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Research Article

The Impact of Advanced Teaching Tools on Uni-versity Teachers' Adoptive Intention in Sichuan in the Age of Artifi-cial Intelligence

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Abstract: The Impact of Advanced Teaching Tools on University Teachers' Adoptive Intention in Sichuan in the Age of Artificial Intelligence" explores the significant relationship between innovative teaching tools and university educators' willingness to integrate artificial intelligence technologies into their practices. The study highlights that educators' positive experiences with advanced teaching tools enhance their perceptions of usability and effectiveness, leading to a greater intention to adopt these technologies. It also examines the role of supportive artificial intelligence policies, which promote ethical usage and provide necessary training, as crucial factors influencing adoption. The findings suggest that fostering an environment that encourages innovative practices and addresses concerns about AI tools can significantly improve educational outcomes. Overall, the research underscores the importance of strategic institutional support in facilitating the successful integration of AI technologies in higher education through a sample of 395 university teachers in Sichuan.

Keywords: Advanced Teaching Tools, Adoptive Intention, Age of Artificial Intelligence

1. Introduction

Effective teaching is an important issue for teachers. It affects their will-ingness to use technology in their classrooms. Research shows that teachers often feel stressed because of administrative tasks and the need to meet indi-vidual student needs. This stress can worsen when there is little support from the administration, leading to burnout and reduced teaching effectiveness [1]. AI technologies can help reduce some of this stress by automating tasks and supporting new tools. This can improve teachers' job satisfaction and help them stay in their roles. It can also improve teaching quality and student outcomes [2]. For example, AI can assist with performance evaluations and personalized as-sessments, allowing teachers to focus more on their teaching. In Sichuan, there is a strong focus on using advanced teaching tools like AI in universities. Schools want to improve teaching methods with technology. Teachers are more likely to use these tools if they see them as effective, easy to use, and supported by their institutions. Adopting AI and advanced teaching tools in Sichuan aims to en-hance educational quality. Teachers' views on these innovations are shaped by their past experiences with technology, their confidence in using digital re-sources, and their belief in the benefits of AI in teaching [3] Research shows that teachers who believe these tools can boost student engagement and learning are more likely to adopt them, leading to better teaching effectiveness. Personal perceptions, institutional support, and cultural factors influence

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Sichuan Uni-versity teachers' intention to adopt advanced teaching tools. Gaining a deeper understanding of these dynamics is vital for developing effective strategies that promote the incorporation of AI and advanced educational tools in higher education [4].

2. Research Objectives

This study explores the influencing mechanism of Shaoxing High School parents' purchase intention in the selection of online courses with the following objectives: (1) To examine the influencing mechanisms of enhancing the uni-versity teachers' adoption of AI based on innovative experience, perceived usage, and artificial intelligence policy in Sichuan. (2) To offer suggestions for advanced AI teaching tools for university teachers' intention to adopt them by enhancing their effective policy, usage, and innovation.

3. Theoretical Foundation

Definition of Unified Theory of Acceptance and Use of Tech-nology in Advanced Teaching Tools

Research employing the UTAUT (Unified Theory of Acceptance and Use of Technology) framework within educational contexts has demonstrated that its core constructs can significantly predict teachers' behavioral intentions to utilize advanced teaching tools. Specifically, studies have found that performance expectancy, which refers to the degree to which using a technology is perceived to enhance job per-formance, and effort expectancy, which pertains to the perceived ease of use associated with the technology, serve as strong predictors of teachers' intentions to adopt these tools [5] Moreover, facilitating conditions, which encompass the resources and support available to users, have been shown to impact actual usage behaviors directly. This suggests that even if teachers are motivated to use advanced teaching tools, their actual implementation may still be contingent upon the availability of adequate support systems and resources. By under-standing these dynamics, educational institutions can craft tailored interventions and support mechanisms that address these key factors. This might involve providing training and professional development opportunities to enhance teachers' confidence and competence in technology, creating a supportive community that fosters collaboration among faculty, and ensuring that institutions maintain the necessary infrastructure and resources for successful technology integration [6]

Definition of Unified Theory of Acceptance and Use of Tech-nology in Advanced Teaching Tools

The Technology Acceptance Model (TAM) is a well-established framework for understanding how users accept and utilize new technologies. Two key concepts, perceived usefulness and perceived ease of use, are central to this model. Perceived usefulness involves

the extent to which educators believe using AI tools will positively impact their teaching effectiveness and enhance student learning outcomes [7]. For instance, if teachers in Sichuan recognize that AI technologies can support personalized learning, reduce administrative burdens, or offer insightful data on student performance, they are more inclined to adopt these technological tools. The Technology Acceptance Model provides valuable insights into the factors that affect university teachers' inten-tions to implement advanced AI teaching tools in Sichuan. By ex-amining perceived usefulness, ease of use, and the influence of training and social factors, educational institutions can create more effective support systems for faculty integrating AI technologies into their teaching methods [8]

Definition of Terms

The inclination of university teachers to adopt AI teaching tools reflects their motivation to integrate these technologies into their educational practices. Several key factors shape this intention. Firstly, educators evaluate the effectiveness of AI tools in enhancing studenlearning, boosting engagement, and simplifying administrative tasks. Additionally, considerations regarding the user-friendliness of these tools, the availability of training opportunities, and the level of institu-tional support play vital roles in this decision-making process. Fur-thermore, teachers' previous experiences with technology and their openness to innovation significantly influence their attitudes toward adopting AI in the classroom. When teachers positively intend to adopt these tools, it can lead to successful implementation, ultimately bene-fiting educators and students [9]. University educators increasingly use innovative AI teaching tools to advance pedagogical strategies and enhance student engagement through technol-ogy. These educators are experimenting with various applications, in-cluding intelligent tutoring systems and automated grading tools, to optimize their workflows and improve the learning experience. Many report that AI tools support personalized learning by allowing them to customize content according to individual students' unique needs and learning styles. This level of adaptability contributes to a more inclusive classroom atmosphere, promoting success among diverse learners. Moreover, educators appreciate that AI can provide real-time feedback, equipping students with timely insights regarding their performance and identifying areas for improvement [10]. Integrating AI teaching tools in higher education illustrates educators' perspectives on how these technologies can improve learning practices. Many university educators view AI tools as valuable resources that enhance personalized learning experiences, increase student engagement, and simplify administrative tasks. AI's ability to provide real-time feedback is recognized, which supports more interactive and responsive teaching methods. However, some educators raise concerns about the complexity and reliability of these tools. Key issues such as data privacy, potential algorithmic bias, and the need for appropriate training can significantly influence their views on the use of AI in educational

settings [11]. University policies concerning artificial intelligence in education typically focus on several critical areas, emphasizing ethical considerations, responsible use, and alignment with educational objectives. Educators advocate for clear guidelines to ensure classroom AI technologies maintain transparency and accountability. Important issues addressed within these policies include data privacy and security, and the potential for bias inherent in AI algorithms. Additionally, many policies stress the importance of equitable access to AI tools to ensure that all students can benefit from such technologies regardless of their backgrounds. Policies also highlight professional development for educators, encouraging continuous training to help teachers effectively incorporate AI into their teaching practices [12]

Conceptual Framework

The framework for adopting artificial intelligence (AI) among ed-ucators in Sichuan includes three key parts: innovative experience, perceived usage, and AI policy. These parts shape how teachers use AI technologies in their classrooms. Innovative experience refers to how university educators try to use AI tools in their teaching. Their desire to experiment with new technology helps them adapt their teaching methods to include AI, which can lead to more engaged students and personalized learning. Educators actively exploring new ways to use AI are more likely to have positive views of these tools, making them want to use AI in their teaching [13] Perceived usage is significant because it reflects teachers' beliefs about how helpful and practical AI tools are for their specific classrooms. Teachers who see AI tools as helpful in im-proving teaching and student success are more willing to use these technologies in their lessons. On the other hand, worries about how complex AI tools are, data privacy, and possible biases can make teachers hesitant to adopt these technologies [14]. AI policy refers to the rules and guidelines for using AI in education. In Sichuan, strong policies are crucial for encouraging responsible AI use, protecting data, and ensuring everyone can access technology. These policies help create an environment where educators feel supported in using AI. They highlight the need for professional development so teachers can learn to use AI tools effectively [15].

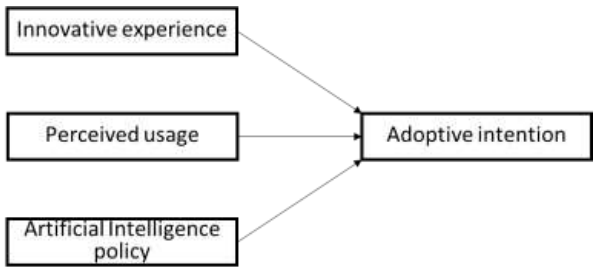

Figure 1. The Conceptual Framework

4. Research Restriction

One key restriction in analyzing parents' attitudes and behaviors toward online education is the potential lack of accessible or updated data on local educational trends. This

limitationcan hinder a comprehensive under-standing of the subject. Additionally, cultural factors specific to Shaoxing may not be adequately considered, which could influence the interpretation of how societal norms affect purchasing intentions in online education. Another challenge is parents' varying levels of technological literacy; dif-ferences in comfort and familiarity with online platforms can impact their perceptions of convenience and usability. Lastly, the rapidly changing landscape of online education necessitates ongoing research, as findings may quickly become outdated. Longitudinal studies are essential for effectively capturing shifts in trends and preferences over time.

5. Research Hypothesis

The Correlation between Innovative Experience and Adoptive In-tention

The proposed hypothesis examining the relationship between innovative experiences and the intention to adopt AI teaching tools in Sichuan suggests that educators who actively engage with and implement AI technologies are more likely to express a firm intention to incorporate these tools into their teaching practices. This premise is founded on the belief that innovative experiences, marked by experimentation and the adoption of new pedagogical methods, can positively impact educators' perceptions regarding the effectiveness and practicality of AI tools. Specifically, the hypothesis indicates that as university instructors gain practical experience with AI technologies, they are more inclined to adopt a positive attitude toward integrating these tools into their curricula. This direct engagement boosts their confidence in utilizing AI and strengthens their conviction regarding the potential benefits these technologies can offer to enhance student learning outcomes [16].

H1: There is no positive correlation between innovative experience and adoptive intention of AI advanced teaching tools in Sichuan.

The Correlation between Perceived Usage and Adoptive Intention

The hypothesis regarding perceived usage and its correlation to adopting AI teaching tools among educators in Sichuan emphasizes the role of teachers' beliefs in influencing their decisions to integrate these technologies into their teaching practices. It suggests that when educators view AI tools as effective and practical for enhancing student engagement and improving learning outcomes, they are more likely to incorporate them into their curricula. This hypothesis highlights that positive perceptions of the usability and reliability of AI technologies contribute to a stronger intention to adopt them. Conversely, concerns about these tools' complexity, reliability, or potential biases can decrease adoptive intentions. Furthermore, the hypothesis considers contextual factors, such as the level of institutional support and availability of training, which may enhance educators' perceptions of AI tools [17].

H2 :There is no positive correlation between perceived usage and the adoptive intention of AI advanced teaching tools in Sichuan.

The Correlation between Artificial Intelligence Policy and Adoptive Intention

The hypothesis regarding artificial intelligence (AI) policy and its relationship to adopting AI teaching tools in Sichuan suggests that supportive policies and guidelines influence educators' willingness to integrate these technologies into their teaching practices. This idea is grounded in the belief that clearly defined AI policies foster ethical usage, ensure data security, and promote equitable access to technology, ultimately creating a favorable environment for adoption. When educators have confidence in the AI usage policies in place, they are more likely to explore and incorporate these tools into their curricula. On the other hand, restrictive or ambiguous policies can cause uncertainty and reluctance among teachers to embrace AI technologies. Furthermore, the hypothesis underscores the significance of professional development initiatives as part of the policy framework, which can help enhance teachers' understanding and comfort levels with AI tools. In summary, this framework posits a strong positive correlation between supportive AI policies and the intention to adopt AI teaching tools among university educators in Sichuan, suggesting that effective policy frameworks can significantly boost technology integration in education [18]

H3: There is no positive correlation between artificial intelligence policy and the adoptive intention of AI advanced teaching tools in Sichuan.

6. Research Methods

Population and Sample

This research population consists of parents of high school students in Shaoxing, China, who are involved in purchasing online study courses. A sample of 395 was collected for this study's analysis in March 2025 through the WeChat Survey Platform. This study's min-imum research sample size is based on the study of Kadam [19]

1. The margin of error (confidence interval) – 95%
2. Standard deviation 0.5
3. 95% - Z Score = 1.96
4. Sample size formula = (Z-score) ^{2} * Std Dev*(1-StdDev) / (margin of error)^2
5. (1.96) ^{2} x 0.5(0.5) / (0.05) ^{2}
6. (3.8416 x 0.25) / 0.0025
7. 0.9604 / 0.0025 = 384
8. 384 respondents would be needed for this study based on a confidence level of 95%

Research Model Correlation Analysis

Correlation analysis is widely used to measure the degree of association between different variables. The Pearson correlation coefficient is commonly used to test the correlation. The value of the correlation coefficient (r) indicates the strength of the correlation between variables, while the significance level of the correlation is shown in the P-value.

Correlation Analysis of Experience and Adoptive Intention

The correlation coefficient r between user belief and purchase behaviour is 0.788, and P=0.000 is less than 0.01. Thus, user belief significantly correlates with the purchase behaviour

Correlation Analysis of Perceived Usage and Adoptive Intention

The correlation coefficient r between perceived value and purchase behav-iour is 0.781, and P=0.000 is less than 0.01. Thus, perceived value significantly correlates with purchase behaviour.

Correlation Analysis of Artificial Intelligence Policy and Adoptive In-tention

The correlation coefficient r between social influence and purchase be-haviour is 0.769, and P=0.000 is less than 0.01. Thus, social influence significantly correlates with purchase behavior

7. Research Result

Recent research highlights several key factors influencing the intention of university teachers in Sichuan to adopt advanced AI teaching tools. The results reveal a significant correlation between innovative experiences, perceived usage, and supportive artificial intelligence policies.Educators who actively engage in innovative practices with AI technologies are more likely to express a firm intention to integrate these tools into their teaching methods. This engagement fosters positive attitudes toward AI and boosts teachers' confidence in effectively utilizing these technologies in their classrooms [20]. Perceived usage is another critical factor; teachers who see AI tools as practical and beneficial for enhancing educational outcomes tend to be more inclined to incorporate them into their curricula. However, concerns related to the complexity of these tools or the potential for biases can adversely affect teachers' perceptions, highlighting the need to address these issues to encourage adoption [21] Furthermore, supportive artificial intelligence policies are crucial in facilitating the adoption process. Policies that advocate for ethical usage, ensure data security, and provide professional development opportunities significantly increase teachers' willingness to embrace AI tools [22].

H1: There is no positive correlation between innovative experience and adoptive intention of AI advanced teaching tools in Sichuan.

H2: There is no positive correlation between perceived usage and the adoptive intention of AI advanced teaching tools in Sichuan.

H3: There is no positive correlation between artificial intelligence policy and the adoptive intention of AI advanced teaching tools in Sichuan.

8. Conclusions

Integrating advanced AI teaching tools in universities in Sichuan presents important managerial implications for educational institutions as they adapt to the rise of artificial intelligence. University leaders are encouraged to focus on incorporating AI technologies into teaching practices by cultivating a culture of innovation among faculty members. This can be achieved by offering professional development opportunities that equip educators with the skills to utilize AI tools in their teaching effectively. Strong institutional support also plays a vital role in this process. University managers should create clear policies that encourage the ethical use of AI, thereby instilling confidence in faculty to adopt these technologies. Addressing data security and usability concerns is essential, as these factors can impede the widespread adoption of AI tools. By promoting a collaborative environment where educators can exchange experiences and share best practices, universities can enhance the acceptance and integration of AI technologies in their curricula. Furthermore, investing in the infrastructure that supports the implementation of AI tools is crucial. Ensuring that all educators have access to the necessary resources will facilitate the effective use of these technologies. By prioritizing these strategies, university management can improve teaching effectiveness, boost student engagement, and create a more innovative educational atmosphere in Sichuan. Highlighting the significance of AI tools is key to achieving better educational outcomes and positioning institutions as leaders in implementing cutting-edge technologies in higher education [23].

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