

**School heads AI utilization in school administration: Challenges, opportunities,
and effectiveness as basis for training program**

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ABSTRACT

In modern education, utilization of AI offers substantial opportunities to improve educational methods, but also brings challenges that affect its overall success. This research employed a sequential explanatory mixed-methods design, using both qualitative and quantitative techniques, to determine the challenges, opportunities and effectiveness of AI utilization of school heads in the Province of Capiz for the school year 2025-2026. The participants of this study were the 135 randomly selected participants from the total population of 417 school heads in the Division of Capiz using random sampling design. The participants of the FGD consisted of six (6) school heads based on purposive sampling. Data collection utilized researcher-made questionnaires determining the challenges, opportunities and effectiveness of AI utilization of school heads. The data were analyzed using various statistical methods, including frequency counts, percentages, means, standard deviations, one-way ANOVA, and Pearson correlation, with a significance level set at 0.05. The major findings revealed that school heads demonstrated a "very high" level of challenges, opportunities and effectiveness of AI utilization as a whole. Additionally, no significant differences were found in the effectiveness among the levels of challenges and opportunities in AI utilization of school heads. There were no significant relationships among challenges, opportunities and effectiveness of AI utilization of school heads.

Keywords: Challenges, opportunities, effectiveness, AI utilization.

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INTRODUCTION

In modern education, utilization of AI offers substantial opportunities to improve educational methods, but also brings challenges that affect its overall success. Research typically indicates that AI can enhance school heads' willingness to accept new knowledge and skills as well as teachers' performance when thoughtfully integrated to support school management, rather than substitute it.

Though there are many advantages, the utilization of AI in school management faces challenges that hinder success. Many school heads lack the necessary skills, knowledge and willing or ready to receive new ideas and suggestions to effectively integrate AI tools in school

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administration. The utilization of AI involves collecting sensitive teacher and student data, raising significant privacy and security concerns. AI can perpetuate existing societal biases, leading to unfair evaluations for certain groups. High costs for AI infrastructure and maintenance may widen the digital divide. Tools like essay generators complicate issues of academic integrity. Effectively addressing these challenges necessitates a balanced strategy that emphasizes ethical guidelines, thorough training, sufficient funding, and human supervision to guarantee AI functions as an aid instead of causing unintended damage (Igbokwe, 2023).

The AI utilization offered extensive opportunities in educational management. School heads can take advantage of various opportunities by using AI in administration, mainly by optimizing operations, improving data-based decision-making, and customizing student assistance. AI tools can streamline payroll, leave management, recruitment activities (such as reviewing CVs), and financial operations like budget forecasting and invoice handling, resulting in fewer mistakes and enhanced financial stability. AI assists in assessing the effectiveness of various instructional strategies by linking teaching methods to student results, enabling administrators to recognize best practices and customize professional development initiatives (Alam, 2021).

The effectiveness of AI utilization in school administration offers both prospects and difficulties. Although AI utilization provides customized and effective management experiences, ethical issues and the necessity for training school heads continue to be considerable challenges. Also, research shows that the impact of AI utilization in educational management is considerable, especially when implemented carefully. AI positively impacts teacher and student achievement, involvement, and enthusiasm by identifying at-risk students for timely interventions, boosting retention rates. A combined approach allows AI to handle data tasks, while teachers provide guidance. However, traditional management and teaching methods excel in fostering critical thinking and creativity (Dai et al., 2024).

Consequently, although the incorporation of AI in school administration brings various challenges, it also provides considerable opportunities to improve administrative and managerial tasks. By tackling concerns related to equity, quality, and the training of school heads, along with applying strategic management practices, educators can leverage AI to foster more vibrant and efficient leadership or administration. Thus, this research was carried out.

Statement of the problem

This study was conducted to investigate the challenges, opportunities, and effectiveness of AI utilization in school administration among school heads in the Province of Capiz for the school year 2025 to 2026.

Specifically, this study sought to answer the following questions:

1. What is the level of challenges in AI utilization in school administration among school heads in general and in terms of skills, knowledge, and receptiveness?
2. What is the level of opportunities in AI utilization in school administration among school heads in general and in terms of skills, knowledge, and receptiveness?
3. What is the level of effectiveness of AI utilization in school administration among school heads in general and in terms of skills, knowledge, and receptiveness?
4. Is there a significant difference in the effectiveness of AI utilization among the levels of challenges in school administration among school heads?
5. Is there a significant difference in the effectiveness of AI utilization among the levels of opportunities in school administration among school heads?

6. Are there significant relationships among the challenges, opportunities, and effectiveness of AI utilization in school administration among school heads in the Province of Capiz?

METHODOLOGY

Research design

This study employed a mixed-methods research approach with an explanatory sequential design to explore the challenges, opportunities, and effectiveness of AI utilization in school administration among school heads in Capiz. The mixed-methods approach combines qualitative and quantitative methods, providing a more comprehensive understanding of the research problem (Creswell, 2018).

The explanatory sequential design first collected and analyzed quantitative data, followed by qualitative data to elucidate the initial findings. This design was useful in identifying underlying causes behind trends in quantitative data. Initially, respondents rated the challenges, opportunities, and effectiveness of AI through researcher-designed questionnaires for quantitative analysis. Subsequently, qualitative insights were gathered from focus group discussions (Johnson & Christensen, 2018).

The integration of both data types through triangulation enhanced the study's credibility. Johnson and Christensen (2018) noted that using diverse research methods can minimize the chances of overlooking crucial information, reinforcing the choice of a mixed-methods approach for this study.

Locale of study

This study was conducted in the Province of Capiz. It is composed of 16 Municipalities with 18 school districts. Every Municipality and school district can be reached via private vehicles and any public utility vehicles. The schools are under the DepEd Capiz Division, Capiz, Philippines.

Respondents of the study

The participants of this study were the 135 randomly selected participants from the total population of 417 school heads in the Division of Capiz.

Selection and description of respondents

The study used a stratified proportional random sampling and employed Taro Yamane formula through a lottery to select 135 school heads from Division of Capiz.

This method allowed the researcher to systematically and proportionally select participants from each school district, ensuring a balance of participants. The selected school heads actively engaged in the study by responding to a survey questionnaire prepared by the researcher.

However, for qualitative data, numerous articles, book chapters, and books provide extensive recommendations, suggesting that an adequate sample size can range from 6 to 12 participants (Morse, 2017). Consequently, the focus group discussion (FGD) included six (6) school heads based on purposive sampling.

Data gathering instruments

The research instrument was a researcher-made survey questionnaire that underwent validation by three (3) experts to collect comprehensive data on the response and experiences of the study's participants. The instruments used in gathering the data needed for the study were the 31-item challenges, 44-item opportunities, and 45-item effectiveness of AI utilization questionnaire. Each level was composed of 3 components.

However, to gather the qualitative data using Focus Group Discussion (FGD) Guide, 14 researcher-made open-ended questions were made on the four (4) questions for challenges, four (4) questions for opportunities, and six (6) questions for effectiveness of AI utilization in school administration of school heads. This was face-validated by the panel.

Data gathering procedure

Permission for research was obtained from the Dean of the Graduate School at Filamer Christian University, Inc. and Capiz Division Superintendents. Participants were informed of the study and assured of confidentiality. After securing approvals, the researcher personally distributed questionnaires, ensuring a 100% retrieval rate. Data gathered was encoded, tallied, and analyzed using SPSS software. Subsequently, a Focus Group Discussion (FGD) was held with six elementary school heads, lasting nearly four hours via Google Meet. The FGD was audio and video recorded, with documentation through photos. Transcriptions of the discussions were created to analyze challenges, opportunities, and effectiveness of AI in school administration. This qualitative method provided a wealth of information and diverse perspectives within a shorter timeframe, complementing the quantitative data collected through questionnaires for result validation.

Data analysis procedure

The following statistical tools employed in the analyses of the data gathered. Frequency Counts and Percentage. These statistical tools were used to describe the number of participants in the study. Mean. This was used to determine the level of challenges, opportunities, and effectiveness of AI utilization in school administration of school heads. Standard Deviation. This test was used in order to determine the homogeneity as well as heterogeneity of the challenges, opportunities, and effectiveness of AI utilization in school administration of school heads. ANOVA. This was used to determine the differences in the effectiveness among the levels of challenges and opportunities of AI utilization in school administration of school heads. Pearson r. This was used to determine the relationships among challenges, opportunities, and effectiveness of AI utilization in school administration of school heads. All inferential tests were set at .05% alpha level of significance.

RESULTS AND DISCUSSION

This study examined the challenges, opportunities, and effectiveness of artificial intelligence utilization in the school administration of school heads in the Province of Capiz, drawing on data gathered through a descriptive-correlational research design supplemented by qualitative discussant responses obtained through focus group discussion. The quantitative data were collected using a structured survey instrument measuring three domains, namely skills, knowledge, and receptiveness, across the three major variables of challenges, opportunities, and effectiveness of AI utilization, while the qualitative responses were drawn from discussants

who validated, negated, or contextualized the statistical findings. The results were analyzed using descriptive statistics such as means and standard deviations, analysis of variance to determine differences in effectiveness across levels of challenges and opportunities, and Pearson correlation to establish relationships among the three variables. The following discussion interprets these results in direct relation to the objectives of the study, which sought to determine the level of challenges, opportunities, and effectiveness of AI utilization among school heads, to examine whether significant differences in effectiveness exist across levels of challenges and opportunities, and to establish whether significant relationships exist among these variables.

The level of challenges of AI utilization in school administration of school heads in the Province of Capiz was found to be very high, with an overall mean of 4.58 and a standard deviation of 0.16, indicating that school heads perceive substantial difficulty in their use of AI tools within administrative functions. The data further revealed that challenges were rated very high across all three domains, specifically skills ($M = 4.58$, $SD = 0.22$), knowledge ($M = 4.57$, $SD = 0.25$), and receptiveness ($M = 4.56$, $SD = 0.23$). These findings suggest that school heads encounter significant obstacles rooted primarily in skill deficits, which in turn impede administrative efficiency and constrain strategic planning capacity. The identified knowledge gap raises concern because it may lead to an overreliance on flawed or misinterpreted AI outputs, thereby compromising evidence-based management practices and heightening the risk of data breaches within school systems. Skepticism toward AI-driven decisions appears to stem from insufficient understanding of the technology, further hindering effective implementation, while reluctance to adopt AI, driven by fears of job insecurity and financial concerns, results in underutilization and mismanagement of available resources, ultimately undermining operational effectiveness. This pattern is consistent with the qualitative accounts provided by the discussants. Discussant 3 offered a moderating perspective, sharing that her challenges were moderate rather than severe, explaining that while she possessed some technical knowledge, she was still learning to apply AI tools effectively and found it difficult to keep pace with rapid technological advancements, which in turn affected her receptiveness. Discussant 1 similarly rated his challenges at a moderate level of 3 out of 5, noting that although he felt somewhat confident, he often encountered difficulty understanding complex AI concepts or troubleshooting technical issues, which made him cautious in his engagement with the technology. Notably, Discussant 1 later affirmed the quantitative finding of a very high level of challenges, acknowledging that many individuals, including himself, struggle to adapt quickly to AI given its rapid evolution and the unequal access to training and resources across the education sector. This apparent tension between individually rated moderate challenges and the aggregate very high level suggests that while individual school heads may perceive their own struggles as manageable, the collective experience across the province reflects a more pronounced systemic difficulty in AI adoption.

The level of opportunities of AI utilization among school heads was likewise found to be very high, with an overall mean of 4.38 and a standard deviation of 0.15, and with very high ratings across skills ($M = 4.31$, $SD = 0.24$), knowledge ($M = 4.38$, $SD = 0.28$), and receptiveness ($M = 4.45$, $SD = 0.24$). These results indicate that school heads possess advanced technical competence, confidence in the use of AI tools, and a strong commitment to ethical data practices, all of which enable them to implement AI effectively within their administrative roles. Their demonstrated knowledge allows for strategic integration of AI aligned with long-term institutional goals and appropriate risk assessment, while their eagerness to embrace technological change positions them as advocates for pedagogical innovation and fosters an adaptive leadership approach. By modeling AI usage themselves, school heads appear to

reduce resistance among teaching staff and promote a culture of experimentation within a safe institutional environment. Taken together, these findings suggest a broader shift from a purely managerial role toward a more strategic leadership orientation, one that enhances operational efficiency while necessitating a deeper cultural transformation within the school organization. The discussant responses largely corroborated this interpretation. Discussant 1 acknowledged seeing considerable opportunity in automating routine tasks and enhancing decision-making, describing himself as receptive and eager to learn, though he recognized that his current skills could be further strengthened to fully capitalize on these opportunities. Discussant 5 rated her opportunities at 4, citing strong motivation and openness to AI tools while noting a continued need for practical experience to maximize potential benefits. Discussants 2 and 4 similarly rated themselves at 4, with Discussant 2 emphasizing strength in processing information and identifying patterns while affirming that human creativity remains indispensable, and Discussant 4 highlighting quick learning and knowledge application as personal strengths while cautioning that real-world implementation still requires human oversight. In reflecting on the aggregate result, both discussants 5 and 4 expressed agreement, with Discussant 5 affirming that a rating of 4 aligns with AI's potential to transform industries and improve lives, and Discussant 4 adding that realizing this potential requires careful planning and execution rather than reliance on technology alone.

The level of effectiveness of AI utilization in school administration was also found to be very high, with an overall mean of 4.36 and a standard deviation of 0.13, and with very high ratings across skills ($M = 4.35$, $SD = 0.22$), knowledge ($M = 4.36$, $SD = 0.21$), and receptiveness ($M = 4.38$, $SD = 0.22$). These results demonstrate that school heads have effectively integrated AI into their leadership practices, transitioning toward a more collaborative administrative model that enhances decision-making, automates routine tasks, and supports personalized approaches to instructional supervision. Their strong grounding in AI knowledge, encompassing its applications, data processing procedures, legal frameworks, and potential biases, appears to support a proactive approach that fosters data-driven decision-making, reduces administrative burnout, and improves the overall working environment. This pattern reflects a broader shift from traditional management practices toward a hybrid leadership model that emphasizes both efficiency and ethical governance within the educational context. The high level of effectiveness further enables school heads to devote greater attention to instructional leadership, strengthening their classroom presence and mentorship roles while allowing them to identify potential crises early, reduce technophobia among staff, and cultivate a broader culture of innovation among teachers. However, the qualitative accounts revealed a more tempered self-assessment among individual discussants. Discussant 1 described his own effectiveness as moderate, noting that while he could use certain AI tools competently, he sometimes struggled to integrate them seamlessly into his workflow or to use more advanced features that could otherwise boost productivity. Discussant 2 rated herself at 3, acknowledging that she was effective to a certain extent but recognized considerable room for improvement. Discussants 3 and 4 rated themselves at 4, with Discussant 3 noting that while she could process data and generate solutions quickly, actual effectiveness depended heavily on the quality of input and the clarity of the user's goals, and Discussant 4 similarly observing that a strong knowledge base and analytical skill do not guarantee real-world effectiveness without human contextual judgment. In response to the aggregate finding, Discussant 2 offered only partial agreement, explaining that while some users are indeed highly effective, many others, including herself, are still in the process of developing the necessary capabilities. This divergence between the very high aggregate effectiveness rating and the more moderate individual self-assessments suggests a possible gap between perceived collective competence and actual individual proficiency, which may warrant further institutional attention in future capacity-building initiatives.

With respect to the difference in effectiveness among the levels of challenges of AI utilization, the analysis of variance revealed no statistically significant difference, $F = 0.862$, $\text{sig.} = 0.36$. This result implies that the effectiveness of AI utilization does not vary meaningfully across different levels of challenges experienced by school heads, meaning that a school head's ability to use AI effectively remains largely consistent regardless of whether the challenges encountered are perceived as low, moderate, or high. This finding suggests that challenges, in themselves, do not function as a definitive barrier to successful AI utilization among school heads in the province, and it is plausible that these administrators have received a baseline level of training or possess a shared professional drive that enables them to perform effectively despite the difficulties they face. This interpretation was contested by Discussant 4, who argued that effectiveness should logically vary with the level of challenges encountered, reasoning that those who face fewer challenges likely use AI more effectively because they possess stronger skills or knowledge, and expressing agreement with the notion that overcoming challenges is central to achieving effectiveness. Despite this qualitative dissent, the statistical evidence supports the conclusion that no significant difference exists, and therefore the null hypothesis stating that there is no significant difference in the effectiveness among the levels of challenges of AI utilization in school administration of school heads is hereby accepted.

Regarding the difference in effectiveness among the levels of opportunities of AI utilization, the statistical analysis similarly revealed no significant difference, $F = 0.014$, $\text{sig.} = 0.91$. This result indicates that the effectiveness of AI utilization among school heads does not change according to their perceived level of opportunity, meaning that school heads are able to utilize AI effectively regardless of whether they perceive greater or fewer opportunities for its application within their administrative work. This finding further suggests that whether a school head engages with basic AI tools occasionally or with advanced AI systems on a more consistent basis, this variation in opportunity level does not produce a measurable difference in administrative performance outcomes when compared across groups. Discussant 3 offered a contrasting view, expressing agreement that greater opportunities generally lead to higher effectiveness, reasoning that when individuals perceive and gain access to more opportunities, they become more motivated and better equipped to use AI effectively. Nevertheless, the statistical results do not support this position, and the null hypothesis stating that there is no significant difference in the effectiveness among the levels of opportunities of AI utilization in school administration of school heads is hereby accepted.

In examining the relationships among challenges, opportunities, and effectiveness of AI utilization, the data revealed a very weak negative and non-significant relationship between challenges and opportunities of AI utilization, $r = -0.027$, $p = 0.758$, which exceeds the 0.05 level of significance. This result implies that experiencing greater challenges does not necessarily correspond to fewer opportunities, or conversely, and suggests that challenges and opportunities function as largely independent constructs among school heads rather than as interdependent forces, with other factors such as training, technical infrastructure, or specific institutional use cases potentially exerting greater influence on AI utilization outcomes. This interpretation stood in contrast to the perspective offered by Discussant 3, who maintained that challenges and opportunities are, in fact, related, explaining that challenges can at times limit how well opportunities are perceived or utilized, while overcoming such challenges can simultaneously open new opportunities, and affirming her belief that the two constructs are meaningfully connected. Despite this qualitative divergence, the statistical evidence supports the conclusion of no significant relationship, and therefore the null hypothesis stating that there

is no significant relationship between challenges and opportunities of AI utilization in school administration of school heads is hereby accepted.

Similarly, the data revealed no significant relationship between challenges and effectiveness of AI utilization, $r = 0.035$, $p = 0.684$, which likewise exceeds the 0.05 level of significance. This result indicates that the level of challenges encountered by school heads has no measurable impact on how effectively AI is utilized in their administrative practice, suggesting that school heads may be actively finding ways to achieve effective AI utilization despite the difficulties they face, or alternatively, that the challenges present are not severe enough to meaningfully degrade overall effectiveness. Discussant 5 offered a related observation, agreeing that greater opportunities tend to correspond with higher effectiveness, noting that when individuals perceive and gain access to more opportunities, they become more motivated and better equipped to use AI effectively. Based on the statistical findings, the null hypothesis stating that there is no significant relationship between challenges and effectiveness of AI utilization in school administration of school heads is hereby accepted.

Finally, the data revealed a weak and non-significant relationship between opportunities and effectiveness of AI utilization, $r = -0.073$, $p = 0.398$, which similarly exceeds the 0.05 level of significance. This finding suggests that greater perceived opportunities for AI utilization do not necessarily translate into higher perceived effectiveness within this data set, indicating that the effectiveness of AI utilization among school heads is not meaningfully dependent on their perceived level of opportunity, and that regardless of whether opportunities are perceived as higher or lower, the level of effectiveness of AI utilization in school administration remains comparable. This absence of correlation between opportunities and effectiveness may point to a gap between rhetoric and reality, wherein school heads recognize the potential applications of AI but have not yet fully realized these possibilities within their actual administrative work. Discussant 2 echoed the sentiment expressed earlier by Discussant 3, maintaining that challenges and opportunities are related to one another, explaining that challenges can limit how opportunities are perceived or used while overcoming them can open new opportunities, and affirming agreement with the view that the two constructs are interconnected. Based on the statistical evidence, however, the null hypothesis stating that there is no significant relationship between opportunities and effectiveness of AI utilization in school administration of school heads is hereby accepted.

Taken together, these findings paint a nuanced picture of AI utilization among school heads in the Province of Capiz, one in which very high levels of challenges, opportunities, and effectiveness coexist without significant statistical differences or meaningful correlations among them. The absence of significant differences in effectiveness across levels of challenges and opportunities, combined with the lack of significant relationships among the three core variables, suggests that AI utilization in school administration operates as a multidimensional phenomenon shaped by factors beyond the scope of challenges and opportunities alone, potentially including institutional training structures, access to technical infrastructure, and individual professional resilience. While the quantitative data consistently point toward statistical independence among these constructs, the qualitative accounts of the discussants reveal a persistent belief among school heads that challenges, opportunities, and effectiveness are experientially interconnected, underscoring a divergence between measured statistical patterns and lived professional perception. These findings directly address the objectives of the study by establishing the level of challenges, opportunities, and effectiveness of AI utilization among school heads, by confirming the absence of significant differences in effectiveness across varying levels of challenges and opportunities, and by clarifying the nature of the relationships among these three variables. The results contribute to the growing body of knowledge on educational AI adoption by demonstrating that school heads, despite reporting very high challenges, are nonetheless able to sustain very high levels of effectiveness, a pattern

that carries important implications for future capacity-building programs, institutional support structures, and policy development aimed at strengthening AI integration in school administration. These insights lay the groundwork for the subsequent chapter, which will address the broader implications of these findings and offer recommendations for enhancing AI utilization practices among school heads in the Province of Capiz.

CONCLUSION

First, school heads encountered challenges to integrate AI in administration due to skill gaps and resistance to change. Basic training is inadequate; intensive professional development is essential. Probably, they will not welcome AI integration in the curriculum. They might feel the need to do away with this new technological trend.

Second, school heads exhibit exceptional AI utilization indications a pivotal shift in educational leadership. Moving beyond mere operational efficiency. However, successful integration depends on fostering a school culture that balances technological adoption with ethical oversight. Ultimately, leveraging these AI opportunities allows for more informed decision-making and a heightened focus on improving overall educational outcomes.

Third, school heads demonstrate a very high level of effectiveness in AI utilization, underpinned by strong proficiency in technical skills, comprehensive knowledge, and a proactive receptiveness to innovation. This concludes that school leaders are not only prepared to adopt AI tools but are already successfully integrating them into administrative workflows. The synergy between their digital literacy and openness to change suggests that school administration is well-positioned for a sustained digital transformation, ensuring that AI becomes a core driver of institutional efficiency and leadership.

Fourth, the challenges of school heads encounter when utilizing AI do not differ significantly in their impact on administrative effectiveness. It was concluded that all identified challenges to AI utilization are equally influential in determining the administrative effectiveness of school heads. Since no single challenge stands out as more or less impactful, school leaders face a uniform set of hurdles including standardized policy frameworks and universal digital literacy training—is necessary to help administrators navigate the complexities of AI adoption effectively.

Fifth, the level of opportunity afforded by AI utilization does not create a statistically significant variance in administrative effectiveness among school heads. It concludes that all levels of opportunities in AI utilization are equally effective in enhancing the administrative performance of school heads, requiring a holistic and standardized approach to AI integration and leadership training.

Sixth, the perceived opportunities of AI are not dictated by the level of challenges faced by school heads. Therefore, the challenges and opportunities in AI utilization are independent of one another, meaning that the presence of one does not predict the level of the other; this necessitates distinct, parallel strategies for managing risks and harvesting benefits in school administration. The study concludes that the challenges of AI utilization do not significantly impede the administrative effectiveness of school heads; this suggests that effectiveness is likely driven by other factors such as individual leadership flexibility and institutional readiness rather than the presence or absence of implementation barriers. The study concludes that the availability of AI opportunities does not guarantee administrative success; effectiveness is an independent variable likely governed by institutional readiness, technical skillsets, and leadership strategy rather than the mere existence of technological potential.

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