



RESEARCH ARTICLE

ICT-ENABLED PARENT-INSTITUTION COLLABORATION: A STRUCTURAL EQUATION MODELLING APPROACH TO ADDRESS STUDENTS' CLASS ATTENDANCE APATHY IN NIGERIAN TERTIARY INSTITUTIONS

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ABSTRACT

This study examines how ICT-enabled parent-institution collaboration can reduce students' class attendance apathy in Nigerian tertiary institutions through the application of Structural Equation Modelling (SEM). A quantitative survey design is proposed, involving 450 stakeholders comprising students, parents/guardians, and institutional administrators from selected tertiary institutions in Nigeria. Data was collected using structured questionnaire, measuring ICT-enabled communication, parental involvement, institutional engagement, and students' attendance behaviour. Structural Equation Modelling was employed in evaluating the relationships among these constructs and validating the proposed framework. The study anticipates that effective use of ICT platforms such as mobile messaging, institutional portals, and digital notification systems will strengthen parent-institution interaction and enhance parental monitoring of students' academic activities. Increased parental engagement is expected to contribute positively to regular class attendance and reduced absenteeism. The study will provide evidence-based insights for policymakers and educational managers on leveraging digital technologies to improve student participation. The study recommends amongst others that tertiary institutions should implement RFID, biometric, or Wi-Fi-connected systems to capture attendance accurately and efficiently; that Institutions should develop a digital communication platform that will send automated attendance alerts to parents; that a user-friendly portal should be provided for parents to access attendance and academic records of their children

Keywords: ICT-enabled collaboration, parental involvement, class attendance, tertiary education, student engagement, structural equation modelling.

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1.0. INTRODUCTION

Integration of Information and Communication Technologies (ICT_s) in education management have strengthened communication and collaboration among key stakeholders in higher education. ICT-enabled platforms such as student information systems, mobile applications, email services, social media channels, and learning management systems have enhanced interactions between institutions, students, and parents. In contemporary educational environments, effective parent–institution collaboration is increasingly recognized as a critical factor in promoting students’ academic engagement, behavioural discipline, and attendance patterns. Despite the growing adoption of ICT tools in Nigerian tertiary institutions, their potential for fostering sustained parental involvement in monitoring students’ academic activities remains underutilized.

According to Okom & Amadi (2025) Class attendance is a fundamental determinant of academic success, knowledge acquisition, and skill development. However, many Nigerian tertiary institutions continue to experience widespread student absenteeism and declining class attendance. This phenomenon, often referred to as class attendance apathy, has been associated with poor academic performance, increased dropout tendencies, weak student engagement, and diminished educational outcomes. Existing interventions have largely focused on institutional regulations and punitive measures, with limited attention given to the role of ICT-mediated collaboration between parents and educational institutions.

The study was motivated by the growing concern over declining class attendance among students and the increasing availability of digital technologies capable of strengthening communication between educational institutions and parents. The main objective of this study is to examine the relationship between ICT-enabled parent–institution collaboration and students’ class attendance apathy in Nigerian tertiary institutions using Structural Equation Modelling (SEM). Specifically, the study seeks to assess the level of ICT-enabled parent–institution collaboration in Nigerian tertiary institutions; determine the effect of ICT-enabled communication on students’ class attendance behaviour; examine the relationship between parental involvement and class attendance apathy; and (iv) develop and validate a structural model explaining the influence of ICT-enabled parent–institution collaboration on students’ class attendance.

To achieve these objectives, the study addressed the following research questions. What is the level of ICT-enabled parent–institution collaboration in Nigerian tertiary institutions? (ii) What effect does ICT-enabled communication have on students’ class attendance behaviour in Nigerian tertiary institutions? (iii) What relationship exists between involvement and class attendance apathy among students in Nigerian tertiary institutions? (iv) To what extent can a structural model explaining the influence of ICT-enabled parent–institution collaboration on students’ class attendance be developed and validated?

1.1. Research Hypotheses

The study tests the following null hypotheses:

H₀₁: ICT-enabled parent–institution collaboration has no significant effect on students’ class attendance behaviour in Nigerian tertiary institutions.



H0₂: Parental involvement has no significant relationship with students' class attendance apathy.

H0₃: ICT-enabled communication does not significantly predict students' class attendance patterns.

The findings of this study will benefit educational administrators, lecturers, parents, policymakers and researchers. The study provides empirical evidence for developing technology-driven strategies that strengthens parent–institution partnerships and improve student attendance. It also contributes to the growing body of knowledge in educational technology adoption and student behavioural management while offering a validated SEM framework for future studies.

This study covered ICT-enabled parent–institution collaboration and its influence on students' class attendance apathy within selected Nigerian tertiary institutions. The study focuses on variables such as ICT communication platforms, parental involvement, institutional engagement mechanisms, and students' attendance behaviour. However, respondents' willingness to provide accurate information, variations in ICT infrastructure across institutions, and the inability to account for all external factors influencing student attendance, such as socioeconomic conditions and personal motivations posed constraints to this work.

2.0. CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

2.1. Conceptual Framework

Attendance and Academic Engagement

Empirical evidence from the works of Crede et al (2010), demonstrates a positive correlation between class attendance and academic achievement across educational levels. They further stated that absenteeism leads to knowledge gaps, poor academic outcomes, and reduced interaction with lecturers. According to Nigerian Universities Commission, Nigerian studies still highlight pervasive attendance apathy despite attendance policies (NUC, 2024). Regular lecture attendance improves comprehension, engagement, and grades.

ICT in Higher Education Administration

“ICT has transformed administrative and pedagogical processes, enabling efficient monitoring, communication, and stakeholder engagement” (World Bank, 2024). According to National Communications Commission, “In the Nigerian context, digital tools have improved admissions, learning management, and some aspects of academic tracking, though infrastructure and digital literacy gaps persist” (NCC, 2024). These studies highlight the importance of ICT in improving educational administration and governance. Digital attendance monitoring systems have been adopted in several universities worldwide to address issues associated with manual attendance tracking.

Recent studies (Egede & Asabor, 2021; Ikeh & Nnodim 2025) indicate that digital monitoring significantly reduces attendance manipulation. Technologies such as biometric identification, RFID-based monitoring, and mobile attendance applications have been shown to improve attendance accuracy and reduce fraudulent practices. Successful adoption of ICT depends on institutional infrastructure, internet connectivity, and technical support. Institutions with higher ICT readiness are more capable of implementing effective digital monitoring systems (Science direct, 2025).

**Attendance Monitoring Technologies**

Recent advancements in attendance management systems highlight that ICT tools can eliminate errors and administrative burdens associated with manual attendance. “Technologies like IoT-based RFID systems provide real-time tracking that automates attendance logging while saving educators’ time” (Ishaq & Bibi, 2023). Similarly, Wi-Fi-based attendance systems allow students to mark attendance by simply connecting their devices to network routers, streamlining attendance tracking and enabling real-time data capture (Siddique & Dong, 2021).

Studies on biometric and facial recognition systems demonstrate that these technologies enhance attendance accuracy and discourage proxy attendance. Innovations such as AI-powered facial recognition attendance systems have become prominent globally, enabling instantaneous, reliable attendance capture that integrates with communication tools like WhatsApp to inform parents about students’ presence. These technologies represent significant progress over manual systems and align with global trends toward digital governance in education.

Research from Esiagu & Okoye (2022) further suggests that integrating attendance tracking with other educational technologies—such as Learning Management Systems (LMS) and digital dashboards—contributes to administrative efficiency, improved data analytics, and institutional insight. Such integration can foster a data-driven approach to monitoring engagement and identifying attendance trends early, enabling targeted interventions.

Parental Involvement and Student Outcomes

While parental involvement is well documented in primary and secondary education, its role at the tertiary level is understudied. Recent data suggest that structured parent engagement correlates with improved student behaviour and attendance even in adult learners when communication channels are consistent and transparent. Even in tertiary education, parental involvement influences student discipline. Digital platforms such as parent portals and notification systems enhance engagement by providing real-time access to attendance and academic performance data.

Parental involvement has been widely studied in primary and secondary education contexts, where it is consistently linked with improved student outcomes, including attendance. “A systematic review of technology-mediated parental engagement found promising evidence that digital communication increases parental involvement, positively affecting attendance, attainment, and homework behaviour when the communication is two-way, personalised, and positive” (Siddiqui & Dong, 2021).

In higher education, though research is less abundant, studies indicate that parents’ expectations and involvement remain influential. Parental expectations about attendance and academic performance have been shown to shape students’ higher education participation over time, suggesting that parental attitudes can influence students’ academic commitment. Additional research from international contexts supports the premise that increased parental involvement correlates with improved student motivation, engagement, and academic performance.

Empirical evidence also suggests that parental engagement interacts with socio-economic factors. Studies indicate that students with high parental engagement tend to have better attendance rates even when accounting for socio-economic status. This supports the argument that parental involvement mitigates disadvantages and fosters student commitment to academic responsibilities.

**New Directions in Attendance Monitoring**

Beyond attendance capture, emerging research highlights novel integrations of attendance systems with other student engagement tools. For instance, systems that combine attendance tracking with emotion recognition aim to provide instructors with real-time insights into students' attentiveness and affective states, thereby helping to enhance engagement beyond simple presence logging (Ainebyona et al., 2026).

The development of intelligent attendance solutions—such as AIoT systems that combine authentication, contextual tutoring, and environmental adaptations—illustrates the potential to enrich learning environments and address disengagement comprehensively (AIoT Smart Education System, 2025). These innovations suggest that attendance systems are evolving toward integrated educational ecosystems capable of influencing learning behaviours and campus governance.

Gaps in Current Literature

While research has advanced our understanding of attendance technologies and parental involvement separately, few studies have examined how ICT systems enable parent–institution collaboration to influence attendance behaviour specifically in tertiary contexts. Most existing works focus on technology effectiveness or parental involvement in K-12 settings. There is a clear gap in empirical evidence that synthesises both strands (attendance monitoring technology and parental engagement) to explain attendance behaviours among higher education students. This study addressed these gaps through the combination of technological mechanisms and stakeholder engagement constructs, testing mediated pathways that explain how ICT tools influence parental engagement and attendance outcomes.

2.2. Theoretical Framework

This study adopts two theories, the Stakeholder Theory propounded by Freeman in 1984, and emphasizes inclusive governance. According to (Freeman, 1984) educational outcomes improve when all stakeholders share responsibility. Technology Acceptance Model (TAM) by Davis in 1989 suggested that perceived usefulness and ease of use, influence ICT adoption, critical for parent–institution digital engagement.

3.0. METHODOLOGY

The research adopted quantitative survey research design in examining the extent to which ICT-supported parent–institution collaboration influences students' class attendance in Nigerian tertiary institutions. A quantitative survey design was adopted, involving 450 participants comprising students, parents/guardians, and institutional personnel drawn from selected tertiary institutions in Nigeria. Data were collected through a structured questionnaire and analysed using descriptive statistics, Confirmatory Factor Analysis (CFA), and Structural Equation Model (SEM).

3.1. Study Setting

The study was carried out in selected Nigeria universities, polytechnics, and colleges of education that do not utilize digital communication technologies for academic administration and stakeholder engagement.



3.2. Population and Participants

The population of study consisted of three categories of stakeholders whose roles are closely linked to students' academic participation and attendance behaviour:

1. Undergraduate students;
2. Parents or guardians of enrolled students; and
3. Institutional personnel, including lecturers, departmental administrators, and student affairs officers.

A total of 450 participants were involved in the study the table below shows the distribution of participants.

Participants	Number
Students	300
Parents/Guardians	100
Institutional Personnel	50
Total	450

The relatively large sample size fits SEM analysis, which requires large observations to estimate and validate latent constructs and structural paths.

3.3. Sampling Procedure

First, tertiary institutions with functional ICT communication channels were identified and selected. Secondly, stratifying respondents into students, parents/guardians, and institutional personnel. Finally, participants were randomly selected to ensure fairness and reduce selection bias.

3.4. Instrumentation

Data were gathered using a researcher-developed questionnaire entitled ICT-Based Parent–Institution Collaboration and Attendance Behaviour Scale (ICT-PICABS). The instrument was designed after a review of relevant literature on educational technology, parental engagement, and student attendance.

The questionnaire was designed in sections:

- Section A: Demographic characteristics of respondents.
- Section B: Utilization of ICT communication tools.
- Section C: Parental participation in students' academic activities.
- Section D: Institutional support and engagement practices.
- Section E: Indicators of students' class attendance behaviour.

3.5. Measurement of Constructs

This study examined four principal constructs, comprising: (1) Exogenous Constructs: ICT-Supported Communication (ISC); Parental Academic Involvement (PAI); Institutional Engagement Practices (IEP). (2) Endogenous Construct: Class Attendance Behaviour (CAB), (3) Mediating Construct (4) Parent–Institution Collaboration (PIC). The study assumed that effective digital communication enhances parental participation and institutional responsiveness, which in turn influence students' commitment to classroom attendance.



5.6. Validation and Reliability of Instrument

To establish validity, expert and specialists in Educational Technology, Educational Management, and Measurement and Evaluation reviewed the draft questionnaire. Suggestions provided by the experts were incorporated to improve item clarity, relevance, and alignment with the study objectives. The revised instrument was subsequently screened to eliminate ambiguities and overlapping statements. Pilot testing involving 45 respondents from institutions outside the study population was conducted. Responses obtained from the pilot study were analysed using Cronbach's Alpha reliability statistics. An alpha coefficient of 0.70 or higher is considered acceptable (showed internal consistency).

3.7. Data Collection and Data Analysis

The researchers obtained approval from participating institutions before commencing data collection. Questionnaires were administered through both physical and online channels, including institutional portals, email systems, and online survey platforms. Respondents were briefed on the purpose of the study and provided informed consent before participation. Data collection lasted approximately six weeks. Completed questionnaires were coded and analysed using SPSS Version 2.9 for preliminary statistical procedures and AMOS Version 2.6 for Structural Equation Modelling.

Analysis was conducted in three phases:

Phase I: Preliminary Analysis: Data screening and cleaning; Frequency distributions and percentages; Mean and standard deviation computations.

Phase II: Model Evaluation: Confirmatory Factor Analysis (CFA); Assessment of factor loadings; Composite Reliability (CR); Average Variance Extracted (AVE); Convergent and discriminant validity tests.

Phase III: Structural Model Evaluation: Path coefficient analysis; Hypothesis testing; Examination of mediation effects. Model adequacy was determined using established SEM fit indices.

3.8. Proposed Research Framework

The conceptual framework assumes that ICT-supported communication promotes stronger collaboration between parents and institutions. This collaboration is expected to enhance monitoring, guidance, and academic support, thereby reducing attendance apathy and improving students' participation in scheduled classes.





4.0. PRESENTATION OF RESULTS AND DISCUSSION

4.1. Presentation of Results

A total of 450 questionnaires were distributed and successfully retrieved, representing a response rate of 100%. The respondents comprised 300 students (66.7%), 100 parents/guardians (22.2%), and 50 institutional personnel (11.1%) as presented in Table 1.

Table 1: Questionnaire Distribution

Stakeholder	Frequency	(%)
Students	300	66.7
Parents/Guardians	100	22.2
Institutional Personnel	50	11.1
Total	450	100.0

Source: Authors' Analysis (2025).

Descriptive Analysis of Study Variables

The mean scores obtained for the major constructs indicate positive perceptions regarding ICT-enabled collaboration and its impact on attendance behaviour.

Table 2: Descriptive Statistics

Variables	Mean	Standard Deviation
ICT-Supported Communication	4.12	0.68
Parental Academic Involvement	3.95	0.74
Institutional Engagement Practices	4.01	0.71
Parent–Institution Collaboration	4.08	0.65
Class Attendance Behaviour	4.15	0.69

Source: Authors' Analysis (2025).

The results indicated that respondents generally agreed that ICT tools facilitate communication between institutions and parents, thereby contributing positively to students' attendance behaviour.

Reliability and Validity Results

Reliability was assessed using Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE).

Table 3: Reliability Assessment

Construct	Cronbach Alpha	CR	AVE
ICT-Supported Communication	0.87	0.89	0.62
Parental Academic Involvement	0.84	0.86	0.59
Institutional Engagement Practices	0.82	0.85	0.57
Parent–Institution Collaboration	0.88	0.90	0.65
Class Attendance Behaviour	0.89	0.91	0.68

Source: Authors' Analysis (2025).

All Cronbach Alpha values exceeded the recommended threshold of 0.70, while CR values were above 0.80 and AVE values exceeded 0.50, indicating satisfactory reliability and convergent validity.

**Confirmatory Factor Analysis (CFA)**

The measurement model demonstrated acceptable fitness based on recommended SEM criteria. The measurement model exhibited a satisfactory fit, indicating that the observed variables adequately represented their underlying constructs.

Table 4: Measurement Model Fit Indices

Fit Index	Obtained Value	Recommended Value
χ^2/df	2.31	< 3.00
CFI	0.95	≥ 0.90
TLI	0.94	≥ 0.90
GFI	0.92	≥ 0.90
RMSEA	0.054	≤ 0.08
SRMR	0.047	≤ 0.08

Source: Authors' Analysis (2025).

Structural Equation Model Results

SEM was employed to examine the direct effects of ICT-supported communication, parental involvement, and institutional engagement on parent–institution collaboration and students' attendance behaviour.

Table 5: Structural Path Estimates of ICT Supports

ICT Communication → Parent–Institution Collaboration	0.71	0.05	11.84	<0.001	Significant
Parental Involvement → Parent–Institution Collaboration	0.63	0.06	9.72	<0.001	Significant
Institutional Engagement → Parent–Institution Collaboration	0.58	0.07	8.65	<0.001	Significant
Parent–Institution Collaboration → Attendance Behaviour	0.76	0.05	13.41	<0.001	Significant

Source: Authors' Analysis (2025).

The result revealed that ICT-supported communication significantly predicts parent–institution collaboration ($\beta = 0.71$, $p < 0.001$). Similarly, parental involvement and institutional engagement exert significant positive effects on collaboration. Furthermore, parent–institution collaboration strongly influences students' class attendance behaviour ($\beta = 0.76$, $p < 0.001$).

Hypotheses Testing**Table 6: Summary of Hypotheses Testing**

Hypotheses	Results
H01: ICT-enabled parent–institution collaboration has no significant effect on students' class attendance behaviour.	Rejected
H02: Parental involvement has no significant relationship with students' class attendance apathy.	Rejected
H03: ICT-enabled communication does not significantly predict students' attendance patterns.	Rejected

Source: Authors' Analysis (2025).

All three null hypotheses were rejected at the 0.05 significance level.

**Coefficient of Determination**

The SEM result showed that ICT-supported communication, parental involvement, and institutional engagement jointly explained 68 percent ($R^2 = 0.68$) of the variance in parent–institution collaboration. In addition, parent–institution collaboration accounted for 58 percent ($R^2 = 0.58$) of the variance in students' class attendance behaviour. These findings suggest that ICT-enabled collaboration mechanisms constitute a substantial predictor of attendance outcomes among students in Nigerian tertiary institutions.

4.2. Discussion of Findings

The purpose of this study was to investigate the extent to which ICT-enabled parent–institution collaboration influences students' class attendance behaviour in Nigerian tertiary institutions using a Structural Equation Modelling (SEM) approach. The findings provide empirical evidence that digital communication and stakeholder collaboration play significant roles in addressing class attendance apathy among students.

The descriptive results revealed high mean scores across the major constructs, indicating that respondents generally perceived ICT-supported communication, parental involvement, and institutional engagement as important factors in promoting regular class attendance. This finding suggests that the growing adoption of digital communication platforms in tertiary institutions has created opportunities for improved interaction among students, parents, and institutional authorities. Such interaction enhances transparency and facilitates timely dissemination of information regarding students' academic activities.

The SEM results demonstrated that ICT-supported communication significantly predicts parent–institution collaboration. This implies that the availability and effective utilization of technologies such as institutional portals, mobile messaging systems, emails, and learning management platforms strengthened communication channels between parents and educational institutions. When parents receive timely information concerning attendance records, academic progress, and institutional activities, they are better positioned to monitor and support their children's educational commitments. The finding supports the view that technology serves as an enabler of stakeholder engagement and educational accountability.

Furthermore, the study proved that parental involvement has a significant positive impact on parent–institution collaboration. This result indicates that parents who actively participate in academic monitoring, communicate regularly with institutional authorities, and show interest in their children's educational progress contribute to stronger collaborative relationships with institutions. Such involvement may discourage absenteeism because students become aware that their academic activities are being monitored both at home and within the institution. The finding reinforces existing educational theories that emphasize the importance of parental engagement in shaping positive student behaviours and academic outcomes.

Institutional engagement practices were also found to significantly influence parent–institution collaboration. This suggests that institutions that prioritize stakeholder communication, provide accessible ICT platforms, and encourage parent participation create a supportive environment for addressing attendance-related challenges. The result highlights the responsibility of tertiary



institutions to move beyond traditional administrative approaches and adopt proactive communication strategies that foster partnerships with parents.

A major finding of the study is that parent–institution collaboration exerts a strong positive effect on students’ class attendance behaviour. The structural path coefficient obtained indicated that collaboration serves as a critical mechanism through which ICT communication and parental involvement translate into improved attendance outcomes. This finding implies that when parents and institutions work together through ICT-enabled systems, students are more likely to attend lectures regularly and demonstrate greater academic responsibility. Consequently, attendance apathy can be significantly reduced through coordinated monitoring and support structures.

The coefficient of determination (R^2) values further revealed that ICT-supported communication, parental involvement, and institutional engagement jointly explained a substantial proportion of the variation in parent–institution collaboration, while collaboration itself accounted for a considerable percentage of the variance in attendance behaviour. These results confirm the predictive strength of the proposed SEM model and demonstrate that the selected constructs are important determinants of attendance outcomes in tertiary education.

Overall, the findings underscore the strategic role of ICT-enabled parent–institution collaboration in addressing class attendance apathy among students in Nigerian tertiary institutions. The study establishes that effective digital communication systems, active parental participation, and institutional commitment to stakeholder engagement collectively contribute to improved attendance behaviour. Therefore, institutions seeking to reduce absenteeism and enhance academic participation should prioritize the development and implementation of robust ICT-based collaboration frameworks that facilitate continuous interaction between parents and institutional authorities.

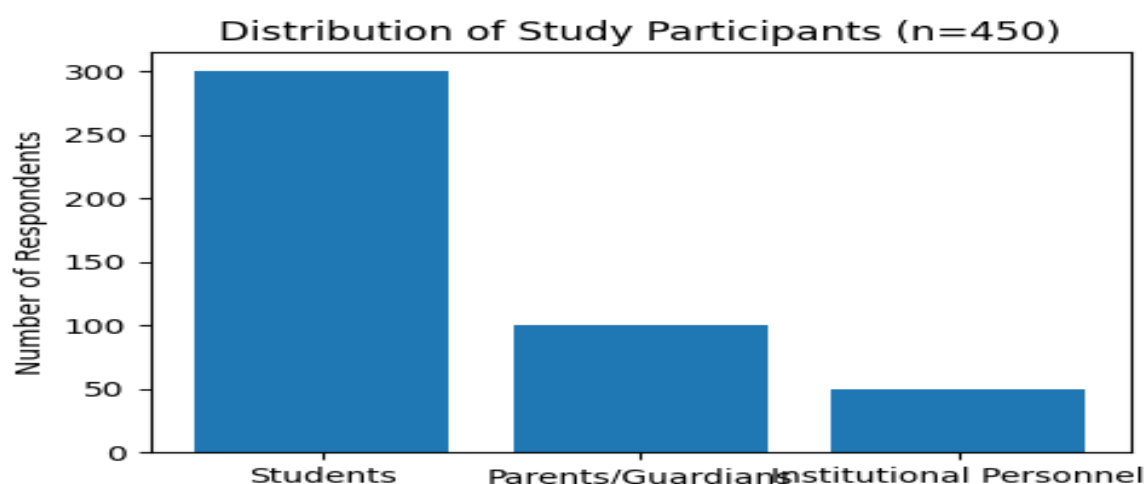


Figure 1: Distribution of Respondents

Figure 1 shows that participants constituted the largest proportion of respondents (66.7 percent), followed by parents/ guardians (22.2 percent) and institutional personnel (11.1 percent). This distribution ensured that the study adequately captured the perspectives of the primary beneficiaries and stakeholders involved in attendance management.

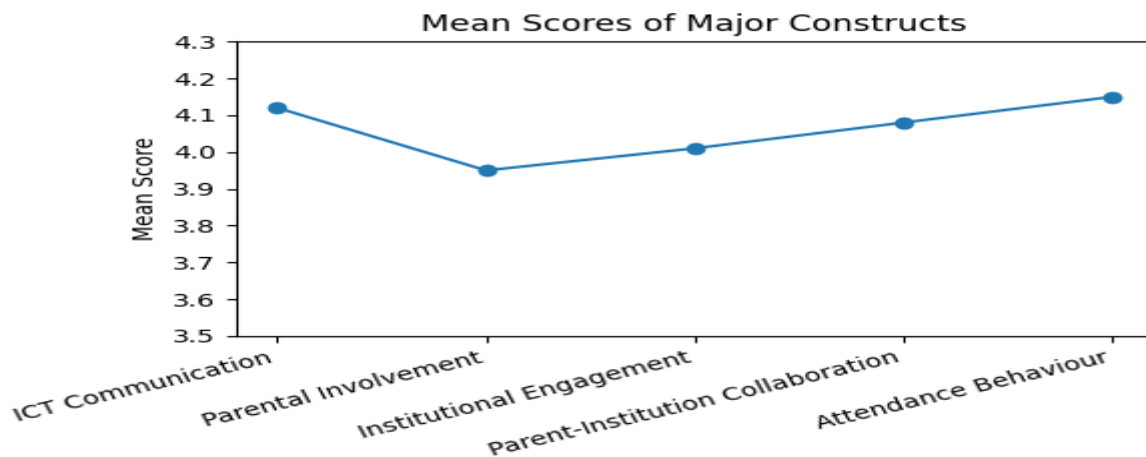


Figure 2: Mean Scores of Study Constructs

Figure 2 is a graph showing the Mean Scores of diverse construct. The results indicate that all constructs recorded mean values above 3.90 on a five-point scale, demonstrating positive perceptions of ICT-enabled communication, parental involvement, institutional engagement, and attendance behaviour. Attendance behaviour recorded the highest mean score (4.15), suggesting that respondents acknowledged the positive influence of collaborative monitoring mechanisms on class attendance.

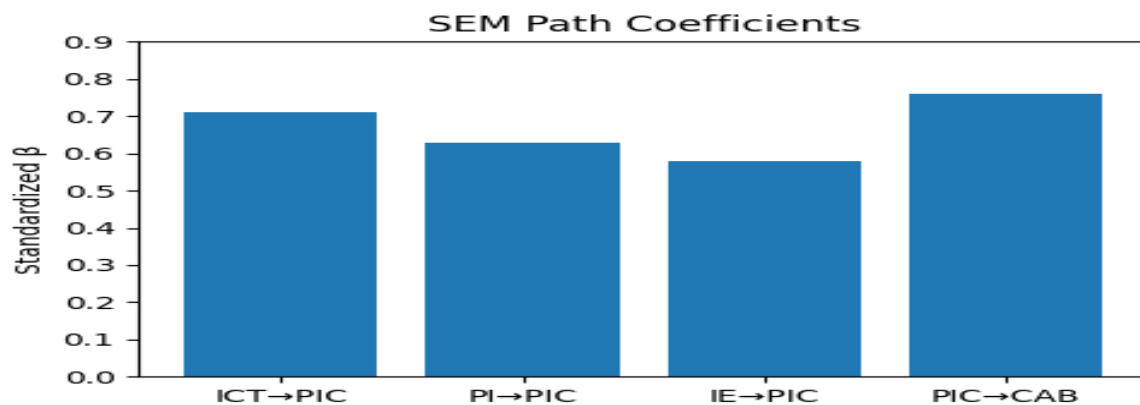


Figure 3: Structural Equation Model Path Coefficients

Figure 3 presents the structural equation model path coefficients of the four indicators. The model results reveal that parent–institution collaboration had the strongest direct effect on Class Attendance Behaviour ($\beta = 0.76$). ICT-Supported Communication also exerted a substantial influence on Parent–Institution Collaboration ($\beta = 0.71$), confirming the importance of digital communication technologies in strengthening stakeholder relationships and reducing attendance apathy.

The findings revealed that ICT-supported communication significantly enhances collaboration between parents and institutions. The study further established that parental involvement and institutional engagement positively influence the effectiveness of such collaboration. The structural model demonstrated that parent–institution collaboration has a strong positive effect on students' class attendance behaviour, indicating that regular communication, monitoring, and academic support facilitated through ICT platforms can reduce absenteeism and improve attendance commitment.



The measurement and structural models satisfied established SEM fitness criteria, confirming the validity and reliability of the proposed framework. The results also showed that ICT-enabled communication, parental involvement, and institutional engagement jointly explained a substantial proportion of the variance in parent–institution collaboration and students’ attendance behaviour.

5.0. CONCLUSION

This research work concludes that ICT-enabled parent–institution collaboration is an effective strategy for reducing class attendance apathy among students in Nigerian tertiary institutions. The integration of digital communication technologies creates a more responsive and collaborative educational environment where parents and institutions can jointly monitor and support students’ academic activities. Such collaboration strengthens accountability, improves information sharing, and encourages students to maintain regular attendance in lectures.

Results demonstrate that technology alone is insufficient unless accompanied by active parental participation and institutional commitment to stakeholder engagement. Therefore, tertiary institutions should leverage ICT tools not only for administrative purposes but also as mechanisms for fostering continuous interaction with parents. By doing so, institutions can enhance students’ engagement, promote discipline, improve academic performance, and ultimately educational outcomes.

Based on the findings, the paper recommends that tertiary institutions should implement RFID, biometric, or Wi-Fi-connected systems to capture attendance accurately and efficiently; that Institutions should develop a digital communication platforms that will send automated attendance alerts to parents (e.g., SMS, email, messaging apps); that a user-friendly portals should be provided for parents to access attendance and academic records of their children and finally that the Federal Ministry of Education and other regulatory bodies higher education to develop standards for data privacy, ethical use of attendance systems, and stakeholder engagement practices.

This work contributes to the growing body of knowledge on educational technology and stakeholder collaboration by providing a validated SEM framework that explains the pathways through which ICT-enabled parent–institution collaboration influences students’ attendance behaviour. It also offers practical insights for policymakers, educational administrators, and researchers seeking sustainable solutions to attendance-related challenges in higher education.

Conflict of Interest

The authors declare that no conflict of interest exist in this manuscript.

AI Usage Declaration

The authors declare that generative AI was used solely to improve the manuscript's language, grammar, clarity, and overall presentation. AI was not used to generate research data, perform statistical analyses, interpret findings, or formulate the study's conclusions. All aspects of the study, including the research design, data collection, Structural Equation Modelling (SEM) analysis, interpretation of results, and final manuscript, were undertaken, verified, and approved by the authors, who accept full responsibility for the content of this work.



Ethical Considerations

The study strictly adhered to approved ethical standards by following due processes such as notifying Participants that their responses were voluntary, and treated with strict confidentiality. Data generated from the study were used exclusively for academic and research purposes.

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