

Original Article

Effectiveness of Campus Wi-Fi on Students' Perceived Academic Support among College Students in One Private School in Kabankalan City

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Abstract

In the contemporary education environment, technology has become a necessary component of the learning process. Campus Wi-Fi has emerged as critical infrastructure supporting various academic activities. However, most studies on internet access and academic performance were conducted in urban centers and developed countries, leaving a gap in understanding private schools in smaller Philippine cities like Kabankalan. This study aimed to assess the effectiveness of campus Wi-Fi on students' perceived academic support at a private college in Kabankalan City, Negros Occidental, Philippines. A descriptive-correlational research design was employed with 350 college students selected through stratified random sampling. A validated researcher-made questionnaire with a Cronbach's alpha of 0.87 was used to gather data on Wi-Fi accessibility, connection speed, reliability, coverage area, usage patterns, and perceived impact on academic support. Statistical tools included frequency distributions, percentages, weighted means, Pearson correlation coefficient, and multiple linear regression. The campus Wi-Fi was rated as very effective overall (weighted mean = 3.73). Accessibility received the highest rating (3.78), followed by connection speed (3.75), reliability (3.73), and coverage area (3.68). A significant positive correlation was found between overall Wi-Fi effectiveness and perceived academic support ($r = 0.757$, $p < 0.01$). Multiple linear regression revealed that connection speed

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($\beta = 0.312$, $p < 0.001$) was the strongest predictor of perceived academic support, followed by reliability ($\beta = 0.248$, $p < 0.001$), while controlling for year level and academic program. Primary challenges included limited coverage (33.1%), weak signal strength (30.9%), and slow connection during peak hours (30.3%). While campus Wi-Fi is generally perceived as very effective, targeted improvements in coverage expansion, signal strength, and bandwidth capacity could further enhance students' learning experiences and perceived academic support.

Keywords: academic support, campus Wi-Fi, college students, digital learning, internet connectivity, perceived impact

1. Introduction

In the contemporary education environment, technology has become a necessary component of the learning process. The combination of digital resources and internet connectivity has transformed typical classroom settings into stimulating, interactive learning environments. Among these technological progressions, campus Wi-Fi has emerged as critical infrastructure supporting various academic activities, from research and online learning to cooperative projects and communication with faculty members (Anderson & Rainie, 2020). A steady internet connection in academic institutions is now a fundamental requirement for students to engage with modern pedagogical approaches and digital learning resources.

The Philippines, as a developing nation, has been making considerable improvements in its digital infrastructure, particularly in the education sector. The Commission on Higher Education (CHED) has highlighted the importance of integrating information and communication technology (ICT) in higher education institutions to prepare students to meet the demands of the digital economy (CHED, 2020). Private schools, in particular, have been investing heavily in technology infrastructure to keep competitive and provide quality education that meets international standards. Campus Wi-Fi has become a key differentiator for these institutions in attracting and preserving students who expect smooth connectivity as part of their educational experience.

Kabankalan City, located in the province of Negros Occidental, has witnessed rapid growth in its educational sector over the past decade. The city is home to several private colleges and universities that serve students from various socio-economic backgrounds. These institutions have recognized the importance of providing stable internet access to support their academic programs and strengthen student learning outcomes. However, despite the increasing integration of digital infrastructure and

connectivity in higher education, fully realizing their potential to enhance students' academic performance and overall learning experience remains a significant challenge (World Bank, 2022).

Previous studies have examined the relationship between internet access and academic performance within various contexts. Brown et al. (2022) documented that technological infrastructure deficits, such as unstable internet access and platform reliability issues, directly hinder a student's capacity to engage, resulting in severe barriers to student retention and academic performance. Similarly, a study by Ren et al. (2024) indicated that digital access quality, specifically internet stability and device availability significantly influences students' satisfaction with online education and their ability to adapt to digital learning environments. However, most of these studies were conducted in city centers and developed countries, leaving a gap in grasping the specific context of private schools in smaller Philippine cities like Kabankalan.

The significance of this study lies in its potential to provide meaningful insights for educational administrators, policymakers, and technology planners to optimize campus Wi-Fi infrastructure and better serve students' academic needs. By examining the effectiveness of campus Wi-Fi on students' study habits and academic performance, this research adds to the growing body of literature on educational technology in the Philippine context. Furthermore, the findings of this study can assist decision-making processes regarding resource allotment for ICT infrastructure development in private educational institutions.

This study focuses on college students at a private school in Kabankalan City and investigates their perceptions of campus Wi-Fi effectiveness and its impact on academic performance. The research examines various dimensions of Wi-Fi effectiveness, including accessibility, connection speed, reliability, and coverage area. Additionally, the study looks at how students use campus Wi-Fi for various academic activities and the challenges they encounter in accessing it.

2. Methodology

This study adopted a descriptive-correlational research design to examine the effectiveness of campus Wi-Fi on students' perceived academic support. The descriptive component enabled the systematic collection and presentation of data on Wi-Fi effectiveness, usage patterns, and student perceptions. The correlational aspect enabled the investigation of relationships between Wi-Fi effectiveness variables and perceived academic support indicators. Multiple linear regression was additionally employed to determine which specific Wi-Fi dimensions most strongly predicted perceived academic support while controlling for demographic variables such as year level and academic program. This design was appropriate for the study as it provided a complete understanding of the current state of campus Wi-Fi and its perceived impact on students' academic endeavors.

The study was conducted at a private school in Kabankalan City, Negros Occidental, Philippines. The selected institution offers various undergraduate

programs and is equipped with Wi-Fi infrastructure that serves academic buildings, the library, the cafeteria, and selected outdoor areas. The institution was selected as the research site due to its representative nature as a private educational institution with an established Wi-Fi infrastructure. Data collection was conducted over two weeks from April 20, 2026, to May 5, 2026.

The respondents of this study were 350 college students enrolled in various programs at the selected private school in Kabankalan City. The sample was determined using stratified random sampling to ensure proportional representation among different year levels and academic programs. Stratification was based on the official enrollment records provided by the school registrar, with students randomly selected from each stratum (year level $\times$ academic program) using a random number generator. The respondents included students from various programs, including Bachelor of Science in Information Technology (BSIT), Bachelor of Science in Criminology (BSCRIM), Bachelor of Science in Medical Technology (BSMT), Bachelor of Elementary Education (BEED), and other degree programs. The sample size was determined using a standard sample size calculator (Raosoft, Inc., 2004) with a 95% confidence level, a 5% margin of error, and a 50% response rate. Inclusion criteria required participants to be currently enrolled college students who had used the campus Wi-Fi for at least one academic semester. Students who were not regularly utilizing the campus network were excluded from participation.

A researcher-made questionnaire was developed to collect the necessary data for this study. The instrument consisted of six parts: Part I gathered demographic information including age, gender, year level, and academic program; Part II assessed the effectiveness of campus Wi-Fi using a 4-point Likert scale (4 = Strongly Agree, 3 = Agree, 2 = Disagree, 1 = Strongly Disagree) across four dimensions: accessibility, connection speed, reliability, and coverage area; Part III examined students' usage patterns and frequency of academic activities supported by campus Wi-Fi using a 4-point frequency scale (4 = Always, 3 = Often, 2 = Sometimes, 1 = Never); Part IV explored difficulties experienced in accessing campus Wi-Fi using a checklist format; Part V assessed the perceived impact of Wi-Fi on academic support using a 4-point agreement scale (4 = Strongly Agree, 3 = Agree, 2 = Disagree, 1 = Strongly Disagree); and Part VI provided space for open-ended suggestions and recommendations. The questionnaire underwent content validation by three professionals in educational technology and research methodology. The instrument's reliability was established through a pilot test with 35 students not included in the main study, yielding a Cronbach's alpha of 0.87, indicating good internal consistency.

Prior to data collection, the researchers secured approval from the school administration and obtained informed consent from all participants. The questionnaire was administered online via Google Forms to facilitate quick access and data collection. The survey link was distributed through official student communication channels and social networking groups. Follow-up messages were sent to ensure maximum response rate. A total of 350 valid responses were obtained.

This study adhered to the right principles in research involving human participants. Informed consent was obtained from all respondents, making sure they understood the study's purpose and their right to withdraw at any time. Confidentiality and anonymity were maintained throughout the research process, with no personally identifiable information collected. The study protocol was reviewed and approved by the institution's research ethics committee before data collection.

The collected data were processed and analyzed using Statistical Package for the Social Sciences (SPSS) version 26. Frequency distribution and percentage were used to describe the demographic profile of respondents and their usage patterns. A weighted mean was computed to determine the effectiveness of campus Wi-Fi across several dimensions. The Pearson correlation coefficient was used to examine the bivariate relationship between Wi-Fi effectiveness and perceived academic support. Multiple linear regression analysis was conducted to determine which specific Wi-Fi dimensions (accessibility, connection speed, reliability, coverage area) significantly predicted perceived academic support while controlling for demographic variables (year level and academic program). The regression model was assessed for multicollinearity using the Variance Inflation Factor (VIF), with values below 10 indicating acceptable levels. All statistical tests were conducted at a 0.05 level of significance.

3. Results

Table 1. Demographic profile of the respondents (N = 350).

Variable	Category	Frequency	Percentage
Gender	Male	170	48.6%
	Female	146	41.7%
	Prefer not to say	34	9.7%
Age	18 years old	50	14.3%
	19 years old	54	15.4%
	20 years old	60	17.1%
	21 years old	56	16.0%
	22 years old	50	14.3%
	23 years old and above	78	22.3%
Year Level	First Year	98	28.0%
	Second Year	124	35.4%
	Third Year	80	22.9%
	Fourth Year	44	12.6%
	Fifth Year	4	1.1%

The demographic data (Table 1) revealed that the majority of respondents were male (48.6%), followed by female (41.7%), while 9.7% preferred not to disclose their gender. In terms of age, the largest group was 23 years old and above (22.3%), followed by 20 years old (17.1%), 21 years old (16.0%), 19 years old (15.4%), and equal representation at 18 and 22 years old (14.3% each). Regarding year level, second-year students comprised the largest group (35.4%), followed by first-year

(28.0%), third-year (22.9%), and fourth-year (12.6%). A small percentage (1.1%) were fifth-year students. In terms of academic programs, the Bachelor of Science in Information Technology (BSIT) had the highest representation (25.7%), followed by Bachelor of Science in Criminology (BSCRIM) at 6.9%, Bachelor of Science in Medical Technology (BSMT) at 6.3%, Bachelor of Elementary Education (BEED) at 5.1%, and other programs.

Table 2. Effectiveness of campus Wi-Fi (N = 350).

Dimension	Weighted Mean	Descriptive Rating
Accessibility	3.78	Very Effective
Connection Speed	3.75	Very Effective
Reliability	3.73	Very Effective
Coverage Area	3.68	Very Effective
Overall	3.73	Very Effective

The overall weighted mean of 3.73 indicates that the campus Wi-Fi was perceived as very effective (Table 2). Accessibility received the highest rating (3.78), followed by connection speed (3.75), reliability (3.73), and coverage area (3.68).

Table 3. Academic activities using campus Wi-Fi (N = 350).

Academic Activity	Always	Often	Sometimes	Never
Taking online quizzes/examinations	280	44	26	0
Submitting assignments online	276	50	24	0
Participating in online discussions	270	58	20	2
Online research for assignments	268	52	30	0
Accessing LMS	268	62	18	2
Collaborating on group projects	268	52	28	2
Watching educational videos	264	52	32	2
Accessing online libraries/databases	262	54	30	4
Downloading educational materials	260	70	20	0
Video conferencing for virtual classes	248	66	34	2

Students extensively used campus Wi-Fi for various academic purposes (Table 3). Taking online quizzes and examinations was the most frequently cited activity, with 80.0% of students responding 'Always,' followed closely by uploading assignments and projects online (78.9%).

A significant positive correlation was found between overall Wi-Fi effectiveness and students' perceived academic support ($r = 0.757$, $p < 0.01$) (Table 4). Among the dimensions, connection speed showed the strongest correlation ($r = 0.754$, $p < 0.01$), followed by reliability ($r = 0.745$, $p < 0.01$), accessibility ($r = 0.696$, $p < 0.01$), and coverage area ($r = 0.627$, $p < 0.01$).

Table 4. Correlation between Wi-Fi effectiveness and perceived academic support.

Wi-Fi Dimension	Pearson r	p-value	Interpretation
Accessibility	0.696	< 0.001	Significant
Connection Speed	0.754	< 0.001	Significant
Reliability	0.745	< 0.001	Significant
Coverage Area	0.627	< 0.001	Significant
Overall Wi-Fi Effectiveness	0.757	< 0.001	Significant

Table 5. Multiple linear regression predicting perceived academic support from Wi-Fi effectiveness dimensions and demographic variables.

Variable	B	SE	β	t	p-value	VIF
(Constant)	0.412	0.089	—	4.629	< 0.001	—
Accessibility	0.156	0.042	0.198	3.714	< 0.001	2.341
Connection Speed	0.287	0.051	0.312	5.627	< 0.001	2.587
Reliability	0.221	0.048	0.248	4.604	< 0.001	2.412
Coverage Area	0.098	0.038	0.127	2.579	0.010	1.893
Year Level	0.034	0.021	0.045	1.619	0.106	1.234
Academic Program (BSIT vs. Non-BSIT)	0.087	0.056	0.052	1.554	0.121	1.456

Note: $R^2 = 0.621$, Adjusted $R^2 = 0.614$, $F = 89.47$, $p < 0.001$

Multiple linear regression analysis was conducted to examine which Wi-Fi dimensions significantly predicted perceived academic support while controlling for year level and academic program (Table 5). The overall model was significant ($F = 89.47$, $p < 0.001$) and explained 62.1% of the variance in perceived academic support ($R^2 = 0.621$, Adjusted $R^2 = 0.614$). All Variance Inflation Factor (VIF) values were below 3.0, indicating no multicollinearity concerns. Connection speed emerged as the strongest predictor ($\beta = 0.312$, $p < 0.001$), followed by reliability ($\beta = 0.248$, $p < 0.001$) and accessibility ($\beta = 0.198$, $p < 0.001$). Coverage area was also a significant predictor ($\beta = 0.127$, $p = 0.010$), though with a smaller effect size. Year level and academic program (BSIT vs. non-BSIT) did not significantly predict perceived academic support ($p > 0.05$), suggesting that the perceived impact of Wi-Fi on academic support was consistent across different student cohorts and programs.

Limited coverage in certain areas was the most frequently cited challenge, affecting 33.1% of respondents, followed by weak signal strength (30.9%), slow connection speed during peak hours (30.3%), and network congestion (29.1%) (Table 6).

Table 6. Difficulties encountered in accessing campus Wi-Fi (N = 350).

Challenge	Frequency	Percentage
Limited coverage in certain areas	116	33.1%
Weak signal strength in some locations	108	30.9%
Slow connection during peak hours	106	30.3%
Network congestion with many users	102	29.1%
Inconsistent connection quality	66	18.9%
Insufficient bandwidth for video streaming	60	17.1%
Difficulty connecting multiple devices	58	16.6%
Limited access time/usage restrictions	56	16.0%
Login/authentication issues	34	9.7%
Frequent disconnection	28	8.0%

The overall weighted mean of 3.73 indicates that students strongly agreed that campus Wi-Fi has a very positive impact on their perceived academic support (Table 7). The highest-rated statement concerned completing assignments more efficiently (3.77).

Table 7. Perceived impact of campus Wi-Fi on academic support (N = 350).

Statement	Weighted Mean	Descriptive Rating
Helps complete assignments more efficiently	3.77	Strongly Agree
Contributes positively to academic performance	3.75	Strongly Agree
Supports online learning activities	3.74	Strongly Agree
Enables effective participation in virtual classes	3.74	Strongly Agree
Facilitates collaboration with classmates	3.73	Strongly Agree
Reduces stress related to academic work	3.73	Strongly Agree
Improves access to learning resources	3.71	Strongly Agree
Enhances research capabilities	3.70	Strongly Agree
Overall Impact	3.73	Strongly Agree

4. Discussion

The findings of this study provide a direct response to the primary research question: campus Wi-Fi at the private school in Kabankalan City is perceived as very effective, and its effectiveness is significantly and positively correlated with students' perceived academic support. The overall weighted mean of 3.73 across all effectiveness dimensions, coupled with the strong positive correlation coefficient ($r = 0.757$, $p < 0.01$), supports the hypothesis that quality Wi-Fi infrastructure contributes meaningfully to the perceived academic experience. However, it is essential to emphasize that these findings reflect students' subjective perceptions rather than objective measures of academic achievement. The study did not use grade point averages (GPAs), transcripts, or other objective academic metrics; therefore, the reported correlation indicates an association between perceived Wi-Fi quality and perceived academic support, rather than a causal relationship between Wi-Fi

infrastructure and actual academic performance. This distinction is critical for accurate interpretation and aligns with the study's use of self-reported perceptual data.

The high ratings across all effectiveness dimensions suggest that the private school in Kabankalan City has allocated substantial resources to its Wi-Fi infrastructure. These results contrast with earlier studies by Fabito et al. (2020), who found that internet connectivity and campus infrastructure in Philippine private universities frequently acted as critical barriers, characterized by bandwidth restrictions and unreliable access. The positive ratings in the present study may be credited to recent infrastructure renovations or the specific institutional context of the selected school. Nevertheless, the coverage area received the lowest rating among the four dimensions (3.68), aligning with the most frequently cited student challenge, limited coverage in certain areas, which indicates that physical infrastructure expansion remains an unresolved priority. This tension between high overall ratings and specific infrastructure deficits reflects broader systemic issues documented in developing nation contexts. According to the World Bank (2022), the Philippine higher education sector faces significant digital infrastructure disparities, with private HEIs generally better equipped than public institutions. Yet, both sectors struggle with uneven connectivity quality and limited coverage in peripheral campus areas. The findings from this single institution thus mirror national patterns of digital inequality, wherein students in smaller cities like Kabankalan experience both improved access relative to rural areas and persistent gaps relative to metropolitan centers.

The usage pattern data underscore the integral role of campus Wi-Fi in supporting multiple academic endeavors. The high frequency of use for essential activities such as examinations, assignment submission, and research indicates that Wi-Fi has become an indispensable part of the academic infrastructure rather than a purely supplementary service. This aligns with the findings of Ren et al. (2024), who established that stable internet access quality is foundational to students' digital adaptation and active engagement in online education. The near-universal use of the network for taking online quizzes and submitting assignments (80.0% and 78.9% 'Always,' respectively) demonstrates that students depend on continuous connectivity to meet core academic requirements.

The multiple linear regression analysis provides a more nuanced understanding of which Wi-Fi dimensions most strongly predict perceived academic support, while controlling for demographic variables. Connection speed emerged as the strongest predictor ($\beta = 0.312$, $p < 0.001$), followed by reliability ($\beta = 0.248$, $p < 0.001$) and accessibility ($\beta = 0.198$, $p < 0.001$), while coverage area contributed modestly but significantly ($\beta = 0.127$, $p = 0.010$). Notably, year level and academic program (BSIT versus non-BSIT) did not significantly predict perceived academic support, suggesting that the perceived value of Wi-Fi transcends disciplinary boundaries and student experience levels. This finding has practical implications: institutions seeking

maximum return on ICT investment should prioritize bandwidth upgrades and connection stability over program-specific interventions. The model explained 62.1% of the variance in perceived academic support (Adjusted $R^2 = 0.614$), indicating that Wi-Fi effectiveness dimensions are substantial, though not exhaustive, predictors of students' perceived academic experience.

The correlation analysis yielded outcomes consistent with previous research by Maity et al. (2021), who documented that digital infrastructure and connectivity issues are directly linked to variations in student academic achievement and test engagement. However, it is imperative to interpret these correlations with appropriate caution. A strong positive correlation does not establish causation; the relationship between Wi-Fi effectiveness and perceived academic support may be bidirectional or confounded by unmeasured variables such as students' digital literacy, study habits, course requirements, or access to personal devices (Podsakoff et al., 2003). Students who are more digitally proficient may both rate Wi-Fi more positively and perceive greater academic benefit, independent of actual infrastructure quality. Similarly, students in programs with heavier online coursework may report both higher Wi-Fi usage and stronger perceived impact, creating a spurious correlation. The cross-sectional design of this study precludes causal inference, and the self-reported nature of both the predictor and outcome variables introduces the possibility of common-method bias. Future research should incorporate objective academic performance metrics and longitudinal designs to disentangle these relationships.

Despite generally positive ratings, students' challenges highlight areas where infrastructure improvements could yield significant benefits. The fact that coverage and signal strength issues were the most commonly reported challenges—reported by 33.1% and 30.9% of respondents, respectively, suggests that expanding the physical infrastructure should be a priority. This corresponds directly to the finding that coverage area had the lowest effectiveness rating among the four dimensions, strengthening the need for deliberate improvements in Wi-Fi coverage and signal distribution. This apparent contradiction between high overall ratings and specific infrastructure deficits warrants deeper critical analysis. The Likert scale used in this study (4 = Strongly Agree to 1 = Strongly Disagree) may have produced ceiling effects, wherein students who generally appreciate the availability of campus Wi-Fi nonetheless experience frustration with specific technical limitations. Alternatively, students may have adapted their academic behaviors to accommodate known connectivity weaknesses, such as avoiding certain campus locations during peak hours, thereby maintaining a positive overall assessment while still reporting localized difficulties. This interpretation is consistent with the Technology Acceptance Model (TAM), which posits that perceived usefulness and perceived ease of use can coexist with recognized system limitations when users develop compensatory strategies

(Davis, 1989). The findings thus suggest that while students have integrated Wi-Fi into their academic routines, they remain acutely aware of infrastructure gaps that, if addressed, could further enhance their learning experience.

The consistently high ratings across all impact statements suggest that Wi-Fi is not simply a convenience but an essential academic tool that students rely on to complete coursework, access resources, and participate in digital learning environments. These data demonstrate that students recognize and appreciate the value of campus Wi-Fi in supporting their academic work. The highest-rated impact statement—'Campus Wi-Fi helps me complete assignments more efficiently' (weighted mean = 3.77)—aligns with the finding that assignment submission and online quiz-taking were among the most frequent Wi-Fi-dependent activities. This convergence between usage patterns and perceived impact strengthens the internal validity of the findings and underscores the practical centrality of Wi-Fi to contemporary student academic life.

Several limitations should be acknowledged. First, the study was confined to a single private institution in Kabankalan City, which constrains the generalizability of the findings to other educational contexts. Second, the cross-sectional design captures perceptions at a single point in time and does not permit causal inferences about the direction of the relationship between Wi-Fi effectiveness and perceived academic support. Third, and most critically, academic support was measured through student self-perception rather than objective metrics such as grade point averages (GPA), course completion rates, or standardized test scores. This reliance on perceptual data means the study demonstrates an association between perceived Wi-Fi quality and perceived academic benefit but cannot claim that better Wi-Fi quality causes improved academic performance. The possibility of common method variance—wherein the same respondents rated both Wi-Fi quality and academic impact using the same measurement instrument—may inflate observed correlations (Podsakoff et al., 2003). Fourth, the online administration of the questionnaire may have attracted respondents with stronger positive or negative experiences with campus technology, potentially introducing self-selection bias. Fifth, although stratified random sampling was employed, the response rate depended on students' willingness to complete an online survey, which may not reflect the views of students with limited digital access or engagement.

To strengthen the theoretical contribution of this study, the findings can be situated within broader frameworks of technology adoption and digital inequality. The Technology Acceptance Model (TAM) posits that perceived usefulness and perceived ease of use are primary determinants of technology adoption (Davis, 1989). The high ratings for Wi-Fi effectiveness and perceived academic support in this study align with TAM predictions: students perceive campus Wi-Fi as both useful (supporting academic tasks) and easy to use (accessible, reliable), which explains its near-universal

adoption for academic activities. However, the digital divide framework (van Dijk, 2020) offers a complementary lens that highlights structural inequalities. While students at this private institution enjoy relatively robust connectivity, the persistent challenges of limited coverage and peak-hour congestion reflect what van Dijk terms 'second-level digital divides'—inequalities not in basic access but in quality, speed, and reliability of connectivity. For international readers, the relevance of this single-school study lies precisely in its illumination of how second-level digital divides manifest in developing nation contexts, where infrastructure investment may outpace equitable distribution. The situation in this Kabankalan City private school, characterized by generally effective Wi-Fi with localized coverage gaps—mirrors broader patterns in Philippine higher education, where CHED-mandated ICT integration has improved institutional capacity but uneven implementation leaves students in peripheral campus areas at a disadvantage (CHED, 2020).

Future researchers may explore the effectiveness of campus Wi-Fi in other educational institutions in Negros Occidental, investigate the impact of specific Wi-Fi improvements on academic outcomes through longitudinal studies, or examine students' digital literacy levels in relation to their utilization of campus Wi-Fi resources. Additionally, future studies should incorporate objective academic performance metrics—such as GPA, course completion rates, or standardized assessment scores—to complement self-reported perceptual data and enable stronger causal claims. Mixed-methods designs that combine quantitative surveys with qualitative interviews could provide deeper insight into how students develop compensatory strategies for connectivity limitations and how these strategies influence academic engagement. Finally, comparative studies across public and private institutions, as well as across urban and rural campuses, would illuminate the structural factors that shape digital inequality in Philippine higher education and inform more targeted policy interventions.

5. Conclusion

This study addressed the effectiveness of campus Wi-Fi on students' perceived academic support at a private college in Kabankalan City. The data indicate that campus Wi-Fi is generally perceived as very effective, with accessibility receiving the highest rating and coverage area the lowest. Students extensively use campus Wi-Fi for various academic activities, including taking online quizzes and examinations, submitting assignments online, and conducting online research. A significant positive correlation exists between Wi-Fi effectiveness and students' perceived academic support, with connection speed showing the strongest bivariate relationship. Multiple linear regression further revealed that connection speed, reliability, and accessibility

are significant predictors of perceived academic support, while demographic variables (year level and academic program) did not significantly influence outcomes.

The findings contribute to the literature on educational technology in the Philippine context by demonstrating that robust Wi-Fi infrastructure is associated with positive academic perceptions among college students. However, the study does not establish that Wi-Fi effectiveness causes improved academic performance; the relationship is correlational and based on self-reported perceptions. For practitioners, the results suggest that investments in bandwidth capacity, signal strength, and spatial coverage are likely to yield tangible improvements in the student learning experience. The finding that connection speed is the strongest predictor of perceived academic support—across all year levels and academic programs—provides clear guidance for institutional ICT budgeting. Targeted improvements in coverage expansion and bandwidth capacity could further enhance students' learning experiences and perceived academic support. Future inquiries should employ longitudinal designs and objective performance metrics to establish causal pathways, extend the investigation to multiple institutions across the region, and incorporate multivariate analyses that control for potential confounding variables to strengthen the evidence base for ICT policy decisions.

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Conflict of Interest Statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. All authors confirm that there are no relevant financial or non-financial interests to disclose.

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