Assessment of School Heads' Technology Leadership and Its Influence on Decision-Making Styles and School Culture

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Abstract: The core of any educational innovations and technology advancement is to deliver quality education. School heads are expected to initiate and implement school change through the use of technology to facilitate complex decisions in integrating technology into learning, teaching, and administration, which may result in having a positive school culture. Thus, school heads' technology leadership, decision-making styles, and school culture are contributory factors in achieving educational goals and objectives. This study assessed the influence of school heads' technology leadership on their decision-making styles and school culture. Specifically, this research measured school heads' perceived level of technology leadership; identified the school heads' decision-making styles; appraised the school culture; the influence of school heads technology leadership on their decision-making styles; the influence of school heads technology leadership on school culture; and the management implication that may be drawn from the result of the study. The researcher utilized the descriptive-correlational research method which was done by gathering the data using the Education Leaders Technology Survey (ELTS), General Decision-Making Style Questionnaire (GDMS), and School Culture Triage Survey. The survey instruments were disseminated to 94 school heads that constituted the total number of public secondary school heads in the Schools Division of Bulacan. Results revealed that school heads' technology leadership has a significant influence on decision-making styles and school culture. Finally, the study results provided insights to enhance management practices in schools.

Keywords—technology leadership; decision-making styles; school culture

1. INTRODUCTION

On March 2020, most schools worldwide are temporarily closed due to the spread of the COVID-19 pandemic. Over 100 countries have implemented nationwide and localized closures, resulting in education disruption over half of the world's student population [1]. The closure of educational institutions is an attempt to contain the spreading of the COVID-19 pandemic. Although such action dramatically affects the regular delivery of education, this practice significantly reduces the transmission of the COVID-19 pandemic [2]. Amid the pandemic, the operation of the educational institution shall continue. With this, educators face challenges in continuing and supporting the school operations in the face of COVID-19 pandemic. The essential role of Information and Communications Technology (ICT) has been used for decades, and maximizing its potential is one solution to ease the need of educational institutions, not only for academics but also for administrations.

Information and Communication Technology (ICT) is a factor in enhancing education quality [3][4][5][6]. Administration and management applications of ICT are currently popular in schools because of their capabilities in facilitating administrative undertakings from data storage to knowledge management and decision-making. ICT is now vital in sustaining the efficacy of educational institutions and support the various operations such as payroll and financial accounting, administration of student data, inventory management, personnel records maintenance, library systems, and learning management systems [7].

ICT integration in the field of education opens opportunities and challenges to educational leadership. They expect school heads to lead all the school improvement changes, including ICT-related innovations [8]. Without school heads' support, ICT educational potential may not be realized [9]. ICT offers new capabilities that lead to significant changes in the academic environment and shows a new way of distributing information throughout the educational system [10]. However, their preparation to become technology leaders is not enough. They have difficulties in developing both the human and technical resources needed to achieve effective ICT integration in schools [11]. Also, Schoeny (2002) found three sources of challenges that school heads faced in integrating ICT [12]. These challenges include school heads who are not well trained in educational technologies, application of ICT presents new challenges, and educational use of ICT is a continually developing process. Rosa (2016) further explains that the scarcity of ICT resources, such as the limited number of computers and the unavailability of internet services, deferred the operative integration of ICT in education [13]

School heads are a vital factor in the implementation of ICT in schools. They must integrate ICT into their daily work and provide consistent and positive leadership for technology use in the teaching-learning process. They must be technology leaders [14]. They have the primary responsibility for initiating and implementing school change through the use of ICT and

can facilitate complex decisions to integrate it into learning, teaching, and administration [10][15][16][9][17][18][19]. Here enters the concept of "technology leadership" in schools wherein school heads' are equipped with the skills needed in creating, using, managing, sustaining support for the effective use of ICT in teaching and learning [20], and accelerating technology integration in schools to develop and sustain the skills needed to produce skilled human resources [21].

In 2018, the International Society for Technology in Education (ISTE) released a new standard for educational leaders. The input and feedback of about 1,300 educators and leaders from 50 states and 36 countries revealed the competencies and mindset required for educators to effectively use technology as a transformative tool for learning, teaching, and leading. According to the ISTE Standards for Education Leaders, a leader must be an equity and citizenship advocate who uses technology to increase equity, inclusion, and digital citizenship practices. An educator must also be a visionary planner who engages others in setting a vision, strategic program, and continuous evaluation cycle for transforming learning with technology. Furthermore, an educator should be an empowering leader who creates a practice where teachers and learners can use technology in innovative ways to enhance teaching and learning. An educator can also be a system designer who creates teams and systems to implement, sustain, and continuously improve technology to support learning. Finally, an educator needs to be a connected learner who models and encourages continuous professional education for themselves and others [22]. ICTs are increasingly becoming very important in supporting the educational system, especially in the decision-making processes [23]. School heads are responsible for leading schools to attain their goals and objectives [24]. They have different decision-making styles, reflecting their actions in leading the schools toward success [25].

Decision-making is a very complex process, and it requires flexibility and the ability to use all available information [26]. Most of the decisions carried out in an educational predicament are taken from an instinctive perspective or only with some necessary information. However, real-life problems are often not so easy, and it is necessary to analyze the information in detail [27]. Ujunju et al. (2012) mentioned that ICT enables the school heads to make quick and accurate decisions through ICT emergence [28]. ICT use in education provides data collection tools, analysis, storage, and dissemination that support decision-making [29]. The use of ICT shows a positive correlation with the decision-making processes [30].

Nevertheless, it depends on the decision-maker to differentiate which information, prototypes, techniques, devices, systems, and procedures to be used purposively for decision-making [31]. Gupton (2010) further explained that school heads must recognize what data is significant to make comprehensive decisions. Educational decision-making needs to evaluate the actual state of ICT in educational practice periodically [32]. Not only to account for the financial investments from public sources but also to inform decisions about future policies and guidelines [33]. ICT can be a vital tool to assist with data-driven decision-making. However, school heads' decisions may positively or negatively impact different aspects of the school. Their decision-making styles are essential but have no direct relation to the acceptance and use of technology [34].

The Philippines Department of Education (DepEd) has implemented a 10-Year Modernization Program to introduce Information Technology (IT) to improve the teaching and learning process, educational management, and operations. One of the main components of the modernization program is the DepEd Computerization Program (DCP). The DepEd Computerization Program (DCP) aims to equip public schools with proper technologies that would improve the teaching-learning process and match the challenges of the 21st century. This program responds to public schools' computer backlog by providing the hardware and software and training on simple troubleshooting.

Aside from the DCP, currently, the DepEd utilizes different information systems that provide quality, relevant, and timely information. Using information systems helps in planning and budgeting, monitoring and evaluation, and policy decision-making across governance levels. DepEd ICT utilization includes the following: (1) Basic Education Information System (BEIS), (2) Learner Information System (LIS), (3) Learning Resources Management and Development System (LRMDS) or LR Portal, and (4) the DepEd Website.

The BEIS serves as the management information system of the DepEd to process quick summaries on total enrolment, the number of nationally funded teachers, instructional rooms, and school furniture. Data gathered using the BEIS are used for planning, budget preparation, resource allocation, and performance indicators. Similarly, the LIS serves as the system that maintains the registry of learners. It intends to provide a standardized registration system for learners, track learners' progress and performance, provide learner information for better planning and supervision of schools and learning centers, and enhance the management of learners' records. Meanwhile, LRMDS aims to expand the distribution and access to learning, teaching, and professional development resources in the different levels of DepEd governance. Also, it provides access to information on quantity and quality and location of textbooks and supplementary materials, and cultural expertise, access to learning, teaching, and professional development resources in digital format, and locates resources in print format and hard copy, standards, specifications, and guidelines for assessing and evaluating, acquiring and harvesting, modification, development, and production of resources. It is also a quality assurance system supporting DepED Regions, Divisions, and Schools to select and acquire quality digital and non-digital resources in response to identified local educational needs. Lastly, the

DepEd website serves as the primary online publication and communication means of the department.

The past years have been smooth in implementing the computerization programs and other related information management systems of DepEd at the school levels. However, the school year 2020-2021 becomes more challenging for school heads due to the COVID-19 pandemic. Away from the traditional face-to-face school operations, the management of schools is done remotely to comply with the minimum health protocols of the government. Communications among school heads, teachers, students, and other stakeholders are done virtually using online platforms. In support, DepEd recommends the use of Microsoft Teams, Workplace by Facebook, and Google Meet in video conferencing to ensure the security and confidentiality of information since DepEd has an existing arrangement with the organizations and platforms mentioned [35].

The DepEd's Basic Education Learning Continuity Plan in the Time of COVID-19 ensures that the delivery of learning will continue by adjusting the K-12 curriculum, aligning the learning materials, deploying multiple learning delivery modalities, and providing training to school heads, teachers, and others. It highlights the direction of DepEd towards the implementation of the distance learning modality of learning delivery. Furthermore, DepEd recognizes technology solutions to facilitate interactive and remote activities for teaching and learning. However, there are also challenges to be encountered in connection to distance learning technologies.

In December 2019, DepEd launched Sulong Edukalidad: Addressing the Challenges of Quality in Basic Education that focuses on the four reforms in basic education: (1) K to 12 curriculum review and update, (2) Improving learning environment, (3) Teachers upskilling and reskilling, and (4) Engagement of stakeholders for support and collaboration. During its launch, in her speech, DepEd Secretary Leonor Magtolis Briones mentioned that "the standards of education quality is even made more challenging by technology." In a separate statement, Briones (2019) emphasized that "We have to change the way we teach our learners. We have to prepare them for a world that is drastically changing." [36] In line with Sulong Edukalidad, DepEd launches the "DepEd Commons." It is an online platform to support the continuous delivery of basic education to Filipino learners under the Public Schools of the Future's Digital Rise Program. Also, DepEd has plans to strengthen the use of the Public Education Network (PEN) in collaboration with the Department of Information and Communications Technology (DICT) to address the challenges in connecting schools to the internet [37]. With the roadmap provided by DepEd, Philippine education is gearing towards the establishment of public education anchored in technology.

Information and Communications Technology (ICT) impacts the education system, especially in schools [38]. ICT has changed the way of managing schools, teaching and learning, and forming school culture. Concentrating on the position of school culture for ICT integration, Pelgrum and Law (2009), as mentioned by Fu (2013), indicated that effective ICT integration depends on school leaders' insights and vision rather than ICT skills [39].

School culture has a mediating role that influences the actions, beliefs, and attitudes [40][41]. School culture refers to the organizational culture situated in the educational background that finds the primary assumptions, conventions, and principles shared by school members. It is the reflection of social interactions and experiences encompassed of individuals' norms, beliefs, attitudes, and values [42]. School heads are expected to perform based on their schools' unique culture and values, which means there is a greater emphasis on building relationships with all school stakeholders [43].

In the study of Lee and Louis (2019), it reveals that having strong and positive school culture are relative to higher levels of school performance. Furthermore, it suggests that there was a connection between schools with a strong culture and their continuous improvement in school-level achievement [44]. Thus, school culture is important element to sustain school improvement, measured by academic achievement. This is also evident to low-performing schools, especially when they were strongly equipped with positive school culture. The effect of school culture on school performance is not temporary but it can have an enduring effect on organizational momentum.

Meanwhile, according to Gürfidan and Koç (2016), a correlation exists between school culture and technology integration by strengthening technology leadership and support services [45]. While establishing a good working environment in the school provides effective leadership and adequate support. However, many schools reject ICT implementation because there is a mismatch between the school culture and the introduced ICT [46]. Also, Chou et al. (2019) believe that technology makes school systems and culture appealing [47].

To deliver quality education is the core of any educational innovations and technology advancement. Thus, school heads' leadership [48], decision-making [49], and school culture [41] are contributory factors in achieving educational goals and objectives. Given the preceding background, this study aims to assess the school heads' technology leadership and its influence on decision-making styles and school culture.

The assessment of school heads' technology leadership is the initial step to know the school heads' integration and use of technology in schools. Self-assessment regarding technology leadership will be beneficial for school heads to understand the different areas where they excel and areas that need to be improved. Skills in technology leadership are vital to remotely manage schools, especially in times of education disruption caused by calamities and pandemics like we are experiencing nowadays. On the other hand, identifying school heads' decision-making styles will allow self-reflection concerning the factors that they consider in making decisions. Thus,

school heads must be good decision-makers since the decision to be made by them may substantially impact policy formulations and school operations. While in terms of school culture, the literature reveals that schools with a positive culture tend to have good performance, and those with negative cultures are more likely to underperform. It further concludes that school culture has a significant influence on school performance [50]. Therefore, appraisal of school culture is a big help for school heads to gauge and have data regarding the level of school improvement by measuring school culture's status and providing interventions in areas that need to be improved. Finally, the study results may provide insights to enhance management practices in schools.

2. STATEMENT OF THE PROBLEM

The research aims to assess the influence of school heads' technology leadership on their decision-making styles and school culture.

Specifically, the study sought to answer the following questions:
1. How may the level of school heads' technology leadership be described in terms of:
    1.1. Equity and Citizenship Advocate;
    1.2. Visionary Planner;
    1.3. Empowering Leader;
    1.4. Systems Designer; and
    1.5. Connected Learner?
2. What are the decision-making styles practiced by the school heads?
3. How may the school culture be described in terms of:
    3.1. Professional Collaboration;
    3.2. Affiliative Collegiality; and
    3.3. Self-determination?
4. Does school heads' technology leadership significantly influence their decision-making styles?
5. Does school heads' technology leadership significantly influence school culture?
6. What management implications may be drawn from the findings of the study?

3. METHODOLOGY

The descriptive-correlational research method was utilized to determine the influence of school heads' technology leadership as predictor of their decision-making style and school culture. Since correlational research is a systematic approach that allows for the investigation between one or more independent quantitative variables and one or more dependent variables, the researcher considered the school heads' technology leadership as the independent variable, while their decision-making styles and school culture are the dependent variables. There is one independent variable that was studied and correlated to two dependent variables. The study made use of a quantitative research approach in analyzing and understanding whether or not the independent variable influences the dependent variables.

3.1 Respondents of the Study

The respondents of this study were public secondary school heads in the Schools Division of Bulacan for School Year 2020-2021. Participating schools were carefully identified and listed.

The school heads were the primary respondents of the study. The experiences and practices in management that they have as school leaders are a good source of information. Their perceived level of ICT leadership, decision-making style, and school culture are the essential data needed in the study.

Table 1 presents the demographic distribution of the respondents. There are 94 school heads in the Schools Division of Bulacan coming from small, medium, and large-sized schools that refer to the study population. The study population was involved to gather accurate and more precise data from a small number of participants belonging to the specified group. The school size was only used to describe the background of the school that the school heads represent.

Table 1: Demographic Distribution of the Respondents

School Size	Population	Percentage
Small	7	7%
Medium	17	18%
Large	70	75%
Total	**94**	**100%**

3.2 Instruments of the Study

This study utilized the Education Leaders Technology Survey (ELTS), the General Decision-Making Style Questionnaire (GDMS), and the School Culture Triage Survey to determine the school heads' technology leadership level, school heads' decision-making styles, and the status of schools' culture respectively.

School Heads' Technology Leadership. In gathering the data, this study used the Education Leaders Technology Survey (ELTS) developed by Schoenbart (2019) to measure the school heads' competencies in using and integrating technology in schools. The ELTS is primarily adapted from the critical areas highlighted on the ISTE Standards for Education Leaders [51].

Decision-making Style Questionnaire. The General Decision-Making Style Questionnaire (GDMS) developed by Scott and Bruce (1995) [52] and adapted from the study of Spicer and Sadler-Smith (2005) [53] was employed to assess decision-making styles. The GDMS questionnaire purports to measure five decision-making preferences: rational, intuitive, dependent, spontaneous, and avoidant. It consists of 25 items, scored on a five-point Likert-type scale, with five items identified for each style.

School Culture Triage Survey. School culture was appraised using the School Culture Triage Survey developed

by Wagner (2006). The School Culture Triage Survey consists of 17 questions and is the Likert scale format with numerical values from 1 to 5. The survey assesses school culture in three areas: Professional Collaboration, Affiliative Collegial, and Efficacy or Self-Determination [54].

4. RESULTS AND DISCUSSION

4.1 Technology Leadership

It is not surprising to discover that school heads' view of technology implementation has a crucial effect on its integration process [55]. As presented in Table 2, school heads' mean technology leadership level across the five standards is 4.23. A mean score of 4.23 indicates that school heads generally have demonstrated a significant level in applying the standards for technology leadership. It further shows that empowering leader (4.38) score the highest among the five standards, followed by connected learner (4.31), system designer (4.28), and visionary planner (4.12). And, among the five standards, equity and citizenship advocates (4.04) record the lowest score. Nevertheless, all technology leadership standards are considered significant even if it is individually examined.

Table 2: Comparative Analysis of School Heads' Technology Leadership Standards

Standard	Weighted Mean	Descriptive Interpretation
Equity and Citizenship Advocate	4.04	Significant
Visionary Planner	4.12	Significant
Empowering Leader	4.38	Significant
System Designer	4.28	Significant
Connected Learner	4.31	Significant
Overall Weighted Mean	**4.23**	**Significant**

4.2 School Heads' Decision-Making Styles

As can be seen from Table 3, the school heads primarily practiced the rational decision-making style (4.60). As mentioned by Uzonwanne (2016), the compatibility between choice and value describes how rationality occurs [56]. Rationality focuses on choosing rather than highlighting the selected substitute and considering the implication of the consequences of the behavior. Therefore, rational decision-making is the model of decision-making that is most likely to apply to higher-level decision-making.

Table 3: Comparative Analysis of School Heads' Decision-Making Styles

Decision-Making Style	Weighted Mean	Descriptive Interpretation
Rational	4.60	Strongly Agree
Intuitive	3.23	Neutral
Dependent	3.75	Agree
Avoidant	2.48	Disagree
Spontaneous	2.61	Neutral

Overall Weighted Mean	**3.33**	**Neutral**

The styles most applied after the rational decision-making style were the dependent decision-making style (3.75), intuitive decision-making style (3.23), and spontaneous decision-making style (2.61). The dependent decision-making style emphasizes solicited advice and direction from others. When making a decision, the decision-maker may consult experts to support his/her decision rather than make the decision alone [57]. On the other hand, Andersen (2000) elaborated that intuition decision is also an effective style because it uses other decision-making functions like sensing, feeling, and thinking [58]. When people need to decide under different circumstances, they would likely use their intuition and determine whether the alternative is right or wrong. While, the spontaneous decision-making style is a high-speed, sensitive style, perhaps used in decision situations with time pressure [59]. Spontaneous decision-making happens if cognitive abilities are not fully utilized before making a decision. Consequently, the person takes decision-making less seriously [60].

It is also highlighted that the lowest rate observed was for the avoidant decision-making style (2.48). Avoidance decision-making style is a collection of choice strategies triggered by a cognitive conclusion driven by the decision's problematic nature that leads for decision avoidance effects [61]. It might impact decisions when only a single task is available to be performed [62].

However, calculating the average of the general decision-making styles resulted in a 3.33 mean score that has a descriptive interpretation of being neutral. Therefore, it may conclude that school heads are using multiple decision-making styles. Accordingly, the rational decision-making style dominates while other decision-making styles serve as support. The emergence of rational as the most practice decision-making style among school heads implies that they are logical. School heads consider all possible alternatives based on reason, facts, and objectives before taking action.

4.3 School Culture

Table 4 shows the comparative analysis of the three components of a school culture which may help identify the component of school culture that needs attention for development. As reflected in the table, professional collaboration scored highest among the three components of school culture. It has a mean score of 4.50, indicating that teachers and staff always prioritize their main responsibility, including curriculum, instruction, assessments, school schedules and team planning time, and determining student behavior. Next is the affiliative collegiality component of school culture. It received a mean score of 4.33 which means that teachers and staff often communicate, celebrate, and appreciate each other. Finally, self-determination scored a mean of 4.21, which is the lowest among the three components of school culture. Although it is the least in the

rank among the three components, the mean score of 4.21 reflects that teachers and staff are often empowered to solve problems and make decisions, be proactive rather than reactive, and enjoy working at the school. In general, school heads perceived that their schools have a healthy school culture and are a nurturing place for the teachers and staff, and students (4.35).

Table 4: Comparative Analysis of the Components of School Culture

Component	Weighted Mean	Descriptive Interpretation
Professional Collaboration	4.50	Always
Affiliative Collegiality	4.33	Often
Self- Determination	4.21	Often
Overall Weighted Mean	**4.35**	**Often**

4.4 The Influence of School Heads' Technology Leadership on Decision-Making Styles

The result of the multiple regression analysis of school heads' technology leadership on decision-making styles is presented in Table 5. Results of the correlation analysis revealed that the five technology leadership standards correlate with the decision-making styles of school heads. Analyzing the obtained Beta coefficients, one could glean that of the five technology leadership standards, one standard, recorded coefficient with associated probability less than the significance level set at 0.05. It means that system designer (0.508, p=0.016) correlates significantly with the decision-making styles of school heads. The four other technology leadership standards correlate with school heads' decision-making styles but not significantly.

Furthermore, findings of the regression run indicate that for every unit increase in equity and citizenship, visionary planner, empower leader, and connected learner could generate a decrease of -0.115, -0.036, -0.033, and an increase of 0.004 respectively in the decision-making styles of school heads. The system designer also gained a B coefficient of 0.433 with an associated probability of 0.016. This finding also revealed that system designer is a significant influence on the decision-making styles of school heads. Similarly, the obtained Beta coefficients analysis would indicate that of the five technology leadership standards, system designer appeared to be the best predictor of school heads' decision-making styles (0.508).

The identification of system designer as the best predictor of school heads' decision-making styles may be attributed to the scope and greater importance that it plays in technology leadership. School heads as system designer are tasked to lead teams that will cater to physical infrastructure and application software management. They also have to ensure that financial and human resources are sufficient while facing the challenges in budgeting and sustaining the initiative and negotiating and setting expectations for instructional use with

teachers [63]. Besides, infrastructure support, team management, and innovative ways of communication may influence the decision-making process [31].

Table 5: Multiple Regression Analysis of School Heads' Technology Leadership on Decision-Making Style

Model	B	Std Error	Beta	T	Sig.
(constant)	2.223	0.421		5.284	0.000
Equity and Citizenship	-0.115	0.136	-0.139	-0.840	0.403
Visionary Planner	-0.036	0.130	-0.049	-0.281	0.779
Empower Leader	-0.033	0.189	-0.035	-0.175	0.861
System Designer	0.433	0.176	0.508	2.458	0.016
Connected Learner	0.004	0.132	0.005	0.028	0.977

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R = 0.378
R^2 = 0.143
F-Value = 2.935
p-value of 0.017
Alpha = 0.05
Decision = Reject H_0

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a. Dependent Variable: General Decision-Making Style
b. Predictors: (Constant), Equity and Citizenship, Visionary Planner, Empower Leader, System Designer, Connected Learner

Moreover, the analysis of variance of the regression of technology leadership on the decision-making styles of school heads revealed an F-value of 2.935 and a p-value of 0.017, which is significant at .05 alpha. It means that the five technology leadership standards jointly influence the decision-making styles of school heads, but the best predictor is the system designer.

Therefore, the result of the study rejects the null hypothesis and concludes that school heads' technology leadership has a significant influence on their decision-making styles. The finding implies that technology-oriented school heads apply their knowledge about technology integration in making decisions and actions [64].

4.5 The Influence of School Heads' Technology Leadership on School Culture

Technology makes school systems and culture appealing [47], but numerous schools reject technology integration because of a mismatch between the school culture and the introduced technology [46]. Table 6 displays the result of the multiple regression analysis of school heads' technology leadership on school culture. The table exposes that an increase in equity and citizenship for every unit could generate a decrease of -0.044 while visionary planner, empower leader,

system designer, and connected learner could increase by 0.102, 0.005, 0.356, and 0.060, respectively, on school culture. Results of the correlation analysis revealed equity and leadership (0.701), visionary planner (0.356), empower leader (0.975), and connected learner (0.590) show no significant correlations with school culture. However, system designer exhibited a significant correlation (0.019) and appears to be the best predictor of school culture (0.434).

The significant correlation of system designer to school culture may be credited to the aspect of system designer that involves establishing a partnership with stakeholders and providing infrastructure. Technology leadership standard in terms of the system designer includes school heads' duty to establish partnerships with stakeholders, providing opportunities to practice professional collaboration, affiliative collegiality, and self-determination. While infrastructure supports, including information systems and communication platforms, ensure constant interaction between school heads, teachers, staff, students, and other school community members. Thus, effective communication plays a vital role in shaping school culture [65].

Table 6: Multiple Regression Analysis of School Heads' Technology Leadership on School Culture

Model	B	Std Error	Beta	T	Sig.
(constant)	2.296	0.357		6.440	0.000
Equity and Citizenship	-0.044	0.116	-0.056	-0.385	0.701
Visionary Planner	0.102	0.110	0.144	0.928	0.356
Empower Leader	0.005	0.161	0.006	0.031	0.975
System Designer	0.356	0.149	0.434	2.386	0.019
Connected Learner	0.060	0.112	0.080	0.541	0.590

R = 0.578
R^2 = 0.334
F-Value = 8.832
p-value of 0.000
Alpha = 0.05
Decision = Reject H_0

a. Dependent Variable: School Culture
b. Predictors: (Constant), Equity and Citizenship, Visionary Planner, Empower Leader, System Designer, Connected Learner

Moreover, the results of the analysis of variance of the regression of technology leadership on school culture showed an F-value of 8.832 and a p-value of 0.000, which is significant at .05 alpha. It indicates that the five technology leadership standards jointly influence school culture and considering system designer as its best predictor.

Therefore, the result of the study rejects the null hypothesis and concludes that school heads' technology leadership has a significant influence on school culture. The findings support the study of Kalkan et al. (2020), Veeriah et al. (2017) and Zahed-Babelan et al. (2019), stating that the leadership of school heads significantly influences the development and shaping of school culture [66][67][68].

Meanwhile, the findings also support the assumption of the Social Cognitive Theory (SCT) that there is an interaction among personal, behavioral, and environmental factors that gives the potential for people to modify or construct an environment suitable for individual and mutual purposes [69]. It is evident how school heads enact on acquiring and adopting technology for their schools. In effect, school heads' technology leadership influences the shaping of school culture with technology.

4.6 Implications Drawn from the Findings of the Study

The result of the study indicates that school heads' technology leadership significantly influences their decision-making styles and school culture as represented by an arrow with a solid line. Based on the findings, the following implications were taken and illustrated in Figure 1.
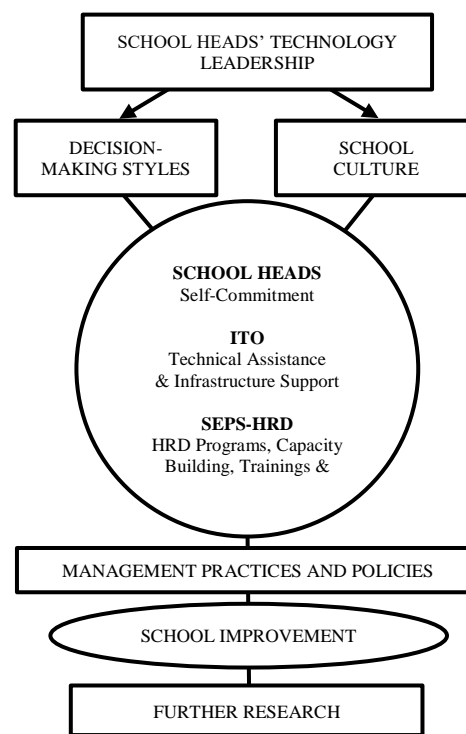

Figure 1. Implication Model

Figure 1 exhibits that the result of the study is expected to primarily give benefits to the school heads, the information technology officer (ITO), and the senior education program specialist for human resource development (SEPS-HRD) as implied by the solid line that connects the variables to the mentioned possible beneficiaries. Since the school heads become aware that technology leadership significantly

influences their decision-making styles and school culture, their self-commitment is needed to continue and further apply the standards for technology leadership. On the other hand, the ITO now has the idea about the status of school heads' technology leadership and, therefore, may take action, especially in providing technical assistance and infrastructure support to ensure that technology integration in schools will be sustainable. Also, the results of the study may be used by the SEPS-HRD as baseline data for policy directions in formulating the human resource development programs, capacity building, training, and workshops for school heads.

Furthermore, Figure 1 suggests that school heads' self-commitment and the services provided by the ITO and SEPS-HRD will further improve the technology leadership qualities of school heads. The continuous improvement of school heads' technology leadership is also expected to provide development to their decision-making styles and school culture. Thus, management practices and the policies to be formulated from the findings of this study will be contributory to school improvement.

Finally, further research should be conducted to assess the study's outcomes in regional and national scope to support its findings and conclusions.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

In the light of the findings of the study, the following conclusions were drawn:

1. Technology leadership of school heads is vital in the integration of technology in the different aspects of school operation. The success of every technological innovation not only lies in the skills of the teachers but more in the leadership skills of the school head. Therefore, school heads are expected to be an equity and citizenship advocate, a visionary planner, an empowering leader, a system designer, and a connected learner. This study shows that school heads apply all the technology leadership standards significantly. And it is a good indicator of an effective technology integration in teaching, learning, and school management.

2. School heads' decisions may positively or negatively impact all organizational components, and their decision-making styles are important. The study concludes that school heads are using multiple decision-making styles. However, the rational decision-making style dominates while other decision-making styles serve as support. It further reflects that school heads should be data-driven when deciding. As much as possible, they need to equip themselves with all the available information. Study it carefully based on reasons and make decisions after thorough evaluation and analysis.

3. Establishing a positive school culture is a highly complex process that entails changes in the school institution's content and structure. Professional collaboration, affiliative and collegial relationships, and efficacy or self-determination are components of school culture that every school heads should work on. Through, the creation of a school culture is collaborative in nature, school heads are expected to work based on their school's unique culture and values, which means there is a greater emphasis on building relationships with all school stakeholders.

4. The school heads' technology leadership significantly influences their decision-making styles. The finding implies that technology-oriented school heads apply their knowledge about technology integration in making decisions and actions [64]. It further validates that school heads' extent of technology leadership may be influenced by their perceptions [70] and principles [71] as stated in the Technology Acceptance Model (TAM). School heads' willingness to use and lead the use of technology relies on their perceived usefulness, perceived ease of use, and attitude toward the use of technology.

5. The school heads' technology leadership significantly influences the school culture. The findings support the study of Kalkan et al. (2020), Veeriah et al. (2017), and Zahed-Babelan et al. (2019), stating that the leadership of school heads significantly influences the development and shaping of school culture [66][68]. Likewise, it strengthens the assumption that there is an interaction among personal, behavioral, and environmental factors that gives the potential for people to modify or construct an environment suitable for individual and mutual purposes based on the Social Cognitive Theory (SCT) [69]. School heads manifest that they take actions on acquiring and adopting technology for their school which in effect influences the shaping of school culture.

6. The implications drawn from the study's findings may be utilized to further improve the school heads' technology leadership, their decision-making styles, and school culture that are contributory to school improvement.

5.2. Recommendations

Based on the findings and conclusions drawn from the data, the following recommendations are hereby offered:

1. The Schools Division of Bulacan thru the Office of the Information and Communications Technology Services (ICTS) may identify documentary evidence to be used as means of verification (MOV) to

validate the self-reported score of school heads with regards to their level of technology leadership.

2. School heads are advised to be data-driven when making a decision. Information technology and database management system like the Learner Information System (LIS), Enhanced Basic Education Information System (EBEIS), and Learning Resources Management and Development System (LRMDS) may be used for strategic planning and remote management. However, it is also important to make consultation to other stakeholders to promote shared leadership roles and responsibility.

3. It is suggested that school heads maintain a healthy school culture to ensure the continuous development and improvement of their working and learning environment. School heads may take advantage of using social media and other related platforms for information dissemination and communication.

4. Further research may be conducted to assess the study's outcomes in regional and national scope to support its findings and conclusions. Future researcher may conduct a study to identify the documentary means of verification and create a tool to better assess school heads' technology leadership. Qualitative research may also be conducted to have an in-depth appraisal of school heads' decision-making styles and school culture.

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