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SCHOOL HEADS' MANAGEMENT COMPETENCIES AND TECHNOLOGICAL LEADERSHIP TOWARDS AN INNOVATIVE GOVERNANCE MODEL

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ABSTRACT

The study evaluated the Management competencies and technological leadership of school administrators in the Division of Rizal, Philippines, to serve as a foundation in designing a novel governance approach. Particularly, Management competencies in strategic planning and visioning, organization and resource Management, decision making and problem solving, communication and interpersonal skills, and monitoring and evaluation were measured. Moreover, technological leadership in technology integration and advocacy, digital literacy and competency, innovation in technology-driven decision making, cybersecurity Awareness and Management, and collaborative use of technologies were evaluated.

The study utilized a quantitative descriptive-correlational research design. One hundred and thirty purposively chosen respondents, consisting of one hundred teachers and thirty school administrators from public schools in the Division of Rizal, served as respondents. A modified research tool was used to gather data that were subjected to descriptive and inferential statistics to assess the respondents' evaluation, differences among groups, and the relationship between the two primary variables. It was found that perceptions about the competencies of school heads were characterized by high levels of Management competencies and technological leadership. Statistically significant differences were observed between the perceptions of teachers and school heads concerning different competencies, including several dimensions of technological leadership. However, results related to technology integration and technology advocacy need confirmation. Moreover, the existence of a low-level but still significant correlation between Management competencies and technological leadership (r=.194, p=.026) was observed.

The results obtained can be used for the creation of an innovative model of governance that combines workforce development, digital leadership, collaborative decision-making, and responsible use of technologies. It is recommended to implement ongoing professional development of school heads, better collaboration between teachers and administrative staff, and responsible technology behavior of students.

KEYWORDS: *Management Competencies, Technological Leadership, School Governance, Digital Leadership, Educational Technology Integration, Innovative Governance Model*

I. INTRODUCTION

The effects of digital transformation in education As a result of the digital transformation in education, the scope of work of school heads and district leaders has increasingly shifted from activities associated with traditional administrative responsibilities to digital leadership skills, during which heads and district leaders play an important role in determining the digital strategies of schools and districts, especially in relation to the use of technology to monitor school activities, conduct school decision-making processes, and establish a good school governance structure. Therefore, it is possible that if schools want to succeed in managing digital transformation, school leaders and district administrators need a combination of Management skills and digital skills for school Management. Also, these skills are likely to be tailored to the school's needs to optimize the use of digital innovations.

Knowledge and skills gained relate to planning, Management of resources, decision-making, communicating, controlling, and monitoring. Alongside is technology leadership, which involves the adoption and use of technology, the use of digital literacy, the adoption of cooperative use of technology, and the control of the security of digital data. Ata and Saltan (2023) highlighted the criticality of such technological proficiency in school leadership by conducting a scoping review of school principals' perceptions of technological leadership, technostress, and information and communication technology. However, the use of technology in teaching/learning does not automatically translate into educational benefits. It is probably the governance, access, and educational institutions' ability to understand how the educational institution's investment in technology aligns with pedagogical and organizational priorities that is the determining factor for the success of the digital tools in education (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2023).

These issues are most evident in public schools of the Division of Rizal, Philippines, where school managers are challenged to meet the emerging governance requirements amidst variations in digital access, infrastructure, re and human capital quality. The OECD (2023) has found that variations in institutional capacity and digital access affect the success of digital education implementation. Thus, an analysis of Management skills alongside technology leadership could provide a more robust explanation of the administrator attributes that promote responsive, efficient, and technology-enabled governance. However, it is yet to be empirically known

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how strongly these two dimensions are associated in the Division of Rizal context.

In response to the problem, the study examined the level of Management competence and technology leadership among public school heads of the Division of Rizal and examined the relationship between such variables. The descriptive-correlational research was conducted to provide an empirical basis for the conceptualization of a new governance model based on the level of competency and its correlation. The model seeks to inform leadership training, the use of technology in Management, and educational governance in the context of the Division of Rizal. This study contributes to the body of knowledge by integrating Management competence and technological leadership in a school setting to generate evidence for school improvement efforts and future research.

1.1 Statement of the Problem

The study aimed to assess the management competencies and technological leadership of school heads in the Division of Rizal towards an innovative governance model development. Specifically, it sought to answer the following sub-problems:

1. What is the level of management competencies of school heads as assessed by the two groups of respondents in terms of:
    1.1. strategic planning and visioning;
    1.2. organizational and resource management;
    1.3. decision making and problem solving;
    1.4. communication and interpersonal skills; and
    1.5. monitoring and evaluation?
2. Is there a significant difference in the assessment of the two groups of respondents on the level of management competencies of school heads?
3. What is the level of technological leadership of school heads as assessed by the two groups of respondents in terms of:
    3.1. technology integration and advocacy;
    3.2. digital literacy and competency;
    3.3. innovation in technology driven decision making;
    3.4. cybersecurity awareness and management; and
    3.5. promotion of collaborative technology use?
4. Is there a significant difference in the assessment of the two groups of respondents on the level of technological leadership of school heads?
5. Is there a significant relationship between the level of management competencies and technological leadership of school heads in the Division of Rizal?
6. Based on the findings of the study, what innovative governance model may be developed?

1.2 Hypothesis

The study tested the following null hypotheses:

1. There is no significant difference in the assessment of the two groups of respondents on the level of management competencies of school heads.
2. There is no significant difference in the assessment of the two groups of respondents on the level of technological leadership of school heads.
3. There is no significant relationship between the level of management competencies and technological leadership of school heads in the Division of Rizal.

2. REVIEW OF RELATED LITERATURES AND STUDIES

Effective school governance further includes school principals' ability to integrate management competencies together with their technologically oriented competencies in order to face the challenges of digital transformation. Management competences encompass planning, resource allocation, decision-making, communication, and performance assessment. Technological competences, on the other hand, are related to the promotion of effective technology implementation, digital literacy development, and appropriate technology utilization. Ata and Saltan (2023) conducted a study on the technological requirements and issues faced by school principals.

In addition, Yang et al. (2025) revealed that leadership vision, resource allocation, and professional development are elements that affect the effective implementation of the use of ICT by teachers. The above statement is confirmed through the work done by Sosa-Díaz et al. (2022), who emphasize the importance of the organizational aspect as the driver behind the usage of educational technology. According to Msambwa et al. (2024), technical competencies, stakeholder engagement, and professional development, among others, were among the vital components in the process of ICT integration.

Finally, the OECD (2023) emphasized the importance of digital infrastructure, data Management, issues of privacy, and institutional capability in ensuring digital education systems. Taken all together, it can be said that innovative school governance necessitates the merging of good management skills with technological expertise and leadership, among others. However, the relationship between Management competencies and technological leadership among public school heads in the Division of Rizal warrants further empirical investigation. The current study addresses this gap by investigating both variables and using the results as a basis for a proposed innovative governance model.

II. RESEARCH METHODOLOGY

Research Design

The study used quantitative descriptive-correlational method of research. The researcher aimed to describe the current state of the school heads' Management skills and technological leadership and to determine if the two variables are related. Quantitative descriptive-correlational is fitting because the researcher observed, described, compared, and correlated observable, quantifiable variables without manipulations.

Population and Sampling

The study was conducted in public schools within the Schools Division of Rizal, Philippines. Purposive sampling was employed to select respondents who could provide relevant assessments of school heads' Management competencies and technological leadership.

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Respondents of the Study

The respondents in the study were 130 in number, with 100 being public school teachers and 30 school heads. The assessments for Management competencies and technological leadership were provided by these respondents. The consolidated findings were intended to inform the development of a proposed innovative governance model.

Research Instrument

Data were collected through a researcher-developed questionnaire administered via Google Forms. The instrument covered respondents' demographic profiles, Management competencies, and technological leadership of school heads. There were five measures of Management competency, whereas technological leadership consisted of technology integration, digital literacy, technology-based decision making, cybersecurity, and collaboration through technology use. Four scales were used with mean score interpretations ranging from Not Competent/Not Evident (1.00-1.75) to Highly Competent/Highly Evident (3.26-4.00).

Validation of the Instrument

The questionnaire underwent face and content validation by five experts in relevant fields. Their recommendations were incorporated into the instrument before administration. A pilot test was conducted to assess internal consistency, with Cronbach's alpha calculated using the Statistical Package for the Social Sciences (SPSS). The reliability coefficient and validation results should be reported in the final manuscript to establish the instrument's adequacy.

Data Gathering Procedure

The required permission to proceed with the study was acquired from the office of the Schools Division Superintendent. After being given the green light, the researcher made sure to contact the proper school officials and ask the targeted respondents to join the study. The researcher provided the respondents with the objectives of the study and the necessary instructions for filling out the questionnaire. The questionnaires were answered via the Google forms application, while the collected data was subjected to analysis using SPSS.

Statistical Treatment

The computation of weighted averages was applied in calculating the degree of Management competencies and technological leadership among their respective indicators. In comparing the scores of teachers and school heads regarding these variables, a suitable test for the two groups of scores was used, considering that the observations are independent and normally distributed. Pearson's product–moment correlation coefficient (Pearson's r) was utilized in correlating the Management competencies and technological leadership, provided that the statistical assumptions have been met.

III. RESULTS AND DISCUSSION

What is the level of management competencies of school heads in terms of strategic planning and visioning, organizational and resource management, decision making and problem solving, communication and interpersonal skills, and monitoring and evaluation?

Table 1

Summary of the means of the respondents' assessment of the level of management competencies of school heads

Indicators	School Heads		Teachers	
	Mean	VI	Mean	VI
strategic planning and visioning	3.95	HC	3.62	HC
organizational and resource management	3.92	HC	3.57	HC
decision making and problem solving	3.93	HC	3.75	HC
communication and interpersonal skills	3.92	HC	3.74	HC
monitoring and evaluation	3.94	HC	3.70	HC
Overall Mean	**3.93**	**HC**	**3.68**	**HC**

Table 1 indicated that school principals perceived themselves as highly competent in the areas of Management, with a mean score of 3.93, compared to 3.68 for teachers. For school principals, Strategic Planning and Visioning was the highest scoring quality at 3.95, with Monitoring and Evaluation at 3.94. Decision-Making and Problem-Solving was next at 3.93, followed by Organizational and Resource Management and Communication and Interpersonal Skills (3.92). In the teacher responses, Decision-Making and Problem Solving was again the highest at 3.75, followed by Communication and Interpersonal Skills at 3.74. Organizational and Resource Management had the lowest mean score of 3.57.

The data show that school heads have perceived strengths in the areas of strategic leadership, school operations, communication, and monitoring. The higher self-ratings of school heads may also reflect differences in perceptions of leadership practice between groups, which must be statistically tested. The findings support the findings by Grissom et al. (2021), which found in their meta-analysis of 219 articles that Instructional Leadership, product school environment, Collaboration, and resource Management were positively related to school effectiveness. In addition, the findings support the Philippine Professional Standards for School Heads (DepEd, 2020), which list components of Strategic Leadership, school administration, Resource Management, and Professional Development. This finding suggests a need for continuous leadership development, but at the same time, an examination of areas of improvement from the teachers' perspective is also necessary.

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Is there a significant difference in the assessment of the two groups of respondents on the level of management competencies of school heads?

Table 2: Difference in the assessment of the two groups of respondents on the level of management competencies of school heads

Indicators School Teachers Heads	Paired Differences					t	df	Sig. (2-tailed)	Decision Ho	Interpretation
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference						
				Lower	Upper					
Strategic Planning and Visioning	.20833	.49603	.0906	.02311	.39356	2.300	29	.029	R	S
Organizational And Resource Management	.27500	.40657	.0742	.12318	.42682	3.705	29	.001	R	S
Decision Making and Problem Solving	.17500	.36642	.0669	.03817	.31183	2.616	29	.014	R	S
Communication and Interpersonal Skills	.14167	.36367	.0664	.00587	.27746	2.134	29	.041	R	S
Monitoring And Evaluation	.20000	.34988	.0639	.06935	.33065	3.131	29	.004	R	S
Overall	.20167	.21192	.0387	.12253	.28080	5.212	29	.000	R	S

*Legend: FR-Failed to Reject; R-Rejected; NS-Not Significant; S-Significant

Table 2 shows the overall result indicated that there were statistically significant differences for all five dimensions in the total of the two groups' ratings on school heads' management competencies. The total difference might have been statistically significant; $t(29) = 5.21$, $p < .001$. Statistically significant differences were observed in strategic planning and visioning; $t(29) = 2.30$, $p = .029$, organizational and resource Management; $t(29) = 3.71$, $p = .001$, decision making and problem solving; $t(29) = 2.62$, $p = .014$, communication and interpersonal skills; $t(29) = 2.13$, $p = .041$, and monitoring and evaluation; $t(29) = 3.13$, $p = .004$. This implied that there were different opinions between the two groups on school heads' Management competencies.

The same consideration is made in the works of Karakose et al. (2021) on teachers' perspectives on principals' digital leadership and AlAjmi (2022) on the association between principals' digital leadership and technology integration by teachers. Grissom et al. (2021) stress the significance of strategic Management, collaboration, and proper leadership as dimensions of school effectiveness. All of these articles prove that there is some benefit in taking into account several perspectives while evaluating school leadership. Nevertheless, the present results do not indicate the reasons for the differences identified.

What is the level of technological leadership of school heads in terms of technology integration and advocacy, digital literacy and competency, innovation in technology driven decision making, cybersecurity awareness and management, and promotion of collaborative technology use?

Table 3.

Summary of the means of the respondents' assessment on the level of technological leadership of school heads

Indicators	School Heads		Teachers	
	Mean	VI	Mean	VI
technology integration and advocacy	3.93	HE	3.63	HE
digital literacy and competency	3.99	HE	3.71	HE
innovation in technology driven decision making	3.98	HE	3.72	HE
cybersecurity awareness and management	3.92	HE	3.67	HE
promotion of collaborative technology use	3.92	HE	3.63	HE
Overall Mean	**3.95**	**HE**	**3.67**	**HE**

**Legend: 3.26-4.00-Significantly Adopted; 2.51-3.25-Moderately Adopted; 1.76-2.50–Slightly Adopted; 1.00-1.75–Not Adopted*

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Table 3 findings that there was a high degree of perceived technological leadership among school heads, with an average score of 3.95, compared to 3.67 reported among the teachers. The innovation in technology decision-making received the highest rating among both sets of participants, with technology integration and technology advocacy getting relatively low ratings. These findings show the importance of including both school heads and teachers in the process of evaluating technological leadership.

The findings are supported by a review by Karaköse et al. (2024) on the growth of research on digital leadership in education, which indicated the significance of the role played by school administration in digital leadership. In a similar vein, Sosa-Díaz et al. (2022) noted that educational technology integration requires leadership, planning, organization, and collaboration. The findings emphasize the importance of enhancing digital capabilities among school heads and institutionally supporting technology integration. Nonetheless, these findings are a description of the participants' perception and do not indicate causality.

Is there a significant difference in the assessment of the two groups of respondents on the level of technological leadership of school heads?

Table 4.

Difference in the assessment of the two groups of respondents on the level of technological leadership of school heads

Indicators School Heads / Teachers	Paired Differences					t	df	Sig. (2-tailed)	Decision Ho	Interpretation
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference						
				Lower	Upper					
Technology Integration and Advocacy	.14167	.45336	.0828	-.02762	.31095	1.712	29	.008	R	S
Digital Literacy and Competency	.49167	.34418	.0628	.36315	.62019	7.824	29	.000	R	S
Innovation In Technology Driven Decision Making	.23333	.31441	.0574	.11593	.35073	4.065	29	.000	R	S
Cybersecurity Awareness and Management	.30000	.38507	.0703	.15621	.44379	4.267	29	.000	R	S
Promotion of Collaborative Technology Use	.42500	.41601	.0760	.26966	.58034	5.596	29	.000	R	S
Overall	.31833	.14111	.0258	.26564	.37102	12.357	29	.000	R	S

*Legend: FR-Failed to Reject; R-Rejected; NS-Not Significant; S-Significant

Table 4 shows the differences between school heads' and teachers' perceptions of technological leadership among school heads are provided in Table 4 below. According to the statistics provided above, there were significant differences between both groups of respondents regarding digital literacy and competencies, innovation in technology-supported decision-making, cybersecurity, and collaborative technology usage. In addition, it was found that the overall results show a significant difference between the perceptions of both groups (t=12.357), (df=29), (p<.001). Nonetheless, the results for technology integration and advocacy require further investigation since the t-value and p-value reported above are contradictory.

This information underlines the necessity of paying attention to the perspectives of various stakeholders while assessing technological leadership. A'mar and Eleyan (2022) identified a statistically significant association between the technology leadership of principals and teachers' technology integration in Palestinian public schools. In addition, Kaya-Kaşıkcı et al. (2023) conducted research on 11,245 public school teachers in Turkey and discovered that technology leadership helped create the proper climate for technology integration through trust and enabling structure. These sources underline the significance of leadership support, professional development, and the proper environment within the educational institution as factors that can stimulate technology integration. Even though both studies prove the significance of technological leadership, they cannot explain the causes of the differences that have been found between the two groups of respondents in the current study.

Is there a significant relationship between the level of management competencies and technological leadership of school heads in the Division of Rizal?

Table 5: Relationship between the level of management competencies and technological leadership of school heads in the Division of Rizal

Indicators		Pearson r	Sig	Ho	VI
Level of management competencies of school heads	Level of technological leadership of school heads	.194	.026	R	S

*Legend: FR-Failed to Reject; R-Rejected; NS-Not Significant; S-Significant

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Table 5 depicts the relationship between Management competencies of school heads and technological leadership in the Division of Rizal. The result obtained shows a weak positive but statistically significant relationship between the two variables (r=.194, p=.026). As the value of p is less than .05, the null hypothesis is therefore rejected. This means that the greater the ratings in terms of Management competencies, the greater are the ratings in terms of technological leadership, but only to a slight Extent.

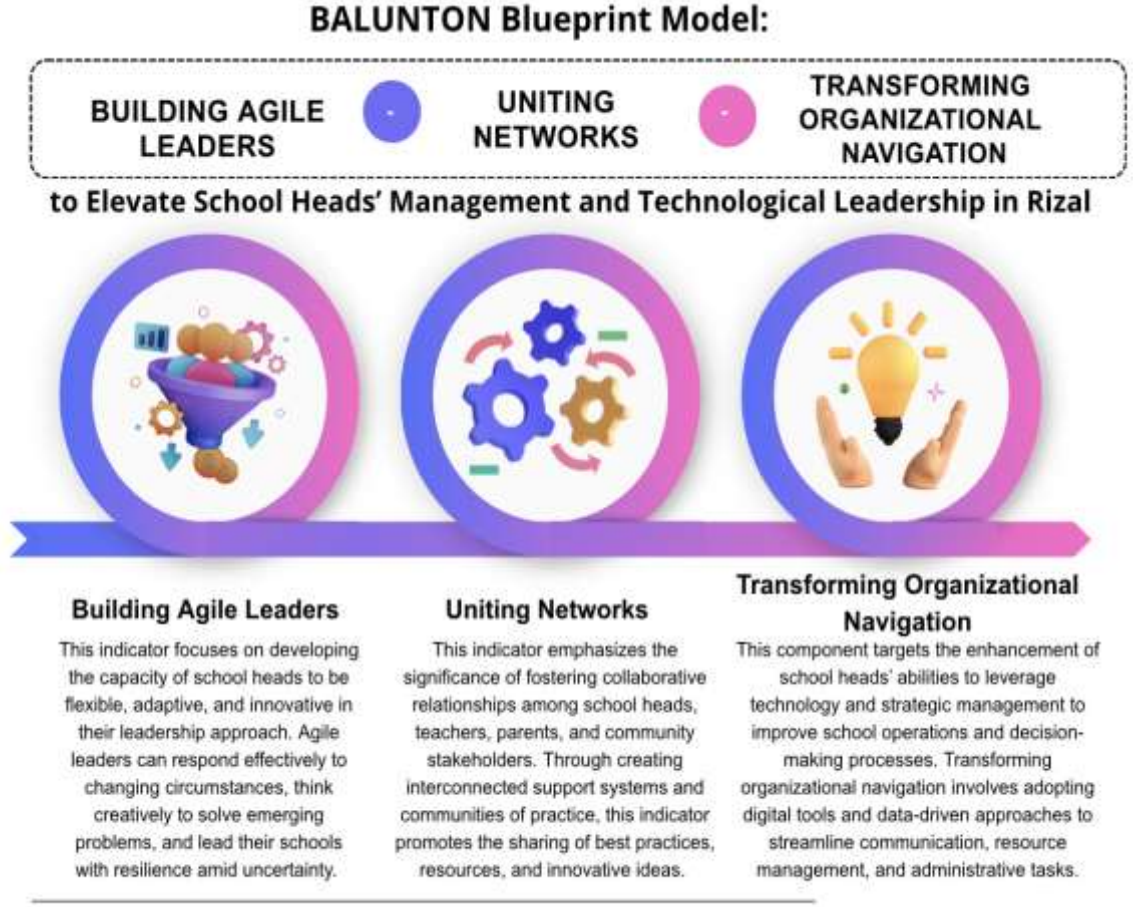
It means that there is a relationship between Management competencies and technological leadership, but they are not the same thing in educational leadership. Mafratoğlu et al. (2025) studied the technological leadership competencies and views of education administrators concerning the use of the metaverse in education and thus provided some evidence that is relevant to the present topic because it concerns the competencies in technology. Their study may be viewed as providing related evidence for the necessity to develop Management and digital leadership skills of school administrators. Still, it should be noted that in the present study, we established the relationship between the two constructs but not the cause-and-effect relationship.

Action plan may be developed based on the findings of the study

BALUNTON Blueprint Model: Building **A**gile **L**eaders**, U**niting **N**etworks**, and T**ransforming **O**rganizational **N**avigation to Elevate School Heads' Management and Technological Leadership in Rizal

The BALUNTON Blueprint—Building Agile Leaders, Uniting Networks, and Transforming Organizational Navigation—is an innovative framework designed to strengthen the management and technological leadership of school heads in Rizal. In an era characterized by rapid changes in educational demands and the growing integration of technology in school operations, this blueprint aims to equip school leaders with the essential skills and strategies for effective leadership. By focusing on agility, collaboration, and advanced organizational navigation, the BALUNTON Blueprint seeks to prepare school heads to lead confidently and adaptively in a challenging and evolving environment.

Building Agile Leaders is a core pillar of the blueprint, emphasizing the development of leadership flexibility and responsiveness. Through this component, school heads are encouraged to cultivate adaptive thinking, resilience, and innovative problem-solving abilities. These qualities enable leaders to make timely decisions, adjust to unforeseen challenges, and drive continuous improvement within their schools, thus fostering a culture of growth and readiness.



Moreso, Uniting Networks and Transforming Organizational Navigation complement this leadership agility by promoting collaboration and technological proficiency. Uniting Networks focuses on creating strong communication channels and partnerships among school leaders, educators, and community stakeholders, facilitating the exchange of

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knowledge and mutual support. Meanwhile, Transforming Organizational Navigation leverages technology and strategic management tools to optimize school operations, ensuring efficient data management and effective resource utilization. Together, these components of the BALUNTON Blueprint provide a comprehensive approach to elevating the capacity of school heads to manage and lead their schools toward academic excellence and innovation in Rizal.

The following indicators are discussed below:

Building Agile Leaders - This indicator focuses on developing the capacity of school heads to be flexible, adaptive, and innovative in their leadership approach. Agile leaders can respond effectively to changing circumstances, think creatively to solve emerging problems, and lead their schools with resilience amid uncertainty. Building agility involves enhancing competencies such as strategic thinking, emotional intelligence, and decision-making under pressure. For school heads in Rizal, cultivating agility means being prepared to navigate shifting educational policies, technological advancements, and diverse stakeholder demands while maintaining a clear focus on school improvement goals.

Uniting Networks – This indicator emphasizes the significance of fostering collaborative relationships among school heads, teachers, parents, and community stakeholders. Through creating interconnected support systems and communities of practice, this indicator promotes the sharing of best practices, resources, and innovative ideas. Collaboration strengthens leadership capacity and helps address complex challenges more effectively. In the context of Rizal, uniting networks encourages school leaders to not work in isolation but to build partnerships within and beyond their schools, thereby creating a collective force for educational excellence and sustained development.

Transforming Organizational Navigation - This component targets the enhancement of school heads' abilities to leverage technology and strategic management to improve school operations and decision-making processes. Transforming organizational navigation involves adopting digital tools and data-driven approaches to streamline communication, resource management, and administrative tasks. It also entails developing skills to analyze information critically and implement evidence-based strategies for school development. For school heads in Rizal, mastering organizational navigation through technology integration is critical to increasing efficiency, transparency, and innovation, ultimately leading to better educational outcomes.

IV. SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Summary of Findings

From the results, it can be concluded that school heads in the Division of Rizal exhibit Management competencies and technological leadership skills that are highly rated across all the dimensions examined. Statistically significant differences were found in the perceptions of school heads' Management competencies and technological leadership when compared against the perceptions of teachers on both constructs. Additionally, there was a weak but significant correlation between Management competencies and technological leadership ($r = .194$), ($p = .026$).

Conclusions

Management competencies and technological leadership were very high among school heads. Nevertheless, disparities in the assessment of school heads and teachers show the need to take into account diverse opinions when evaluating leadership skills. The existence of a weak positive correlation between management competencies and technological leadership points to their interconnection and individuality.

Recommendations

The principals of schools must continue to undergo professional development related to their management skills and technology leadership. The school divisions need to enhance collaboration and evaluation procedures, and the teachers must be active in acquiring knowledge regarding technology and implementing the same in practice. The students must be advised about proper technology usage. Further research could be conducted by looking at other aspects of technology leadership.

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