



## **Collaborative Leadership: Principal's Decision Making Strategy in Optimizing Sustainable Digital Based School Culture (DBSC) in the Era of Technological Disruption in Mataram City**

Agus Fahmi, Raden Bambang Sumarsono\*

Program Studi Manajemen Pendidikan, Universitas Negeri Malang, Jawa Timur, Indonesia  
agus.fahmi.2401329@students.um.ac.id, raden.bambang.fip@um.ac.id

**Abstract:** This study aims to analyze the decision-making strategies of school principals through *collaborative leadership* in optimizing a *sustainable Digital Based School Culture* (DBSC) in the era of technological disruption. This study uses a qualitative approach, SLR type. The procedure is to identify references from various sources using *search engines* such as *Publish or Perish* (PoP), science direct, Vos Viewer, Mendeley (referring to the PRISMA pipeline flow), and PRISMA flow diagram creation. The study found that collaborative leadership helps principals create a more technology-responsive school environment, improve digital literacy for all school members, and support the development of sustainable technology infrastructure. However, challenges such as limited technological infrastructure, resistance to change, and lack of digital literacy are still the main obstacles. The results of this study conclude that the optimization of DBSC through *collaborative leadership* not only improves the quality of education, but also prepares schools to face the demands of future technological developments.

**Keywords:** Collaborative, Leadership, DBSC, Decision, Making.

### **Introduction**

The era of technological disruption marked by the rapid development of information and communication technology has brought significant changes in various sectors, including Education with the adjustment of disruptive learning innovations (Ulfatin et al., 2022). This development forces educational institutions, especially schools, to adopt and integrate technology in various aspects of their operations and management with the principles of content-based education to outcome-based education (Pavai Madheswari & Uma Mageswari, 2020). One of the concepts that emerges in this context is *Digital Based School Culture* (DBSC) or School Digital Culture (BDS) (Rasdiana et al., 2024), which is a digital-based school culture where the learning, management, and interaction processes in schools are carried out by utilizing digital technology.

Leadership in education plays an important role in shaping the quality and direction of the education system. Adaptive leadership organizes the change process with teams through difficulties and uncertainties, as well as building culture and structure (Wong & Chan, 2018). An educational leader is not only responsible for administrative management, but also in predicting the adaptability of potential leaders (Boyar et al., 2023). Adaptive leadership moderates the relationship between



organizational learning and organizational innovation (Chughtai et al., 2023). The principal has a central role in the school management which is achievement-oriented and lets its followers know their expectations (Saleem et al., 2020). The principal's decision-making strategy and process affect teacher productivity (ISABELLA EZINWA, 2023). This illustrates that teachers need to be more involved in the decision-making process, and administrators must ensure that the implementation stages are followed in accordance with what is agreed upon by the stakeholders involved in decision-making. School principals should intensify efforts in the use of consultation, collaborative, and feedback strategies (Ayeni & Ojo, 2022). In the current era of technological disruption, educational institutions must be able to adapt well. so that it can explain how this technology can be effectively and efficiently implemented or on the contrary can hinder or worsen (Calzada, 2023). The habituation of technology culture in schools must begin with the development of digital modules, online learning and blended learning, as well as the digitization of learning administration to improve decision-making (Purnomo et al., 2024).

School principals, as key leaders in educational institutions, have a key role in ensuring that technology adoption can run optimally. Therefore, school principals change their leadership behavior to be more ethical, focused, caring, democratic, and pedagogical in leading the teaching-learning process (Berhanu, 2024). The strategic role of school principals is not only limited to decision-making related to education policy, but also in creating a school ecosystem that supports digital transformation. Therefore, the right *decision-making* strategy is needed to ensure that digitalization in schools can run in harmony with the vision and mission of education, as well as decision-making skills that are modified according to the necessary circumstances (Valente et al., 2020). The *decision-making* strategy taken by the principal will greatly determine how to optimize DBSC where education is experiencing a shift that requires a shift in methodological approaches, and there is a need for an assessment of decision criteria with the right process (Nermend et al., 2022). School principals must be able to identify existing challenges and opportunities, as well as make decisions based on data and technology. Academics and management practitioners have highlighted the importance of ethical dimensions in strategy selection (Rodgers et al., 2023), to create an innovative, inclusive, and sustainable learning environment demanding the role and contribution of several important factors in determining the quality of learning for students (Dina, 2013).

The use of technology in schools emphasizes the need to combine theories from the West with sustainable development issues in other countries, including in Asia (Kim, 2024). The findings of an empirical study in Indonesia emphasize the need for digitization in the decision-making process in schools that is useful for reporting online learning practices in Education (Aditya et al., 2021). In the context of Indonesia, the results of empirical studies show that teachers' attitudes play an important role in the successful implementation of education (Kurniawati et al., 2012).

The problem that then arises is the weak adaptation capacity to overcome the impact of social, economic, and cultural conditions on social, economic, and cultural conditions, such as rapid population growth (Laplaza et al., 2017). This difficulty is not due to a lack of willpower or resources, but due to a lack of the right strategy for a



particular type of organization (Gouveia & Mamede, 2022). Research has been conducted by (Hidayati, et al., 2012) in NTB Province on application media such as e-learning by being piloted in one of the junior high schools in Mataram, namely SMP Negeri 11 Mataram. The results of the study show that students' interest in the application of this e-learning media in schools is quite high, so that it can attract students' interest in learning because it has the potential to create a fun learning atmosphere and make it easier for students to understand the material presented (Hidayati & Wuryandari, 2012). However, studies show that the failure rate of digital transformation is quite high up to 90% (Marcel et al., 2024). Therefore, a new leadership concept is needed, namely collaborative leadership, which encourages the need for adaptive and responsive leadership practices (Nadeem, 2024). So that the decision making of the principal can consider the needs of stakeholders. The aim is to provide a workable model based on the principles of median and coverage to help formulate sustainable school consolidation policies (Bhatnagar & Bolia, 2023).

## Method

This study uses a qualitative approach with the type of Systematic Literature Review (SLR) method of reviewing educational management research (Mahajan et al., 2023). The inclusion data used is related to "Collaborative Leadership: Principals' Decision Making Strategies in Optimizing Digital Based School Culture (DBSC) in the Disruptive Era of Technology" as keywords. Meanwhile, exclusion data is not directly related to the theme, abstract, focus, does not use English, is not indexed by Scopus, and is not relevant to others. This SLR uses VOSviewer in determining the theme by displaying the results in the form of visual bibliometric images at the global level indexed by Scopus using Bibliometric analysis (Huong et al., 2024).

The search engine is in the form of an application through Software Publish or Perish (PoP) (Huong et al., 2024) by selecting a maximum result of 500 in the last 5 years between 2020-2024, then strengthened through science direct which has been filtered with the provision that between 2020-2024, is a research article or review result, and to obtain data using open access. Furthermore, for the method of assessing the risk of bias and the method of interpreting data using prisma 2020 flow diagram, namely at the identification stage, 500 databases were obtained and 116 were obtained from other registers. From the data, there are 90 similarities or duplicates, 70 ineligible by automation tools, and 50 other design reasons for reduction. The next stage is screening, from the reduction at the initial stage of 406 then record exclude as many as 200 then issued again 50 then those who are not taken again are 20, the results of the ineligible assessment are 20. Reports and criteria issued on the grounds that they do not match the focus on abstracts, do not use English, do not use Scopus, there are similarities, and theories are irrelevant. The stages *include*, The final result obtained to be a follow-up study and become a novelty is 116.

## Results and Discussion

### Result

The description of the data in the order generated from the SLR of the PRISMA model, is presented in the following prism model:

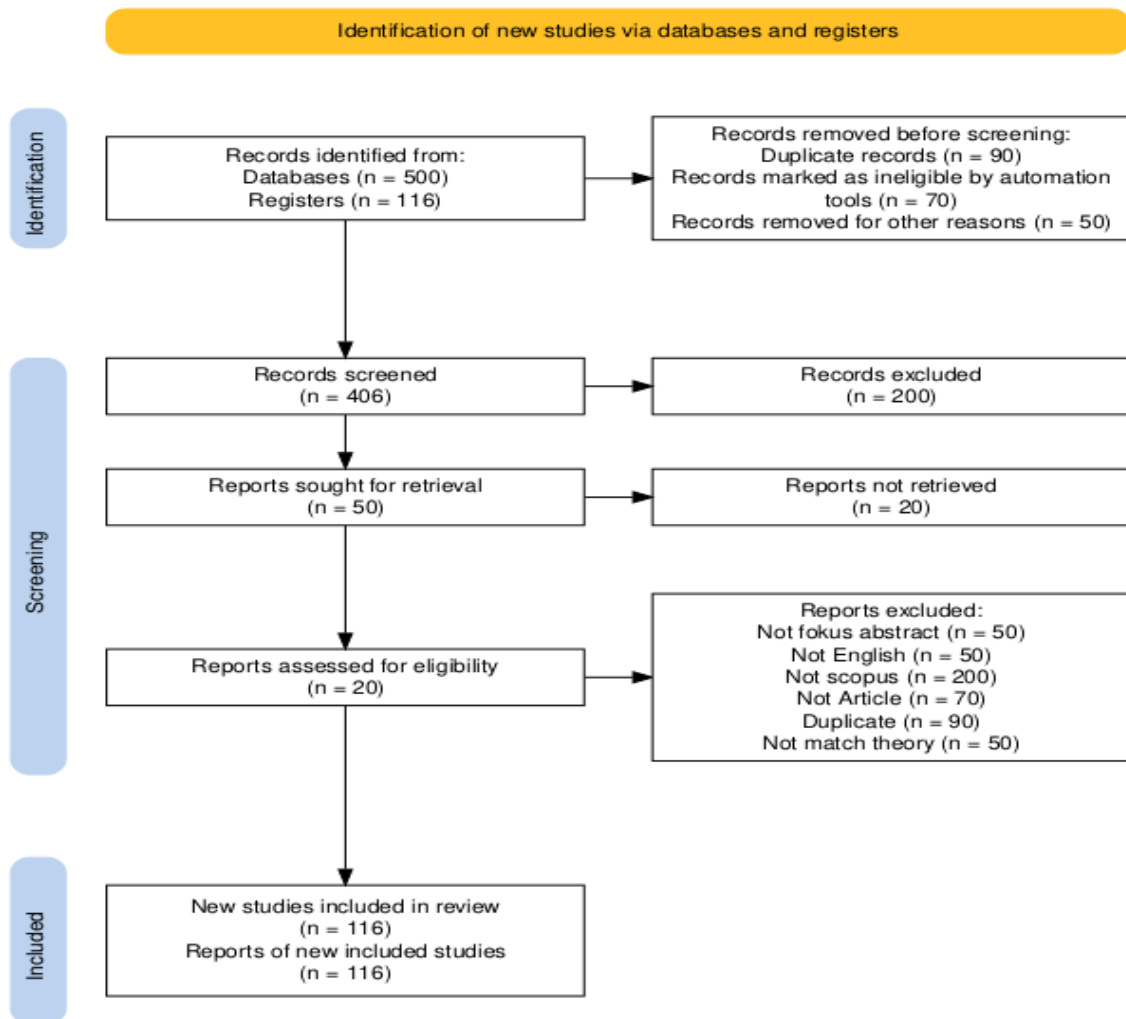


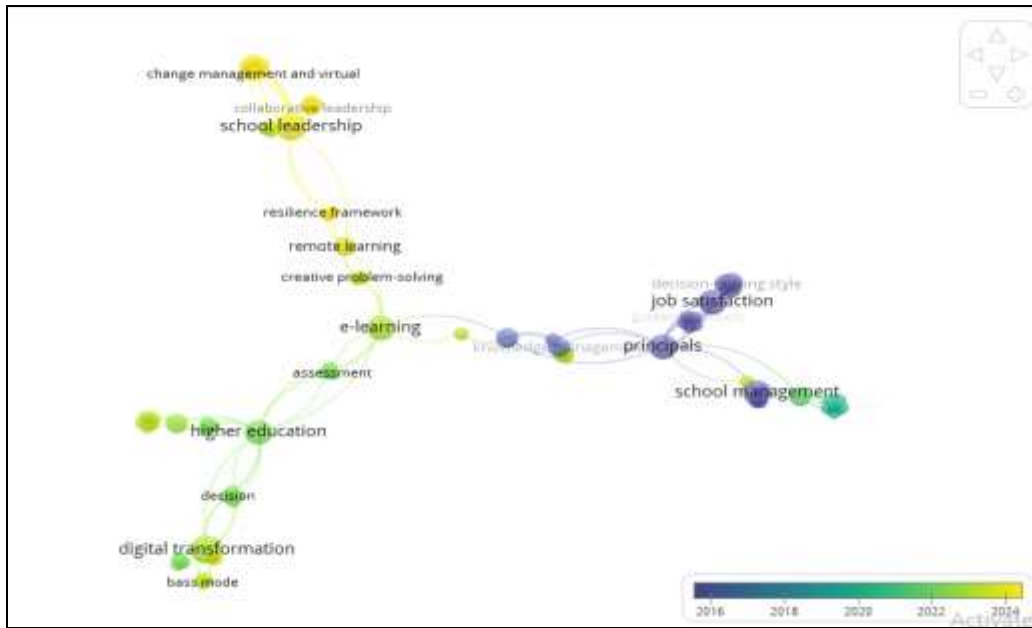
Figure 1. Processing Data and Download Diagram Flow, from:

[https://estech.shinyapps.io/prisma\\_flowdiagram/](https://estech.shinyapps.io/prisma_flowdiagram/)

The explanation of the figure above shows that at the identification stage, a database of 500 was obtained and from other registers 116 were obtained. From the data, there are 90 similarities or duplicates, 70 ineligible by automation tools, and 50 other design reasons for reduction. The next stage is screening, from the reduction at the initial stage of 406 then record exclude as many as 200 then issued again 50 then those who are not taken again are 20, the results of the ineligible assessment are 20. Reports and criteria issued on the grounds that they do not match the focus on abstracts, do not use English, do not use Scopus, there are similarities, and theories are irrelevant. The stages include, The final result obtained to be a follow-up study and become a novelty is

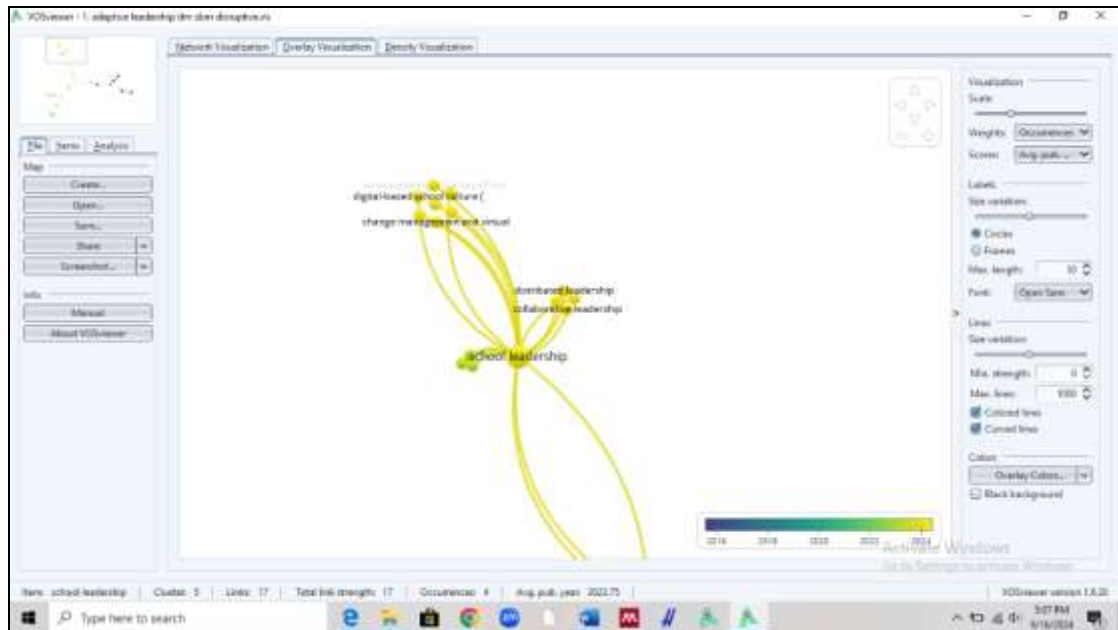
116.

Gap Research and theme determination using the VOS Viewer application which is exported in pdf format into processed RIS format, resulting in the following Bibliometrics:



**Figur 2. Initial bibliometrics using VOS Viewer**

In the image above, it shows that the yellow part has novelty to be researched and is very relevant to the current context of education. Thus, the focus of LSR in this study can be taken as "Collaborative Leadership: Decision Making Strategies for School Principals in Optimizing Sustainable Digital Based School Culture (DBSC) in the Era of Technological Disruption" as shown in the following figure:



**Figure 3. Final Bibliometric for theme determination**

## Discussion

The vos viewer data is then processed in excel, resulting in the data in the following table 1:

**Table 1.** Data from VOS Viewer is processed using excel.

term	occurrences	relevance score
study	80	0.1134
analysis	42	0.3426
approach	41	0.1498
education	39	0.6256
research	37	0.1869
decision	36	1.1208
management	36	0.3297
process	36	0.2819
data	35	0.3389
school	35	0.5724
practice	34	0.3007
role	32	0.4543
decision making	31	0.9479

Collaborative leadership emphasizes the importance of cooperation between



various parties in an organization to achieve common goals, lead, and manage implementation to encourage responsible practices (French et al., 2024). In the context of *a sustainable Digital Based School Culture* (DBSC) is not only individually responsible, but must also manage the participation of teachers, students, parents, and other stakeholders, as pedagogy can be conducive to transformative learning in the digital environment (Taimur & Onuki, 2022). Because after all, there is a significant direct influence of the quality of academic services on satisfaction, both at the university and at the level of primary and secondary education units (Supriyanto et al., 2024).

The findings of the problem (Gap Research) from the SLR carried out are; 1) weak adaptation capacity, 2) lack of appropriate strategies in decision-making, 3) lack of Open and Transparent Communication, 4) weak Empowerment and Stakeholder Involvement, 5) absence of sustainable Capacity Development and Technology Competence.

For this reason, what must be done is first, in a digital-based school environment, open communication between the principal and his team becomes more important. Technology enables collaboration through digital platforms, such as discussion forums, task management apps, or video conferencing, which facilitates communication without time and place limits. *Second*, effective collaboration involves not only principals and teachers, but also students and parents. Decisions taken collectively and involving various parties will result in policies that are more inclusive and acceptable to the entire school community. Third, technological disruption requires school principals to ensure that all teachers and staff have adequate digital competencies. Principals should support training and professional development programs on an ongoing basis, so that all parties can be involved in technology-based decision-making. *Fourth*, collaboration cannot run effectively without trust between the principal and other stakeholders. This trust is built through accountability and transparency in the decision-making process. *Fifth*, One of the results of collaborative decision-making is the preparation of a plan for the development of school technology infrastructure. Principals must allocate resources wisely, ensuring the school's hardware, software, and network are adequate to support a sustainable DBSC.

Research has been conducted by (Hidayati, et al) in NTB Province on application media such as e-learning by piloting it in one of the junior high schools in Mataram, namely SMP Negeri 11 Mataram. The results of the study show that students' interest in the application of e-learning media in schools is quite high, so that it can attract students' interest in learning because it has the potential to create a fun learning atmosphere and make it easier for students to understand the material presented (Hidayati & Wuryandari, 2012). The research revealed that the use of digital technology in learning can increase students' interest in learning, but limited to experiments alone does not have an obligation to be carried out sustainably.

Meanwhile, another study conducted by (Marcel, et al) shows that the failure rate of digital transformation is quite high up to 90% (Marcel et al., 2024). This is due to the fact that digital transformation changes so quickly and results in changes in school processes, learning models, and culture. The transformational leadership model alone has not had a significant impact on digital transformation adaptation. Therefore, a collaborative leadership concept is needed that requires school principals to be involved



in every decision-making process and implementation of digital-based learning. Mastery of digital technology knowledge for a leader is a must to develop digital learning habits which ultimately make a digital-based school culture sustainable. Challenges such as limited technological infrastructure, resistance to change, and lack of digital literacy are still the main obstacles. Therefore, school principals need to adopt a flexible and solution-oriented approach in dealing with these challenges.

When viewed from the two studies, it shows that there is an imbalance between the efficient and attractive use of digital technology and the level of achievement of digital transformation. Based on a preliminary study conducted by researchers in two different schools, namely SDN 3 Mataram and SDN 28 Mataram on how Collaborative Leadership: Decision Making Strategies for School Principals in Optimizing Digital Based School Culture (DBSC) Sustainably in the Era of Technological Disruption in Mataram City. It can be seen that the collaborative leadership of the principal has an impact on the high motivation of teachers and students in the learning process. The use of digital technology such as literacy and numeracy learning applications becomes very interesting when presented by teachers in classroom learning.

## Conclusion

In the face of an era of technological disruption, school principals need to adopt collaborative decision-making strategies to optimize *a sustainable Digital Based School Culture (DBSC)*. Open, participatory, and data-driven collaborative leadership can improve the quality of education, strengthen collaboration between stakeholders, and present innovative solutions to the challenges of technological disruption within the education unit. Existing challenges must be overcome with adaptive and cooperation-based strategies, so that digital transformation can be carried out effectively and sustainably.

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