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The Technology Driven Leadership Approach and Job Performance of School Heads: TECHLEAD

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Abstract — The researcher conducted the study on how the technology-driven leadership approach relates to the job performance of school heads in public basic education institutions. As schools increasingly depend on digital tools, leadership, previously confined to administration, now encompasses technology. We used a descriptive-correlational research design, selecting 100 participants from school heads and teachers through purposive sampling. A validated survey measuring five dimensions of technology-driven leadership—strategic planning, management of school operations and resources, modeling innovative teaching, governance, and ICT-based evaluation—was used to collect data. Standard Performance Indicators were used to evaluate the job performance of school heads.

Descriptive analysis showed that school heads perceived themselves as technologically incompetent leaders, and their job performance was evaluated as very satisfactory. Results of Pearson correlation showed a highly positive and significant relationship ($r = 0.728$, $p < 0.01$) between technology-driven leadership and job performance. Regression analysis also revealed that technology-embedded leadership is a significant predictor of job performance, explaining 53% of the variance ($R^2 = 0.530$). Some profile characteristics like age, marital status, education level, job title and number of attended trainings had a strong correlation with his/her job performance or capability to lead in technology.

Such findings highlight how tech-espoused leadership led to increased managerial effectiveness and productivity in heads leading schools. -- The study underscores the importance of targeted professional development programs that enable school leaders to lead in a digitally evolving education environment and ensure high levels of performance.

Keywords — Technological Leadership, Job Performance, School Heads, Educational Management and Leadership Discipline, Digital Leadership, Instructional Leadership, ICT in Education, Descriptive-Quantitative Research Method, Cebu City, Philippines.

I. Introduction

Technology is decently contemporary at the helm for educational leadership. The Technology-Driven Leadership Approach, or TECHLEAD+, emphasizes the strategic use of digital technologies, a data-informed decision-making process, and innovative management practices to enhance organizational effectiveness and educational outcomes. By utilizing technology well, school leaders can enhance communication and operational efficiency, along with

creating a growth culture. By doing so, TECHLEAD+ will enable school leaders to acquire skills relevant to the evolving demands of 21st-century education; it aims for a flexible learning environment that supports both teachers and students at Vinnakota and prepares them for future work. Technology can be harnessed and incorporated not just in schools but also in the way they are led so as to create better learning experiences for students and greater outcomes overall.

Background and Rationale

As education moves at lightning speed, the challenge for school leaders to adapt to new technology is no longer an option; it is a necessity. With technology being at the core of teaching, learning, and administrative processes, school heads are under pressure to lead digital transformation. And yet, many educators and educational leaders are not well prepared to do this work. This is a different time with a new role for school leaders—transition from managing schools to visionary leadership, digital capabilities, Strategic Mindset and responsiveness to the needs of digital citizens.

Others, such as Singapore, Estonia and Finland, have shown how investing in information communication technology (ICT)-related education can result in digital leadership skills that have helped define a global standard for educational leadership powered by technology. Their schools are focused on innovation, professional development and the strategic use of technology—all elements essential to leading in the digital age.

A survey carried out by UNESCO in 2023 showed that, in developing economies, only one-third (34%) of school leaders believe they are sufficiently equipped to turn digital leadership initiatives into practices. Likewise, school leaders in the Philippines did not acquire competency in skills like digital supervision, integrating ICT into instruction, and making data-driven decisions; they fell behind. More than 60% of the school heads lacked access to professional development that is aligned with effective technology leadership, despite national programs (DepEd Digital Rise Program, ICT4E Strategic Plan) being available [Philippines Institute for Development Studies (PIDS)].

This challenge is especially acute at the local level, where principals frequently manage digital initiatives without updated equipment, limited internet connectivity and scarce training opportunities. These operational conditions, along with heavy administrative necessities, reinforce the need to develop the technological leadership skills of Filipino school heads.

The current study comes to fill the gap in knowledge and practice between global leadership theories and Philippine public-school reality. As tech leadership is crucial for digital transformation, this study assesses technology-focused supervisory practices and their work performance among school heads so that the findings can guide leadership development, policy-making, and capacity-building initiatives to effectively equip executives with necessary competencies to lead their schools through a digital transition.

Literature Review

As a result, technology has drastically changed the face of education, causing the school management practices and classroom delivery methods to advance over time, involving new sets of skills and knowledge requirements for educational leaders. Across the world, academics point out that technology leadership is a strategic responsibility rather than simply a technical assignment. It is, therefore, not either IT integration in schools or adoption of technologies that makes it make sense that they be led by effective technology leaders (Anderson & Dexter, 2005), supported where visionary leadership is made the cornerstone for a meaningful technology adoption process (Fullan, 2013). According to Collins and Halverson (2018), in the face of digital transformation, leaders need to adapt to new learning environments; school heads were described by Aksal (2015) as digital leaders who influence a school's culture while leading underlying changes in teachers and students towards innovation. In the same way, Tan and Goh (2020) underlined that digital learning of principles continuously increases institutional preparedness for technological transformation. Empirical research supports these conclusions, showing that ICT leadership is a motivational factor for teachers and leads to their engagement and better school performance. Afshari et al. For example, (2009) estimated that administrator's ICT leadership can significantly promote teacher innovation, while Dexter (2011) discovered that principals' technology has positive influences on student performance. Digital leadership is highlighted as a necessary competence needed to direct education through rapid technological change (Arnold & Sangrà, 2018; Akberdina & Pushkareva, 2019) and is noted by Ameen and Ahmad (2012) as increasing teachers' commitment and collaboration when leaders are technologically knowledgeable.

School heads in the Philippines have been adopting technology-driven initiatives appropriate to the needs of their students. According to Dela Cruz (2020), school heads act as ICT managers who advocate for the operation of technology in schools, while Bautista (2019) emphasizes that digital literacy allows leaders to make better decisions that facilitate learning. According to Maala and Lagos (2022), technological leadership is one of the elements in achieving quality education standards. Capulong (2022) also noted data-driven decision-making plays an important role in the effective leaders. Padolina-Alcantara (2023), likewise, underlined the significance of digital readiness for school heads in meeting performance aims. These claims are substantiated by local empirical studies. Tanucan et al. found that digital leadership of school heads was found to predict teachers' job satisfaction. Antia and Dioso (2023) reported a strong positive correlation between digital literacy and performance of school leaders, while Escalaw (2023) emphasized adaptability and innovation as key to sustaining school operations through remote learning. [Ancho and Villadiego, 2022; Rios and Corpuz, 2023; Habagat et al. (2024) found that technological and supportive leadership improves communication, creativity and organizational commitment. Antiporda and Lazo (2024) studied training programs, Galang (2023) used data dashboards, and Cabrera (2023) studied infrastructure support on access to network subsystems. Together, these empirical findings indicate that technology-based leadership enhances

administrative efficiency, instructional supervision, teacher buy-in and overall school performance.

TECHLEAD+ Conceptualized: TECHLEAD+: the use of technology, digital tools and data-informed practices to enhance and improve school operations, instructional supervision, and stakeholder engagement. These five drive the dimensions of the framework: strategic vision, management for school operations and resources, instructional leadership with technology, governance, and evaluation by ICT. The job performance of school heads, on the other hand, refers to their efficiency in terms of leadership, administrative skills, supervision and instruction, and stakeholder engagement. According to the available literature, school leaders' technological competencies directly influence such performance outcomes as efficiency, innovation, and a culture of continuous improvement that contributes to improving both institutional quality and instructional quality (Regañon, 2023; Lucero et al., 2022; Magallanes et al., 2024).

This study based its theoretical foundation on several leadership frameworks. Transformational leadership (Leithwood, 2004) emphasizes the importance of inspiring and motivating staff toward common goals—similar to technology-driven initiatives where innovation and collaboration across stakeholders are essential. Distributed leadership (Spillane, 2006) emphasizes responsibility delegation and facilitation of ICT collaborative management and decision-making. Our hybrid leadership (Gronn, 2002) is formed between individual and collective practices that integrate the work of establishing a digital strategy with routine administrative tasks. The theory of organizational change (Kotter, 1996) guides how to map, implement and sustain the digital change; while professional capital (Hargreaves & Fullan, 2012) conceptualizes the relationship between leadership, teacher practices and technology adoption. Key international frameworks such as those from OECD (2015), UNESCO (2020–2023), and the World Bank (2022) all reinforce leadership development at all levels of education systems for successful digital transformation, supporting equitable access to technology in schools. Collectively, these conceptual and theoretical lenses offer a robust underpinning for the TECHLEAD+ framework and demonstrate that leading effective schools in the digital era is characterized by visionary direction, technological proficiency, management/connectivity relationships, and agility. This study extends these observations on the relationship between school heads' technological leadership practices and their job performance, with potential implications for leadership development, educational management and policymaking in the public school system in the Philippines.

II. Methodology

T The study examined the technological leadership practices of school heads and their connection to job performance in public elementary schools in North District 1, Schools Division of Cebu City, during the school year 2024–2025. Using a mixed-methods design, this research combined quantitative and qualitative approaches to facilitate both numerical determination and

contextual framing. The study specifically sought to ascertain the extent of technological leadership among school heads, as demonstrated in areas such as information dissemination, forecasting and strategic planning, administration of school operation and resources, and innovation implementation as well as evaluation and assessment based on the perceptions of teachers and administrators. It also looked at their performance on the job in areas such as strategic leadership, operational management, and promoting innovative teaching practices. In addition, the study investigated associations of respondents' demographic characteristics, technology use, and perceptions of school heads' technological leadership with all aspects of their job performance. Data collection utilized validated survey instruments, and analyses included descriptive statistics, Pearson correlation, and chi-square tests; qualitative responses were used thematically to identify challenges and obstacles experienced by school leaders. These findings informed the creation of a proposed training program to develop school heads´ BIOS technology leadership skills and professional effectiveness.

A descriptive-correlational research design was used along with qualitative data to give better context to variables in the study. Descriptive–correlational research allows researchers to describe group characteristics and explore the relationships among variables without manipulation (Creswell, 2014). Calmorin and Calmorin (2012) state that this type of design shows the existence and strength of relationships under real-life conditions. The descriptive part checked out how the heads of schools made nervous energy in initiative forms for institution leadership via technology use, while the correlational component studied correlations between demographic characters and technological management, as well as job performance. Qualitative data revealed the challenges and barriers school leaders encounter in implementing technology-infused leadership practices.

This study employed purposive sampling (Creswell, 2014), selecting the sample based on its relevance to the research objectives. A comprehensive perspective on leadership practices and outcomes was achieved by including both school administrators and teachers from public elementary schools in North District 1 as participants. A sum of 100 individuals participated, including five administrators and 95 teachers. Respondents were spread over four of the schools: Cebu City Central Elementary School (52%), Ermita Elementary School (21%), Lusaran Elementary School (16%), and Kang-atis Elementary School (11%) to ensure that all responses were fairly distributed across the schools in the district. Insights from administrators focused on decision-making and the operational aspect of management, while teachers offered perspectives around the implementation and outcomes of leadership initiatives.

Guided by the Input–Process–Output (IPO) paradigm, the study followed a structured procedure. A formal request was then made to the Office of the District Supervisor, seeking authorization. Questionnaires were distributed to the chosen respondents when the approval was granted as well; this included collection and data processing for analysis. Demographic and professional data were collected during the input phase. Finally, the instrument itself was tested and validated for clarity and reliability. Descriptive statistics (frequency, percentage, mean, and

standard deviation) were applied to analyze quantitative data, while relationships between variables were assessed through inferential statistics (Pearson correlation and chi-square tests). Qualitative responses were thematically coded for common challenges and experiences in areas of technological leadership.

The main instrument for data collection was a researcher-designed questionnaire that consisted of three sections. The initial part collected demographic and professional data, such as roles, length of service, level of education achieved, and how often technology is used for work-related tasks. Section two measured technology leadership practices over five domains: dissemination; forecasting and strategic planning; administration and governance; implementation of innovations; and evaluation and assessment. The next one examined job performance in strategic leadership, operational management, and modeling innovative teaching. Responses were recorded using a five-point Likert scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree), which permits standardized, quantifiable measurement across response items.

The data was confirmed and analyzed through appropriate software. Demographic characteristics and response distributions were described by percentages and weighted means of technological leadership practices and job performance level. T-tests, Pearson correlations, and chi-square tests (inferential statistics) showed significant differences and relationships between the variables, which formed a strong foundation for conclusions and recommendations.

Ethical conditions were adhered to to ensure participants' rights, privacy and well-being. Additionally, formal permission was granted by the District Office and school authorities, along with informed consent obtained from all participants in the form of study objectives, procedures, benefits and voluntary participation. Participants' anonymity and confidentiality were assured, and data were reported in an aggregated format. Only the researcher and academic advisers had access to raw data. The study was conducted in accordance with institutional, national, and international ethical standards for research and academic integrity, which include transparency in the processes related to the production and validation of knowledge that underpin responsible research conduct.

III. Results and Discussion

Demographic Profile of Respondents

Understandings of respondents' demographic characteristics provide crucial necessary context for interpreting trends in organizational leadership and workforce composition. As shown in table 2, the distribution was summarized according to age group and gender. We see that the majority of teachers are between age groups 41 and 50 (40%), followed by age groups [31--40 (35%),21--30 (18%),51 and above (7%)]. This bias towards a more experienced population indicates faculty with significant practical experience while remaining flexible and receptive to

developmental opportunities, mirroring the finding of Caballero and Dela Cruz (2022) that teachers who are in their 30s or 40s tend to be early adopters of technology since they combine years of experience with major investments into professional development.

In terms of sex, over 90% of the teaching population are female, which is in line with Santos & Mendoza's (2021) observation about the feminization of the teaching profession, especially at the basic education level. In terms of leadership education rooms, this demographic may feed into the support unique to female educators on pathways and barriers to promotion.

60% of the respondents were aged 41–50 years, and 40% were aged above 51 years; no respondent was below the age of 41, suggesting hospital leadership positions are generally held by older staff with more experience. The gender breakdown (60% female) reflects the teacher workforce, suggesting a consistent, albeit nascent, trend of women entering into leadership (Gonzales & Rivera, 2023).

The interaction of these demographic variables with the independent (technological leadership) and dependent (job performance) variables of the study reveals that factors such as age and experience influence technology adoption patterns, which impact how leaders drive technology in organizations. As Serrano (2020) notes, established administrators can benefit from continuing professional learning in order to remain current with digital advances, but younger educators' expertise concerning technology use lends itself to collaborative, cross-generational learning.

Marital Status and Professional Engagement

Most of the teachers (74.7%) and administrators (80%) were married as compared to those that were single, separated or widowed in Table 3. The majority of married respondents may signal a relationship between familial stability and professional promotion, noting stable household dynamics as related to organizational commitment and leadership readiness (Castillo & Ramos, 2022; Lopez & Dizon, 2021).

This is complemented by married administrators, whose commitment lies in advancing technological leadership through digital innovation. In contrast, teachers who were unmarried or divorced (and thus often at earlier points in their careers and lives) tended to emphasize building skills and adaptability—traits that are fundamental for future leaders (Bautista & Reyes, 2023).

Educational Attainment and Leadership Capacity

Table 4 shows a strong culture of academic pursuit: more than 85 percent of teachers have obtained or are engaged in graduate studies, while all admins have at least a master's degree, with most earning doctorate degrees or units. Such is a mark of compliance with DepEd competency standards (DepEd Order No. 25, s. 2021) and a relentless pursuit of continuing professional development.

More educated leaders tend to exhibit enhanced technological and instructional leadership capacity (Villanueva & Ortiz, 2022; Delos Santos, 2023). If there is a high overlap between these variables, this probably signals that the road to career advancement and academic degrees is also a road from academic leadership to TECHLEAD+ readiness, as described in the business context by the transformation model formed around those who are able to employ TRALM.

Job Position and Leadership Succession

According to table 5, classroom teachers (especially Teacher III) constitute the majority of the workforce; only 5% of them are administrators. The ratio of senior, well-qualified teachers—many being female, aged 41 years or older, and/or involved with graduate study—provides a solid basis for leadership succession and distributed forms of leadership (Llego, 2023; Gonzales & Bernal, 2021). This framework promotes the sustainability of technology-fueled school administration and empowers veteran educators as agents of transformation.

Tenure, Professional Development, and Mentoring

Most teachers have been in the field for only 6–10 years, as seen in Table 6, while administrators are fairly seasoned with much longer tenures. Such stability allows greater understanding of institutional culture and bolstered reform over the long term, reiterating Creswell (2014) and Fullan (2019) in our work. Conversely, having early-career teachers serves as an opportunity for mentorship—a process by which both technological and pedagogical knowledge is transferred (Gonzales & Bernal, 2021).

Table 7 shows that CPD is very much in the culture, and administrators attend even more trainings compared to teachers. This is consistent with Day and Sammons (2014), who highlight the importance of continuing to learn in effectively leading.

Administration and Teaching Technologies

Table 8 shows a stark contrast in technology usage: teachers are highly active users of digital instructional tools, but the technology used by administrators is primarily limited to basic communication and management technologies. With this in mind, it points towards a gap in modeling digital leadership (ISTE, 2018; Hallinger & Murphy, 2013). As mere participation in advanced degree programs does not equate to any level of competency in the digital age, administrators also require orientation to digital leadership through tailored digital capacity programs (Afshari et al., 2012).

Dimensions of Technological Leadership

Tables 9–13 examine the technological leadership of school heads in terms of dissemination, planning, governance, innovation and evaluation. The results show consistently moderate and low levels of engagement, particularly in collaborative and innovative practices. School heads are good at strategic planning or digital communication platforms, but they do not

have experience in hands-on implementation, policy development, or participatory evaluation. This pattern, which mirrors the literature on ICT leadership such as Fullan (2014), Anderson & Dexter (2005), and Flanagan & Jacobsen (2003), emphasizes that structured frameworks of ICT leadership and capacity building in data-driven decision-making are necessary.

Work Performance in Key Performance Areas

Tables 14–16 indicate that school heads excel in strategic leadership, resource management, and promoting innovation in instruction; their highest ratings are evident for visionary planning and compliance with policy. Nonetheless, the integration of automated systems and formalized training on digital pedagogies is not widespread, echoing Fullan's (2019) characterization of an "implementation gap." Sustainable innovation needs inspirational leadership and institutional support (Hargreaves & Fullan, 2020).

Demographic Correlates of Technology Use and Performance

Tables 17–19 show that the most significant correlations between technology use and job performance are age; educational attainment; marital status; position; and attendance at training, but not gender or years in position. Younger and more educated teachers use technology more often, making the findings confirm a need for targeted training and graduate schooling. In short, leadership effectiveness in the digital age evolves through purposeful professional development rather than demographic traits.

Obstacles and Challenges to Technological Leadership

The main roadblocks to effective technology leadership (Table 17) are not grounded in the desire or trained skill set of leaders; rather, they are rooted in systemic challenges: inadequate funding, high-stakes training efforts, refactors on technical support issues/needs, unreliable connectivity and lack of importance given that being open to change is a fundamental human trait. These findings mirror global concerns (e.g., Darling-Hammond et al., 2017) and underscore the need for holistic solutions—policy coherence, expanded investment, ongoing professional development, and a culture of innovation.

Overall, this analysis shows that the teaching workforce is experienced, well qualified and dedicated to lifelong improvement, but there are consistent gaps in technological leadership—particularly at the head level. This is why closing gaps requires systemic investment, targeted capacity-building and an intentional approach to nurturing collaborative, data-driven and innovative leadership practices so that technology-enabled transformation in education is sustainable and inclusive.

IV. Conclusion

It represents an in-depth examination of teachers' and school administrators' demographics, professional development, technological leadership practices, and how these elements relate to their job performance within the educational sphere. The findings highlight several key takeaways.

Firstly, the majority of female educators in the teaching workforce possess experience, are academically well-prepared, and are committed to continuous professional development. With all of this experience and a high level of qualification, schools have the potential for instructional leadership and innovation. The study also highlights a generational divide when it comes to technology use, as younger and more highly educated teachers reported they are more skilled and involved with digital tools.

Second, while school administrators demonstrate strengths in strategic administration, resource management, and policy compliance, they only show moderate levels of technological leadership with regard to hands-on implementation, collaborative innovation, and participatory evaluation. This gap between skills in digital communication and deeper integration of technology in education indicates the demand for focused professional development programs that will build a stronger capacity for digital leadership among administrators, not just management.

Third, the research illustrates those important demographic categories—including age cohort, level of education attainment, marital status, occupation level and training frequency—are statistically significant predictors of both technology adoption and workplace performance. Gender and years in position, by comparison, do not correlate significantly with these outcomes—suggesting a more equitable professional environment.

Lastly, systemic issues such as a lack of funds, insufficient training, inadequate technical support, and resistance to change are limiting schools from experiencing the full capacity of technologic leadership. Overcoming these barriers requires coordinated action at the policy, institutional and individual levels to ensure educators and school leaders are prepared for the challenges of 21st-century education.

This point is very important, as this research helps spot strengths and gaps in educational leadership practice. The results of the study emphasize the necessity for systems that support sustainable integration, thus calling for investments in continuous professional development and innovative culture styling as well as structured leadership frameworks. Attending to these aspects better prepares educational institutions' leaders and teachers for effecting real and lasting change in teaching, learning, and organizational performance.

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