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ICT, Attendance, and Sex as Determinants of Academic Performance: A Case of Advanced Secondary Students at Kisimiri Secondary School, Arusha, Tanzania

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ABSTRACT

Numerous studies have explored the factors that influence students' academic performance. This study investigates the relationship between Information and Communication Technology (ICT) use, classroom attendance, and sex with academic performance among students at Kisimiri Secondary School. A quantitative cross-sectional survey design was adopted, collecting data through self-administered questionnaires for students and interviews with teachers. Data analysis was conducted using the Statistical Package for Social Sciences (SPSS), employing descriptive statistics, one-way analysis, and Pearson's correlation for bivariate analysis. The findings indicate a significant positive correlation between ICT use and classroom attendance with academic performance, while no significant relationship was found between sex and academic performance. The study concludes that ICT use and regular classroom attendance are critical factors in enhancing academic success and progression. It recommends that schools focus on integrating ICT into the learning process and encouraging consistent attendance to improve student outcomes. Future research should consider a larger and more diverse sample, include comparative analyses between public and private schools, and incorporate qualitative methods to deepen the understanding of these relationships.

Keywords: Attendance, Kisimiri, Sex, Technology, Theory

INTRODUCTION

The academic performance of secondary school students has been widely studied, underscoring its significance for personal development and societal progress. Academic success equips students with the foundation for future careers, contributing to the social and economic advancement of both individuals and communities. Schools serve as environments where students acquire knowledge, skills, values, and technological competencies irrespective of sex, ethnicity, race, religion, or geographical origin. They foster peaceful coexistence among students, despite their social, economic, cultural, or physiological differences.

Success in school is typically measured by academic achievement, which reflects a student's ability to meet the standards set by educational institutions [1]. Academic performance is defined as the degree to which a student achieves proficiency in a subject area after engaging in learning experiences [2]. [3] describes it as the knowledge attained in a subject, usually measured by grades obtained through assessments. Common measures of academic performance include continuous assessments and examination results. For this study, academic performance is operationalized as the scores students achieved in classroom tests, mid-term

and end-of-term exams, annual exams, and national form six examinations during the 2022/2023 academic year. Thus, it encompasses results from both formative and summative evaluations.

The primary goal of schools is to provide students with access to knowledge and skills, with academic performance evaluated through examinations that determine progression to higher levels of education. In Tanzania, advanced secondary education serves as a gateway to university studies. Research shows that students with strong academic performance are better positioned for occupational and economic success. Academic outcomes also enable educational institutions to assess the effectiveness of curricula in meeting teaching and learning objectives [4]. Numerous studies have examined factors influencing academic performance in educational settings. For example, [5] found significant relationships between academic ability, test anxiety, and academic performance, while [6] highlighted the role of physical facilities in shaping academic outcomes.

Statement of the Problem

The core mission of educational institutions is to produce skilled human capital necessary for individual and national socio-economic development. Student performance in examinations is the primary measure of acquired knowledge, skills, values, and attitudes. Failure in national examinations often results in significant challenges for students, whose future prospects become uncertain. Academic performance is particularly critical in Tanzania, where success in national form four and form six examinations determines access to university and other tertiary education opportunities. As noted by [7], acquiring knowledge and skills through education is a challenging and complex journey. Students are expected to dedicate substantial time to their studies to achieve favorable academic outcomes. However, research and observations have documented a concerning decline in secondary school examination performance over recent years [8]. This trend has intensified public pressure on educational stakeholders, including Regional Education Officers (REOs), District Secondary Education Officers (DSEOs), Ward Education Officers (WEOs), school administrators, and teachers, prompting them to implement various interventions. These include extra coaching, screening students, discouraging poorly performing students from taking national exams, and enforcing attendance during holidays and school hours. Despite these efforts, systemic reliance on final national examinations poses challenges for many students, particularly those aiming for university admission. Previous studies, such as those by [9] and [10], have identified multiple factors influencing academic performance, including age, class size, entry qualifications, sex, daily study habits, and English proficiency. Kisimiri Secondary School has consistently ranked as one of Tanzania's top-performing schools over the past decade. However, no study has systematically examined the factors contributing to its sustained academic excellence. This study addresses this gap by investigating the role of ICT use, classroom attendance, and sex in influencing academic performance among advanced secondary school students in Tanzania, focusing specifically on Kisimiri Secondary School.

Objectives of the Study

The study aimed to achieve the following specific objectives:

1. To examine the relationship between Information and Communication Technology (ICT) use and academic performance among advanced secondary school students in Tanzania.

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2. To investigate the relationship between classroom attendance and academic performance among advanced secondary school students in Tanzania.
3. To determine the relationship between sex and academic performance among advanced secondary school students in Tanzania.

Research Questions

The study sought to answer the following research questions:

1. How does ICT use relate to academic performance among advanced secondary school students in Tanzania?
2. How does classroom attendance relate to academic performance among advanced secondary school students in Tanzania?
3. How does sex relate to academic performance among advanced secondary school students in Tanzania?

Research Hypotheses

The study tested the following hypotheses:

1. ICT use is positively related to academic performance among advanced secondary school students in Tanzania.
2. Classroom attendance is positively related to academic performance among advanced secondary school students in Tanzania.
3. Sex is positively related to academic performance among advanced secondary school students in Tanzania.

Theoretical Review

The study was grounded in the Technology Acceptance Model (TAM), developed by Davis (1986), which explains individuals' willingness to adopt and use ICT. TAM suggests that this willingness is influenced by internal factors, such as sex, attitudes toward ICT, and aptitude, as well as external factors, including school culture and societal barriers [12]. The theory is built on three key propositions: the perceived usefulness of ICT and classroom attendance, the perceived ease of ICT use in educational settings, and students' attitudes toward ICT integration [11]. Students' perceptions of the utility and simplicity of ICT significantly affect their academic performance, as well as their classroom attendance. A positive attitude toward ICT and regular attendance fosters academic success by minimizing absenteeism. While previous studies have linked these factors with academic outcomes, none have specifically used TAM to explore the relationships among ICT, classroom attendance, sex, and academic performance in Tanzania. This study bridges this gap by applying TAM to analyze these factors within the Tanzanian context.

Conceptual Framework

The conceptual framework illustrates the relationships among the independent variables ICT, classroom attendance, and sex and the dependent variable, academic performance. ICT is subdivided into hardware and software, attendance into classroom and school attendance, and sex into male and female categories. Academic performance is measured through both summative and formative evaluations. Extraneous factors, such as personality traits, were excluded to focus solely on the primary variables. Figure 1 provides an overview of the conceptual framework, adapted from previous studies [13], [14].

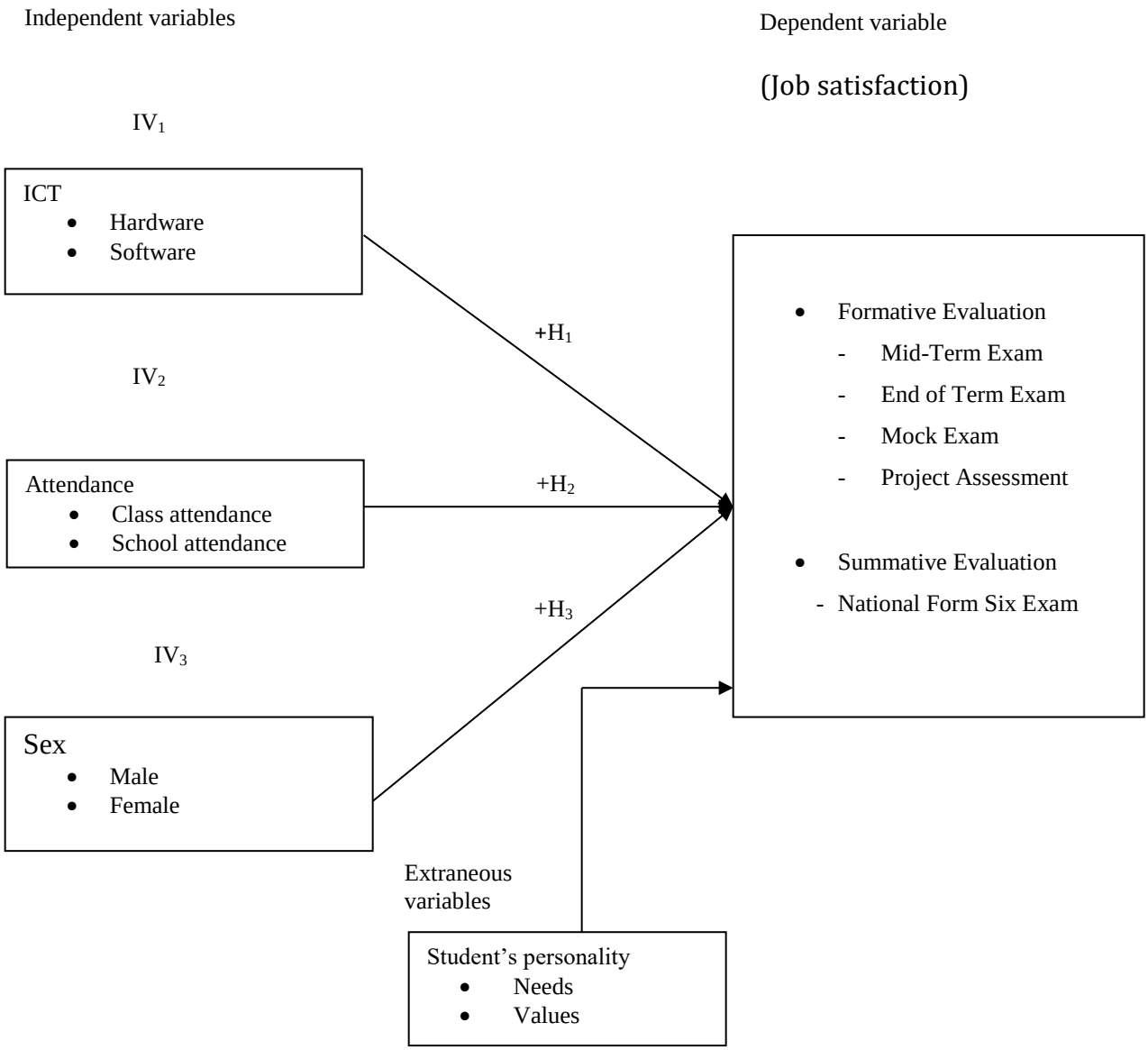

Figure 1: Conceptual Framework for the study of relationship between ICT, class attendance and sex and academic performance.

LITERATURE REVIEW

ICT and Academic Performance

Information and Communication Technology (ICT) encompasses a wide range of communication devices and applications, such as radio, television, cellular phones, computers, hardware, software, satellite systems, video conferencing, and distance learning tools [15]. [16] defines ICT as the handling and processing of information through electronic and communication devices like computers, cameras, and telephones. [17] further describe ICT as technologies that provide access to information via telecommunication. Similarly, [18] define ICT as technological facilities designed to send, receive, store, and process information.

In this study, ICT refers to the use of hardware (e.g., radios, computers, smart watches, printers, projectors, USB flash drives, CD-ROMs, and modems) and software (e.g., internet, Facebook, fax,

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email, e-learning platforms, e-libraries, and social networks) that enable learners to access, collect, store, transmit, retrieve, and manipulate information for academic purposes. Globally, ICT has revolutionized various aspects of life, including education, shifting pedagogy from teacher-centered to learner-centered approaches. In Tanzania, the government has made significant efforts to integrate ICT into the secondary school education system, as seen in initiatives such as the National ICT Policy, e-schools, and e-learning programs. One notable program is Tanzania Beyond Tomorrow (TBT), which promotes ICT integration in teaching and learning. Inspired by this initiative, Kisimiri Secondary School launched the Kisimiri Beyond Tomorrow program under the inspiring motto, "The Sky is the Starting Point." Through advancements in ICT, the sky is no longer a limit but a gateway to exploring worlds beyond our own, opening new frontiers of knowledge and discovery. At Kisimiri Secondary School, ICT facilities enable students to access online short courses in addition to their advanced level subjects. Recently, students completed an online course titled Introduction to Entrepreneurship and received certifications. This demonstrates the immeasurable contributions of ICT to education, making the world a "global village" where information is readily accessible, regardless of geographical, social, or economic barriers. ICT has shifted the teacher's role from being the sole source of knowledge to a facilitator, empowering learners to explore and engage with information independently.

ICT's impact on academic achievement is well documented. For instance, [15] emphasizes that ICT significantly enhances academic performance. [19] highlight that ICT fosters learner-centered approaches, critical thinking, and creativity. [20] found that students taught using ICT performed better than those taught through traditional methods. Similarly, [21] reported a strong correlation between ICT access and student achievement, while [15] and [22] identified the internet as a critical tool for academic improvement. Further studies corroborate ICT's positive influence on academic performance. For example, [23] observed a significant impact of ICT utilization on student outcomes. [24] noted a relationship between ICT implementation and academic success, while [25] emphasized the transformative role of ICT in student achievement. [26] and [27] also documented substantial positive associations between ICT use and academic performance. While prior studies have enriched the understanding of ICT's influence on students' academic performance, none have specifically explored its impact at Kisimiri Secondary School. This study seeks to address that gap by offering empirical evidence on the role of ICT in enhancing academic outcomes at Kisimiri Secondary School over the past ten years.

Class Attendance and Academic Performance

Class attendance refers to the extent of a learner's participation in classroom or online lessons [28]. [6] define it as the physical presence of students during lessons, while [29] describes it as the presence of a student on school grounds or in the classroom on designated days. For this study, class attendance is conceptualized as the percentage of lessons attended by students, including active engagement with teaching materials, teachers, and peers in a classroom setting. Class attendance is essential for academic success as it offers students the opportunity to actively engage in the teaching-learning process and interact with peers, teachers, and educational resources. To support effective learning, secondary schools in Tanzania mandate classroom attendance. At Kisimiri Secondary School, roll calls are conducted by class teachers daily, with attendance records maintained for administrative purposes. Additionally, the school has implemented subject-specific attendance checklists, requiring teachers to record

attendance for each lesson. Students are also required to sign the checklist, minimizing absenteeism. This systematic monitoring has contributed to Kisimiri Secondary School's consistent high performance in national form six examinations, ranking among the top schools in Tanzania over the past decade, including three consecutive years at the top. Attendance records are vital administrative tools for parents and school authorities to monitor and manage students' activities [30]. However, challenges persist, with student attendance varying significantly by region, school type, subject, and gender. [31] categorize attendance into two types: presence within the school compound and presence in the classroom throughout the day. Some students may attend school but miss specific lessons due to various factors, including illness, school suspension, long travel distances, household responsibilities, disinterest in certain subjects, peer pressure, or a lack of school lunch programs. Classroom absenteeism often arises from students' disinterest in challenging subjects, dissatisfaction with teaching methods, or fear of corporal punishment during lessons. Despite these challenges, there is substantial evidence linking class attendance to academic performance. Several studies, including [32] and [33], have demonstrated a positive correlation between class attendance and academic achievement. [34] and [35] also reported that attendance significantly influences students' performance. Similarly, [36] found that school attendance positively correlates with academic outcomes, while [37] identified a strong association between classroom attendance and student competition results in history topics.

Moreover, [38] noted a relationship between overall academic performance and attendance, with [39] reporting a positive link between attendance and exam scores. [40] found that students with higher attendance levels achieved better academic outcomes. Conversely, some studies present conflicting findings. [41] found no significant relationship between attendance and academic performance in certain contexts, and [42] reported no correlation between attendance and final scores. No research has yet explored the connection between classroom attendance and students' academic performance at Arusha Advanced Secondary School. This study seeks to close this gap by offering valuable insights specific to the Tanzanian context. The results will enhance the existing knowledge base and could potentially be applicable to other schools within the region and elsewhere.

Sex and Academic Performance

Sex refers to the biological attributes distinguishing males and females, encompassing physical and physiological characteristics such as chromosomes, hormones, and reproductive anatomy Coen & Banister, cited in [43]. [44] emphasize that these biological characteristics are universal and unchanging. In this study, sex refers to male and female form six students in the academic year 2022/2023 who participated in the survey. Biological sex alone does not determine academic performance. Instead, environmental factors significantly influence academic outcomes. For instance, cultural biases or practices prioritizing boys' education over girls' often disadvantage female students, particularly in some African societies, including Tanzania. Consequently, fewer females are represented at higher educational levels due to factors such as early pregnancies, cultural practices, school environment challenges, and family conflicts. However, with equitable opportunities, both males and females can achieve their full academic potential. At Kisimiri Secondary School, a coeducational institution, both boys and girls have equal opportunities to access educational resources and interact with teaching materials, ensuring that biological differences do not hinder academic achievement. Globally, the relationship between sex and academic performance has been widely debated. In some studies,

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male students have been found to outperform females in specific subjects, particularly mathematics [2], [45], [46]. For example, [47] observed that boys generally outperformed girls in mathematics. However, other studies suggest a reversal, with females performing better or showing no significant differences between sexes. [48] found no significant gender differences in mathematics performance over three academic sessions, while [49] reported similar findings. Additionally, [38] highlighted a statistically significant association between gender and overall academic performance in accounting. Numerous studies have investigated the connection between gender and students' academic performance across different educational levels. However, there is a lack of research focusing specifically on the direct relationship between students' sex and their academic performance in advanced secondary schools. This study aims to address this gap by offering fresh perspectives on how students' sex influences academic outcomes at this level.

MATERIALS AND METHODS

Study Design

This study adopted a quantitative approach utilizing a correlational cross-sectional survey design to explore the relationship between Information and Communication Technology (ICT) (IV1), class attendance (IV2), sex (IV3), and student academic performance (DV)[50]. The survey method was employed to gather information from a large number of respondents at a single point in time. A quantitative approach was chosen as it involved variables measured numerically and analyzed statistically. The cross-sectional nature of the study reduced the time and cost involved by collecting data from respondents only once [51].

Study Population

According to [52], the target population refers to "all members of a real or hypothetical set of people, events, or objects to which the investigator wishes to generalize the research findings." The target population for this study consisted of all students and teachers at Kisimiri Secondary School. Teachers and students were selected due to their critical roles and firsthand knowledge regarding students' academic performance. The accessible population included students and teachers present during the data collection period.

Study Sample Size

A sample, as described by [53], is a subset of the target population selected systematically for a study. Data for this study were collected from form six students in the academic year 2022/2023, comprising a total sample size of 124 respondents.

Sampling Techniques

Purposive sampling was employed to select respondents for this study. Form six students from the 2022/2023 cohort were specifically chosen to evaluate their academic performance. Similarly, purposive sampling was applied to select teachers who taught the form six cohort, as they possessed relevant insights and experience regarding the ICT, class attendance and students' academic outcomes [50].

Data Collection Methods

The study employed a survey method using self-administered questionnaires (SAQs) to gather quantitative data from a large number of respondents efficiently. To supplement the data collected through SAQs, structured interviews were conducted with teachers using interview

guides. These interviews provided additional insights and allowed the researcher to validate and enrich the findings obtained from the students.

Data Analysis Techniques

Data analysis was performed using the Statistical Package for Social Sciences (SPSS) version 21. Descriptive statistics, including frequencies and percentages, were calculated for background variables. Inferential analysis, specifically bivariate analysis, was conducted to test hypotheses and examine correlations between numerical independent variables (ICT, class attendance, and sex) and the numerical dependent variable (academic performance). Karl Pearson's Linear Correlation Coefficient (PLCC) was used for this purpose. Qualitative data from teacher interviews were analyzed by categorizing and organizing responses into patterns and themes. The PLCC results were presented in tables, with a significance level of less than 0.05 considered sufficient for hypothesis acceptance.

Validity of the Research Instrument

To ensure content validity, the research instrument was aligned with the conceptual framework (Figure 1) and reviewed by education experts. Their feedback on content clarity and alignment with study objectives was incorporated to enhance the instrument's validity.

Reliability of the Instrument

According to [54], a Cronbach's alpha value greater than 0.7 indicates acceptable reliability. The reliability of the research instrument was established by computing Cronbach's alpha values using SPSS. Table 1 presents the computed values:

Table 1: Cronbach's Alpha Values

Variables	Scale(s)	Number of Items	Cronbach's Alpha
Academic Performance	Formative Evaluation	5	0.901
	Summative Evaluation	5	0.876
ICT	Hardware	6	0.772
	Software	6	0.990
Attendance	School Attendance	6	0.908
	Classroom Attendance	6	0.849
Sex	Male and Female	10	0.795

The computations presented in Table 1 reveal an overall Cronbach's Alpha value of 0.870, which exceeds the threshold of 0.7 recommended by [54] for establishing the reliability of research instruments. The individual item values ranged from a minimum of 0.772 to a maximum of 0.990, with values closer to 1 indicating greater reliability. Notably, all 44 items in the self-administered questionnaires (SAQs) yielded Cronbach's Alpha values above 0.7, demonstrating a high level of reliability for the instrument utilized in this study. Consequently, the instrument is considered robust, ensuring the production of reliable and trustworthy findings

RESULTS AND DISCUSSION

Respondent Background Information

The initial section of the survey instrument gathered data on three background variables: sex, age, and study combination.

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Table 2: Distribution of Respondents by Sex

Sex	Number of Students	Percentage
Female	57	46
Male	67	54
Total	124	100.0

Table 2 indicates that 54% of respondents were male, highlighting a male dominance among advanced level students at Kisimiri Secondary School. This is consistent with broader trends in education where fewer females reach higher levels of education due to factors such as cultural norms, early marriages, and reduced educational opportunities for girls in some Tanzanian communities.

Table 3: Distribution of respondents by age group

Age group (years)	Number of Students	Percentage
14 – 18	58	46.8
19- 23	66	53.2
Total	124	100.0

Table 3 shows that 53.2% of respondents were in the 19–23 age group, while 46.8% were in the 14–18 age group. This suggests that most students at Kisimiri Secondary School were within the typical school-age bracket.

Table 4: Distribution of respondents by study combination

Study combination	Number of Students	Percentage
HKL	56	45.2
PCM	68	54.8
Total	124	100.0

Table 4 indicates that 54.8% of respondents were enrolled in the PCM (science) combination, highlighting a strong preference for science related courses. This trend aligns with government efforts to promote science education as a cornerstone for advancing industrial development. Additionally, it may be attributed to the "Samia Scholarship," an initiative by the Honorable President of the United Republic of Tanzania, which supports high performing female students in science disciplines following their national form six examinations.

Results of Hypothesis One (H_1)

The first study hypothesis stated that "Information and communication technology is positively related to academic performance among advanced secondary schools students in Tanzania." To test this, the two numerical indices (ICT and ACDPER) were correlated using Pearson's Linear Correlation index. Table 5 gives the pertinent results:

Table 5: Pearson's Linear Correlation between ICT and Academic Performance

		Academic Performance	ICT
Academic Performance	Pearson Correlation	1	0.341(**)
	Sig. (2-tailed)		0.000
	N	124	124
ICT	Pearson Correlation	0.341(**)	1

	Sig. (2-tailed)	0.000	
	N	124	124

* * Correlation is significant at the 0.01 level (2-tailed)

Table 5 shows a positive correlation (r = 0.341, Sig = 0.000) between ICT and academic performance, supporting the hypothesis. This indicates that increased access and use of ICT positively influence students' academic performance at Kisimiri Secondary School.

Results of Hypothesis Two (H_2)

The second hypothesis in the study was that "class attendance is positively related to academic performance among advanced secondary schools students in Tanzania." Using responses under class attendance only, the two numerical variables (ATT and ACDPER) were correlated using Pearson's linear correlation coefficient as shown in Table 6:

Table 6: Pearson's Linear Correlation between Classroom Attendance and Academic Performance

		Academic Performance	Classroom Attendance
Academic Performance	Pearson Correlation	1	0.221(**)
	Sig. (2-tailed)		0.000
	N	124	124
Classroom Attendance	Pearson Correlation	0.221(**)	1
	Sig. (2-tailed)	0.000	
	N	124	124

** Correlation is significant at the 0.01 level (2-tailed).

Table 6 reveals a positive correlation (r = 0.221, Sig = 0.000) between classroom attendance and academic performance, validating the hypothesis. The findings suggest that consistent attendance positively impacts academic outcomes.

Results of Hypothesis Three (H_3)

The third study hypothesis was "sex is positively related is positively related to academic performance among advanced secondary schools students in Tanzania." To ratify this, the two variables (SEXV and ACDPER) were correlated using Pearson's linear correlation as in Table 7:

Table 7: Pearson's Linear Correlation between student's sex and academic performance

		Academic Performance	Student Sex
Academic Performance	Pearson Correlation	1	0.118
	Sig. (2-tailed)		0.194
	N	124	124
Student Sex	Pearson Correlation	0.118	1
	Sig. (2-tailed)	0.194	
	N	124	124

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Table 7 indicates no significant correlation (r = 0.118, Sig = 0.194) between sex and academic performance. The hypothesis is therefore rejected, suggesting that sex does not significantly influence academic performance among students at Kisimiri Secondary School.

DISCUSSIONS OF STUDY FINDINGS

This study aimed to investigate the relationship between ICT, classroom attendance, sex and students' academic performance. Three research questions and corresponding hypotheses were formulated and tested using the Pearson Linear Correlation Coefficient (PLCC). The findings revealed a positive relationship between ICT usage, classroom attendance, and students' academic performance. However, the results did not support a significant relationship between students' sex and their academic performance.

H_1: The study's quantitative findings demonstrated a positive relationship between Information and Communication Technology (ICT) and academic performance among advanced secondary school students in Tanzania. This was supported by qualitative findings, as teachers' perspectives aligned with the quantitative data collected from students through SAQs. Both sets of findings highlighted a positive correlation between ICT and students' academic performance. As one teacher explained, *"ICT impacts students' academic performance by helping them access in-depth information and knowledge related to their subjects. Additionally, ICT allows learners to observe the realities of the concepts taught in classroom settings."* Another teacher emphasized that *"ICT enhances students' academic performance by serving as a source of relevant academic materials."* This sentiment was echoed by another respondent, who noted, *"ICT simplifies and makes the teaching and learning process more engaging and enjoyable."* A fourth teacher added, *"ICT increases learners' interest in studying, which in turn improves academic performance. Moreover, it provides a wide range of reference materials, reducing reliance on textbooks and increasing students' chances of performing well in examinations."* Finally, a fifth respondent observed that *"ICT fosters students' creativity through e-learning by allowing them to utilize various resources effectively. It also simplifies the organization of assignments, further supporting their academic success."*

Both quantitative and qualitative findings align with previous research, such as [21] study, which identified a strong correlation between ICT access and student achievement. Similarly, [23] demonstrated the significant impact of ICT utilization on student outcomes, while [24] highlighted a clear relationship between ICT implementation and academic success. Additionally, studies by [26] and [27] reported substantial positive associations between ICT use and academic performance. Theoretically, the study's findings reinforce [29] Technology Acceptance Model (TAM), confirming that when individuals perceive ICT as both useful and easy to use in academic settings, they are more likely to adopt it in their daily learning processes. This increased readiness to use ICT enhances their opportunities for academic success, further validating the applicability of TAM in educational contexts.

H_2: The analysis of quantitative data confirmed a positive correlation between classroom attendance and academic performance among advanced secondary school students in Tanzania. Similarly, qualitative data collected through interviews echoed these findings, highlighting the significant impact of classroom attendance on academic outcomes. One teacher observed, "*Students with good classroom attendance tend to perform better than those who miss lessons. Regular attendance provides the advantage of understanding the material presented by*

the teacher and seeking clarification when concepts are unclear." The second teacher emphasized that *"Academic performance is directly proportional to class attendance. Students who perform poorly are often those who frequently skip lessons."* Another teacher stated, *"Poor attendance not only lowers students' academic performance but also weakens the teacher's ability to conduct effective formative evaluations."* Other respondents highlighted the interactive benefits of regular attendance, with one remarking that *"Classroom attendance improves academic performance by fostering interactions between students and their teachers, as well as among peers."* Finally, another teacher concluded, *"There is a clear relationship between classroom attendance and academic performance, as consistent attendance ensures students are taught effectively, enhancing their overall performance."*

The findings of this study are supported by previous research, such as [32], who demonstrated a positive correlation between class attendance and academic achievement. Similarly, [34] and [35] reported significant influences of attendance on students' performance. In line with these results, [36] found that school attendance positively correlates with academic outcomes. The findings of this study contribute significantly to the Technology Acceptance Model (TAM) by applying it to examine the relationship between students' classroom attendance and academic performance. To date, no research has utilized TAM to explore this connection among advanced secondary school students in Tanzania, specifically in Arusha and Kisimiri. This study addresses this research gap and provides a valuable reference point for future researchers seeking to investigate similar contexts or further expand the application of TAM in educational settings.

H_3: The findings of this study revealed that sex does not significantly influence academic performance among secondary school students in Tanzania. This result contrasts with earlier research by [47], which reported that boys generally outperformed girls in mathematics. However, it aligns with studies such as [48], who found no significant gender differences in mathematics performance across three academic sessions, and [49] who reported similar conclusions. Qualitative data from this study supported the findings, with one teacher asserting that *"a student's sex has no impact on their academic performance; success depends solely on hard work and self-determination."* Another respondent similarly stated, *"Sex does not influence students' academic performance."* [38] identified a statistically significant association between gender and overall academic performance in accounting. However, some teachers in this study expressed views that were not consistent with the findings collected from students through SAQs. For example, one teacher argued that *"The gender of a student influences their academic performance due to cultural norms in some societies, where males are prioritized for education and considered superior to females.* Another teacher observed that *"Gender affects academic performance because certain subjects, like advanced mathematics and physics, are often perceived as challenging and more suitable for boys.* A further perspective suggested that *"Student sex plays a role in academic performance, as boys and girls differ in how they interact socially, which can positively impact their academic outcomes."* Theoretically, the Technology Acceptance Model (TAM) can be extended to explore the relationship between students' gender and academic performance. Since TAM focuses on perceptions, it suggests that when individuals perceive that gender does not influence academic performance, they are more likely to achieve better outcomes. This perspective enriches the Davis Technology Acceptance Model by demonstrating its applicability beyond technology-related contexts, highlighting how perceptions about gender neutrality can positively impact academic achievement.

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CONCLUSION

The study demonstrated significant positive correlations between ICT integration, class attendance, and academic performance, highlighting the critical role of technology and consistent engagement in the learning process. These findings suggest that education stakeholders, particularly school administrators and education officers, should prioritize the provision of ICT resources and reinforce policies ensuring mandatory class attendance, given their direct positive impact on student achievement. Additionally, the study observed no significant relationship between sex and academic performance, affirming that academic potential is equitable across genders when opportunities are fairly distributed. To promote this equity, government authorities should intensify efforts to eliminate sex based disparities and ensure equal access to quality education at the advanced secondary school level.

Recommendations for Action

Based on the study findings, the following recommendations are made for actionable measures:

1. School authorities and education stakeholders should prioritize the development of ICT infrastructure and provide comprehensive training for both students and teachers. This will enhance academic outcomes in advanced secondary schools and better prepare students for university level education.
2. School authorities and teachers should implement and reinforce effective attendance monitoring systems. Emphasis should be placed on ensuring that all students consistently attend lessons to improve engagement and academic performance.
3. Education authorities must continue to address barriers to education for girls, such as cultural biases and early marriages. Policies and programs that prioritize girls' education are essential to closing the gender gap and ensuring equal opportunities for all students.

Recommendations for Future Research

1. This study primarily employed a quantitative research approach. Future researchers could adopt mixed methods, combining both qualitative and quantitative paradigms, to provide a more comprehensive understanding of the factors influencing academic performance.
2. The current study was conducted in one public secondary school with a relatively small sample size. Future research should include larger, more diverse samples from both public and private schools to enhance the generalizability of the findings.
3. While this study focused on ICT, classroom attendance, and sex, future researchers are encouraged to investigate other factors affecting academic performance in Tanzanian secondary schools. This could include socioeconomic status, teaching methodologies, and parental involvement, among others, to provide a broader perspective on student achievement

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