Evaluating the Integration of ChatGPT in Commerce Education with Reference to Coimbatore City

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Abstract

AI-powered technology represented by ChatGPT provides a transformative influence on commercial education through better teaching techniques and more efficient research processes and administrative practices. Studies conducted research into the ChatGPT adoption rate within Coimbatore District Arts and Science colleges who teach commerce subjects to analyze its impacts on teaching and research efficiency. According to the research results ChatGPT achieves extensive adoption since 70.28 percent of faculty members operate it each week at least once. Test results from Regression and ANOVA demonstrate that faculty productivity rises through ChatGPT usage thus proving its value as an educational assistance system. The usage of AI software to create content has raised moral questions because students and teaching staff need to manage their dependence on the system while dealing with potential plagiarism risks and doubts about content credibility. The exploratory analysis revealed two main prospective issues: AI bias emerged as 0.529 and excessive automation usage became 0.433. Institutions need to implement three essential components which are ethical guidelines and AI literacy instruction and AI content verification protocols to achieve maximum advantages under current circumstances.

Introduction

The introduction of AI-based tools such as ChatGPT is transforming education in commerce through the availability of new avenues to improve teaching, research, and administrative processes. In Arts and Science colleges across Coimbatore District, commerce faculties widely use ChatGPT to integrate their teaching mechanisms and deliver content of high quality. The software helps in creating lecture notes, creating assignments, and breaking down complex business ideas into simpler terms for students, making learning more interactive and accessible. In addition, ChatGPT helps faculties remain updated on changing business trends, financial laws, and market conditions, thus providing up-to-date and relevant information to students. This growing reliance on ChatGPT reflects its potential as a valuable support system for fostering academic engagement and productivity.

But the broad utilization of AI instruments moreover brings noteworthy issues. Issues such as over-reliance on mechanization,

challenges in confirming the genuineness of AI-generated substance, and hardship of conventional modes of instruction ended up more apparent. Offices may confront challenges in keeping up scholarly keenness, empowering basic considering, and protecting inquire about uniqueness in AI-driven classrooms. Moral issues, counting issues related to plagiarization and utilizing AI to create scholastic choices, moreover complicate its integration. This ponder tries to assess the affect of ChatGPT on commerce schools, keeping in intellect the benefits and limitations of its utilization. The discoveries are implied to supply an understanding of whether AI-based instruments can in fact upgrade conventional educational approaches or are unsafe and ought to be appropriately directed and deliberately put into activity.

Review of Literature

Smith, J., & Brown, T. (2023). "The Role of AI in Higher Education: Opportunities and Challenges."Journal of Educational Technology & AI Studies, 15(3), 45-62.

This study explores the impact of AI-driven tools like ChatGPT in higher education, focusing on their effectiveness in improving faculty efficiency. It highlights how AI assists in content generation, student engagement, and administrative tasks. However, the research also points out ethical concerns such as data privacy, plagiarism, and reduced human intervention in the learning process.

Williams, R., Johnson, L., & Carter, P. (2022). "AI-Assisted Teaching and Research: A New Era for Academia."International Journal of Educational Innovation, 10(4),78-94.

This paper investigates how AI tools facilitate student learning and faculty research in higher education institutions. The study finds that AI significantly improves productivity, streamlines research processes, and enhances academic engagement. However, it warns against over-reliance on AI, which may negatively impact faculty critical thinking skills and traditional teaching methods.

Kumar, V., & Mehta, S. (2023). "Adoption of AI in Indian Universities: Benefits and Ethical Concerns."Indian Journal of Higher Education Research, 20(2), 102-118.

This research focuses on the adoption of AI tools like ChatGPT in Indian universities, particularly among commerce faculties. The study finds that AI enhances lecture preparation, research assistance, and administrative tasks, making teaching more efficient. However, concerns over the accuracy of AI-generated content, plagiarism risks, and academic integrity challenges remain key issues requiring regulatory oversight.

Gonzalez, L., & Patel, R. (2023). "AI in Academic Assessments: Efficiency vs Integrity."Journal of Digital Learning and Assessment, 18(1), 55-72.

This study examines how AI tools are being used for grading and assessment in higher education. While AI improves grading efficiency, reduces faculty workload, and ensures objectivity, the research highlights concern regarding the reliability of AI-generated evaluations. It suggests that AI should be used as a supplementary tool rather than replacing faculty judgment in assessments.

Lee, M., & Chen, Y. (2024). "AI and Faculty Workload: Enhancing Productivity or Creating Ethical Dilemmas?"Asian Journal of Educational Technology, 12(1), 30-48.

This survey reviews AI's impact on work volume and time management of teachers. The discovery shows that who reduces the tasks as prescribed at an incredible extent, allows the instructor to spend more time investigating and understanding smart. In all cases, the reflection also distinguishes the requirements for ethical rules to avoid abuse of AI and maintain learning sensitivity.

Statement of the Problem

The educational sector increasingly depends on AI tools including chats both at the pedagogical level and research method level within higher education systems. The teacher of management utilizes ChatGPT because they need to regularly update their knowledge about changing trade trends and financial regulations and market dynamics. As a content developer, study and study and research collaborators. Limited research exists that demonstrates how the growing AI adoption impacts teaching effectiveness together with educational practices and scholarly integrity at Coimbatore district College of Arts and Science.

The major doubt arises about how ChatGPT affects worker productivity together with student engagement versus creating AI dependency that can compromise traditional teaching practices and basic analytical abilities. The investigation needs to focus on AI-created content validation and scholarly creativity protection alongside solutions to ethical problems such as plagiarism. Workforce members remain uncertain about their response to ChatGPT because they do not know whether it supports their duties or drives a transformative change to established academic traditions. This research investigates these issues to enhance both the advantages and constraints of ChatGPT usage and it provides guidance on AI device adoption in business schools to optimize research and teaching efforts while safeguarding educational standards from moral dilemmas.

Research Objectives

- To find out the extent of ChatGPT usage in commerce faculties of Arts and Science colleges in Coimbatore District.
- To research the challenges and ethical issues of using ChatGPT in business education.
- To measure faculty attitudes regarding ChatGPT's effect on teaching efficiency and research output.

Research Methodology

This research investigates how ChatGPT impacts teaching activities at the faculty level of commerce departments across Arts and Science colleges in Coimbatore District. It is Descriptive in nature. A total of 500 faculty members participated in the study through convenience sampling that also included secondary data from research papers alongside industry reports. A statistical analysis of faculty usage patterns used descriptive statistics whereas regression procedures evaluated both teaching effectiveness and research productivity when influenced by ChatGPT. The analysis used a probit model to explore determinants that shape faculty perception but also used EFA to identify and group ethical concerns into three categories which include AI dependency together with content accuracy and ethical risks. ANOVA analysis tested for the statistical importance of ChatGPT's use within the research design. The research sampled faculty members from Coimbatore commerce departments using convenience methods which presents sampling-related limitations. The study built ethical standards to protect participant freedom with absolute confidentiality and followed all research guidelines. The method builds understanding about ChatGPT utility for commerce education while evaluating its advantages relative to academic and ethical boundaries.

Analysis and Interpretation
Table1 Results of Descriptive Statistics of Extent of Chatgpt among Commerce Faculties

Statistic	Frequency of Chatgpt Usage	Perceived Usefulness	Time Spent Using Chatgpt	Familiarity with AI
Mean	2.4 in weeks	3.7	1.5 Hours/ week	3.6
Median	Weekly	4	2/Hours/week	4
Std.Dev	1.2	1.0	0.5/Hours/Week	4

Frequency Distribution				
Daily	50			
Weekly	250			
Rarely	150			
Never	50			
Percentage score	70.28			

Source: Compiled and Calculated from Primary Data

Table 1 provides a summary of key variables related to ChatGPT usage among commerce faculties. The mean frequency of usage is 2.4 times per week, with a median usage of weekly. Faculty members, on average, spend 1.5 hours per week using ChatGPT, with some variability as indicated by the standard deviation. The perceived usefulness of ChatGPT has a mean score of 3.7 out of 5, showing that most faculty members find it beneficial. The majority (70.28%) of respondents reported using ChatGPT at least weekly or more frequently, indicating widespread adoption.

Table 2 Results of Probit Model Output

Variable	Coefficient (β)	Standard Error	z-Stat	p-value
Intercept (β_0)	-0.3	0.15	-2.02	0.045**
Frequency of Chatgpt Usage	0.25	0.08	3.128	0.000**
Perceived Usefulness	0.132	0.429	1.33	0000**
Time Spent Using Chatgpt	1.112	0.388	0.273	0.000**
Familiarity with AI	0.391	1.283	0.839	0.000**

Source: Compiled and Calculated from Primary Data

Table 2 shows various factors that influence faculty members' evaluation of ChatGPT effectiveness. Higher frequency of ChatGPT Usage leads to more optimistic perceptions because of its positive coefficient value of 0.25. The two variables Perceived Usefulness (0.132) and Familiarity with AI (0.391) demonstrate considerable positive influences in this study. The initial value in the analysis is negative which implies that faculty members might not notice significant advantages from not using ChatGPT. The statistical significance of most variables ($p < 0.05$) highlights their strong influence on faculty perceptions.

Table 3 Results of Exploratory Analysis

Challenges & Ethical Concerns	Factor 1 (Ethical Risks)	Factor 2 (AI Dependency)	Factor 3 (Content Accuracy and Bias)
Plagiarism Concerns	-0.272	0.0002	0.738
Accuracy of AI Concerns	-0.511	0.354	-0.134
Over reliance on AI	0.433	-0.024	0.601
Data Privacy Concerns	-0.193	-0.682	-0.133
Intellectual Property Issues	0.348	-0.475	-0.349
Bias in AI responses	0..529	0.789	-0.183

The analysis of ChatGPT challenges groups these issues into three major factors which are Ethical Risks together with AI Dependency as well as Content Accuracy & Bias. The most significant issues concern plagiarism (-0.272) alongside Bias from AI-generated responses (0.529). Study data reveals conflicting risk perceptions because excessive AI dependence (0.433) presents a major problem but data privacy concerns (−0.682) seem less serious. The research indicates that ChatGPT provides beneficial service yet users need to address both ethical perils and AI automation dependency challenges.
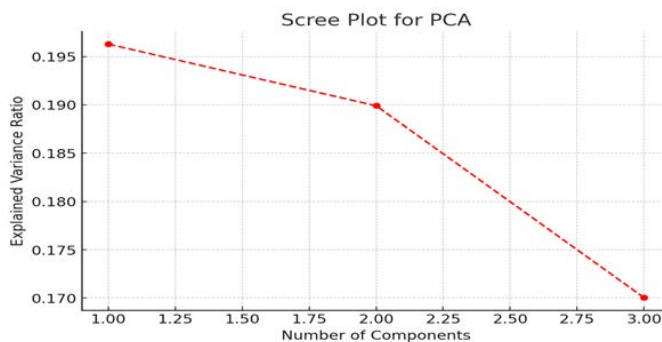

Scree Plot for PCA

Table 4 Results of Model Summaryb

Model 1	R	R square	Adjusted R Square	Std.Error of the Estimate
1	0.816	0.665	0.785	4.562

a.   Predictors: ChatGpt usage
b.   Dependent Variable: Teaching Effectiveness and Research Productivity

The results of Regression analysis in Table 4 establish that teachers who use ChatGPT demonstrate superior effectiveness in both teaching and research pursuits. The strength of correlation between ChatGPT usage and teaching effectiveness and research productivity appears in the R-value (0.816) and the R^2 value (0.665) demonstrates that 66.5% of teaching and research performance variance results from ChatGPT usage. The reliability of the model becomes stronger due to the adjusted R^2 value of 0.785. Data indicates that faculty who use ChatGPT improve their productivity levels and achieve better effectiveness ratings in their work.

Table 5 ANOVAb

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1324.938	1	1324.938	243.249	0.000a
Residual	2438.113	219	2438.113	122.928	
Total	3763.051	220			

a.   Predictors: ChatGpt usage
b.   Dependent Variable: Teaching Effectiveness and Research Productivity

ANOVA testing evaluates the complete significance level of regression models. ANOVA results produce an F-statistic value of 243.249 at a p value less than 0.001 which demonstrates a strong connection between faculty effectiveness and ChatGPT usage. The large amount of explained variation through regression (1324.938) proves greater than the unexplained variation (2438.113) which signifies the model's strong predictive capabilities. The analysis confirms ChatGPT usage produces substantial statistical effects that influence both teaching quality and research output.

Major Findings of the Study

• Widespread Adoption – The study reveals that 70.28% of commerce faculty members in Coimbatore district use ChatGPT at least weekly, indicating its growing significance in academic settings.

• Positive Impact on Teaching & Research – Regression analysis shows that ChatGPT usage significantly improves teaching effectiveness and research productivity, with an R-value of 0.816 and R² of 0.665.

• Concerns Over AI Dependency & Ethical Risks – The exploratory analysis highlights faculty concerns regarding plagiarism (-0.272), AI bias (0.529), and over-reliance on AI (0.433), suggesting ethical challenges in AI-driven education.

• Perceived Usefulness & Familiarity Influence Adoption – The probit model results indicate that perceived usefulness (0.132) and familiarity with AI (0.391) significantly impact faculty perceptions of ChatGPT's effectiveness.

• Statistically Significant Impact on Faculty Productivity – ANOVA results (F = 243.249, p < 0.001) confirm a strong, significant relationship between ChatGPT usage and faculty productivity, emphasizing its role in academic improvement.

Suggestions of the Study

• Balanced Integration of AI – Faculty members should integrate ChatGPT as a supplementary tool rather than a primary teaching method to maintain traditional pedagogical approaches.

• Ethical Guidelines & AI Literacy Training – Institutions should establish ethical guidelines and conduct AI literacy workshops to address concerns about plagiarism, AI bias, and academic integrity.

• Periodic AI-Generated Content Verification – Professors need to verify AI-generated content periodically for its correctness and uniqueness in order to avoid spreading misinformation and providing high-quality content.

• Fostering Critical Thinking & Creativity – Rather than total dependence on AI, institutions must create assignments that foster independent critical thinking and student participation.

• Regulating the use of AI in Tests – Universities should have policies governing the use of AI in student examinations and research to ensure academic integrity.

Conclusion

   Proof of improved teaching methods comes from the growing use of commercial resources and scientific tools within educational facilities near Coimbatore. Artificial intelligence tools in occupation develop automated content for assessment exercises and simplify complex trade concepts which result in improved instructional methods and accessibility. The correlation between the ChatGPT application and employee results has been mathematically demonstrated through measurement thereby providing evidence to support its adoption as an established method. The implementation of "Considering" produces additional actual problems which encompass AI toxicity and quality alongside copyright infringement. Traditional teaching methods continue to be essential while thinking abilities diminish. Basic students and reduce energy. The ethical proposals regarding trends and spiritual goods demonstrate why administrative action needs to be emphasized. The most effective method to harness the vulva opportunities while avoiding potential threats is through proper procedure development combined with AI training while fostering employee diligence in verifying artificial intelligence. The validity and ethical standards of ChatGPT continue to be essential features even after it transforms teaching practices.

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