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Teacher Readiness and Perceptions Towards AI-based Smart Teaching Tools

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Keywords

AI adoption, AI literacy, AI tools, higher education, smart teaching.

Abstract

AI-based smart teaching tools, like intelligent tutoring systems and chatbots, are transforming management education by enabling personalized learning and data-driven insights. However, successful adoption hinges on teachers' readiness, awareness, and acceptance, which can be limited by digital literacy, institutional support, and ethical concerns. This study examines management teachers' perceptions and readiness for AI tools, focusing on their awareness, adaptability, and perceived barriers, such as AI literacy and resistance to change. It also explores how AI impacts teaching effectiveness, student engagement, and curriculum development. The findings will inform strategies for educational policymakers and administrators.

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1. Introduction

The integration of Artificial Intelligence (AI) in education is reshaping traditional teaching methodologies by introducing automated assessments, personalized learning, and intelligent tutoring systems. AI-based smart teaching tools have gained prominence in higher education, particularly in management studies, where technology enhances instructional effectiveness and student engagement (Luckin et al., 2016). These tools enable real-time feedback, adaptive learning experiences, and data-driven decision-making to improve teaching outcomes. However, the effectiveness of AI in education is largely dependent on the readiness and perception of educators, who play a crucial role in its implementation.

Teacher readiness is a key factor in the adoption of AI-powered teaching tools, especially among management educators who need to balance theoretical instruction with practical business applications. Many teachers face challenges related to digital literacy, institutional support, and concerns over AI's reliability in evaluating student performance (Selwyn, 2019). Ethical issues such as data privacy, algorithmic bias, and the role of AI in decision-making further contribute to scepticism among educators. Additionally, resistance to change and the absence of structured training programs may act as barriers to the successful integration of AI in management education.

Addressing the challenges associated with AI adoption in education requires a collaborative approach from institutions, policymakers, and educators. Understanding teacher readiness will help in designing appropriate training programs and providing necessary resources to ensure a smooth transition to AI-enabled teaching. As AI continues to evolve, examining its role in higher education will be essential for developing effective strategies that enhance learning experiences while addressing the concerns of educators and institutions (Alhumaid, 2019).

In addition to teacher readiness, the institutional ecosystem plays a crucial role in facilitating AI adoption in management education. Universities and business schools must create a supportive environment that encourages the

use of AI-driven tools through faculty training programs, infrastructure development, and curriculum modifications. The effectiveness of AI-based smart teaching tools depends not only on individual faculty members' willingness to adapt but also on the institutional policies that promote their integration. Providing access to AI resources, fostering interdisciplinary collaborations, and addressing ethical considerations can help mitigate challenges associated with AI implementation. A well-structured framework that includes policy guidelines, professional development programs, and technical support will be essential in ensuring that AI contributes positively to teaching and learning in management education (Chen, Xie, & Hwang, 2020).

This study focuses on understanding the perceptions and preparedness of management teachers toward AI-based smart teaching tools. Furthermore, AI-powered tools such as chatbots, intelligent tutoring systems, and predictive analytics are becoming integral to management education, offering data-driven insights that can improve curriculum design and student learning outcomes. While these advancements have the potential to revolutionize higher education, their impact depends on how effectively educators integrate them into their teaching practices (Zawacki-Richter et al., 2019). By exploring faculty perspectives, this study aims to bridge the gap between technological advancements and their practical implementation in management education.

2. Review of Literature

AI in Education: Transforming Teaching and Learning

The integration of Artificial Intelligence (AI) in education has gained significant attention in recent years, offering personalized learning experiences, intelligent tutoring systems, and automated assessments. AI-driven tools have been shown to enhance student engagement and instructional efficiency by adapting content delivery based on learners' needs (Luckin et al., 2016). Research by Zawacki-Richter et al. (2019) highlights how AI applications in higher education can facilitate data-driven decision-

making, allowing educators to provide timely feedback and support to students.

Teacher Readiness and Perception Towards AI Adoption

A critical factor influencing the successful implementation of AI-based teaching tools is educators' readiness and willingness to adopt these technologies. Selwyn (2019) argues that teachers often face challenges such as lack of digital literacy, skepticism regarding AI's reliability, and ethical concerns related to data privacy and algorithmic bias. Similarly, Alhumaid (2019) emphasizes the need for structured training programs and institutional support to bridge the gap between AI advancements and their practical application in classrooms. Chiu et al. (2021) conducted a systematic literature review and found that while AI has the potential to enhance teaching practices, teachers' attitudes and perceived ease of use significantly impact its adoption.

Institutional Support and Infrastructure for AI Integration

Beyond individual teacher readiness, institutional support plays a crucial role in AI adoption in education. Chen, Xie, and Hwang (2020) highlight that universities and business schools must invest in faculty training programs, infrastructure development, and curriculum modifications to facilitate AI implementation. The presence of clear policy frameworks, access to AI-driven resources, and interdisciplinary collaborations can further enhance the effectiveness of AI-based teaching tools. A study by Riordan et al. (2023) emphasizes the importance of human-centered AI in education, ensuring that technological advancements complement, rather than replace, traditional teaching methodologies.

Ethical Considerations and Challenges in AI Adoption

Despite its benefits, AI integration in education raises several ethical concerns, including issues related to student data privacy, algorithmic bias, and over-reliance on technology for assessments. Seldon (2023) warns about the potential risks of AI-driven education, advocating for a balanced approach where AI supports rather than dominates the learning process. Another study

by Holmes et al. (2021) underscores the need for transparent AI systems that prioritize fairness, accountability, and inclusivity in educational settings.

The Role of AI in Enhancing Pedagogy

Artificial Intelligence (AI) has revolutionized pedagogical practices by offering adaptive learning environments, personalized feedback mechanisms, and intelligent tutoring systems. AI-driven platforms, such as automated grading tools and chatbots, provide real-time support to students, enhancing learning outcomes (Hwang, Xie, & Yang, 2020). Studies by Bond et al. (2021) highlight the effectiveness of AI in fostering student engagement by dynamically adjusting learning content to individual needs. The integration of AI in higher education, particularly in management studies, has also been found to streamline administrative processes and improve course delivery methods (Zawacki-Richter et al., 2019).

Faculty Readiness and Digital Competence in AI-Based Education

While AI holds immense potential for improving education, faculty readiness remains a major challenge. Many educators lack adequate digital skills to effectively incorporate AI into their teaching practices (Hinojo-Lucena et al., 2019). According to Mhlanga (2022), the level of AI literacy among faculty significantly influences their willingness to adopt AI-driven tools in classrooms. A lack of confidence in AI's reliability for assessments and content delivery has also been identified as a barrier to adoption (Moorhouse, 2021). To address these concerns, research suggests that faculty training programs focusing on AI literacy and pedagogical integration are essential for successful AI implementation (Chen et al., 2021).

Impact of AI on Teaching Strategies and Student Learning

AI-based tools have been shown to transform traditional teaching methodologies by automating repetitive tasks, freeing up educators to focus on interactive and critical-thinking-based instruction (Hwang et al., 2020). Chatbots and virtual teaching assistants have been widely adopted in business schools to provide instant query resolution and personalized guidance to students (Baker & Smith, 2019). However, Alqahtani (2022) warns that an

over-reliance on AI could reduce direct student-teacher interactions, potentially impacting the human aspects of education.

Ethical and Institutional Challenges in AI Implementation

The integration of AI in education raises ethical concerns, particularly regarding data security, surveillance, and the fairness of AI-driven decision-making systems (Holmes et al., 2021). Research by Cobey and Burgess (2023) highlights issues related to bias in AI algorithms, which can affect grading and student performance evaluation. Institutional policies play a crucial role in ensuring ethical AI use, with many universities now developing guidelines for responsible AI adoption in teaching and learning environments (Mhlanga, 2022).

Research Gap

Despite the increasing adoption of Artificial Intelligence (AI) in education, significant research gaps persist, particularly concerning faculty readiness and perceptions. Most existing studies emphasize student learning, while the role of faculty adaptability remains underexplored (Selwyn, 2019). Although AI-powered tools have the potential to enhance teaching effectiveness, there is limited empirical research on their implementation in management education (Zawacki-Richter et al., 2019). Faculty concerns regarding digital literacy, ethical issues, and institutional support continue to hinder AI adoption, yet these factors are not extensively studied. Moreover, the impact of AI-driven teaching tools on faculty engagement, curriculum development, and student interaction lacks comprehensive analysis. Institutional policies and structured training programs play a critical role in shaping faculty attitudes toward AI, but research on their effectiveness remains scarce. While AI enhances pedagogical methods, its influence on traditional teaching strategies and classroom dynamics is not well understood. Ethical considerations, including data privacy and algorithmic bias, require further investigation to ensure responsible AI integration in education. The lack of comparative studies across universities and disciplines makes it difficult to generalize AI adoption trends. Additionally, there is minimal research on the long-term impact of AI-based teaching tools on faculty

workload and job satisfaction. Addressing these research gaps will provide valuable insights for policymakers and educators, facilitating the seamless integration of AI in higher education. This study aims to explore faculty perceptions, readiness, and the role of institutional support in AI adoption, contributing to the existing literature on AI-driven smart teaching.

3. Objectives of Study

1. To evaluate the level of awareness and adaptability among management faculty toward AI- based smart teaching tools.

2. To analyse the perceived barriers which the faculty members face due to AI-based smart teaching tools.

3. To examine the impact of AI-powered teaching tools on faculty teaching effectiveness, student engagement, and curriculum development in management education.

Research Methodology

A structured questionnaire was distributed to management faculty members to assess their AI literacy, resistance to change, and the role of training programs in AI integration. The survey captured insights into faculty awareness and adaptability to AI-based teaching tools. Additionally, informal interviews were conducted with selected participants. These interviews provided a deeper understanding of their experiences and perspectives on AI in education. The combination of surveys and interviews ensured a comprehensive data collection approach. This method helped in exploring both quantitative trends and qualitative insights.

Data Collection Method

A structured questionnaire was administered to management faculty members to gather insights into their AI literacy, resistance to change, and the role of training programs in enhancing AI integration. Additionally, informal interviews were also conducted with selected participants to gain deeper

insights into their experiences and perspectives regarding AI-based smart teaching tools.

Sampling Techniques

The study focuses on management faculty members from three universities and seven business schools in Chennai city. A stratified random sampling technique was employed to ensure diverse representation from different institutions. This approach helps in capturing varied perspectives on AI-based smart teaching tools. Faculty members were selected based on their teaching experience and familiarity with AI in education. The sample ensures a balanced mix of respondents from both universities and business schools. This method enhances the reliability and generalizability of the study findings.

Data Analysis Techniques

The collected data were analysed using descriptive statistics and factor analysis to examine AI adoption in management education. Descriptive statistics helped in summarizing key patterns and faculty perceptions. Factor analysis was conducted to identify underlying themes influencing AI integration. This approach provided insights into faculty readiness, adaptability, and perceived barriers. The analysis helped in understanding key trends in AI-based smart teaching tools. The findings contribute to enhancing AI adoption strategies in management education.

Area of the Study – Universities and Business Schools in Chennai

This study is conducted among management faculty members from universities and business schools in Chennai city. Chennai is a well-established educational hub with numerous institutions offering management programs that integrate modern teaching methodologies. The study covers three universities and seven business schools, ensuring a broad representation of faculty members with diverse experiences in AI-based smart teaching tools. These institutions have been selected to assess the extent of AI adoption and faculty readiness in management education.

Chennai's higher education landscape is evolving rapidly, with institutions adopting emerging technologies to enhance teaching and learning experiences. Business schools and universities in the city are increasingly integrating AI-driven tools for automated assessments, personalized learning, and curriculum development. However, the effectiveness of these technologies depends on educators' awareness, adaptability, and willingness to embrace AI in their teaching practices. Understanding faculty perspectives is essential for evaluating AI adoption in management education.

The focus on Chennai-based universities and business schools allows the study to explore the unique challenges and opportunities associated with AI implementation in higher education. Faculty readiness, institutional support, and infrastructure play a vital role in determining the success of AI-based teaching tools. By analysing faculty perceptions and preparedness, this research aims to provide valuable insights for policymakers and institutions to develop effective AI integration strategies in management education.

4. Results

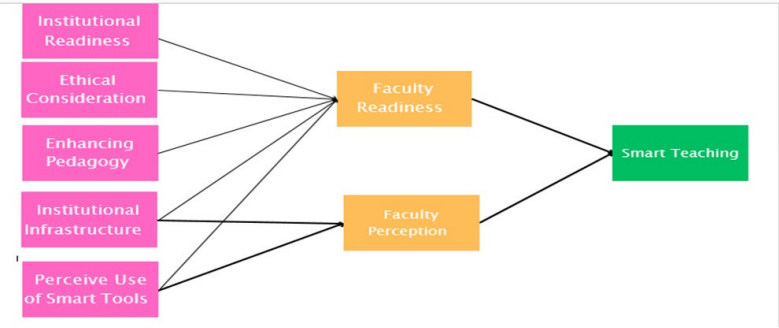


Figure 1: Model for Smart Teaching

Hypothesis tested:

- H1: Faculty Readiness has a significant positive influence on Smart Teaching.

  Faculty Perception and Smart Teaching

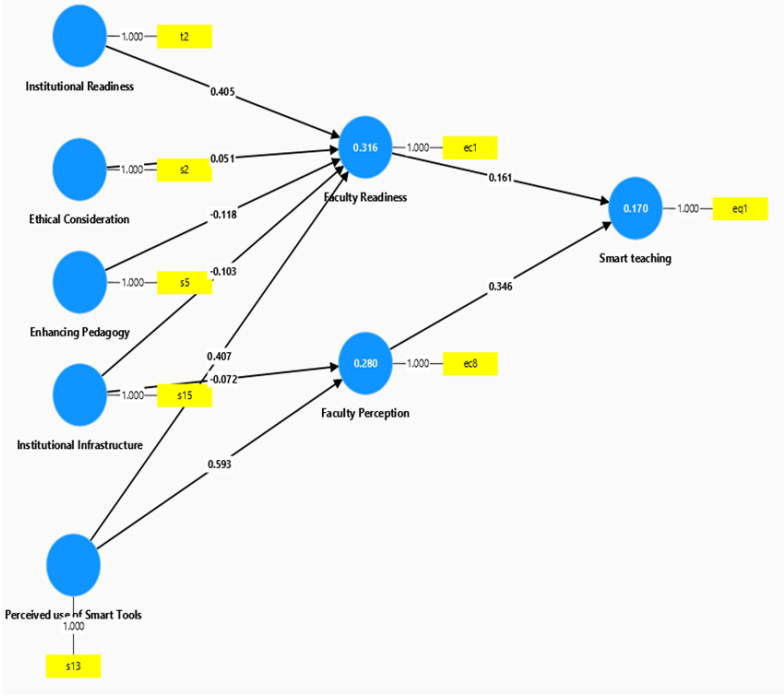
- H2: Faculty Perception has a significant positive influence on Smart Teaching.
  Institutional Readiness and Faculty Readiness
- H3: Institutional Readiness has a significant positive influence on Faculty Readiness.
  Ethical Consideration and Faculty Readiness
- H4: Ethical Consideration has a significant positive influence on Faculty Readiness.
  Enhancing Pedagogy and Faculty Readiness
- H5: Enhancing Pedagogy has a significant positive influence on Faculty Readiness.
  Institutional Infrastructure and Faculty Readiness
- H6: Institutional Infrastructure has a significant influence on Faculty Readiness.
  Perceived Use of Smart Tools and Faculty Readiness
- H7: Perceived Use of Smart Tools has a significant positive influence on Faculty Readiness.
  Institutional Infrastructure and Faculty Perception
- H8: Institutional Infrastructure has a significant influence on Faculty Perception.
  Perceived Use of Smart Tools and Faculty Perception
- H9: Perceived Use of Smart Tools has a significant positive influence on Faculty Perception.

Path Analysis: Smart PLS software aids in the projection of a structural model for a specific study. It shows the route and covariance of several components. The evaluation function for predicting the path between two factors is called the path coefficient.

Table I: Path Analysis of personal motivation

Path	Path Coefficient	T-Statistics (|O/STDEV|)	P Values	Confidence interval 97.5%
Faculty Readiness → Smart Teaching	**0.161**	**3.979**	**0.001**	**0.333**
Faculty Perception → Smart Teaching	**0.346**	**8.685**	**0.001**	**0.455**
Institutional Readiness → Faculty Readiness	**0.405**	**3.218**	**0.001**	**0.243**
Ethical Consideration → Faculty Readiness	**0.051**	**4.645**	**0.001**	**0.386**
Enhancing Pedagogy → Faculty Readiness	**-0.118**	**3.668**	**0.001**	**0.320**
Institutional Infrastructure → Faculty Readiness	**-0.103**	**4.832**	**0.001**	**0.223**
Perceive Use of Smart Tools → Faculty Readiness	**0.407**	**3.233**	**0.001**	**0.135**

Institutional Infrastructure → Faculty Perception	**-0.072**	**2.22**	**0.001**	**0.143**
Perceive Use of Smart Tools → Faculty Perception	**0.593**	**4.322**	**0.001**	**0.342**



Figue 2: SEM model for teacher readiness and perceptions towards smart teaching

Results and Discussion

The relationship between Faculty Readiness and Smart Teaching is significant with $\beta = 0.161$, P-value < 0.01, and $t = 3.979$, indicating that Faculty Readiness has a significant influence on Smart Teaching.

The relationship between Faculty Perception and Smart Teaching is significant with $\beta = 0.346$, P-value < 0.01, and $t = 8.685$, showing that Faculty Perception plays a strong role in enhancing Smart Teaching.

The relationship between Institutional Readiness and Faculty Readiness is significant with $\beta = 0.405$, P-value < 0.01, and $t = 3.218$, indicating that Institutional Readiness is a key factor in shaping Faculty Readiness.

The relationship between Ethical Consideration and Faculty Readiness is significant with $\beta = 0.051$, P-value < 0.01, and $t = 4.645$, suggesting that Ethical Consideration has an impact, though relatively small, on Faculty Readiness.

The relationship between Enhancing Pedagogy and Faculty Readiness is significant but negative, with $\beta = -0.118$, P-value < 0.01, and $t = 3.668$. This suggests that certain pedagogical enhancements may be perceived as barriers or challenges to Faculty Readiness, requiring better adaptation strategies.

The relationship between Institutional Infrastructure and Faculty Readiness is also negative, with $\beta = -0.103$, P-value < 0.01, and $t = 4.832$, indicating that infrastructure gaps or challenges may hinder Faculty Readiness.

The relationship between Perceived Use of Smart Tools and Faculty Readiness is significant with $\beta = 0.407$, P-value < 0.01, and $t = 3.233$, meaning that Faculty Readiness improves when Smart Tools are perceived as beneficial.

The relationship between Institutional Infrastructure and Faculty Perception is negative, with $\beta = -0.072$, P-value < 0.01, and $t = 2.22$, indicating that infrastructure challenges may create negative perceptions among faculty.

Finally, the relationship between Perceived Use of Smart Tools and Faculty Perception is significant with $\beta = 0.593$, P-value < 0.01, and $t = 4.322$,

emphasizing that faculty members who perceive Smart Tools positively have a higher perception of effective teaching methodologies.

Key Insights

Faculty Perception has the strongest impact on Smart Teaching ($\beta = 0.346$), followed by Faculty Readiness ($\beta = 0.161$).

Institutional Readiness ($\beta = 0.405$) and Perceived Use of Smart Tools ($\beta = 0.407$) play key roles in shaping Faculty Readiness.

Infrastructure gaps negatively impact both Faculty Readiness and Faculty Perception.

The strongest positive relationship in the model is between Perceived Use of Smart Tools and Faculty Perception ($\beta = 0.593$), emphasizing the importance of technology integration.

Policy Implications

Strengthening Institutional Readiness can significantly enhance Faculty Readiness, leading to better Smart Teaching outcomes.

Smart Tool Integration should be a key focus area, as its positive perception strongly impacts faculty motivation and teaching quality.

Addressing Institutional Infrastructure Challenges is crucial, as negative infrastructure perceptions hinder Faculty Readiness and overall teaching effectiveness.

Ethical considerations and pedagogical strategies should be aligned to ensure they support rather than hinder faculty engagement.

5. Conclusion

It is very clear from the study that the Faculty Perception and Faculty Readiness significantly influence Smart Teaching, with Faculty Perception playing the most crucial role. Institutional Readiness and the Perceived Use of Smart Tools strongly shape Faculty Readiness, highlighting the importance

of institutional support and technological integration. However, infrastructure challenges negatively affect both Faculty Readiness and Faculty Perception, requiring immediate attention. Ethical considerations and pedagogical strategies should be carefully structured to support, rather than hinder, faculty engagement. Strengthening Institutional Readiness can enhance Faculty Readiness, leading to better teaching outcomes. The strong link between Smart Tool perception and Faculty Perception underscores the importance of fostering a tech-friendly teaching environment. Addressing these key factors can create a more effective and sustainable smart teaching framework. Future research should explore adaptive strategies to mitigate infrastructure and pedagogical challenges in Smart Teaching.

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7.Short biography

Dr N. Arunfred, Assistant Professor in Management, is a passionate educator with a decade of experience. He earned his Ph.D. in Supply Chain Management in 2014 and has mentored two research scholars. With 20 publications in refereed journals and an ICSSR-funded project, he specializes in Supply Chain Management and Business Analytics. Dr. Arunfred employs practical sessions and case studies in teaching and inspires students as a motivational trainer.

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