Al-Edenat et al. (2023) providing facilities and infrastructure and also developing students' personalities and skills. At this time, school principals play a very big role and are required to have strong performance qualities. In fact, the quality of the school principal has developed into a widespread demand in society, as a criterion for the success and quality of the school which can be seen from the level of school accreditation. The community and government have high hopes that schools will be able to produce graduates who have good academic

achievements in accordance with community demands. For this reason, it is necessary to have a school principal who has good performance. In this regard, it can be seen that the success or failure of education and learning at school is greatly influenced by the principal's ability in each component of the school. According to Du et al. (2023) This ability concerns their knowledge and understanding of management and performance, as well as the tasks assigned to them, because it is not uncommon for failures in education and learning at school to be caused by school principals not understanding the tasks they have to carry out. Thus, whether the quality of a school is good or bad is largely determined by the quality of the school principal's performance. The performance carried out is very important because the development of educational activities/programs in each school is determined by the direction, guidance and vision that the school principal wants to achieve.

According to Hannan et al. (2023) Organizations competitively seek to increase digital transformation to improve customer relationships, operational processes and business models. Existing efforts have led to a shift in business activities towards digitalization at almost all operational levels in the organization. Shifting changes create new opportunities in improving the value chain in business tasks, business cycles, and improving organizational performance to be more effective, efficient and fast. This shows that the presence of digital transformation for organizations can build new skills and business models through digital technology in a deep and strategic manner. At the organizational level, the presence of digital transformation has become an important phenomenon that is taking place quickly and revolutionizing all activities. This phenomenon has an impact on almost all fields, one of which is education. According to Chen et al. (2023), digital transformation has a major influence on education in improving the teaching and learning process, educational activities, the education system, and even the performance of the educational community as a whole. More than that, digital transformation creates global competitiveness and competitive advantage in education quality. This is further emphasized by Purwanto (2022) that the role of digital transformation is to equip teachers to encourage skills and use of digital technology in dealing with and equipping students during learning. In addition, digital transformation can encourage teachers and employees to adopt innovations that focus on transferring and acquiring knowledge to solve problems or complete tasks with students.

According to Khan et al. (2021) Digital transformation is an organization's ability to use digital technology to improve the efficiency and effectiveness of internal operations and external market offerings. This change involves an organizational shift to big data, analytics, cloud, mobile and social media platforms. Digital transformation also drives innovation and change in society and industry through the use of digital technology. Companies need to design strategies that accommodate the implications of digital transformation and improve operational performance. According to Putritamara et al. (2023) Companies that successfully adopt digital opportunities such as analytics, big data, cloud, social media, and mobile platforms can build competitive digital business strategies. There is an increased focus on digital business opportunities and strategies,

with the aim of understanding how to exploit digital opportunities and drive innovation and transformation across the enterprise. Digital literacy is an individual's ability to use digital technology in various aspects of life, including work, learning, and entertainment. Digital literacy is influenced by everyday experiences and is a lifelong process. It involves the ability to gather and use knowledge, techniques, attitudes, and personal qualities in digital action to solve problems and complete tasks. According to Purwanto et al. (2023);Putritamara et al. (2023) Digital literacy is broader than just information communication technology literacy, and involves individuals' awareness of their digital literacy level as well as efforts to develop digital literacy.

The existence of digital transformation not only increases the ability of teachers and employees to adapt to using new technology, but also encourages the emergence of innovation to integrate digital solutions into education. The innovation carried out encourages skills and competencies to improve organizational performance, which is one of the most important goals for the organization. This was proven in research by Oliveira et al. (2022);Oeij et al. (2019);Purwanto et al. (2023) that 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 influence on organizations. Digital transformation and innovation support organizations to use digital connections to access computerized information and data bringing new practices and creative impetus to their business activities. In simple terms, digital transformation and innovation will make it easier for the learning process and school administration to run smoothly. In this research, digital transformation refers to a process of change that is based on innovative creativity through digital technology. According to Quaicoe et al. (2023) will encourage organizations to continue to improve and develop into changes that advance the organization based on innovation that facilitates teaching and learning and administration activities to create value. 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 an opportunity and a challenge, these two contradictory things depend on how educational institutions respond to digital transformation and innovation in the school environment. According to Oliveira et al. (2022) Digital transformation and innovation enable the development or refinement of new services for customers, namely students and parents, more efficiently and can fundamentally improve organizational performance to achieve competitive advantage. The aim of this research is to analyze the relationship between digital transformation and school performance, analyze the relationship between digital transformation and school innovation, analyze the relationship between innovation and school performance.

Method

This research uses a quantitative approach. The respondents used in this research were 450 teachers who were determined using a simple random sampling method from elementary school to high school level. The time given for filling out the questionnaire is 2 weeks. The researcher determined

each measurement instrument used to measure the research variables using a seven-point Likert scale starting with point 1 (strongly disagree) to point 7 (strongly agree). Data was obtained from distributing questionnaires via social media. Data analysis used structural equation modeling (SEM) partial least squares with SmartPLS 3.0 software tools. The data testing stage is the convergent validity test which can be said to be valid when the standard value of the factor loadings 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 be highly correlated. Reliability is the reliability or consistency of an attribute measurement. The reference used to see the adequacy of the level of reliability is using Cronbach's alpha and composite reliability values. The criteria for fulfilling the reliability of the questionnaire instrument are by looking at the Cronbach's alpha value greater than 0.6 and the composite reliability value greater than 0.7. Next, testing the structural model (inner model) to test the causal relationship between latent variables or variables that cannot be measured directly by looking at the R-square value of the Role of Digital Transformation and Innovation on School Performance in the construct. After that, to measure the supportability of the hypothesis, the researcher measures the p-value and compares the T-table and T-statistic values. This research hypothesis is said to be supported if the p-value is <0.05 (significant at the 5% level) and if the T value -the statistic is higher than the T-table value with a confidence level of 95% (alpha 5 percent), so the T-table value for the hypothesis (two tailed) is ≥ 1.96 .

The hypothesis of this research is

H1: Digital Transformation has a positive and significant relationship with school performance

H2: Digital Transformation has a positive and significant relationship with innovation

H3: Innovation has a positive and significant relationship with school performance

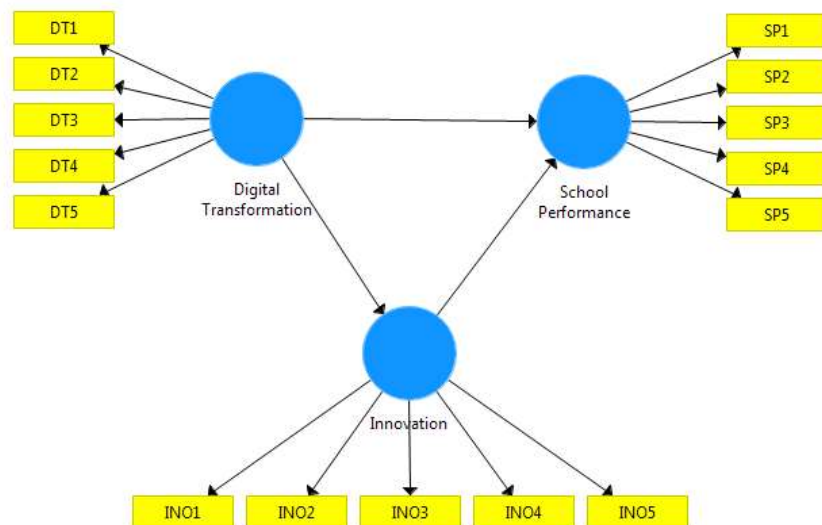


Fig 1. Research Model

Results and Discussion

Researchers carry out validity tests and reliability tests to test whether the research instruments used can accurately measure what they want to research. Researchers use convergent validity and discriminant validity. The results of the convergent validity test are said to be valid if the standard value of the factor loading is at least between 0.4 and better if it is ≥ 0.70 and is significant at the 1% level, then practically the measurement item meets the convergent validity criteria. explains the results of convergent validity testing in detail which are processed using the SmartPLS 3 statistical tool.

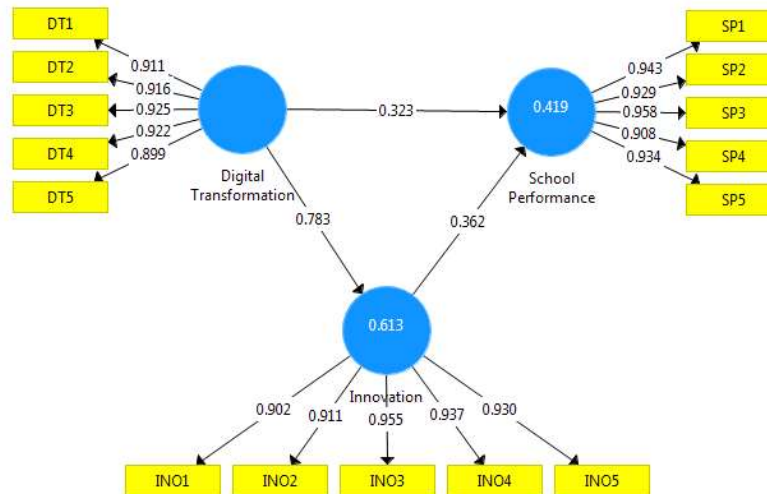


Fig 2. Validity Testing

Figure 2 shows the results of the convergent validity test that the indicators or items for each variable have met the requirements for convergent validity and are significant. Next, researchers also conducted a discriminant validity test. To evaluate the reliability of the questionnaire, you can look at the Cronbach's alpha and composite reliability values. The criteria for fulfilling the reliability of the questionnaire instrument are by looking at the Cronbach's alpha value greater than 0.6 and the composite reliability value greater than 0.7. Data processed in Table 2 shows that the Cronbach's Alpha value ranges from a minimum of 0.6 or more and the Composite Reliability value ranges from 0.7 or more. Thus, each measurement item can consistently and reliably measure each research variable.

Table 1. Reliability Testing

	Alpha Cronbach	Rho A	Composite Reliability	Average Variance Extracted (AVE)
Digital Transformation	0.787	0.798	0.843	0.787
Innovation	0.821	0.854	0.813	0.698
Organizational Performance	0.926	0.936	0.916	0.876

The hypothesis of this research 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 confidence level of 95% (alpha 5 percent) then the T-table value for the hypothesis (two tailed) is ≥ 1.96 .

Table 2. Hypothesis Test

	Original Sample (O)	T-statistics	P-value
Digital Transformation - Innovation	0.783	17.961	0.000
Digital Transformation - Performance	0.323	2.686	0.000
Innovation - Performance	0.362	3.155	0.000

The results of this research are that digital transformation has a positive and significant relationship to school performance, digital transformation has a positive and significant relationship to innovation, innovation has a positive and significant relationship to school performance.

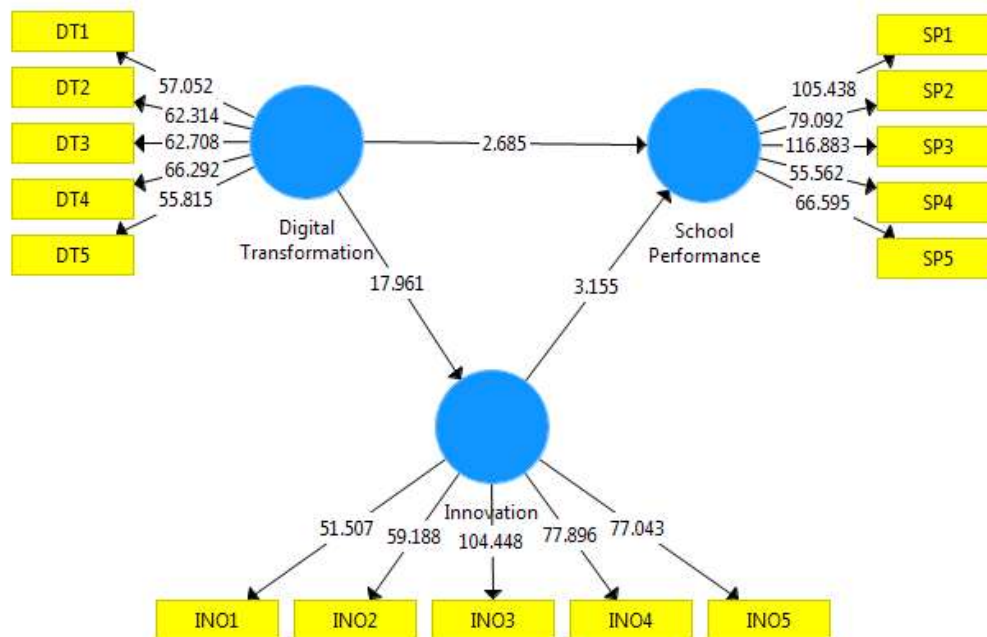


Fig 3. Hypothesis Testing

Discussion

The Effect of Digital Transformation on Organizational Performance

Based on the results of the first hypothesis analysis, it shows that digital transformation has a positive and significant effect on organizational performance which is based on the T-statistic value of 2.685 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 by Zoppeletto et al. (2023) that digital transformation has proven to be productive in improving school performance. The role of digital technology makes internal school operations run quickly and easily. In this case, digital transformation is not only effective for

streamlining school processes, but also presents opportunities for value creation and school growth, thereby improving school performance to achieve competitive advantage. At the school level, digital transformation plays a role for organizations to build and maintain competitive advantages in the digital era. Digital transformation plays a critical role in ever-evolving school operations to increase customer satisfaction and reduce operational costs. The implications of digital transformation show that digitalization can influence school performance. According to Wang et al. (2023);Xiao et al. (2019) also stated that successful digital transformation depends on school organizations being able to develop several capabilities in various fields and these capabilities differ depending on the particular sector as well as the specific needs of the school organization. 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 ultimately results in improved school organizational performance.

According to Zhang et al. (2023);Zoppelletto et al. (2023) Digital transformation is a process of significant change in the use of digital technology to achieve school goals through optimizing school processes, using data, and developing more innovative products and services. Digital transformation is the use of technology that aims to radically improve a company's performance and reach by changing customer relationships, internal processes, and value propositions. Digital transformation can help businesses increase efficiency, productivity and competitiveness in the market. Digital transformation can also be seen as the process of using digital technology to increase operational efficiency, reduce costs, increase innovation and improve customer experience. According to Yang et al. (2023); Zoppeletto et al. (2023) Digital transformation as a process aimed at improving a particular organization, producing significant changes in its characteristics with a combination of information, computing, communication and connectivity technologies. In today's world, it is very important for businesses to carry out digital transformation in order to remain competitive in their respective markets. There are several strategies and factors that need to be considered when achieving digital transformation. A true digital transformation process requires good and effective data security because there are proven threats of digital data leakage and cyber crime. Good and effective security involves analysis, implementation, updating and monitoring comprehensive .After that, the strategy implemented by the company was to reorganize and start the process of changing the company's internal structure and economic model.It is true, transformation refers to changes that can have a big impact on organizational culture.There is also a need to understand the mechanisms of digitalization and build a common understanding in organization. This may involve training employees on new technologies and encouraging experimentation and risk-taking. Digital transformation also involves developing a strategic vision, planning and implementation. To develop this strategy, business leaders need tools that help understand the phenomena and current state of the organization, as well as good cooperation and communication between various parties. In the process of implementing digitalization, resistance to digitalization raises the risk of implementation failure.

The Effect of Digital Transformation on Innovation

The second hypothesis shows that digital transformation has a positive and significant effect on school innovation with a T-statistic value of 17.961 and a p-value of $0.000 < 0.05$. The results of this research are in line with research by Suwanto et al. (2022); Shin et al. (2023) that digital transformation has a positive effect on school innovation. Digital transformation not only facilitates business operations, but also drives innovation in products, services and business models. Innovation is a strategic goal of digital transformation to encourage school organizations to gain greater benefits through digitalization. These findings prove that a school organization that has a strong digital orientation can open up opportunities to improve and expand the organization's operations and services. With these results, it can be concluded that the third hypothesis is supported. Digital transformation allows school organizations to utilize digital connections to gain access to human resources, data, information and knowledge. The transformation process involves innovation as the ability to adapt in facing new challenges as well as changes in attitudes to accept new practices and innovative initiatives in school organizational operations. This means that school organizations need to have the ability to manage and utilize digital technology in the school innovation process. Research findings; Sanina et al. (2023); Sui et al. (2023) also show results that digital transformation can increase innovation. Digital transformation can accelerate the innovation process by integrating the power of existing resources and technology in school organizations. Thus, digital transformation enables the creation of new innovations among business partners in the value chain that can open up opportunities to improve and expand services.

With digitalization, it is hoped that schools can gain more benefits, including increasing income through more efficient processes and faster and better quality production. The digitalization process itself must be supported by transformation that is in line with company goals. Digital Transformation identifies the importance of planning and strategy as a step in implementing initiatives. According to Rof et al. (2020); Sanina et al. (2023) this digital transformation will also affect the company's value proposition, key partners, and revenue, so management must always be aligned with company goals. As one of the most important factors supporting digital transformation, the human aspect is the most important factor because it is directly related to the process of digitalization and change. This is also supported by the findings of Tsou et al. (2023) which highlights the importance of technical capabilities and change management of stakeholders so that digitalization can be carried out well in companies. Digital transformation in HR has become a topic of interest for HR researchers in the last decade, of course it has also become the focus of attention of many HR professionals. The main reason for digital transformation in HR is because digital technology has the potential and ability to change HR as we know it today to become more efficient. Digital transformation impacts organizations in various ways. The largest expected impact is on the organization's value proposition, the customer segments that can be identified and served, the way the organization reaches customers, and the resources available. Based on a literature review, According to Shin et al. (2023) states that the impact of digital transformation can be grouped into four main topics, namely: impact on customers and customer

relationships, impact on value creation and business models. impact on company internal and organizational structure, impact on processes and efficiency Based on research; Rof et al. (2020);Sanina et al. (2023);Sui et al. (2023) that digital transformation touches on three main parts of the organization, namely customer experience, school operational processes.

The Effect of Innovation and School Performance

The third hypothesis also shows that the hypothesis is supported. The T-statistic value is $3,155 \geq 1.96$ and the p-value is $0.000 < 0.05$, meaning that innovation has a positive and significant effect on organizational performance. The results of this research are in line with the findings of Wang and Wang (2012) that innovation is one of the key factors that influence school organizational performance. Innovation drives convenience, novelty, broad reach, and contributes to competitiveness which ultimately influences organizational performance. Another study by Oeij et al. (2019);Purwanto et al. (2023) have also proven that innovation will make school organizations more efficient and create positive dynamics that have an effect on improving organizational performance. This emphasizes that innovation is seen as a key competency for organizations to survive in a dynamic and competitive environment, maintain competitive advantage, and improve school performance. Thus, innovation can increase organizational efficiency, add potential value, and bring intangible resources to be more responsive to customer needs and able to develop more capabilities that lead to better organizational performance. Innovation at the organizational level is defined as a technology, strategy , or management practices used by organizations or other users who have adopted digital technology or not, or as a significant restructuring or improvement in a process . Innovation improves organizational performance through improving product/service quality, introducing new products/services in a timely manner, and responding well to customers. Previous research has proven a positive relationship between innovation and organizational performance. The research results of Quaicoe et al. (2023);Oliveira et al. (2022) found evidence that organizations that utilize innovation and digital potential gain great benefits in carrying out and facilitating organizational activities. It is not surprising that organizations with great innovation demonstrate their ability to develop new capabilities and respond to the ever-evolving business climate for the advancement of their school organizations.

According to Quaicoe et al. (2023);Oliveira et al. (2022) creativity has a positive and significant influence on school performance, where the higher the creativity, the higher the employee performance. According to research by Nousopoulou et al. (2022) creativity has a positive and significant influence on employee performance, where employees have special skills in solving problems in school work, so that the work done is completed on time and more effectively and more accurately. According to Quaicoe et al. (2023) creativity has a positive and significant influence on employee performance, where creativity is a factor that influences school performance. According to Purwanto et al. (2023);Putritamara et al. (2023) indicators of creativity are curiosity, optimism, flexibility, looking for solutions to problems, originality, likes to imagine.

According to the research results of Nousopoulou et al. (2022);Quaicoe et al. (2023) innovation has a positive and significant influence on employee performance, the better the innovation carried out by employees, the better the employee's performance. According to research by Oeij et al. (2019) innovation has a positive and significant influence on school performance where new ideas or ideas in solving existing problems can improve performance. According to research According to Khan et al. (2021); Oliveira et al. (2022) innovation has a positive and significant influence on employee performance, if employees have high levels of innovation it can have a positive impact and influence school performance.

The results of this study also support previous research conducted by Shin et al. (2023);Tsou et al. (2023) stated that innovation has a positive effect on employee performance, meaning that the better the innovation carried out by employees, the better the employee's performance. According to Ren et al. (2023) innovation has a positive and significant influence on employee performance, where new ideas or ideas in solving existing problems can improve performance. According to Sui et al. (2023) innovation has a positive and significant influence on employee performance, if employees have high levels of innovation it can have a positive impact and influence employee performance. The results of this research also support previous research conducted by Sanina et al. (2023); stating that creativity and innovation have an influence positive impact on employee performance, meaning that the higher the employee's creativity and innovation, the more directly the employee's performance will increase. The results of this study are in line with previous research conducted by Suwanto et al. (2022) stated that innovative creativity has a positive effect on employee performance, meaning that the better the creativity and innovation carried out by employees, the better the employee's performance.

Conclusion

In conclusion, the findings of this research support and prove the results of previous research that digital transformation positively influences organizational performance and innovation, as well as confirming the direct influence of innovation on organizational performance. The contribution of this research is aimed at various literature related to the role of digital transformation and innovation on organizational performance. Meanwhile, for practical implications, digital transformation and innovation can improve organizational performance, especially for schools. It is hoped that the research results can further strengthen schools to better equip teachers and employees to take advantage of opportunities in the digital era, especially to reach wider services to their students. Apart from that, this research still has limitations that must be corrected in future research. First, the number of respondents for this study was limited to teachers and school employees. It is hoped that future research can involve more respondents from the education sector so that the research results are more diverse. Second, the data collection for this research was through a survey with a questionnaire, the answers were very much based on the respondent's perception so that the respondent's exploration of information was limited. Future 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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