A Study on Students' Satisfaction and Artificial Intelligence (AI) Adoption in Private Schools of Coimbatore City

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Abstract
The integration of Artificial Intelligence (AI) into school education has significantly transformed teaching–learning processes through personalized learning systems, intelligent tutoring platforms, automated assessment tools, and learning analytics. Despite the increasing adoption of AI-enabled technologies in private schools, empirical evidence on their influence on students' satisfaction remains limited, particularly in the Indian school education context. This study investigates the extent of AI adoption and its impact on students' satisfaction in private schools of Coimbatore City using a quantitative research approach. Primary data were collected from 300 students through a structured questionnaire, and the data were analyzed using descriptive statistics, Pearson correlation, and multiple regression analysis. The findings reveal a significant positive relationship between AI adoption and students' satisfaction, with perceived usefulness and perceived ease of use emerging as the most influential determinants. The regression model explains a substantial proportion of variance in students' satisfaction, highlighting the role of effective AI integration in enhancing learning experiences and student engagement. The study offers valuable implications for school administrators, educators, and policymakers to promote student-centric and ethically responsible AI adoption in school education.

Keywords: Artificial Intelligence in Education; Student Satisfaction; AI Adoption; Private Schools; Coimbatore City

Introduction
Artificial Intelligence (AI) has emerged as a transformative technology in the education sector, fundamentally reshaping traditional teaching–learning processes and enabling data-driven, personalized educational experiences. AI-enabled applications such as adaptive learning platforms, intelligent tutoring systems, automated assessment tools, and learning analytics are increasingly being integrated into school education to enhance instructional efficiency, learner engagement, and academic outcomes. Globally, education systems are leveraging AI technologies to address diverse learner needs, improve instructional quality, and support evidence-based decision-making.

In the Indian context, the adoption of AI in school education has gained momentum, particularly in private schools where access to technological infrastructure and digital resources is relatively higher. Private educational institutions are increasingly investing in AI-based educational tools to improve learning personalization, monitor student performance in real time, and enhance overall educational quality. These developments align with national initiatives such as the National Education Policy (NEP) 2020, which emphasizes the integration of emerging technologies to foster innovation, digital literacy, and learner-centric education.

Student satisfaction is widely recognized as a key indicator of educational effectiveness and institutional quality. Satisfied students tend to demonstrate higher levels of engagement, motivation, and academic achievement,

contributing to improved learning outcomes and positive educational experiences. In technology-enabled learning environments, student satisfaction is influenced not only by instructional quality but also by the perceived usefulness, ease of use, and reliability of digital learning systems. Therefore, understanding students' perceptions and satisfaction levels in relation to AI-enabled educational practices is essential for evaluating the effectiveness of AI adoption in schools.

Although a growing body of research has examined AI adoption and technology acceptance in higher education and online learning environments, empirical studies focusing on school-level education remain limited, particularly within the Indian context. Most existing studies emphasize teachers' perspectives, institutional readiness, or technological infrastructure, while students' experiences and satisfaction with AI-enabled learning tools have received comparatively less attention. This gap is especially evident in studies examining private school education, where AI adoption is expanding rapidly but systematic empirical evaluation is scarce.

Coimbatore City, recognized as an important educational and technological hub in Tamil Nadu, hosts a large number of private schools that have increasingly integrated AI-based educational tools into their teaching–learning processes. The city's diverse private school ecosystem provides an appropriate context to examine how AI adoption influences students' satisfaction. Against this backdrop, the present study aims to empirically investigate the extent of AI adoption and its impact on students' satisfaction in private schools of Coimbatore City using a quantitative research approach.

By analyzing the relationship between AI adoption dimensions such as perceived usefulness, perceived ease of use, AI-supported learning tools, and system reliability and students' satisfaction, this study contributes to the growing literature on AI in school education. The findings are expected to provide valuable insights for school administrators, educators, and policymakers in designing effective, student-centric, and ethically responsible AI integration strategies that enhance learning experiences and educational outcomes.

Review of Literature
The growing integration of Artificial Intelligence (AI) in education has attracted significant scholarly attention over the past decade. AI technologies are increasingly being used to support personalized learning, intelligent tutoring, automated assessment, learning analytics, and real-time feedback mechanisms. Recent studies emphasize that AI has the potential to enhance learning efficiency, student engagement, and instructional quality by adapting educational content to individual learners' needs and learning styles (Bond et al., 2023; Holmes et al., 2022).

Artificial Intelligence in School Education
AI adoption in school education has accelerated due to advancements in digital infrastructure and increased emphasis on technology-enabled learning. Studies indicate that AI-supported learning environments enable adaptive content delivery, immediate feedback, and data-driven monitoring of student progress, which contribute to improved learning outcomes (Zhai et al., 2021; Long, 2025). Research conducted in developing economies highlights that private schools are often early adopters of AI technologies due to better financial resources and managerial flexibility (OECD, 2025). However, the level and effectiveness of AI integration vary significantly across institutions, depending on infrastructure, teacher preparedness, and system reliability.

Technology Adoption Theories in Education
Technology adoption research in education is predominantly grounded in theoretical frameworks such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). These models identify perceived usefulness and perceived ease of use as key determinants influencing individuals' acceptance and continued use of technology (Venkatesh et al., 2012; Cheng, 2020). Recent empirical studies applying TAM and UTAUT in AI-enabled learning contexts confirm that students are more likely to accept and benefit from AI tools when they perceive them as useful, easy to use, and reliable (Zhao et al., 2025; Rahman et al., 2025).

Student Satisfaction in Technology-Enabled Learning

Student satisfaction is a multidimensional construct reflecting learners' perceptions of instructional quality, learning environment, and technological support. Prior research demonstrates that satisfaction plays a crucial role in determining student engagement, motivation, and academic achievement (Alyoussef, 2023). In technology-enhanced learning environments, satisfaction is strongly influenced by system quality, content relevance, interactivity, and ease of navigation. Studies reveal that AI-enabled tools that provide personalized feedback and adaptive learning pathways significantly enhance students' satisfaction levels (Almufarreh, 2024; Kumar & Silva, 2021).

Empirical Evidence on AI Adoption and Student Satisfaction

Recent empirical studies have begun to explore the relationship between AI adoption and student satisfaction, primarily in higher education and online learning settings. Findings consistently report a positive association between AI-enabled learning tools and students' satisfaction, engagement, and perceived learning effectiveness (Salloum et al., 2022; Alshammari et al., 2025). Perceived usefulness and perceived ease of use are frequently identified as the strongest predictors of satisfaction, while system reliability and trust in AI systems also play a significant role (Ng et al., 2023; Zhao et al., 2025). However, limited studies focus specifically on school-level education, particularly within the Indian context.

Research Gap and Conceptual Positioning

Despite the growing body of literature on AI in education, several gaps remain evident. First, most empirical studies focus on higher education institutions, leaving school-level education underexplored. Second, limited research examines students' satisfaction as a direct outcome of AI adoption in private schools. Third, there is a lack of quantitative studies in the Indian context that empirically validate the relationship between AI adoption dimensions and student satisfaction. Addressing these gaps, the present study applies established technology adoption constructs to examine AI adoption and students' satisfaction in private schools of Coimbatore City, thereby contributing to both theory and practice.

Statement of the Problem

The increasing adoption of Artificial Intelligence (AI) in private schools aims to enhance teaching–learning processes through personalized instruction, automated assessment, and data-driven learning support. However, despite the growing implementation of AI-enabled educational tools, there is limited empirical evidence on whether such adoption effectively improves students' satisfaction, particularly at the school education level in the Indian context. Existing studies largely focus on higher education or institutional and teacher perspectives, while students' experiences and satisfaction with AI-enabled learning remain underexplored.

In private schools of Coimbatore City, where AI adoption is expanding rapidly, a systematic quantitative assessment of the relationship between AI adoption and students' satisfaction is lacking. This research gap restricts informed decision-making regarding effective and student-centric AI integration. Therefore, the present study addresses this gap by empirically examining the impact of AI adoption on students' satisfaction in private schools of Coimbatore City.

Objectives of the Study

- To examine the extent of Artificial Intelligence (AI) adoption in private schools of Coimbatore City.
- To assess the level of students' satisfaction with AI-enabled teaching and learning practices.
- To analyze the relationship between AI adoption and students' satisfaction.
- To identify the key AI adoption factors influencing students' satisfaction in private schools.

Hypotheses

- H_0: Artificial Intelligence (AI) adoption has no significant impact on students' satisfaction in private schools of Coimbatore City.
- H_1: Artificial Intelligence (AI) adoption has a significant positive impact on students' satisfaction in private schools of Coimbatore City.

Research Methodology
Research Design
The study adopts a quantitative, descriptive, and explanatory research design to examine the impact of Artificial Intelligence (AI) adoption on students' satisfaction in private schools of Coimbatore City. A survey-based approach was employed to collect primary data from students using AI-enabled learning tools.

Study Area and Population
The study was conducted in private schools located in Coimbatore City, Tamil Nadu, India. The target population comprised students from secondary and higher secondary levels who were exposed to AI-supported educational applications such as adaptive learning platforms, digital assessments, and intelligent tutoring systems.

Sample Size and Sampling Technique
A sample of 300 students was selected using a simple random sampling technique to ensure unbiased representation. The sample size is considered adequate for quantitative statistical analysis.

Data Collection Method
Primary data were collected through a structured questionnaire designed using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The questionnaire consisted of two sections:
- AI adoption dimensions (perceived usefulness, ease of use, system reliability, and learning support)
- Students' satisfaction

Measurement of Variables
AI adoption was treated as the independent variable, measured through multiple indicators adapted from validated prior studies. Students' satisfaction was considered the dependent variable, measured using established satisfaction scales relevant to educational technology contexts.

Data Analysis Techniques
The collected data were analyzed using Statistical Package for Social Sciences (SPSS). Descriptive statistics were used to summarize respondent characteristics. Reliability analysis (Cronbach's alpha) was conducted to test internal consistency. Correlation and multiple regression analyses were employed to examine the relationship and impact of AI adoption on students' satisfaction. Hypotheses were tested at a 5% level of significance.

Ethical Considerations
Participation in the study was voluntary, and informed consent was obtained from all respondents. Anonymity and confidentiality of respondents' information were strictly maintained, and the data were used solely for academic research purposes.

Data Analysis and Interpretation
The collected data were analyzed using descriptive statistics, reliability analysis, correlation, and regression techniques to examine the influence of Artificial Intelligence (AI) adoption on students' satisfaction in private schools of Coimbatore City.

Demographic Profile of Respondents

Table 1: Demographic Characteristics of the Respondents

Demographic Variable	Category	Frequency	Percentage
Gender	Male	156	52.0
	Female	144	48.0
Age Group (Years)	13–14	78	26.0
	15–16	134	44.7
	17–18	88	29.3
Class Level	Class 8–9	96	32.0
	Class 10	84	28.0
	Class 11–12	120	40.0
Exposure to AI Tools	Low	62	20.7
	Moderate	128	42.6
	High	110	36.7

Interpretation: The demographic analysis shows balanced gender representation among respondents. Most students fall within the 15–16 age group, indicating adequate cognitive exposure to AI-enabled learning tools. A substantial proportion of students reported moderate to high exposure to AI-based educational technologies, confirming the

relevance of AI adoption in private schools of Coimbatore City.

Descriptive Statistics
Table 2: Descriptive Statistics of Study Variables

Variable	Mean	Standard Deviation
AI Adoption	3.86	0.61
Students' Satisfaction	3.93	0.57

Interpretation: The mean values indicate that students perceive a high level of AI adoption and report favorable satisfaction levels with AI-enabled educational practices.

Reliability Analysis
Table 3: Reliability Statistics

Construct	Number of Items	Cronbach's Alpha
AI Adoption	12	0.879
Students' Satisfaction	8	0.864

Interpretation: All constructs exhibit Cronbach's alpha values above 0.70, confirming strong internal consistency and reliability of the research instrument.

Correlation Analysis
Table 4: Correlation between AI Adoption and Students' Satisfaction

Variables	AI Adoption	Students' Satisfaction
AI Adoption	1	0.689**
Students' Satisfaction	0.689**	1

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

Interpretation: The results reveal a strong and statistically significant positive relationship between AI adoption and students' satisfaction, indicating that increased AI usage enhances students' learning experiences.

Regression Analysis
Table 5: Model Summary : Impact of AI Adoption on Students' Satisfaction

R	R²	Adjusted R²	F-value	Sig.
0.689	0.475	0.472	270.61	0.000

Interpretation: The regression model explains 47.5% of the variance in students' satisfaction and is statistically significant at the 1% level.

Regression Coefficients
Table 6: Regression Coefficients

Variable	Unstandardized B	Std. Error	Standardized Beta	t-value	Sig.
Constant	1.198	0.287	—	4.18	0.000
AI Adoption	0.721	0.044	0.689	16.45	0.000

Interpretation: AI adoption has a significant positive effect on students' satisfaction ($\beta = 0.689$, $p < 0.001$). Hence, the null hypothesis is rejected, and the alternative hypothesis is accepted.

Hypothesis Testing
Table 7: Summary of Hypotheses Testing

Hypothesis	Result
H_0: AI adoption has no significant impact on students' satisfaction	Rejected
H_1: AI adoption has a significant positive impact on students' satisfaction	Accepted

The findings confirm that demographic diversity exists among respondents and that AI adoption significantly enhances students' satisfaction in private schools of Coimbatore City. Effective integration of AI-enabled educational technologies contributes positively to students' engagement, learning quality, and overall satisfaction.

Discussion of Findings
The present study examined the impact of Artificial Intelligence (AI) adoption on students' satisfaction in private schools of Coimbatore City using a quantitative approach. The findings provide strong empirical support for the positive role of AI-enabled educational

technologies in enhancing students' learning experiences.

The descriptive analysis revealed that private schools in Coimbatore City have achieved a moderate to high level of AI adoption. Students reported frequent exposure to AI-supported learning tools such as adaptive learning platforms, digital assessments, and intelligent content delivery systems. This indicates that private schools are progressively integrating AI into their academic processes to enhance instructional effectiveness.

The correlation analysis demonstrated a strong and statistically significant positive relationship between AI adoption and students' satisfaction. This finding suggests that increased utilization of AI-based educational tools is associated with higher levels of satisfaction among students. The result aligns with prior studies in educational technology research, which emphasize that technology-supported learning environments improve engagement, motivation, and perceived learning quality.

Regression analysis further confirmed that AI adoption significantly predicts students' satisfaction. AI adoption explained a substantial proportion of the variance in satisfaction levels, indicating its strong explanatory power. The positive regression coefficient highlights that improvements in AI-enabled learning infrastructure directly enhance students' perceptions of their educational experience.

These findings are consistent with established technology adoption theories, such as the Technology Acceptance Model (TAM), which emphasize perceived usefulness and ease of use as key drivers of user satisfaction. When AI tools are reliable, user-friendly, and aligned with learning needs, students are more likely to experience enhanced satisfaction and engagement.

Overall, the discussion confirms that effective and student-centric AI integration contributes meaningfully to improving satisfaction levels in private school education. The results underscore the importance of strategic implementation of AI technologies to maximize educational outcomes.

Managerial and Educational Implications

The findings of this study offer important managerial and educational implications for school management, educators, technology providers, and policymakers seeking to enhance the effective adoption of Artificial Intelligence (AI) in private school education.

From a managerial perspective, school administrators should prioritize strategic investments in AI-enabled educational technologies that are user-friendly, reliable, and aligned with curriculum objectives. Since AI adoption significantly influences students' satisfaction, management should focus on selecting platforms that support personalized learning, adaptive content delivery, and real-time performance feedback. Regular evaluation of AI systems is essential to ensure system reliability, data security, and uninterrupted learning experiences.

School management should also allocate resources for capacity building and infrastructure development, including high-speed internet access, digital classrooms, and technical support systems. Establishing partnerships with reputed educational technology providers can further enhance the quality and sustainability of AI implementation.

From an educational perspective, teachers play a critical role in translating AI capabilities into meaningful learning outcomes. Continuous professional development programs should be organized to train teachers in the effective pedagogical use of AI tools. Teachers should be encouraged to integrate AI-driven analytics into lesson planning, assessment, and student mentoring to address individual learning needs and improve academic engagement.

The study also highlights the need for student-centered AI adoption. Educational practices should ensure that AI tools complement traditional teaching methods rather than replace human interaction. Ethical considerations, such as data privacy, transparency, and inclusivity, must be emphasized to build trust among students and parents.

At the policy level, education authorities should formulate clear guidelines and standards for AI adoption in school education. Policies that promote responsible, equitable, and inclusive use of AI can support long-term educational development and reduce the digital divide.

Overall, the findings underscore that effective managerial planning, teacher preparedness, and supportive policy frameworks are essential to maximize the benefits of AI adoption and

enhance students' satisfaction in private schools.

Scope for Future Research

Future studies may extend this research by including government and rural schools to enable comparative analysis. Longitudinal designs can be used to examine the long-term effects of AI adoption on students' learning outcomes and academic performance. Incorporating teachers', parents', and administrators' perspectives would provide a more comprehensive understanding of AI integration in school education. Advanced analytical techniques such as Structural Equation Modeling (SEM) may also be employed to explore complex relationships among AI adoption factors and student satisfaction.

Limitations of the Study

The study is limited to private schools in Coimbatore City, which may restrict the generalizability of the findings. Data were collected through self-reported responses, which may be subject to response bias. Additionally, the cross-sectional research design limits the ability to establish causal relationships between AI adoption and students' satisfaction.

Conclusion

This study examined the relationship between Artificial Intelligence (AI) adoption and students' satisfaction in private schools of Coimbatore City using a quantitative research approach. The findings provide strong empirical evidence that AI adoption has a significant and positive impact on students' satisfaction. Students exposed to AI-enabled learning tools reported higher levels of engagement, improved learning experiences, and greater overall satisfaction.

The results highlight that effective integration of AI technologies enhances personalized learning, instructional efficiency, and educational quality in private schools. The study reinforces the relevance of technology adoption theories by confirming the role of AI as a key determinant of satisfaction in school-level education.

Overall, the findings underscore the importance of strategic, ethical, and student-centric AI implementation in schools. By investing in reliable AI infrastructure and teacher training, private schools can enhance learning outcomes and student satisfaction, contributing to sustainable educational development.

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