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Exploratory Analysis Study and Correlations between the Principal's Leadership Style and the School's Digitalization System in Bandar Lampung City

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Abstract: Exploratory Analysis Study and Correlations between the Principal's Leadership Style and the School's Digitalization System in Bandar Lampung City. **Objectives:** This study aimed to describe the influence of the principal's leadership style on the school digitalization system according to school's accreditation and status. **Methods:** This research method used exploratory survey method with a questionnaire completed by 30 elementary school teachers in Bandar Lampung City. The data were analysed using descriptive statistics and non-parametric correlations test. **Findings:** The situational leadership style that elementary school principals generally applied in Bandar Lampung is the selling style. Nevertheless, the principals still showed 3 other leadership styles, namely: telling, participating and delegating; with proportions that are not much different. Unlike the digitalisation system, schools generally are still not optimal in implementing digital systems in schools. **Conclusions:** The principal's leadership style did not have a significant relationship to the school digitalization system.

Keywords: principal's leadership style, school's digitalization, correlation.

Abstrak: Studi Analisis Eksplorasi dan Korelasi antara Gaya Kepemimpinan Kepala Sekolah dan Sistem Digitalisasi Sekolah di Kota Bandar Lampung. ***Tujuan:*** *Penelitian ini bertujuan untuk menggambarkan pengaruh gaya kepemimpinan kepala sekolah terhadap sistem digitalisasi sekolah sesuai dengan akreditasi dan status sekolah.* ***Metode:*** *Metode penelitian ini menggunakan metode survei eksploratif dengan kuesioner yang diisi oleh 30 guru sekolah dasar di Kota Bandar Lampung. Data dianalisis menggunakan statistik deskriptif dan uji korelasi non-parametrik.* ***Temuan:*** *Gaya kepemimpinan situasional yang diterapkan oleh kepala sekolah dasar di Bandar Lampung adalah gaya penjualan. Meskipun demikian, kepala sekolah masih menunjukkan 3 gaya kepemimpinan lainnya, yaitu: mengatakan, berpartisipasi, dan mendelegasikan dengan proporsi yang tidak jauh berbeda. Berbeda dengan sistem digitalisasi, sekolah umumnya masih belum optimal dalam menerapkan sistem digital di sekolah.* ***Kesimpulan:*** *Gaya kepemimpinan kepala sekolah tidak memiliki hubungan yang signifikan dengan sistem digitalisasi sekolah.*

Kata kunci: *gaya kepemimpinan kepala sekolah, digitalisasi sekolah, korelasi.*

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INTRODUCTION

Advances in technology have enabled automation to occur in almost all fields. New technologies and approaches that combine the physical, digital, and biological world will fundamentally change the pattern of life and human interaction (Tjandrawina, 2016). The Industrial Revolution 4.0 as a phase of the technological revolution changed the way in which human activities took place in the scale, scope, complexity, and transformation of previous life experiences. Humans will even live in global uncertainty. Therefore humans must have the ability to manage every era that changes very quickly.

The world of education is one part that must adjust to the development of the industry. This is reinforced by the role of schools as formal educational institutions preparing students in facing the world independently. Therefore, schools need to present technology products as learning media or as a tool in creating an ICT-based education atmosphere (Information and Communication Technology). Thus, all school residents will get used to carrying out their responsibilities using ICT. As a result, the process of coordination and transfer of information can be carried out quickly.

The ease of use of these technologies can be an opportunity for schools to develop themselves by utilizing systems, workflows, and communication networks that are combined in smart devices to coordinate with each other (Liffler & Tschiener, 2013). Thus, schools that are able to implement digital products in academic activities in schools will be able to build an innovative work system. Without innovation, it is difficult to measure school success (Hall & Hord, 2011).

However, along with the high usefulness offered, there are consequences that must be accepted. The era in which school principals, educators, and education personnel equip themselves has experienced rapid progress. Activities in the current era are supported by digitizing technology. This is different from what is experienced by the principal, educators, and education staff. The advancement of information and communication technology has resulted in a gap between the skills they have and those that should be mastered (Sung, 2017). Therefore, schools need to manage the academic community to improve their knowledge and skills in applying the latest technology in every academic activity.

The importance of ICT-based innovation in school management and all its consequences is the responsibility of the school principal. Moreover, many studies stated that leadership behavior is an important predictor of its effectiveness (Jamal, 2014). One of the important roles in managing a school is leadership style. Principals need to determine and implement appropriate leadership styles to create an innovation climate that enables educators and education staff to be motivated in providing innovative services, especially in the Industrial Revolution Era 4.0 (Dunegan, Tierney & Duchon, 1992; West, 1990), where the power of connectivity allows for interactions between school members and certain devices that facilitate academic activities (Lee, Lapira, Bagheri & Kao, 2013). In addition, the principal needs to have a dynamic and flexible leadership style. The principal must continually assess the motivation, ability, and experience of the work partners to determine which style is most adequate with flexible and changing conditions. Thus, principals who want to develop work partners, increase their confidence, and help them learn about their work must change their leadership style constantly.

Each work environment has different individual characteristics, level of readiness, and level of behaviour. Individual readiness can be a mirror of the knowledge they have. Such knowledge is the basis for individuals to behave. Based on the behaviour displayed while carrying out the task, individual skills can be elaborated.

In one condition, there are individuals who have low knowledge and skills, but the individual is always willing to complete each given task. In other conditions, there are individuals who have the knowledge and skills to complete the task, but will not dare to be responsible for carrying out the task. The two conditions must, of course, be dealt with in different ways, adjusting to the characteristics of individual needs that are led so that the implementation of responsibilities can achieve the expected goals while developing individual competencies within an institution. Therefore, a leader needs to apply a different leadership style in dealing with individuals in one work environment by considering the needs of the individual or situational (Hariri, Ridwan, & Karwan, 2017).

Situational leadership style theory states that it would be better for principals to apply the commanding style (Telling) to individuals who are knowledgeable and of low willingness (Gill, 2011). Of course, this needs to be accompanied by rules and how to solve them. This will be different if the individual faced has a high enthusiasm in carrying out the task. The principal only needs to provide ideas and motivation to be understood and agreed upon by the individual in carrying out the task (Selling). When individual abilities have developed and have adequate knowledge and skills but are still hesitant in taking steps, the principal only plays a role in decision making (Participating). In contrast to individuals who have high education, skills and willingness. They want a little structural role in carrying out their duties (Vecchio& Boatwright, 2002). Therefore, the principal gives the individual freedom to make their own decisions and adjust to the way taken in carrying out responsibilities (Delegating).

Situational leadership provides flexibility for principals to apply the leadership style which is most appropriate to the situation and conditions. Especially if this flexibility in leading is accompanied by continuous innovations and long-term visions, the development of partners' abilities will also be more effective and directed. This is also in accordance with Fatah & Komariah (2020) stated in his research that innovative and visionary principals are suitable to face the challenges of the industrial era 4.0. Nevertheless, there needs to be a more in-depth analysis related to the leadership style and the era of the Industrial Revolution 4.0 which is identical to the digital era in schools.

Based on this description, it is necessary to conduct research to describe the characteristics and relationships between the principal's leadership style with digital school management. The research data is expected to be an evaluation and consideration material for conducting training for school principals. In this framework, the objectives of the study was to describe the school principals' leadership styles and school digitalization system based on school accreditation and status, and the correlation school principals' leadership styles and school digitalization systems.

METHODS

The research used an exploratory research design (Þukauskas, Vveinhardt & Andriukaitienë, 2018), which is to provide a careful and complete picture of what is about an object of study. The object of this research is the principal's leadership style and the digitalization system in schools. To get in-depth clarity, each research variable needs to be operationalized into measurable indicators that illustrate the type of data and information needed to answer the research question. The sample of this study was 30 elementary school teachers in Bandar Lampung, which were determined using purposive sampling techniques, namely teachers who were familiar with information and communication technology.

The research instrument used was a questionnaire. The instrument describes the principal's leadership and school characteristics in its digitizing aspects. The leadership style is measured based on 12 aspects (Tannenbaum & Schmidt, 1958), namely: 1) Decision Making; 2) Information Dissemination; 3) Delegation; 4) Level of Autonomy; 5) Work Standards; 6) Change Management; 7) Response to Errors and Errors; 8) Attitudes towards Risk - Taking; 9) Approach to Conflict; 10) Work Team Development; 11) Communication; 12) Willingness. These aspects are further elaborated into 73 indicators, consisting of 48 leadership style indicators and 25 digital school indicators. Each indicator is equipped with 4 answer choice scores, namely a score of 1 for an inappropriate statement, a score of 2 for a statement that is less appropriate, a score of 3 for a statement that is quite appropriate and a score of 4 for an appropriate statement. Distribution of the questionnaire online, namely by distributing online instruments created with the help of google forms and distributing *url addresses* to teachers via Whatsapp. In addition to statements related to leadership style and school characteristics, the questionnaire also contained the identities of the respondents, principals and schools.

Before being distributed, the instrument was tested for validity and reliability with the Rasch Model using Winsteps Version 3.73 involving 30 respondents. The instrument can be said to be valid and reliable if it meets the criteria in Table 1.

Data from 30 respondents were collected and analyzed, the Cronbach Alpha reliability coefficient was 0.94. Thus, the research instruments compiled are considered to have a high level of consistency (Bond & Fox, 2007; Sumintono & Widhiarso, 2013). In addition, the analysis was deepened to the level of the instrument and obtained PT-Measure Corr value data. in all items more than 0. This shows that all items are declared valid to measure what should be measured (Bond & Fox, 2007; Linacre, 201).

This research was conducted by following the research flowchart as in Figure 1. Principal's leadership style was assessed from the teacher's perspective based on survey instruments. The survey data were then analyzed to describe the principal's leadership style (which is divided into 4 categories, namely: telling, selling, participating and delegating), the school digitalization system and the relationship between the 2 variables.

Table 1. Item validity and reliability criteria based on the Rasch model

Criteria	Statistical Data	Minimum Requirements	Sources
Item validity	Item Polarity	PTMEA CORR > 0	Bond & Fox, 2007; Linacre, 2010
Reliabi-litas	Cronbach Alpha	Value > 0,7	Bond & Fox, 2007; Sumintono & Widhiarso, 2013

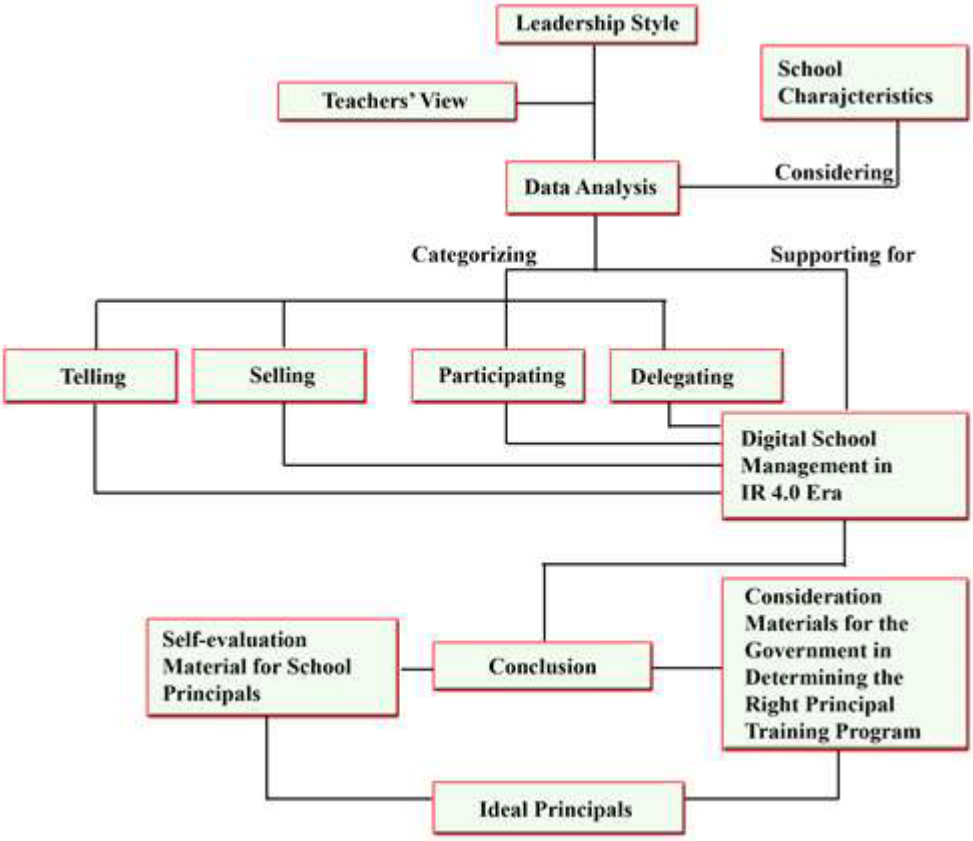

Figure 1. Flowchart of research

Analysis Data

Data collected were analyzed quantitatively using statistical analysis. In the case of the principal's leadership style data, the results of statistical analysis are explained based on the highest score on each criterion where the criterion with the highest score A means the leadership style applied is Telling, B means Selling, C means Participating and D means Delegating (*Tannenbaum et al.*, *1958)*. Whereas in the case of digital schools, the description is qualitatively in accordance with the ideal assessment criteria in Table 2 (Widoyoko, 2011), so that it can be stated the criteria for the leadership style of elementary school principals in Bandar Lampung and the school digitalization system.

Tabel 2. Ideal assessment criteria for digital schools based on Widoyoko (2011)

No	Range of Scores	Category
1	$x > 3.4$	Very good
2	$2.8 < x \geq 3.4$	Good
3	$2.2 < x \geq 2.8$	Enough
4	$1.6 < x \geq 2.2$	Less
5	$x < 1.6$	Very less

In addition, two research variables were analysed statistically using SPSS version 25. This was done to determine the principal's leadership style towards digital school management. If the absolute value of r is more than 0.5, then these 2 variables have a strong correlation. If the absolute value of r is between 0.3 and 0.5, then the 2 variables have a moderate correlation. But if the absolute value of r is between 0.1 and 0.3, then these 2 variables have a small correlation (Cohen, 1988).

■ RESULTS AND DISCUSSION

Leadership is a way for leaders to influence the thinking and behavior of work partners to work together to achieve organizational goals productively (Hasibuan, 2013). Leadership is directed so that work partners want to act as expected or directed so that all members of the organization can work to achieve one goal (Sutikno, 2014). The leader's task is not only to give orders but to encourage and facilitate improvements in the quality of work carried out by members or subordinates (Slamet, 1999; Diwiyani & Sarino, 2018)). Leaders help everyone in the organization to be able to do a good job through coaching activities, facilitating, helping to overcome obstacles (Munawarah, Yusrizal & Usman, 2020), and so forth.

Every leader always has his own character and way of managing an organization, which is called the leadership style. Precisely, leadership style is the norm of behavior used by someone when that person tries to influence the behavior of others as he sees it (Thoha, 2013; Stonner, 1996). The influence process is carried out so that work partners can understand and agree on what needs to be done and how the task is carried out effectively, as well as processes to facilitate individual and collective efforts to achieve common goals (Lian, 2020; Yukl, 2010). Thus, leadership style can also be expressed as a leadership strategy to achieve the organization's vision and mission (Rivai, 2014).

The leadership style adopted in an educational institution or school is certainly different when dealing with one work partner with another. This considers that each working partner has different characteristics. The principal needs to show the right way by adjusting each individual to establish a conducive collaboration. One contingency approach with flexible leadership is the Situational Leadership Model proposed by Hersey and Blanchard (1977). This situational leadership style is very varied and effective because it adapts to the readiness of work partners. In this case, the readiness in question is the motivation for achievement (Suyadnya, Natajaya & Sunu, 2013), responsibility, and knowledge, skills, and experience. Nevertheless, the principal needs to know the characteristics of each working partner in order to determine the right leadership style (Farmer, 2012). Therefore, this situational leadership style is very much determined by the ability of social communication as a soft skill that must be possessed. This skill results in better teacher performance and influences students' academic and non-academic achievements (Ismail, Sutarman, Yudhakusuma & Mayasari, 2020).

School Principals' Leadership Styles and School Digitalization System Based on School Accreditation

Primary school principal leadership styles tend to be evenly distributed in 4 aspects of situational leadership styles, both in schools that are accredited A, B and C. However, every principal with a certain accreditation has the most dominant leadership style. In schools with A accreditation, principals tend to adopt a selling style. This is the same as implemented by school principals in schools that are accredited B. In contrast to schools that are accredited C, principals tend to apply the delegating style. These descriptions are presented in Table 3 below.

Table 3. Percentage of school principals' leadership styles based on accreditation

No	School Accreditation	Percentage of School Principals' Leadership Styles			
		Telling	Selling	Participating	Delegating
1	A	82,48	83,70*	83,09	81,86
2	B	80,42	82,29*	80,00	78,33
3	C	80,56	85,42	86,11	90,28*

* The highest number

The results indicate that the implementation of the situational leadership style has been going well at elementary schools in Bandar Lampung. The headmaster implements four balanced situational leadership styles, both at low and high accredited schools as well as at public and private schools. This is in line with research conducted by Aisyah & Takdir (2017) that school principals implement situational leadership styles supported by humanist, fair and motivating attitudes. Therefore, the principal considers the level of knowledge, skills, and experience of work partners in communication and coordination. Thus, principals can determine the right behaviour according to the needs of the team and the environment so that they work as expected in achieving the goals (Northhouse, 2013).

Thus, there was a time when the principal gave direct instruction (telling) to new individuals who joined the school (Gill, 2011). This was done taking into account that his knowledge of work was still limited. Work partners still need to adjust to the work patterns that run at school. Therefore, principals need to give direct orders to them when there are tasks that need to be completed. When an individual's abilities have developed and have sufficient knowledge, experience, and skills, the principal needs to reduce his involvement in the implementation of the assigned tasks. It aims to smooth the completion of the school program. It considers that individuals who are professional in their work have their own way of solving a problem. The headmaster who interferes too much will actually hamper work because it interferes with the work patterns that the individual used to do. Nevertheless, the principal still participates in making crucial decisions where the individuals involved do not yet have the courage to take risks (participating).

However, every school principal with a certain accreditation has the most dominant leadership style. In schools with accreditation A and B, principals tend to adopt a selling style. This is the same as implemented by school principals in public and private schools. This shows that the work team under his leadership already has a high enthusiasm in carrying out the task. However, the work team is not brave enough to provide creative breakthroughs for the progress of the school. Therefore, the principal still needs to stimulate and provide ideas to be understood and agreed by the work team in order to improvise in carrying out the task (selling).

On the other hand, this also cannot be separated from the treatment of school principals. The principal still likes to control and direct the way teamwork is accompanied by contextual explanations. Even though the school principal still delegates individuals in certain programs, they always communicate in relation to the development of the program. This treatment is an emphasis that must be understood by the team that the leader in the school is the principal so that everything that happens in the school must be in coordination with it. This takes into account that everything that happens in the school is the

principal's responsibility. Therefore, the actions to be taken in the school environment need to be known by the principal to be reviewed again, especially on the risks that accompany it. Likewise, when conflicts occur. In school life where the community consists of individuals with different characters and backgrounds. The conflict between individuals cannot be denied. When conflicts occur, the principal with this selling style likes to be directly involved in resolving them. Thus, the school principal still takes time to coordinate and share information.

The principal's involvement is not limited to that. In terms of career development, the principal is also responsible for identifying work team development opportunities. This is based on the needs of each individual. When there is a team performance improvement program outside the school environment, the principal always has the time to talk face to face with the right individuals to provide an explanation of the program and its usefulness in the future. Furthermore, the principal always takes the initiative if there is a change in school management. Of course, the principal explained why the initiation was taken. For example, when one team member makes a mistake at work. With various considerations, the school principal needs to reshuffle his position accompanied by an acceptable explanation. In addition, the headmaster also ensures that the team understands why and how the mistakes occur so that the same mistakes will not be repeated.

In contrast to C-accredited schools, principals tend to adopt a delegating style where work teams are given the freedom to make decisions and act on their own terms. The principal only gives clear parameters as a reference. In fact, this is not entirely based on high individual knowledge, experience, and skills. This is considering that the school is relatively new. The experience and skills of the principal and the work team are still at the same level in managing the new school. Thus, the headmaster does not yet have sufficient ability to provide guidance to work partners on program implementation. Therefore, the principal submits entirely to the team to manage.

The advantage that can be obtained with the delegating style is that the school principal gets a reference in the management of the school that is applied by each team that is assigned in their own way. This enriches the principal's knowledge related to appropriate techniques in the success of achieving school goals. In the end, the principal will apply a different style to the new members who have joined the experience gained from his previous team. The level of experience that is not much different makes the principal happy to debate openly most things, such as setting work standards, resolving conflicts that occur within the school, career development, and handling of incidental changes that occur during program implementation. In addition, the headmaster also tolerates differences of opinion among work team members.

Nevertheless, the principal still ensures that individuals understand the level of risk that will be received behind the decision and the way the program is implemented. The important point is that the team remains committed to achieving the agreed objectives regardless of the risks involved. If something goes wrong during the course of the assignment, the principal does not object and understands it as a lesson for himself and all school members. It considers that the principal has a small contribution compared to the person in charge of the program.

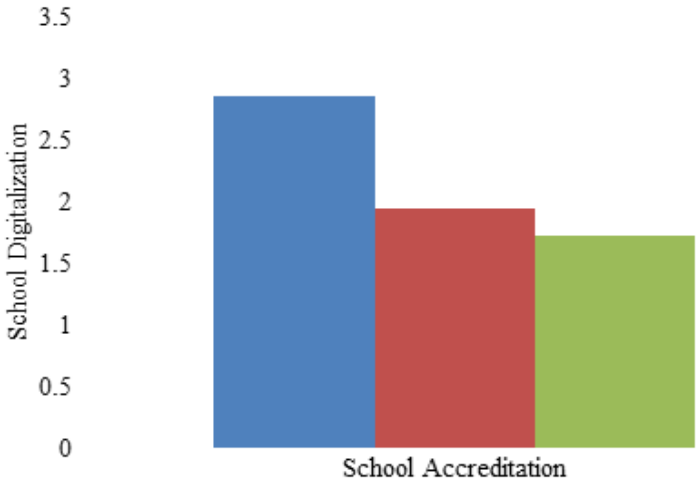

Figure 2. School digitalization level based on school accreditation. Blue, red, and green is school accreditation A, B, and C.

In detail, the digitalization system in schools is presented in Table 4. Both schools that are accredited A, B, and C have the lowest scores in the aspect of management of facilities and infrastructure. While the highest value is found in the learning aspects of accredited schools A. Schools that are accredited B and C have the advantage of digitizing systems in aspects of human resource management.

Table 4. Aspects of school digitalization based on accreditation

No	Aspect of School Digitalization	School Accreditation		
		A	B	C
1	Management of Human Recources	2,93	2,62*	2,80*
2	Public relations	3,02	1,95	1,94
3	Management of Students	2,88	1,88	1,94
4	Learning	3,22*	2,17	1,33
5	Management of Facilities and Infrastructure	2,34**	1,48**	1,00**
6	Management of Finance	2,76	1,60	1,33

* The highest number
** The lower number

On the other hand, the school led by the school principal has not yet fully implemented the digitalization system in its management. The criteria for digital schools that have been good enough are realized only in schools that are accredited A. Whereas in schools that are accredited B and C the application is still not optimal. In general, the digitalization system in schools has declined along with the lower level of accreditation (Figure 2). This shows that the digitalization system in schools is decreasing along with the lower level of accreditation. It is reasonable to consider 2 of the school accreditation assessment standards are management systems and facilities and infrastructure. When accreditation is low, these 2 standards, which are references and facilities to support the sustainability of other standards;

also tend to be less than optimal. Moreover, the digital school criteria referred to in this study are above the accreditation standards.

School Principals' Leadership Styles and School Digitalization System Based on School Status

Next, the analysis is based on the status of the school, which is a state or private school. Overall, private principals show a situational leadership style compared to public school principals in all aspects. Nevertheless, both public and private principals show more selling style than the others (presented in Table 5).

Table 5. Percentage of school principals' leadership styles based on school status

No	School Status	Percentage of School Principals' Leadership Styles			
		Telling	Selling	Participating	Delegating
1	State School	76,88	77,60*	76,46	76,88
2	Private School	82,77	86,36*	85,61	82,58

* The highest number

The advantages of private schools are not only demonstrated in the implementation of situational leadership styles, but also in terms of digitalization in schools (Figure 3). Private schools show more digital school criteria compared to public schools. The implementation was already categorized as good. Unlike the public schools that are less optimal in application.

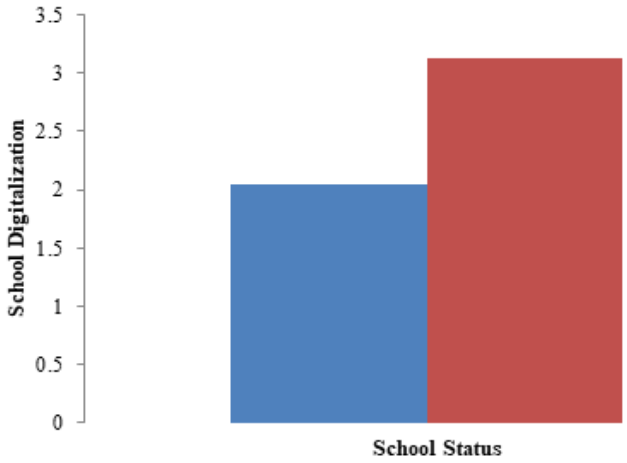

Figure 3. Digitalization level based on school status. Blue and red are state and private school, respectively

In terms of school status, private schools show more digital school criteria compared to public schools. The advantages of private schools can be judged from the perspective of the budget front. The source of the budget that comes from school income itself tends to create a higher sense of responsibility in school management compared to funding that comes from grants or the government (Weingast, 2009). By being directly involved in earning income independently, the school work team is more careful and responsible in spending it. In the end, the responsible attitude is applied in all aspects of management.

In detail, the digitalization system in public and private schools is presented in Table 6. Both public and private schools have the lowest scores

in terms of facilities and infrastructure management. While the highest value is found in the learning aspects of private schools. On the other hand, public schools place more emphasis on managing human resources in digitalization.

Table 6. Aspects of School Digitalization Based on School Status

No	Aspect of School Digitalization	School Status	
		State	Private
1	Management of Human Recources	2,69*	3,02
2	Public relations	2,17	3,23
3	Management of Students	2,02	3,21
4	Learning	2,16	3,58*
5	Management of Facilities and Infrastructure	1,58**	2,50**
6	Management of Finance	1,63	3,27

* The highest number
** The lower number

Furthermore, the digitalization of schools is more emphasized in the system of human resource management and learning, both in public and private schools as well as in schools accredited A, B, and C. If considered, at least 2 aspects are the main things in the sustainability of activities in school. Good management of resources enables the creation of good communication and coordination between individuals. Thus, if the school faces a problem, the work teams can work together to solve it faster.

Correlation School Principals' Leadership Styles and School Digitalization System

The determination of the relationship between the principal's leadership style and the school digitalization system was statistically tested using SPSS version 25, namely the nonparametric correlations test. This test was taken because the research data obtained were not normally distributed. The test results can be seen in Table 7 below.

Tabel 7. The result of nonparametric correlations test with SPSS version 25

Correlations				
			Leadership Style	Digital School
Spearman's rho	Leadership Style	Correlation Coefficient	1.000	.313
		Sig. (2-tailed)	.	.092
		N	30	30
	Digital School	Correlation Coefficient	.313	1.000
		Sig. (2-tailed)	.092	.
		N	30	30

Based on Table 9, it can be seen that the value of Sig. (2-tailed) of 0.092 (greater than 0.05). Thus, it can be stated that the principal's leadership style does not have a significant relationship. In addition, the Correlation Coefficient value of 0.313. This shows that the principal's leadership style has a small correlation with the school digitalization system (Cohen, 1988).

Learning becomes an important point in school life. This considers that whether or not the school is good in the eyes of the community is seen from how well the learning system. Moreover, the graduation system adopted by the government refers to the national exam which is the final result of learning. Thus, it is reasonable if schools prioritize progress in the field of learning over other fields. A description of the leadership style and non-linear digitalization of schools, where the principal gives an almost equal proportion in the 4 categories of situational leadership but is not followed by a good digitalization system; showed that there is no significant relationship between the two variables.

It considers that situational leadership styles are a mixture of task behaviour, worker commitment, and relationship behaviour (Kindle, 2009). That is, this is a method applied by principals in dealing with emotional human resources so that the coordination process can go well. This is more likely to be done in person. While the digital system is only an alternative medium that can speed up the process of communication and information transfer that can be done online. Communication is more emphasized in the delivery of general information.

■ CONCLUSIONS

Based on the description of the results and discussion, it was concluded that the situational leadership style that primary school principals generally apply in Bandar Lampung is selling style. Even so, the principal still shows 3 other leadership styles, namely: telling, participating, and delegating; with proportions that are not much different. Unlike the digitalization system, schools generally are still not optimal in implementing digital systems in schools. Therefore, the principal's leadership style does not have a significant relationship with the school digitalization system. The research data can be an evaluation and consideration material for conducting training for school principals. Nevertheless, these results need to be further investigated by more varied methods.

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