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Digital Leadership Competencies to Improve the Quality of High Schools in Tasikmalaya City in the Post-Pandemic Covid-19

Krisna Sujaya[1]

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ABSTRACT

Purpose: The objectives of this study are separated into two parts. The first step is identifying how digital leadership implementation will proceed following the Covid-19 pandemic. The second objective is to investigate digital leadership's effects on improving senior high school quality in Tasikmalaya City, West Java, Indonesia. **Design/methodology/approach:** Using a rating scale questionnaire, the study collected primary data. Respondents in this study were high school personnel in the Indonesian city of Tasikmalaya. For data collection, a random sample method is used. **Findings:** According to this study, when organizational leaders can deliver digital leadership services to their subordinates, the company is better able to adapt, innovate, compete, and evolve following its vision and goal. Furthermore, all of these changes will have a favorable effect on the organization's quality. **Research limitations/implications:** The practical and theoretical ramifications of the current study are significant due to the addition of new relationships to the understanding of school education and the presentation of a path forward for its application. **Originality/value:** The research model is innovative since previous studies have not addressed the digital leadership system in the setting of Indonesian senior high schools.

[1] Indonesian University of Education, Bandung Indonesia
Email: krisnasujaya@upi.edu; https://orcid.org/0000-0002-3145-1897

1. Introduction

According to several experts, the use of online media during the epidemic led to a decline in the quality of education. Unfortunately, the preceding opinion is not supported by the findings of extensive research conducted by numerous specialists. According to Rusek et al. (2017), the quality of schools during the pandemic was comparable to that before the outbreak. The school performance rate grew by 3.5%, teacher performance rose to 93%, and online teacher attendance reached 100%. An attendance rate of 100% is only achievable during a pandemic. One of the reasons is that the amount of human movement is limited. The instructor only focuses at home and does not engage in activities outside the home so that the online learning process may be carried out with 100 percent presence.

As a leader, the principal requires that all instructors have internet access for educational purposes. The school principal provides teachers with brief instruction, and teachers work hard to adapt to the learning process. Online, commands, instructions, and persuasion are administered. The principal has never met the teacher. Online learning and internet media are utilized throughout the training process. The complete process of planning, implementing, evaluating, regulating, and developing (PPEPP) takes place online. This makes it easier for organization members with a high level of computer literacy. Still, it becomes a barrier for those who can no longer fully utilize technology. This situation is widespread due to age, amount of education, commitment to learning IT, and resistance to change (Saputra, 2021).

In this study, the inadequate quality of high school education in Indonesia and Tasikmalaya City stands out as the most significant issue. Only 3.0% of 235 schools were in the excellent category, while 16.3% were in a good category, 34.7% were in the poor category, and 46% were in the very low category. According to additional statistics, most high school teachers in Tasikmalaya City had only a bachelor's degree (97.4%), 2.4% earned a master's degree, and only 0.2% obtained a Ph.D. Despite the proliferation of postgraduate programs at postsecondary institutions, the number of high school teachers with master's and doctoral degrees is still quite low. Other data indicates that only 4.2% of teachers have above-average competency, 89.8% have average competence, and 6.0% have below-average competence. The education and training of teachers with below-average competency should include workshops, seminars, symposiums, non-degree education, postgraduate education, and others.

A growing number of honorary teachers in Tasikmalaya City have not been hired as teachers with government employee status through a special arrangement, exacerbating the difficulties of high school teachers (P3K). Only 3.1% of high school teachers are appointed as teachers with status above the average each year, whereas 96.9% of honorary teachers who register and take the test fail and must wait in line the next year. Reading the above problems, the low quality of education in Tasikmalaya City is due to the following: there are very few schools in the superior category, the majority are only in the good and poor categories, the level of teacher education is still low, only Bachelor's degrees, the majority have not attained a master's degree, teacher competence is still quiet, unable to achieve maximum competence, and there are still many honorary teachers who receive funding from the government. Therefore, academics have a transient belief that when digital leadership is correctly applied in high schools, the quality of education may improve.

Results of prior investigation According to Rosacker, Ragothaman, and Gillispie (2009), with good digital leadership, the quality of schools will be high because of the process of providing direction, input, persuasion, and all aspects of coordination between the principal and all school stakeholders are open, democratic, adaptive, and consistently oriented toward the vision and mission of the school. However, other researchers assert that leadership cannot influence school quality, whereas teacher performance, teacher dedication, facilities and infrastructure, curriculum, assessment system, and funding can influence school quality. Aspects of the management process, particularly the principal's coordination and leadership, are insignificant. Reading about differences in the findings of previous researchers piques the curiosity of researchers in studying the impact of digital leadership on improving the quality of senior high schools. The originality of this study resides in the digital era's administration, which enables the process of planning, implementing, assessing, controlling, and enhancing to be conducted online, producing even better results.

The objectives of this study are separated into two parts. The first step is identifying how digital leadership implementation will proceed following the Covid-19 pandemic. The second objective is to investigate digital leadership's effects on improving senior high school quality in Tasikmalaya City, West Java, Indonesia. The research model is innovative since previous studies have not addressed the digital leadership system in the setting of Indonesian senior high schools. In addition, the practical and theoretical ramifications of the current research are significant due to the addition of new linkages to the understanding of school education and the presentation of a path forward for its application. In addition, the research's future directions are a means to investigate other literature.

2. Literature Review

Leadership is the effort made by managers to carry out their management responsibilities effectively, beginning with planning, implementing, organizing, and assessing (Homsombat et al., 2021). Leadership is the purposeful effort made by an organization's leadership to achieve its vision, mission, goals, and strategic objectives (Homsombat et al., 2021). Leadership is the most critical factor in the organization's ability to compete successfully. Leadership is the most important factor in achieving organizational sustainability (Leroy et al., 2022). Digital leadership is a management strategy used by leaders that employ advanced digital technology from planning to activity evaluation (Thomas et al., 2020). Digital use is not restricted to administrative facets; it also addresses the raw material selection, production processes, packaging, promotion, sales, product delivery to clients, and product quality enhancement (Wolmarans, 2005). Effectiveness of digital leadership in leading enterprises, including non-profits, increases (Nnaji & Uzoigwe, 2021). Managers exert considerable effort to fulfill their digital managerial tasks (Skaalvik, 2020). One of the measures taken is employing digital technology across the board, inspiring others to attain company goals (Pesonen, 2003).

To ensure the survival of an organization, it is necessary to achieve its goals (Lumpkin & Favor, 2013). Organizational objectives serve as a roadmap for the organization's implementation of all long-, medium-, and short-term strategies (Velarde, Adams, & Ghani, 2020). Organizational advancement depends on leaders accountable for the organization's survival (Agustina, Kristiawan, & Tobari, 2021). The aspects and indicators of organizational

development include enhancing performance graphs, output, and revenue. The greater an organization's performance, the greater its chances of succeeding in competition with other comparable companies (Baloch et al., 2017; Changwong, Sukkamart, & Sisan, 2018). The organization will not survive if it loses in the marketplace. Regarding school organizations, digital leadership possessed by school principals, particularly in high schools, will contribute significantly to the development of a school (Cheung & Wong, 2011; Kusumaningrum, Sumarsono, & Gunawan, 2018). Digital leadership, as is well-known, enables schools to create digital data that they truly need and that will provide good meaning to enhance the quality of school data (Bandur, Hamsal, & Furinto, 2022).

All student data becomes digital. All digital data on pupils is retained in the school from enrolling as students until they are declared passed (Munge, Kimani, & Ngugi, 2016). Student personal information, beginning with the location of parents, address, date of birth, hobbies, intelligence level, history of illness or permission not to attend school, parents' occupation, delinquency at school, various forms of disciplinary violations at school, report card grades for each semester, and high school diploma (Nnaji & Uzoigwe, 2021; Skaalvik, 2020; Velarde et al., 2020). All educational content has been converted to digital format, including learning document data such as learning syllabi, learning process designs, question grids, exam questions, semester examinations, and final exam questions (Lumpkin & Favor, 2013). Digitalization of student grades makes it difficult for unscrupulous parties to alter them. Student performance data is very sensitive information. Hence its storage in digital format will provide security assurance. This information is crucial for schools and kids when college enrollment is imminent (Bandur et al., 2022).

According to past studies, an organization's performance improves as its digital data quality increases. When a company lacks digital data, the opportunity to lose very vital data will be vastly increased (Homsombat et al., 2021). There are several advantages to employing digital data in digital management, such as the fact that there is no longer a fear of losing valuable data and no need to maintain a significant amount of physical data (Wolmarans, 2005). Digital leadership focuses more on the role of leaders in exploiting digital data in an organization's management process. Regarding education, digital leadership is required given that all educational data are crucial and some are even sensitive. Therefore, the time is now to establish digital leadership that will enable you to beat the competition. At the very least, the deployment of digital leadership will improve the performance of for-profit and non-profit organizations, such as schools, substantially (Moss, 2008). The greater the school's digital leadership implementation, the greater the school's success, which has ramifications for the overall quality of schools (Pesonen, 2003).

On the other hand, if the school principal's digital leadership is not optimal, then the school's quality will also not be optimal. As a government agency that oversees and is accountable for school quality, the Education Office must now require high school principals to adopt digital leadership effectively (Lumpkin & Favor, 2013). With a well-implemented and structured monitoring and evaluation process, all stakeholders can be confident that the activities' implementation will flow smoothly and be effectively managed. When the findings of monitoring and evaluation conducted in schools are unsatisfactory, the monitoring and evaluation process is continued with a good follow-up process in the form of improvements. When the results are positive, the improvement process is repeated so that the school's vision and mission can be implemented effectively in the future (Changwong et al., 2018).

A school principal who can exercise digital leadership can enhance school performance, bringing the school to a level of excellence (Kusumaningrum et al., 2018). The digital leadership of the principal, all vice principals, and all instructors will have a tremendously favorable effect on improving school quality in terms of graduates and other qualities. Digital leadership capable of implementing digitization in all parts of education in schools will positively impact teacher and education staff performance, which has both practical and management consequences for school success (Munge et al., 2016). Schools that do not apply digital leadership will undoubtedly face many challenges, find it difficult to develop, find it difficult to meet the school's vision and mission, find it difficult to compete, find it difficult to innovate, and will have low overall quality. The quality of a good school is the school's obligation to the community whose students are entrusted to the school (Yunas, 2014). The quality of schools is inextricably linked to the quality of graduates, the number of graduates who join tertiary institutions successfully, and the number of graduates who can be accepted into the industry and create jobs.

Digital data generated by the education council in each district/city substantially contributes to enhancing the quality of school administration, which has consequences for improving the quality of schools as a whole (Pesonen, 2003). Certainly, the quality of information technology and digitalization of all elements determines the quality of a good school. It will be challenging for an institution to increase its quality if it disregards digital data. According to the research conducted by Bandur et al. (2022), strong digital leadership would boost a school's development. Therefore, in the current era of digitization, the victors of the fierce competition are those who can master digital data.

Digital leadership on curriculum, learning processes, school management, school financing, buildings and infrastructure, teacher and educational staff resources, and evaluations are exercised and archived by school principals (Munge et al., 2016). This will tremendously impact the present and future quality of education. The research conducted by Wolmarans (2005) revealed that all educational criteria, spanning from curriculum to funding, are implemented digitally, kept digitally, and used in rankings to improve the performance and quality of senior high schools in Tasikmalaya. School principals should always be mindful of the eight national education standards when exercising digital leadership so that the implementation and management of schools conform with the law governing the national education system.

When exercising digital leadership, school principals must adhere to the eight national education standards stipulated by the laws of the Republic of Indonesia. When the eight National Education Standards do not lead school administrators, it won't be easy to meet accreditation requirements and workplace needs (Bandur et al., 2022; Homsombat et al., 2021; Wolmarans, 2005). Community members, in this example, students and their parents, shall get educational services following national education standards so that there is no variation in the quality of education services throughout Indonesia. The research conducted by Cheung and Wong (2011) revealed that the digital leadership process would be isolated from the digital implementation of the eight national education standards. Therefore, the practice of digital leadership post-pandemic over the previous two to three years provides a favorable and strong impression that digital leadership, as implemented, is truly required. Using this literature as a foundation, the following assumptions are developed: (see Figure 1).

Hypothesis 1: *Competencies of principals have an impact on school digitalization.*
Hypothesis 2: *Competencies of teachers have an impact on school digitalization.*
Hypothesis 3: *Innovation adoption moderates the relationship between the competencies of principals and school digitalization.*
Hypothesis 4: *Innovation adoption moderates the relationship between teachers' competencies and school digitalization.*

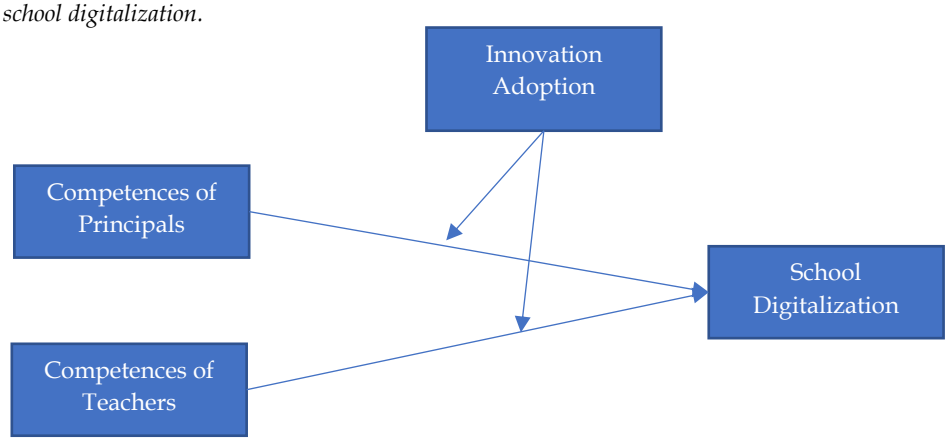

Figure 1. *Research Framework*

3. Methodology

The questionnaire used to acquire "primary data" was a rating scale. These elements are derived from many prior investigations. The scale elements are derived from the research by Utami et al. (2020) to quantify the direct impact of principals' digitization competencies. In addition, the scale items are derived from Antera et al. (2022) research to assess the direct impact of teacher competencies on school digitalization. In addition, the scale items are drawn from Rusek et al. (2017) to examine the moderating effect of innovation adoption on the relationship between principals' competencies and school digitalization. Similarly, similar factors are utilized to assess the moderating effect of innovation adoption on the relationship between teacher competencies and school digitalization. Finally, the study used the data from Gupta, Seetharaman, and Maddulety's (2020) study to analyze the influence of school digitalization on innovation adoption, principal and teacher competences, and principal and teacher competencies.

In addition, the respondents of this study were high school personnel in the Indonesian city of Tasikmalaya. When the research population is known, a "random sampling technique" is employed to gather data. Respondents were contacted at various high schools because many scholars support this method as a legitimate way to collect data. Before presenting respondents with the questionnaire, verbal consent was obtained from them. In addition, these respondents were asked to react using a "rating scale" because this data-gathering method is appropriate. Finally, this research has collected this substantial data to analyze and determine its findings. This study has investigated the "partial least square" method for data analysis, which is deemed suitable for "social sciences" research. The finalization of the study was based on the findings of "convergent validity," "discriminant validity," and "path findings."

4. Findings

This study of research data utilized the "partial least square" method. However, the "reliability" and "validity" of the research are evaluated at the outset. The research determined the values of "Cronbach alpha, composite reliability, extracted average variance, and factor loadings" for the study's conclusions. The values for "Cronbach alpha > 0.80", "composite reliability > 0.70", "average variance extracted > 0.50", and "factor loadings > 0.60" (dos Santos & Cirillo, 2021; Field, 2013; Raykov, 1997) are listed in Table 1 (dos Santos & Cirillo, 2021; Field, 2013; Raykov, 1997), as determined by the study. Consequently, the "measurement model" demonstrates that the "reliability" of this investigation is adequate.

Table 1

Convergent Validity

Construct	Items	Factor Loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted
Competencies of Principals	CP1	0.895	0.959	0.966	0.804
	CP2	0.901			
	CP3	0.893			
	CP4	0.873			
	CP5	0.902			
	CP6	0.913			
	CP7	0.902			
Competencies of Teachers	CT1	0.878	0.962	0.968	0.813
	CT2	0.908			
	CT3	0.919			
	CT4	0.919			
	CT5	0.886			
	CT6	0.907			
	CT7	0.892			
Innovation Adoption	IA1	0.799	0.931	0.944	0.706
	IA2	0.804			
	IA3	0.783			
	IA4	0.863			
	IA5	0.891			
	IA6	0.868			
	IA7	0.866			
School Digitalization	SD1	0.913	0.957	0.964	0.795
	SD2	0.926			
	SD3	0.923			
	SD4	0.862			
	SD5	0.887			
	SD6	0.862			
	SD7	0.864			

In this research, the "Heteritrait-Monotrait (HTMT)" method was employed to determine "discriminant validity." Gold, Malhotra, and Segars's (2001) research state, "HTMT is statistically significant when the values of each construct are less than 0.90." The results of this study are presented in Table 2, emphasizing the research's "discriminant validity."

Table 2

Discriminant Validity

	Competencies of Principals	Competencies of Teachers	Innovation Adoption	School Digitalization
Competencies of Principals				
Competencies of Teachers	0.867			
Innovation Adoption	0.829	0.792		
School Digitalization	0.774	0.711	0.648	

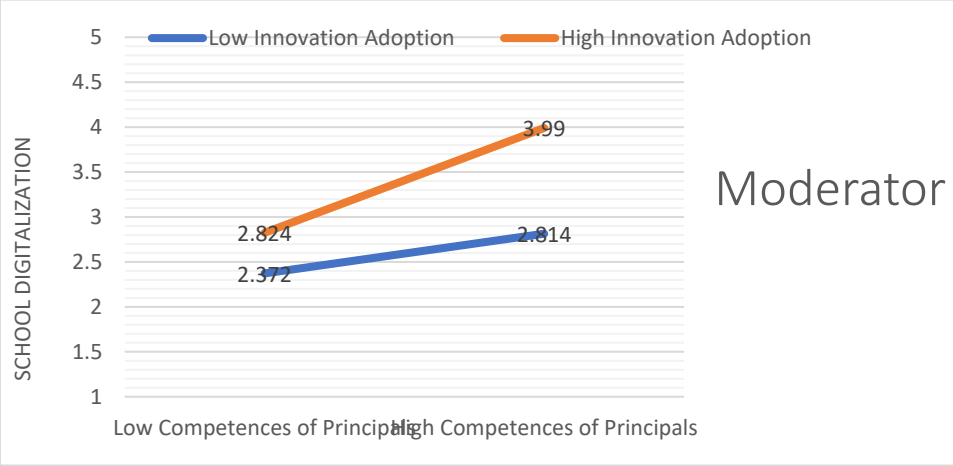

Figure 2. *Moderating Effect 1*

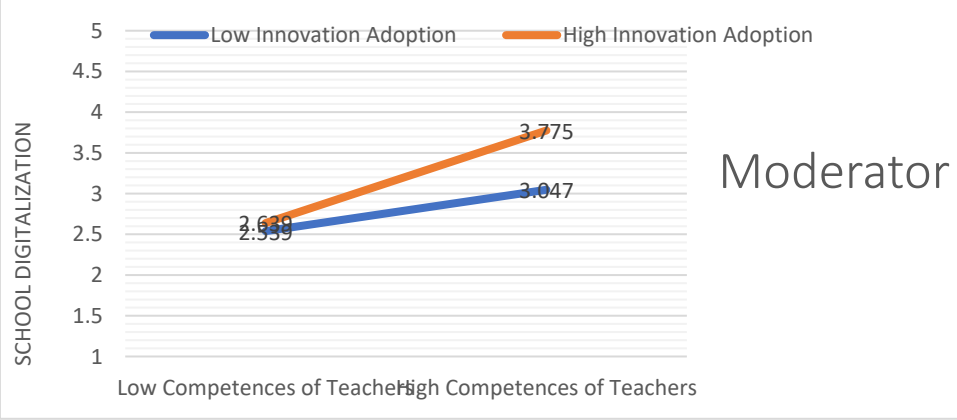

Figure 3. *Moderating Effect 2*

The findings of the "direct" and "moderating" hypotheses of this research have been determined (see Table 3). Principals' competencies have a substantial and beneficial effect on school digitalization, as demonstrated by Hypothesis 1 outcomes. Similarly, Hypothesis 2 posits that teacher abilities directly and positively affect school digitalization. In addition, the results of Hypothesis 3 indicate that innovation adoption positively moderates the association between principals' abilities and school digitalization. Additionally, innovation adoption reinforces this association between principals' skills and school digitalization (see Figure 2). In addition, the results of Hypothesis 4 indicate that innovation adoption positively moderates the association between teacher competencies and school digitalization. Additionally, innovation adoption reinforces this association between teacher competencies and school digitalization (see Figure 3).

Table 3

Path Results

	Original Sample	Standard Deviation	T Statistics	P Values	Status
Competencies of Principals -> School Digitalization	0.402	0.090	4.466	0	Accepted
Competencies of Teachers -> School Digitalization	0.411	0.067	6.134	0	Accepted
Moderating Effect 1 -> School Digitalization	0.181	0.032	5.656	0	Accepted
Moderating Effect 2 -> School Digitalization	0.157	0.021	7.476	0	Accepted

Significance = $t > 1.96$ and $p < 0.05$

5. Discussion

The research findings are about the tactics taken by the leadership (school principal) in implementing digital leadership, such as executing the process of school activities beginning with the admission of new students and ending with graduation based on digital data. The study found that high schools in the city of Tasikmalaya have implemented digitization at all stages, beginning with new student admissions, completeness of student administration, completeness of educational process files, HR administration, student data, student grades, violations students have committed, student transfers, report cards on results of student learning, student class expansion, student academic and non-academic accomplishments, and student graduation. According to Lee and Nie (2017), the digitization process has been in effect since students registered to become state high school students; everything has been done digitally, and the process continues until students graduate; all data has been inputted digitally so that it will not be lost even in the event of natural disasters, fires, or other riots. The digitization process is also incorporated into the school planning procedure to carry out various school activities that contribute to the realization of the school's vision and mission.

Similarly, the researchers also evaluated the planning process for numerous digital school activities. All students in public high schools must submit their plans online. The strategic planning done every five years and operational planning done every year are done digitally, even if not open access. However, they are all recorded in the school's memory, which is linked to the memory of the city education office. In addition, these findings confirm the findings of previous research conducted by Homsombat et al. (2021)

that the planning process for various school activities that will be used to achieve the school's vision and mission has been digitally stored to ensure the security of long-, medium-, and short-term planning data. The digitization process can also be observed in the execution of actions that are all accurately recorded digitally (Wolmarans, 2005).

In addition, the study determined that in all government-owned senior high schools in Tasikmalaya City, the process of implementing activities has been meticulously documented in the form of monthly, quarterly, semiannual, and annual activity reports. This activity report is a form of accountability for school principals engaged in digital leadership, allowing monthly monitoring of graphs depicting rising objective achievement. Therefore, according to the findings of a previous study by Pesonen (2003), the process of reporting activities carried out by data officers, reporting on education or abbreviated as "Dapodik" in Tasikmalaya City, has been carried out very well following recommendations from the Ministry of Education and Culture of the Republic of Indonesia (Changwong et al., 2018; Lumpkin & Favor, 2013). With the help of officers who manage educational data and reporting, organizing numerous school activities has also been conducted digitally (Munge et al., 2016).

The investigation also revealed that the procedure of organization utilized by high school principals in Tasikmalaya City is fully digital. Coordinating all operational plan activities has been conducted using digital apps whose operations are performed by the education data and reporting division. They are responsible for providing periodic and even daily updates on coordinating school activities. In agreement with the findings of earlier studies by Homsombat et al. (2021), organizing as a means of performing school management functions has been carried out highly effectively. In the context of realizing the vision and goal of senior high schools in Tasikmalaya City, all organizing efforts have been proceeding smoothly. It has also been digitally documented in conjunction with evaluating actions related to implementing the full operational plan. The education statistics and reporting unit, which is responsible for each school and operates under the direction of the principal, has performed admirably. They are responsible for reporting the findings of the evaluations conducted by the school to identify various shortcomings and deficiencies in implementing activities.

In addition, the survey found that all state-funded senior high schools have reviewed and monitored school activities. The results have been reported in detail and programmed by the principal, who is aided by the education data and reporting division. By reporting the findings of monitoring and assessment, it is intended that various inadequacies or weaknesses can be recognized as early as possible so that the school principal and the Tasikmalaya municipal education office can quickly regulate or remedy them. In addition, these results confirm the findings of previous research conducted by Kusumaningrum et al. (2018), which state unequivocally that the implementation of monitoring and evaluation can be carried out correctly and that all of them have been reported digitally periodically by the education data and reporting section located in every school.

Similarly, this study explored whether the follow-up conducted by the school principal and the education office of the city of Tasikmalaya was based on digital data supplied by the education data and reporting section. Follow-up on monitoring and evaluation results is confined to two actions: addressing flaws in implementing activities or enhancing the quality of education services when monitoring and evaluation results are favorable. The findings

lend support to the conclusions of prior research. According to Homsombat et al. (2021), in the execution of follow-up, everything is based on digital data from monitoring and evaluation outcomes carried out by the principal's leadership, who is aided by the school's education data and reporting section. Digital supervision exercised by organizational leaders can only be successful if it is executed in seriousness, beginning with planning, implementing, organizing, reviewing, and then following up. The entire process of digital leadership will be more efficient when supported by sections such as the Data and Reporting section, which will detail the implementation of all management functions to meet the organization's vision and goal. When organizational leaders can deliver digital leadership services to their subordinates, the company is better able to adapt, innovate, compete, and evolve according to its vision and mission, according to the findings of this study. All of these improvements will contribute to the enhancement of the organization's quality.

6. Implications

Theoretically, this research has enhanced the literature on school quality by developing and presenting new linkages. In addition, the study has contributed to the body of knowledge by illustrating the relationship between principals' competencies and school digitization. Similarly, the study has contributed to the body of knowledge by explaining the connection between teacher competencies and school digitalization. In addition, the study has contributed to the body of knowledge by highlighting the relationship between principals' competencies and school digitalization as an important moderator of innovation uptake. Finally, the study has contributed to the body of knowledge by establishing the relationship between teacher competencies and school digitalization as a moderating factor for innovation uptake. In this way, the moderating relationships of this study are produced in a framework that is unique within the body of knowledge and literature.

When digital leadership can use the complete process of implementing management functions, including planning, implementation, organizing, evaluation, and follow-up, utilizing the digitalization process, these management functions will be implemented successfully and efficiently. Moreover, in the context of senior high school education, the process of implementing management functions has been carried out digitally by the school principal with the assistance of the Education Data and Reporting Section (DAPODIK), which is located in each education unit, including senior high school education units. By implementing the conclusions of this study, all student data, learning data, evaluation results data, and important education-related data can be stored safely and orderly in school folders and city district offices. According to this study, when organizational leaders can integrate all management functions based on digital data, it will favor the organization's overall quality. Regarding the quality of digital leadership in the senior high school education unit of Tasikmalaya, all school principals have implemented digital leadership with the assistance of the education data and reporting department. Consequently, the city's quality of senior high schools may compete with schools from other regions. In delivering educational services to the community, the school demonstrates a high level of creativity, commitment, and responsibility.

7. Future Directions

Significantly, this study found that when organizational leaders can deliver digital leadership services to their subordinates, the organization is better able to adapt, innovate,

compete, and evolve following its vision and mission. Moreover, all of these improvements resulting from this new research methodology will favor the organization's quality. However, this study model has several disadvantages. Future research is required to address these constraints. The study model is limited in that it has only addressed the capabilities of teachers and principals but not the role of supporting personnel in the quality digitalization of schools. Therefore, this study advised that the model be improved by incorporating the direct interaction between school support workers and digitalization initiatives. In addition, the study model is limited because it has only addressed the skills of teachers and principals about the moderating function of innovation adoption, but not the contribution of other mediators and moderators. This study advised that the model be improved by including the moderating relationship between new technologies, student acceptance of innovation, and quality education management practices. Therefore, scholars can contribute significantly to the corpus of knowledge by addressing these constraints.

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