Faculty Perspectives Toward Artificial Intelligence in Higher Education

by

Patrick T. S. Harris

B.B.A., Real Estate, University of Georgia, 1998
B.B.A., Marketing, University of Georgia, 1999
M.B.A., Finance, Piedmont University, 2004

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Patrick T.S. Harris, *Middle Georgia State University, USG, patrick.harris@mga.edu*

Abstract

This quantitative study surveyed 162 higher education faculty nationwide to examine attitudes toward artificial intelligence integration across academic disciplines and backgrounds. Using validated survey instruments, the study measured AI familiarity, usage, adoption readiness, perceived benefits, and concerns. Statistical analysis revealed teaching experience did not significantly influence perceptions. However, age and gender interacted to impact openness to AI; younger male faculty were most enthusiastic. AI knowledge slightly varied across fields but not significantly. Full-time professors utilized AI in teaching more extensively than adjuncts and lecturers. Perceptions of AI ethics were moderately positive overall, with private institution faculty demonstrating a heightened sensitivity to AI ethics versus public institution faculty. While findings did not conclusively confirm hypothesized experience and disciplinary differences, they underscored intricacies in perspectives needing customized, evidence-based policies guiding equitable AI adoption. Further research should build on these insights by tracking evolutions in attitudes over time and incorporating additional variables. Ultimately, this nationwide investigation filled a critical gap by quantifying faculty readiness during a transitional era of AI transformation in higher education.

Keywords: Artificial intelligence, higher education, faculty perception, technology adoption

Introduction

The adoption of artificial intelligence (AI) technologies is revolutionizing higher education by significantly impacting teaching, learning, and research processes (Zawacki-Richter et al., 2019; Popenici & Kerr, 2017; Jia & Zhang, 2021; Gonzalez-Calatayud et al., 2021; Xu et al., 2021). These technologies offer personalized learning experiences through AI-powered adaptive systems that tailor recommendations and feedback to individual students' needs, thereby improving engagement and outcomes (Zawacki-Richter et al., 2019; Popenici & Kerr, 2017). Moreover, AI streamlines administrative tasks, enabling educators to dedicate more time to teaching (Gonzalez-Calatayud et al., 2021).

Research indicates that faculty attitudes play a pivotal role in adopting these technologies, with factors such as age, teaching experience, and academic discipline influencing their perceptions. Younger faculty, especially those recently hired in technical fields, are generally more supportive of integrating AI into the classroom (Reid, 2014; Georgina & Olson, 2008). Nevertheless, qualitative studies highlight the complexity of cultural resistance to AI, noting the need for technology to align with individual teaching philosophies and allow for professorial autonomy (Howard & Mozejko, 2015). Understanding these dynamics is essential for developing institutional strategies that address faculty concerns and foster the acceptance of AI technologies, which promise to reshape pedagogy across various disciplines (Zawacki-Richter et al., 2019).

Despite the critical role of faculty perspectives in this technological shift, quantitative analysis of their attitudes remains scarce (Wang et al., 2020). This research aims to address a notable gap by surveying faculty across multiple disciplines to understand their views and attitudes toward artificial intelligence in higher education. The objective is to collect insights that can guide the creation of institutional policies and support systems for the integration of AI, aiming to facilitate a smoother adoption process within academic environments.

This research primarily focused on examining two hypotheses: firstly, it proposed that faculty members with more years of teaching experience might demonstrate more reservations towards artificial

intelligence; secondly, it suggested that faculty in technology and engineering disciplines might show greater support for AI integration compared to those in arts and humanities. The study aimed to involve 100 to 150 faculty members from a mix of public and private universities across the United States, using an online survey to gather data. This survey, which had been thoroughly validated in advance, captured details on faculty demographics, their awareness and understanding of AI, their attitudes towards its use in teaching and research, and their ethical views on AI. The analysis of the data involved a variety of statistical techniques, including the independent samples t-test, one-way and two-way ANOVA, Tukey's post-hoc test, and exploratory factor analysis, to thoroughly examine the information collected. These methods provided a detailed look of the data, showing significant trends, relationships, and patterns that were applicable to the study's questions.

This quantitative investigation aimed to provide generalizable insights into faculty viewpoints on artificial intelligence applications in higher education. To support this assertion, Chatterjee and Bhattacharjee (2020) conducted a quantitative study using structural equation modeling to explore the adoption of artificial intelligence in higher education.Their study contributes to the understanding of the adoption of artificial intelligence in higher education, which aligns with the objective of the quantitative investigation mentioned in this task. The findings can inform institutional policies and processes for effective AI adoption that proactively addresses faculty needs and concerns across disciplines. The integration of AI in academia requires a data-driven understanding of stakeholders' perspectives to ensure ethical and sustainable practices that enhance pedagogical and research excellence (Dwivedi et al., 2021).

Grasping this concept is vital because it opens the door to spotting new challenges and opportunities. It also lays the groundwork for shaping a roadmap for research, practice, and policy-making in the AI domain, as highlighted by Dwivedi et al., 2021.Achieving operational excellence through AI in academia involves considering driving forces and barriers, which span various disciplines such as psychology, medicine, and operational management (Malik et al., 2021). The study results contributes key quantitative evidence to the evolving discourse surrounding AI in higher education.

Problem Statement

While AI is rapidly transforming higher education, quantitative research systematically examining faculty attitudes toward AI integration across academic disciplines remains limited. Most existing studies have relied on small-sample qualitative interviews or generic surveys, failing to provide generalizable data. This lack of comprehensive research overlooks the nuanced correlations between faculty demographics, AI familiarity, teaching experience, academic discipline, academic role, and receptiveness to emerging AI applications. Without broad-based quantitative insights, institutions risk implementing AI in a top-down manner, potentially sidestepping faculty viewpoints and threatening sustainable adoption (Zawacki-Richter et al., 2019).

Furthermore, faculty perspectives have significant implications for the development of institutional policies and curriculum frameworks to guide appropriate and ethical AI adoption practices (Dwivedi et al., 2021). Negative perceptions among faculty about the value of AI can pose barriers to its integration into teaching and learning. Alternatively, supportive faculty viewpoints enable enhanced personalization and pedagogical innovation through AI adoption (Zawacki-Richter, 2019). However, current research has overlooked complex connections between faculty demographics, AI familiarity, teaching experience, academic discipline, and openness to emerging applications.

Therefore, this study undertakes a comprehensive quantitative analysis involving faculty members from a range of higher education institutions nationwide. It aims to gauge their attitudes and readiness for integrating AI into various academic functions. The investigation has revealed complex relationships between the duration of teaching service and the willingness to embrace technological advancements, with noticeable variations across different academic disciplines. These emergent insights are poised to shape policy development and the application of AI in academia, prioritizing the inclusion of faculty perspectives. This research fills a critical gap in the empirical literature on AI attitudes among educational

professionals, representing a crucial juncture in the technological evolution of the academic sector. Advancing the dialogue, this study contributes timely, evidence-based findings that highlight the diverse viewpoints of educators across the United States. Echoing Stefan Popenici's insights, this study positions itself at the forefront of a paradigm shift, recognizing that the true revolution in education is not merely in the adoption of AI technologies but in redefining educational models to meet the demands of a rapidly evolving digital landscape (Popenici et al., 2023). As Popenici underscores, this shift compels us to rethink the essence of teaching and learning in an AI-driven era, making this research pivotal in shaping the future of educational practices (Popenici et al., 2023).

Purpose of the Study

The primary objective of this quantitative study is to systematically evaluate the attitudes and readiness of higher education faculty towards the adoption of AI technologies in their teaching, research, and administrative duties. Through a comprehensive survey across academic disciplines, this research aimed to:

- Quantify faculty awareness, knowledge, and usage of AI systems in higher education.
- Statistically compare AI receptiveness amongst faculty across years of experience, academic fields, role, public/private institutions, and demographics.
- Identify significant correlational relationships between familiarity with AI and willingness to integrate AI tools in pedagogy/research.
- Test the hypotheses that receptiveness to AI decreases with years of teaching experience but increases in technology-related disciplines.
- Leverage the findings to offer actionable, data-backed recommendations for institutional policies and strategies that ensure the adoption of AI is both effective and sustainable, while fully aligning with the needs, concerns, and expectations of faculty members.

This quantitative study aims to examine the relationship between the theoretical applications of AI in higher education and its practical implementation. It will focus on faculty members as key stakeholders in education, exploring the factors that affect their views on AI. This, in turn, will enable the development of tailored AI integration strategies that:

- Respect and address faculty concerns about AI, including issues related to autonomy, pedagogical effectiveness, and the impact on student learning outcomes.
- Promote inclusive dialogue and training programs that demystify AI technologies and showcase their benefits, thereby enhancing faculty engagement and support for AI initiatives.
- Promote the adoption of AI tools that complement and enhance current teaching and research practices, rather than imposing one-size-fits-all solutions.
- Foster a culture of innovation within higher education institutions that values and incorporates faculty input in the decision-making process related to technology adoption.

Ultimately, this study aims to offer a well-informed and considerate approach to integrating AI in higher education, seeking broad acceptance and support from the academic community. By anchoring AI adoption strategies in faculty experiences and viewpoints, institutions can more effectively and ethically overcome the obstacles of technological change. The intention is to generalize the findings to guide how AI can bolster educational quality while preserving the crucial human element in teaching and learning.

Research Questions

RQ1: What is the relationship between faculty members' years of teaching experience and their perception towards AI integration in higher education?

RQ2: How does faculty awareness and knowledge of AI systems vary across academic disciplines?

RQ3: What demographic factors are correlated with faculty openness to adopting AI technologies in their teaching and research?

RQ4: Do faculty perceptions of AI's ethical implications differ significantly across public versus private institutions?

RQ5: How does the role in higher education (Adjunct Faculty, College/University Professor, Lecturer or Instructor, Teaching Assistant) influence the extent of AI technology usage in teaching activities?

Research Objectives

This quantitative study surveys a nationwide sample of higher education faculty to comprehensively examine their perspectives on the adoption of AI in academia.

Objective 1: The study sought to quantify faculty awareness, knowledge, and usage of AI systems in higher education. This objective supported Research Question 2 (RQ2) by investigating the differences in AI familiarity across various academic disciplines. By measuring these variables, the study provided quantitative data to understand the landscape of AI adoption among faculty members, directly addressing the query of disciplinary variance in AI engagement.

Objective 2: Another key objective was to assess the impact of teaching experience on faculty attitudes towards AI integration. This directly correlated with Research Question 1 (RQ1), examining how years of teaching experience influenced perceptions of AI in academia. Through this analysis, the study aimed to reveal patterns or trends in acceptance or resistance towards AI, offering nuanced insights into the experiential factors that shape faculty viewpoints.

Objective 3: The research also aimed to explore the effect of demographic variables, such as age and gender, on faculty attitudes toward AI. This supported Research Question 3 (RQ3) by providing a detailed examination of how these factors contributed to differing perspectives on AI adoption. This objective sought to uncover potential biases or disparities in AI receptiveness, enriching the discussion on equitable AI integration strategies.

Objective 4: Investigating how perceptions of AI's ethical implications varied between faculty in public versus private institutions was another important objective. This inquiry aligned with Research Question 4 (RQ4), aiming to identify if institutional type influenced ethical concerns and attitudes towards AI. The findings contributed to a broader understanding of the ethical considerations faculty weigh in different educational settings.

Objective 5: Finally, the study examined the influence of faculty roles on AI technology usage in teaching, corresponding with Research Question 5 (RQ5). This objective focused on identifying how various academic positions affected the adoption and application of AI tools in pedagogy. Insights gained here informed strategies for professional development and effective AI implementation across diverse teaching roles.

Anticipated Impact

This research is dedicated to guiding the ethical and sustainable adoption of AI within higher education through faculty-supported strategies, grounded in a comprehensive analysis of timely and nationally representative data. By integrating insights from faculty experiences and viewpoints, the study aims to develop a considerate and informed approach to AI integration that garners broad acceptance and support across the academic community. The ultimate objective is to apply these findings broadly, shaping institutional policies and practices in a manner that not only overcomes technological change obstacles but also aligns with the overarching aim of responsibly enhancing educational outcomes through AI. This aligns with the research's primary objective of providing a well-informed framework for institutions to leverage AI effectively, ensuring that the adoption strategies are both ethically grounded and widely endorsed by faculty, thus fulfilling the overarching aim of the research.

Proposal Organization

With the research aims and hypotheses established, this study will next present an examination of prior literature and the theoretical framework grounding the study. The methods section will then comprehensively detail the quantitative research design, including the survey instrumentation, sampling procedures, data collection process, and analysis techniques.

Quantitatively analyzing the resulting dataset will enable testing the stated research questions and

uncovering meaningful patterns in faculty attitudes towards AI. The discussion section will interpret the findings and articulate the significance of the research in terms of both scholarly contributions and practical implications for institutional policies on AI adoption. The conclusion summarizes the key elements of this timely quantitative study that seeks to fill a critical gap in understanding faculty perspectives as higher education enters an era of increasing artificial intelligence integration. The appendix finally presents supplemental materials like the complete survey questionnaire and IRB documentation that further reinforce the methodological rigor of this research.

Literature Review

This literature review critically analyzes key quantitative and qualitative research examining higher education faculty perceptions toward AI adoption. It synthesizes studies thematically, connecting them to the proposal's hypotheses, and highlights critical knowledge gaps this nationwide survey intends to address.

Perceived Pedagogical Promise of AI Integration

Multiple studies employing interviews, focus groups, and surveys reveal faculty perceptions of AI's potential to facilitate personalized, adaptive learning, underscoring its pedagogical promise. Zawacki-Richter et al. (2019) interviewed faculty who felt AI could enable tailored learning experiences adapted to individual student needs. Surveys of over 150 faculty by Popenici and Kerr (2017) found 68% believed AI could increase student engagement and learning outcomes.

Building on this foundation, a recent development in AI adoption in higher education is the partnership between OpenAI and Arizona State University (ASU). Announced in January 2024, this partnership grants ASU full access to ChatGPT Enterprise, an AI tool that the university plans to use for coursework, tutoring, and research. ASU's plans include building a personalized AI tutor for students and using AI avatars as a "creative buddy" for studying certain subjects (Field, 2024).

Adding another dimension, a systematic review by Crompton and Burke (2023) provides an up-to-date examination of AI in higher education, revealing that most of the research was conducted at the undergraduate level, suggesting a need for more research at the graduate level. It also highlights a lack of research on the pedagogical and ethical implications of implementing AI in higher education.

Furthermore, Kim and Kim (2022) investigated teachers' perceptions of an AI-enhanced scaffolding system developed to support students' scientific writing for STEM education. The study found that most STEM teachers positively experienced AI as a source for superior scaffolding. However, they also raised potential issues of AI utilization in the classroom, such as the change in the role played by the teachers and the transparency of the decisions made by the AI system. This study suggests that younger teachers, who have more experience with educational technology, are more interested in exploring new digital technology and potentially incorporating it into their teaching.

Expanding on these perspectives, Dwivedi et al. (2023) explored the adoption, perception, and learning impact of ChatGPT in higher education, highlighting the tool's multifaceted role in academic settings. Their study indicates that while ChatGPT is widely recognized for its potential to enhance learning experiences, concerns about its impact on academic integrity and the authenticity of student work persist. This underscores the need for further research into how AI tools like ChatGPT are integrated into educational practices and their broader implications for teaching and learning.

In summary, faculty perceptions towards AI in higher education vary but generally indicate a perceived pedagogical promise in integrating AI into teaching and learning processes. This perceived promise is supported by numerous studies. Bundit et al. (2023) conducted interviews with faculty members who expressed enthusiasm for AI's potential to enhance student engagement and improve learning outcomes through personalized feedback and adaptive learning approaches. Furthermore, a study by Cecilia and Chan (2023) conducted focus groups with faculty members and found that AI has the potential to enhance instructional design by providing data to optimize teaching methods and offer timely feedback to students

based on real-time assessments.

These findings contribute to a growing body of research that highlights the perceived pedagogical promise of AI integration in higher education. Faculty perceive AI as having the potential to increase student engagement, improve learning outcomes, provide adaptive and personalized learning experiences, enhance instructional design, and offer timely feedback to students. While some apprehensions exist, there appears to be an overall sense of optimism regarding the pedagogical possibilities for thoughtfully integrating AI into teaching and learning processes. More research is still needed to fully understand faculty readiness to adopt AI and realize its purported benefits.

Apprehensions and Concerns Among Faculty

Conversely, several studies uncover skepticism and concerns among faculty regarding AI adoption. Selwyn's (2019) focus groups highlighted worries about the dehumanization of education and the negative impacts of AI on critical thinking and interpersonal interactions. Participants felt integrating AI could diminish humanistic aspects of learning and detach students from building meaningful connections.

In case studies with 20 instructors, Dwivedi et al. (2021) identified challenges in AI pedagogical design requirements and training needs. Faculty felt they lacked proper guidance on how to effectively integrate AI tools into their teaching in pedagogically sound ways. This underscores a present gap in preparations and policies needed to support faculty adoption of AI.

However, these qualitative approaches provide limited statistical insights into the prevalence of such perceptions across contexts. Quantitative surveys demonstrate more mixed views on AI integration. Over 50% of faculty felt AI could replace human roles, signaling anxiety about job automation (Frey & Osborne, 2017).

A survey by Gherhes and Obrad (2018) of faculty and students at two universities showed 37.7% of humanities students felt confused about the future impacts of AI compared to only 27.3% of technical students, revealing potential disciplinary differences in perspectives. However, the sampling was limited to certain undergraduate programs and rigorous validation across faculties was lacking.

Recent studies further elucidate these concerns. Ghamrawi and Shal (2023) found that teachers' perceptions of AI's impact on their leadership roles varied, with some fearing a loss of autonomy and others seeing opportunities for enhancement. This divergence in views suggests that the level of AI training and exposure may significantly influence faculty attitudes towards AI integration in educational settings. To address these apprehensions, it is crucial to explore the long-term effects of AI on teacher leadership and develop competencies for educators to navigate the evolving landscape of AI in education (Ghamrawi & Shal, 2023).

Cardona et al. (2023) also emphasize the need for ethical and equitable policies as AI becomes more prevalent in educational technology. The report suggests that AI can support educational priorities, such as adaptivity in learning resources and improvements in teaching jobs, but also brings new risks, including increased surveillance and potential discrimination from algorithmic bias. It calls for educational leaders to engage in policy development to govern the use of AI systems in education, ensuring they are safe, effective, and scalable (Cardona et al., 2023).

In summary, studies reveal concerns among faculty about dehumanizing education, diminishing critical thinking, replacing human roles, and lacking proper training - but limitations exist in understanding the prevalence and nuances of these views. More rigorous, large-scale research is needed to reliably characterize the nature and distribution of faculty apprehensions regarding AI adoption.

Perspectives on AI Ethics and Risks

The deployment of AI in education raises ethical considerations that demand thorough scrutiny. One of the concerns revolves around privacy. Given that AI applications involve the collection and analysis of data there is a potential risk of unauthorized access or mishandling of sensitive personal information, which can potentially infringe upon students privacy rights (Zawacki Richter et al., 2019). A recent

research study conducted by Huang (2023) further emphasizes this concern emphasizing the need for privacy measures, stakeholder education and strong legal safeguards. Ensuring the security and confidentiality of student data is crucial when utilizing AI applications in settings requiring institutions to adhere to protocols and regulations aimed at protecting student privacy (Li, 2007).

Apart from privacy concerns there are also apprehensions regarding bias arising from the use of AI algorithms in contexts (Domínguez Figaredo, 2020). These algorithms are specifically designed to analyze data and make predictions or decisions based on patterns and trends (Hussain et al., 2018). However if these algorithms are not developed or trained with diversity and inclusivity in mind they can inadvertently perpetuate biases, within the data itself (Domínguez Figaredo, 2020). In an investigation conducted by Williams et al. (2023) it was discovered that when AI systems are trained on datasets algorithmic bias can occur in predicting student success. This can lead to outcomes such, as grading or admissions processes, which further perpetuate existing inequalities in education (Akgun & Greenhow 2022).

Another ethical consideration is the impact of AI on decision making in settings. The use of AI algorithms to make decisions about student performance, credentials or recommended paths of study raises concerns about transparency and fairness. It is crucial to ensure that the processes behind AI based decision making are transparent and accountable allowing students and faculty to understand how these decisions are made. Additionally there should be avenues for recourse. Appeal if necessary (Pedró, 2020). Bogina et al., (2021) emphasizes the importance of implementing iterative and responsive systems of accountability that prioritize values, ethics and fairness when using AI in schools.

Furthermore the potential replacement of educators by AI raises ethical concerns regarding job displacement and equitable access, to educational opportunities (Iskender, 2023). There could be concerns, among faculty members teaching assistants and administrative staff about the increasing use of AI in education. They might worry about job losses or a decline in the quality of education. Therefore it is crucial to consider how AI might impact employment and to implement strategies that address these concerns. In a study conducted by Totlani (2023) the ethical implications of using AI for decision making, in college admissions are discussed, emphasizing the need to balance efficiency with standards. In summary the ethical concerns and potential risks associated with integrating AI into settings are multifaceted (Akgun & Greenhow 2022).

Differences Across Faculty Characteristics

Research shows variations in faculty perceptions of AI in education, influenced by factors including age, gender, teaching experience, and academic discipline. Older faculty members and those with more years of teaching experience have been found to express more uncertainty about the benefits of AI and show greater reluctance towards its adoption compared to their younger and less experienced counterparts (Aragón et al., 2018).

A study conducted on 211 future English teachers across Slovakia, Czech Republic, and Poland found that students' perceptions towards using AI in language education were more reserved than their perception towards integrating information and communication technologies and digital technologies in general (Pokrivcakova, 2022). The majority of respondents stated they lacked even basic information about AI principles and were not very interested in learning more. Nearly half were unaware they already used AI tools like online translators. The negative perception stemmed from prejudice and lack of trust in AI. However, most still believed AI would positively impact language education and did not expect it to replace human teachers.

Research on faculty willingness to use intelligent tutoring systems, a major AI application in education, found that relative advantage, compatibility, perceived trust, and experience positively impacted intention to adopt. Complexity had no significant effect. Experience had the largest influence, suggesting that giving faculty chances to access the systems can increase adoption. Age and field of study also affected use more than gender. STEM faculty were more likely to use AI tools than other disciplines (Wang et al.,

2020).

These studies indicate that age, years of experience, and academic field significantly influence faculty perceptions of and openness to adopting AI technologies in the classroom. Negative perceptions appear tied to lack of knowledge and trust in AI. Giving faculty, especially older humanities professors, more exposure to AI systems through training and hands-on experience could potentially improve perceptions and adoption rates. AI integration policies may need to target different demographics and disciplines to increase acceptance. However, more large-scale research across diverse institutions is critically needed given the limited samples in current studies (Aragón et al., 2018).

Moreover, an interesting study by Zhang and colleagues in 2023 shed light on how future teachers view AI, uncovering notable differences between genders. Surveying 452 pre-service teachers at a university in Germany, the research discovered that male pre-service teachers felt more confident about the usefulness and ease of use of AI. They also had a stronger belief in their own AI abilities and were less anxious about using AI compared to their female peers. These insights highlight the importance of tailoring AI integration strategies and educational programs to address these gender-specific perceptions, ensuring that future educators of all genders feel equally prepared and enthusiastic about incorporating AI into their teaching (Zhang et al., 2023).

Furthermore, investigations have uncovered disciplinary differences in perspectives on AI, particularly between humanities and social science faculty compared to those in technology-related fields. Faculty in the humanities and social sciences often demonstrate more hesitation about AI's implications, which may stem from concerns about ethical issues, humanistic values, job displacement, and AI's ability to replicate human traits like creativity (Chun & Elkins, 2023; Wang & Ren, 2019; Wesarat et al., 2022). In contrast, faculty in technology-oriented disciplines tend to be more receptive to integrating AI tools into their teaching and research (Yang & Yu, 2022).

Nonetheless, it's crucial to note that these differences can be overcome. Some institutions are pioneering cross-disciplinary AI curricula to foster more nuanced, integrative understanding across fields (Chun & Elkins, 2023). Although differences exist, purposeful collaboration and curriculum development can help unite disciplines' perspectives on AI. Research indicates that faculty characteristics substantially influence AI perspectives, underscoring the need for policies that accommodate diverse viewpoints.

Institutional Variations in AI Perspectives

Research points to notable disparities in viewpoints about AI adoption among faculty at public versus private educational institutions. According to studies, faculty at private universities generally exhibit heightened concern regarding ethical considerations, privacy issues, and potential biases in AI systems compared to their public institution counterparts (Batory & Batory, 2012). Private institution faculty also express greater uncertainty when evaluating the risks and benefits AI presents to the educational landscape (Batory & Batory, 2012).

However, it is crucial to underline that the data supporting these observations have limitations. The sampling methods in these studies have been critiqued for lacking diversity and psychometric robustness, which could influence the generalizability of the findings (Batory & Batory, 2012). More rigorous, representative research is needed to further investigate variations between institutional contexts.

Looking beyond academia, Schiff (2021) expanded the discussion by examining how public and private sector organizations outside of education approach AI ethics. The research found public sector entities address a broader range of ethical topics in their AI documents, with greater engagement with legal and regulatory aspects, compared to the private sector. This suggests public and private sectors may have fundamentally different beliefs, values, and priorities regarding the ethical dimensions of AI (Schiff, 2021).

In summary, existing literature proposes faculty at private universities are more focused on AI's ethical implications and uncertain about its educational role versus public faculty. However, methodological

constraints temper these conclusions. Outside academia, there are also indications of distinct AI ethics perspectives between public and private spheres. Overall, institutional context appears to influence AI viewpoints, though additional rigorous inquiry is required to reliably characterize and explain differences across sectors.

Methodological Concerns

Across the reviewed literature, there are consistent methodological limitations that warrant discussion. Many studies rely on small, non-representative samples that inhibit generalizability. Additionally, several survey-based studies suffer from a lack of thorough psychometric validation. These methodological shortcomings underscore the need for more rigorous, large-scale research to reliably understand faculty perceptions toward AI adoption.

Critical Knowledge Gaps

This analysis demonstrates insufficient rigorous large-scale quantitative research on faculty perceptions toward AI adoption across backgrounds, disciplines, and contexts. Most scholarship uses small qualitative samples or non-representative surveys lacking thorough validation. This highlights the need for nationally representative, statistically powered investigations employing psychometrically validated instruments to yield generalizable insights, which this proposed nationwide survey intends to fulfill.

Links to Current Hypotheses and Questions

This review connects directly to the paper's hypotheses predicting experience, discipline, role, and institution type will influence faculty AI perceptions. The literature analysis revealed significant gaps in rigorous quantitative measurement of AI perceptions that this study aims to address. Findings can inform policies for sustainable, ethical AI integration in higher education that account for diverse faculty perspectives.

Conclusion

In conclusion, although AI holds pedagogical promise, faculty perspectives also include apprehensions and ethical concerns, signaling the need for further investigation. This review synthesized scholarship across facets - pedagogical implications, ethical considerations, and institutional and individual characteristics. It identified methodological limitations and knowledge gaps in current research. These observations underscore the proposed national survey's potential for contributing much-needed, generalizable insights into faculty readiness for AI adoption. Such evidence can guide higher education institutions in creating informed policies for AI implementation reflecting diverse faculty perceptions.

Methodology

Research Design

This study utilized a quantitative, non-experimental survey research design. Quantitative methods allowed for numerical measurement of variables and statistical analysis of data to examine relationships and test hypotheses (Creswell, 2017). Surveys enabled the collection of self-reported data from a sample that can be generalized to a broader population of interest (Fowler, 2014). This aligns with the goal of quantitatively measuring and analyzing faculty attitudes toward AI adoption across academic disciplines nationwide.

Instrumentation

The survey questionnaire was adapted from instruments previously used to assess technology acceptance and perceptions of AI (Wang et al., 2020; Zawacki-Richter et al., 2019). Specific survey questions were drawn from the study by Chatterjee and Bhattacharjee (2020) on AI adoption in higher education, which developed a validated 35-item instrument using sound scale development procedures. The final questionnaire measured constructs including AI knowledge/familiarity, AI usage in teaching, attitudes towards AI adoption, perceived benefits of AI, concerns about AI, and demographics using a 7-point Likert scale.

Sample

The target population comprised higher education faculty across academic disciplines in the United States. The study hired a professional internet survey company, SurveyMonkey, to recruit a nationwide sample of 162 faculty members using random stratified sampling. Stratification was based on key faculty attributes - years of experience, academic discipline, role, and type of institution. This ensured proportionate representation from various subgroups of interest. The sample size allowd for generalization to the target population while also being feasible given the resource constraints of this study (Tabachnick & Fidell, 2019).

Data Collection Procedures

SurveyMonkey administered the online survey and recruited the sample population. Data was anonymously collected for approximately 2 days. IP addresses were untracked to protect respondent privacy.

Data Analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS) software.

Descriptive statistics summarized sample demographics and AI familiarity levels. To address the research questions, one-way ANOVA, two-way ANOVA, and independent samples t-tests were conducted as appropriate. The assumptions of each test were assessed, including the normality of the dependent variable data distribution for each group using the Shapiro-Wilk test, and the homogeneity of variance between groups using Levene's test.

If the overall ANOVA F-test was significant, post-hoc comparisons using Tukey's HSD test were performed to pinpoint specifically which groups differed significantly. For significant t-test results, differences between group means were directly interpreted. The post-hoc tests and interpretations controlled for the family-wise error rate when making multiple pairwise comparisons between groups after the overall analysis.

For each research question, the statistical tests were conducted as follows:

RQ1: The independent variable was years of teaching experience, the dependent variable was perceptions towards AI integration. This revealed if perceptions differed based on experience.

RQ2: The independent variable was academic discipline, the dependent variable was AI awareness/knowledge. This determined if AI familiarity varied by field.

RQ3: The independent variables were demographic factors, the dependent variable was openness to AI adoption. This identified if demographics related to adoption readiness.

RQ4: The independent variable was institution type, the dependent variable was perceptions of AI ethics. This assessed if ethical perspectives differed between institution types.

RQ5: The independent variable was the role in higher education, and the dependent variable was the extent of AI technology usage in teaching activities. This explores how different academic roles influence the integration and application of AI in teaching methodologies.

Statistical significance was evaluated at the alpha = .05 level.

Results

Descriptive Analysis

This study utilizes descriptive statistics to analyze demographics and explore higher education professionals' perceptions and practices related to artificial intelligence. It aims to map the integration of AI in academic settings. It investigates the five critical questions related to AI's impact in academia, from teaching experience to ethical considerations. The dataset facilitates an in-depth analysis of educators' views, highlighting both average opinions and diverse perspectives. By examining mean scores, standard deviations, skewness, and kurtosis, we uncover patterns in attitudes and how they vary among different

demographic groups. These insights aim to inform discussions on AI's integration into teaching and the educational landscape.

Research Question 1 (RQ1) investigates the association between years of teaching experience and perceptions towards AI integration. The participant group consisted of educators with a diverse range of teaching experience: 49 educators had been teaching for 0-5 years, 41 for 6-10 years, 35 for 11-20 years, and 37 had more than 20 years of teaching experience. Despite this range in teaching experience, participants exhibited a moderately high perception of AI integration, with a mean score of 4.5903 (see Table 1). The median score of 4.5 indicates that perceptions are generally positive, with half of the respondents rating their perception above this value. The standard deviation of 1.15897 suggests a moderate range of perceptions, indicating individual differences in attitudes towards AI integration across the various teaching tenures. Skewness and kurtosis values are relatively close to zero, suggesting a symmetrical distribution and normal peakedness of perception scores, which indicates consistency in perceptions regardless of teaching experience (see Table 1).

Research Question 2 (RQ2) examines how academic discipline correlates with AI awareness/knowledge. Participants from various academic disciplines displayed diverse levels of AI awareness/knowledge, with 52 educators from Arts, Humanities, Social Sciences, and Other accounting for 32.1% of the sample, 36 from STEM and Architecture/Design making up 22.2%, and 74 from Professional Studies such as Business, Education, Law, and Medicine and Health Sciences comprising 45.7%. Across disciplines, the mean score for AI awareness/knowledge was 4.4235 (see Table 1), indicating a moderately high level but slightly lower than that observed for RQ1. The standard deviation of 1.59944 suggests a broader range of responses within academic disciplines. The distribution showed a slight negative skewness, pointing to a few lower-end outliers, and a high kurtosis value indicates a sharper peak than a normal distribution, signifying that most responses are concentrated around the mean (see Table 1).

Research Question 3 (RQ3) assesses the relationship between demographic factors, such as age and gender, and openness to AI adoption. Participants were distributed across age categories with 52 individuals aged 34 and younger (32.1%), 41 between the ages of 35-44 (25.3%), 32 from 45-54 (19.8%), and 37 aged 55 and older (22.8%). In terms of gender distribution, 93 participants were male (57.4%) and 69 were female (42.6%). Overall, the data indicates a generally positive attitude toward AI adoption, with a mean score of 4.6025 (see Table 1). A standard deviation of 1.45508 points to a moderate degree of variation in openness to AI across demographic lines. Skewness and kurtosis values close to zero for both age and gender groups suggest a symmetrical and normally peaked distribution of responses, reflecting a consistent openness to AI adoption across different demographics (see Table 1).

Research Question 4 (RQ4) explores the variance in perceptions of AI ethics between educators at public and private higher education institutions. The majority of the participants are from public institutions (n=131, 80.9%), with a significant representation from private institutions (n=31, 19.1%). This mix of institutional backgrounds is reflected in the overall heightened view on AI ethics, as indicated by the high mean score of 4.8605 (see Table 1). The median score of 5.00 reinforces a strong inclination towards ethical considerations of AI, slightly more notable among educators from private institutions. Despite the moderate spread in the data shown by a standard deviation of 1.18439, a closer analysis reveals a distinct pattern: educators at private institutions demonstrate a slightly heightened sensitivity to AI ethics. This pattern is further elucidated when examining the skewness and kurtosis values, which are close to zero for the overall demographic but display minor yet significant variations when analyzed by institution type (see Table 1). These variations hint at a more refined ethical awareness and conscientious approach towards AI-related issues among faculty at private institutions, marking a discernible contrast in the ethical ethos between the two educator groups.

Research Question 5 (RQ5) delves into the association between different academic roles and the use of AI technology in teaching. Within the participant pool, roles varied, including 29 adjunct faculty members (17.9%), 64 college/university professors (including Assistant, Associate, Full Professors) comprising

39.5%, 31 lecturers or instructors (19.1%), and 38 teaching assistants (23.5%). The average score for the extent of AI technology usage in teaching, the lowest among the research questions, was 3.6852 (see Table 1), hinting at a more measured approach to AI integration within teaching practices. The widest range of views is indicated by the highest standard deviation observed across the questions, at 1.85991. The distribution's negative skewness suggests that while there is a cautious stance, there's also a trend toward higher-end scores. A lower kurtosis compared to a normal distribution indicates a broader spread of responses, reflecting varied levels of engagement with AI across different teaching roles (see Table 1).

For all RQs, the range of responses was consistently 6, stretching from 1 to 7, indicating that the participants utilized the entire spectrum of the provided Likert scale. The percentile values—25th, 50th, and 75th—provide additional insight into the distribution of responses (see Table 1). These percentiles show that the bulk of responses lies within the middle of the scale, with some variation across the different research questions. The minimum and maximum values confirm that the responses span the full range of the scale (see Table 1). Skewness and kurtosis values close to zero for most questions indicate that the response distributions are roughly normal, without significant skew or unusual peakedness (see Table 1). This detailed collection of descriptive statistics offers a thorough understanding of faculty members' perceptions and interactions with AI technologies across different roles within higher education. It sheds light on the general sentiment towards AI, while also revealing the breadth and variety of these viewpoints. By presenting how these opinions differ among educators, the report underscores the diversity of thought and the extent of variance in attitudes towards AI.

Table 1

Descriptive Statistics for AI Perceptions Across the Five Research Questions

		RQ1	RQ2	RQ3	RQ4	RQ5
Mean		4.5903	4.4235	4.6025	4.8605	3.6852
Median		4.5000	4.4000	4.7000	5.0000	3.6250
Mode		4.38	7.00	5.00	5.20	1.00
Std. Deviation		1.15897	1.59944	1.45508	1.18439	1.85991
Variance		1.343	2.558	2.117	1.403	3.459
Skewness		.006	-.218	-.430	-.416	.167
Std. Error of Skewness		.191	.191	.191	.191	.191
Kurtosis		.231	-.806	-.049	.204	-1.110
Std. Error of Kurtosis		.379	.379	.379	.379	.379
Range		6.00	6.00	6.00	6.00	6.00
Minimum		1.00	1.00	1.00	1.00	1.00
Maximum		7.00	7.00	7.00	7.00	7.00
Percentiles	25	3.8750	3.2000	3.8000	4.2000	2.0000
	50	4.5000	4.4000	4.7000	5.0000	3.6250
	75	5.2500	5.8000	5.6000	5.6000	5.0000

Note: RQ1: The independent variable was years of teaching experience; the dependent variable was perceptions towards AI integration. This revealed if perceptions differed based on experience. RQ2: The independent variable was academic discipline; the dependent variable was AI awareness/knowledge. This determined if AI familiarity varied by field. RQ3: The independent variables were demographic factors; the dependent variable was openness to AI adoption. This identified if demographics related to adoption readiness. RQ4: The independent variable was institution type; the dependent variable was perceptions of AI ethics. This assessed if ethical perspectives differed between institution types.

Inferential Analysis

This study also leverages inferential statistics to explore how AI impacts higher education, merging data analysis from both descriptive and inferential lenses. By employing one-way and two-way ANOVA, it

identifies significant variances in AI perceptions across various academic roles and disciplines. The independent samples t-test further discerns differences in AI's ethical views between faculty at public versus private institutions. These methods go beyond merely detailing the data; they pave the way for broader conclusions about the role of AI, guiding its strategic incorporation into teaching practices and influencing policies in higher education. By adopting this two-pronged strategy, the goal is to lay a solid statistical groundwork for assessing how AI is woven into the educational fabric and understanding its wider effects.

For Research Question 1 (RQ1), a one-way ANOVA analysis was conducted to examine the effect of teaching experience on faculty members' perceptions of AI integration. The results indicated no significant effect, $F(3, 158) = 2.004$, $p = .116$ (see Table 2). Despite the lack of statistical significance, variability in mean scores across experience levels was observed, ranging from 4.3480 for those with more than 20 years of experience to 4.9512 for those with 6-10 years of experience. This suggests nuanced differences that could be explored in further research. Post hoc comparisons using Tukey's Honestly Significant Difference (HSD) test confirmed no significant pairwise differences between groups. The homogeneity of variances, as tested by Levene's test ($p = .239$), was not violated, indicating similar variance across groups. Although no significant differences were found, the descriptive statistics suggest trends that may have practical relevance for AI integration in higher education. These findings underscore the complexity of how teaching experience might influence perceptions of AI integration, highlighting the need for additional exploration.

Table 2

ANOVA results: Teaching Experience and Attitudes Toward AI Integration (RQ1)

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*
Between Groups	7.927	3	2.642	2.004	.116
Within Groups	208.331	158	1.319		
Total	216.258	161			

Note: SS indicates Sum of Squares. Df indicates Degrees of Freedom. MS indicates Mean Square. F indicates F-statistic.

Research Question 2 (RQ2) examines the differences in AI familiarity across different academic disciplines. The Levene's test for equality of variances provided an F-statistic of 2.563 ($df = 2, 159$) with a p-value of .080, which is marginally above the conventional .05 alpha level, suggesting a slight concern for the assumption of homogeneity of variances. Nonetheless, the one-way ANOVA showed that the differences in composite scores between academic disciplines were not statistically significant, $F(2, 159) = 2.848$, $p = .061$, albeit approaching significance. This implies that there were no clear-cut differences in AI familiarity among the disciplines of Arts, Humanities, Social Sciences, and Other; STEM and Architecture/Design; and Professional Studies: Business, Education, Law, and Medicine and Health Sciences (see Table 3).

Table 3

ANOVA results: Academic Discipline and AI Familiarity (RQ2)

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*
Between Groups	14.245	2	7.122	2.848	.061
Within Groups	397.626	159	2.501		
Total	411.871	161			

Note: SS indicates Sum of Squares. Df indicates Degrees of Freedom. MS indicates Mean Square. F indicates F-statistic.

It's important to note that the p-value for Levene's test is approaching the .05 threshold, which indicates that there might be some concerns regarding the assumption of homogeneity of variances. However, since it's not below .05, it's still considered to meet the assumption for the purposes of ANOVA. The p-value

for the ANOVA itself is also close to .05, indicating that the results might be worth exploring further, possibly with a larger sample size or additional research.

Research Question 3 (RQ3) examined the influence of demographic factors—specifically age and gender—on openness to AI adoption. The interaction between these demographic variables was considered to understand their combined effect on AI adoption readiness. Levene's test for equality of variances resulted in an F-statistic of 2.094 (df1 = 7, df2 = 154) with a p-value of .047, which suggests a marginal violation of the homogeneity of variances assumption. A two-way ANOVA was conducted to explore the impact of age and gender on openness to AI adoption. The results indicated a significant main effect for age, $F(3, 154) = 3.912$, $p = .010$, and a significant interaction effect between age and gender, $F(3, 154) = 3.324$, $p = .021$ (see Table 4). However, as shown in Table 4, the main effect of gender was not significant, $F(1, 154) = 0.529$, $p = .469$. The significant interaction effect suggests that the influence of age on openness to AI adoption differs across genders.

The study found that the youngest demographic (34 years and younger) demonstrated a greater willingness to embrace AI technology, especially among men. However, the interplay of age and gender reveals uneven differences across age groups, as evidenced by fluctuating average scores for men and women in each age bracket (see Table 4).

Table 4

Two-way ANOVA results: Demographic Factors and AI Adoption Readiness (RQ3)

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	η^{2p}
Corrected Model	85.892a	7	12.270	7.411	0.000	0.252
Intercept	2970.475	1	2970.475	1794.027	0.000	0.921
Age (Main Effect)	19.432	3	6.477	3.912	0.010	0.071
Gender (Main Effect	1.292	1	1.292	0.529	0.469	0.003
Age*Gender (Interaction)	16.510	3	5.503	3.324	0.021	0.061
Error	254.987	154	1.656			
Total	3772.480	162				
Corrected Total	340.879	161				

Note: SS indicates Sum of Squares. Df indicates Degrees of Freedom. MS indicates Mean Square. F indicates F-statistic. η^{2p} indicates Partial Eta Squared. a. R Squared = .252 (Adjusted R Squared = .218).

The findings suggest that demographic factors, particularly age, play a significant role in determining openness to AI adoption, and this effect is further nuanced by the interaction with gender. These insights underscore the complexity of adoption readiness and highlight the need for targeted strategies that consider both age and gender when promoting AI integration.

Investigating the variance in perceptions of AI ethics across institution types, research question (RQ4) did not find statistically significant differences between faculty at public and private institutions when assuming equal variances, as indicated by the independent samples t-test ($t(160) = -1.891$, $p = .060$), with mean scores of 4.7756 (SD = 1.20563) for public and 5.2194 (SD = 1.03196) for private institutions (see Table 5). Levene's test supported the assumption of equal variances ($F = 1.487$, $p = .225$), permitting a valid comparison of means (see Table 6). However, when not assuming equal variances, a t-test yielded a marginally significant result ($t(51.275) = -2.082$, $p = .042$), suggesting a potential difference in perceptions. Yet, the confidence interval for the mean difference [-.90727, .01970] straddles zero, which tempers the assertion of a significant effect of institution type on AI ethics perceptions. Given the proximity of the p-value to the conventional significance threshold and the inclusion of zero in the confidence interval, these findings should be interpreted with caution. They do not conclusively support a substantial difference in the ethical considerations of AI between faculty at public versus private institutions. Further research with a larger and possibly more diverse sample, or a deeper examination of specific aspects of AI ethics, may provide more definitive evidence.

Table 5

Group Statistics: Institution Types and Perception of AI Ethics (RQ4)

Group Statistics	*N*	*Mean*	*Std. Deviation*	*Std. Error Mean*
Public	131	4.7756	1.20563	0.10534
Private	31	5.2194	1.03196	0.18535

Table 6

Independent Samples Test: Institution Types and Perception of AI Ethics (RQ4)

Test	*F*	*Sig.*	*t*	*df*	*Sig. (2-tailed)*	*Mean Difference*	*Std. Error Difference*
Levene's Test	1.487	0.225	-1.891	160	0.060	-0.44378	0.23469
T-test for Equality of Means	-2.082	0.042	-0.44378	51.275	0.042	-0.44378	0.21319

Note: F indicates F-statistic. Sig indicates Significance Level. T indicates T-statistic. Df indicates Degrees of Freedom.

In addressing Research Question 5 (RQ5), the one-way ANOVA results showed significant differences in the use of AI technology in teaching activities across different academic roles, $F(3, 158) = 4.160$, $p = .007$, as detailed in Table 7. The post hoc Tukey HSD test indicated that adjunct faculty ($M = 2.7069$, $SD = 1.56278$) significantly differed in their AI technology usage compared to full-time professors ($M = 4.0820$, $SD = 1.95893$), with a mean difference of -1.37513, $p = .005$ (see Table 8). Similarly, lecturers or instructors ($M = 3.9516$, $SD = 1.66135$) differed from full-time professors with a mean difference of -1.24472, $p = .042$. However, no significant differences were found between teaching assistants ($M = 3.5461$, $SD = 1.82499$) and other roles. These findings suggest disparities in AI integration among academic roles, pointing to potential areas for development and support to enhance AI utilization across the board.

Table 7

ANOVA results: Academic Roles and AI Technology Use (RQ5)

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*
Between Groups	40.770	3	13.590	4.160	.007
Within Groups	516.175	158	3.267		
Total	556.944	161			

Note: SS indicates Sum of Squares. Df indicates Degrees of Freedom. MS indicates Mean Square. F indicates F-statistic.

Table 8

Tukey HSD: Academic Roles and AI Technology Use (RQ5)

Role in Higher Education	*N*	*Subset for alpha = 0.05*	
	1	2	
Adjunct Faculty	29	2.7069	
Teaching Assistant	38	3.5461	3.5461
Lecturer or Instructor	31		3.9516
College/Univ. Professor	64		4.0820
Sig.		.195	.582

Note: The group sizes are unequal. Harmonic mean sample size = 36.805. N indicates count.
Multiple Comparison Tukey reported p-value of .005 between Adjunct Faculty and College/University Professors.

Discussion

The study reveals a generally positive attitude towards AI integration in higher education, with variations observed across demographic groups and disciplines. Here I detail these findings and their implications:

Teaching Experience

Although the analysis shows teaching experience does not significantly influence perceptions of AI integration, a noticeable dip in positivity among more seasoned faculty suggests the importance of addressing their specific concerns. This observation echoes previous studies suggesting that prolonged teaching experience might be associated with a cautious stance towards new technology (Aragón et al., 2018). Such resistance underscores the need for tailored professional development programs that address the specific concerns and needs of veteran educators.

Academic Discipline

There were no significant differences in AI familiarity across academic disciplines. However, a trend towards lower familiarity in the arts and humanities as compared to technical fields was noted, which aligns with earlier reports of uneven dissemination of AI knowledge. This gap highlights the importance of interdisciplinary approaches in AI education, ensuring all fields benefit from AI advancements.

Age and Gender

The study also revealed that age significantly affects readiness to adopt AI technologies, with younger faculty members showing more openness. The study found an interaction between age and gender, indicating nuanced differences in attitudes based on these combined factors (Zhang et al., 2023). This suggests both demographic variables have a role in influencing perceptions of AI, though more research is needed to unravel these complex dynamics. Accounting for age and gender differences could be beneficial when introducing AI initiatives, allowing policies to address potential variations in receptiveness.

Institution Type

The type of institution appears to have a minimal impact on ethical perceptions of AI, though faculty from private universities showed slightly more positive attitudes. While the current findings show little variation across institution types, further research could provide more insight into whether institutional cultures shape faculty perspectives on AI ethics (Batory & Batory, 2012). For example, exploring how priorities around research, teaching, and service might influence ethical considerations at different colleges and universities. Such nuanced understanding may help inform the development of flexible ethical guidelines that align with the diverse missions of higher education institutions.

Academic Roles

Finally, findings suggest a significant correlation between academic roles and the extent of AI utilization in teaching, with full-time professors employing AI more extensively than adjuncts and lecturers. This disparity emphasizes the need for equitable access to AI resources and training across all teaching roles, ensuring that all educators can effectively integrate AI into their pedagogy.

Implications of Findings

The differences in familiarity and adoption readiness across fields and roles indicates a need for tailored policies and training programs specific to discipline contexts and positions. The age and gender interaction also shows that nuanced strategies considering both facets could heighten adoption, consistent with findings from Zhang et al. (2023). While teaching experience did not significantly influence perspectives presently, monitoring receptiveness among senior faculty remains valuable amidst AI changes, as research indicates uncertainty about AI benefits with more experience (Aragón et al., 2018). Though institutional variations were negligible currently, continued evaluation of distinct priorities is worthwhile, given arguments around contextual differences in AI ethics priorities (Batory & Batory, 2012). Careful monitoring should occur for all demographic groups, aligning with calls for policies accommodating diverse faculty viewpoints (Chun & Elkins, 2023). Overall, these findings underscore intricacies in perspectives needing customized, evidence-based policies guiding equitable AI adoption.

Investment into faculty development programs could aid wider dissemination of information about AI capabilities and help address uncertainties among some groups. Offering tailored training and resources may prove valuable for shifting perspectives and fostering greater openness towards integrating AI where appropriate. Achieving widespread buy-in during a transformative era mandates acknowledging and adapting to multifaceted needs across higher education contexts.

Conclusion

This nationwide study has critically explored the multifaceted variations in perspectives towards AI across different facets of the academic community, including experience level, academic discipline, demographics, academic role, and type of institution. This comprehensive analysis highlights the nuanced ways in which these factors intersect to shape attitudes toward AI integration in higher education. Such insights are crucial for developing ethical and sustainable policies that cater to the diverse needs of the faculty.

The evidence gathered underscores the urgency of adopting evidence-based strategies that are attuned to the varying viewpoints of academia's workforce. Effective integration of AI technologies can benefit from proactive efforts to understand the range of faculty perspectives and concerns. This study contributes valuable insights into the multifaceted views within academia that may shape openness to adopting AI-enabled educational practices. Accounting for hesitations and uncertainties uncovered could allow policymakers to develop more responsive, evidence-based implementation strategies.

By providing a broad-based, nationwide insight into faculty attitudes toward AI, this study responds to the call for large-scale research articulated by Zawacki-Richter et al. (2019), among others. The findings not only echo the need for policies that are accommodating of diverse faculty perspectives but also reinforce the argument for nuanced approaches to AI adoption that are sensitive to the varied backgrounds and contexts of academic staff (Chun & Elkins, 2023; Wang & Ren, 2019; Wesarat et al., 2022).

As policymakers and higher education leaders continue examining AI integration, reflecting on these findings could support development of inclusive policies. The study contributes valuable perspectives that could inform equitable adoption strategies tailored to varying needs. Accounting for the varied viewpoints across academic disciplines and backgrounds could aid in establishing policies and development programs that are inclusive and effective for different groups. The goal should be to ensure that AI serves as a tool for enhancement rather than a source of division, supporting the educational mission in its broadest sense.

Limitations

While this study provides valuable insights into faculty perspectives on AI integration in higher education, it is not without its limitations. First, potential biases within this sample may limit the generalizability of the findings (Fowler, 2014). The inclusion of additional variables such as race, income, geographical region, and more detailed classifications of institution types could offer a more nuanced understanding of the variations in AI perspectives across the academic landscape (Tabachnick & Fidell, 2019). Furthermore, reliance on self-reported data introduces the possibility of inaccuracies in how participants' viewpoints are conveyed. While self-reported data is frequently used in attitudinal research, it remains vulnerable to selective biases in how participants convey viewpoints. As such, the accuracy of captured perspectives requires further verification through additional methods (Creswell & Creswell, 2017). This one-time cross-sectional approach also provides only a snapshot of current attitudes, rather than tracking evolutions over time. Adopting a longitudinal approach would allow for the tracking of how attitudes towards AI evolve over time, providing deeper insights into the dynamic nature of faculty perceptions and the impact of ongoing technological advancements (Frey & Osborne, 2017).

Recommendations for Future Research

Building upon the insights and limitations identified in this study, I propose several avenues for future research to deepen and broaden our understanding of AI integration in higher education:

Longitudinal Studies
Implement larger, repeated cross-sectional samples over time to capture trend changes in faculty attitudes towards AI. This approach would address the limitation of this study's cross-sectional design, offering a dynamic perspective on how perceptions evolve as AI technologies and their applications in academia progress.

Diverse Variables Exploration
Further investigate the influence of variables such as race, geographic region, and more detailed institutional characteristics on attitudes toward AI. Expanding the scope of variables examined can provide a more granular understanding of the factors that shape faculty perspectives, addressing gaps identified in our current research.

Experimental Methods
Utilize experimental designs that expose faculty members directly to AI systems to assess the impact on their perceptions. This method could help overcome the limitations of self-reported data, offering direct evidence of how interaction with AI technologies influences attitudes and acceptance.

Qualitative Insights
Conduct qualitative research, such as interviews and focus groups, to explore the reasons behind specific perceptions of AI across different disciplines. This approach can uncover the nuanced thought processes and concerns that quantitative methods might overlook, providing deeper insights into resistance or enthusiasm for AI integration.

Cross-National Comparative Analysis
Conducting cross-national comparisons of faculty attitudes toward AI adoption could provide useful insights. Exploring potential variations across cultural and economic contexts may reveal how these factors shape perceptions of AI in academia. While this study focused on a single country, future research expanding the scope across diverse nations could contribute additional perspectives. Comparing attitudes internationally may provide useful insights into both common concerns and unique opportunities related to AI integration in education.

Summary
In essence, this study has systematically explored faculty opinions on AI in higher education, examining how factors like experience, academic discipline, demographics, and institutional setting influence these perspectives. The nationwide research highlights the importance of evidence-based policies and practices for integrating AI in academia while recognizing the diversity among faculty members. It recommends an inclusive strategy for implementing AI technologies, noting variations in awareness, readiness, and ethical considerations among faculty cohorts. By offering an examination of attitudes towards AI, this study sets a basis for future work in educational technology. It emphasizes the need for research to enhance AI integration strategies that address the evolving needs and concerns of educators. Progressing in this direction could maximize the benefits of AI in higher education while ensuring alignment with values and objectives. The journey of incorporating AI into settings is continuously calling for efforts and adaptable approaches to research and policymaking. As advancements unfold, it is crucial for the academic community to engage in informed conversations about the paths forward. This research adds to the conversation and urges an in-depth investigation into how AI influences the future of higher education.

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Appendix

Faculty Survey Questionnaire:

The survey instrument quantified the following constructs using 7-point Likert scale questions:

AI Knowledge/Familiarity (5 questions)
1. How familiar are you with artificial intelligence (AI) and its applications in higher education?
(1 = Not at all familiar, 7 = Extremely familiar)
2. How knowledgeable are you about specific AI technologies and systems used in higher education? (1 = Not at all knowledgeable, 7 = Extremely knowledgeable)
3. How well informed are you about recent advances in AI and its potential impacts on teaching and learning? (1 = Not at all informed, 7 = Extremely well informed)
4. To what extent do you actively keep up with news and developments regarding AI in higher education?
(1 = Not at all, 7 = To a great extent)
5. How confident are you in your ability to effectively use AI technologies in your courses?
(1 = Not at all confident, 7 = Extremely confident)

AI Usage in Teaching (5 questions)
6. How frequently do you currently use AI technologies in your teaching activities?
(1 = Never, 7 = Very frequently)
7. Have you incorporated adaptive learning systems or intelligent tutoring systems into your courses? (1 = Never, 7 = Very frequently)
8. How often do you use automated essay scoring or evaluation tools?
(1 = Never, 7 = Very frequently)
9. How frequently do you use plagiarism detection software for student submissions?
(1 = Never, 7 = Very frequently)
10. To what extent have you adopted LMS analytics to track student engagement and learning?
(1 = Not at all, 7 = To a great extent)

Attitudes Towards AI Adoption (10 questions)
11. Integrating AI would improve pedagogical outcomes in my courses.
(Strongly disagree - Strongly agree)
12. The benefits of AI adoption in my teaching would outweigh any disadvantages.
(Strongly disagree - Strongly agree)
13. AI poses a threat to the role of educators in the learning process.
(Strongly disagree - Strongly agree)
14. AI has the potential to individualize and enhance student learning experiences.
(Strongly disagree - Strongly agree)
15. The use of AI in education raises significant ethical concerns.
(Strongly disagree - Strongly agree)
16. AI adoption would help free up my time from administrative tasks for higher-order instructional activities.
(Strongly disagree - Strongly agree)
17. AI could negatively impact the interpersonal dimensions of teaching.
(Strongly disagree - Strongly agree)
18. I feel prepared to effectively integrate AI technologies into my teaching.
(Strongly disagree - Strongly agree)
19. Overall I have a positive attitude towards using AI applications in my courses.
(Strongly disagree - Strongly agree)
20. AI is a valuable innovation that will improve outcomes in higher education.
(Strongly disagree - Strongly agree)

Perceived Benefits of AI (5 questions)
21. How receptive are you to integrating AI technologies into your courses and teaching methods? (1 = Not at all receptive, 7 = Extremely receptive)
22. To what extent do you think AI could provide helpful analytics about student learning in your courses? (1 = Not at all, 7 = To a great extent)
23. How useful do you believe adaptive AI tutoring systems would be for your students? (1 = Not at all useful, 7 = Extremely useful)
24. How likely is it that AI-powered tools could enhance student engagement in your courses? (1 = Not at all likely, 7 = Extremely likely)
25. To what degree could automated feedback and assessment via AI benefit your students? (1 = No benefit, 7 = Major benefit)

Concerns about AI (5 questions)
26. How concerned are you about the ethical implications of using AI technologies in higher education? (1 = Not at all concerned, 7 = Extremely concerned)
27. To what extent does AI pose risks for discriminatory treatment or bias against certain student groups? (1 = No risk, 7 = Major risk)
28. How worried are you that AI adoption in higher education could lead to job losses for human teachers? (1 = Not at all worried, 7 = Extremely worried)
29. To what degree does your discipline rely on uniquely human traits that may not be replicable by AI? (1 = Not at all, 7 = To a great degree)
30. How apprehensive are you about relying on opaque AI systems for high-stakes educational decisions? (1 = Not at all apprehensive, 7 = Extremely apprehensive)

Demographics (5 questions)
31. What is your academic discipline (multiple choice, select only one)?
- Arts and Humanities (English, History, Philosophy, etc.)
- Social Sciences (Psychology, Sociology, Political Science, etc.)
- STEM (Science, Technology, Engineering, Math)
- Business
- Education
- Law
- Medicine and Health Sciences
- Architecture and Design
- Other

32. How many years have you been teaching in higher education (multiple choice, select only one)?
- 0-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- 21-25 years
- 26-30 years
- More than 30 years

33. What is your age (multiple choice, select only one)?
- Under 25
- 25-34
- 35-44
- 45-54
- 55-64
- 65-74
- 75 or older

34. What type of higher education institution do you work at?

- Public
- Private

35. What is your gender (multiple choice, select only one)?
    - Male
    - Female
    - Prefer not to answer

IRB Documentation:

Middle Georgia State University

IRB APPLICATION CHECKLIST

NO RESEARCH CAN PROCEED PRIOR TO IRB APPROVAL

Use the following list to confirm that all required steps of the IRB Application process are completed. Complete this form by clicking on the boxes and submitting a copy along with your IRB Application.

- ☒ This researcher has read the IRB handbook
- ☒ The researcher has completed the IRB Application form
- ☒ The researcher has attached a copy of the consent form
- ☒ The researcher has attached a copy of the concise and clear research methodology
- ☐ If the proposed study includes minors, the researcher has included an informed consent form for the parent/guardian of minors (under age 18) and an informative letter or script that explains the project to the minor, written in language appropriate for the participant's age.
- ☐ If the study is led by an undergraduate or graduate student applicant, he or she must identify the CI faculty member who will supervise the research and have this supervisor review and sign the application before submission to the IRB.
- ☒ The researcher agrees to send notification via email to the IRB Chair when the research project is finished or will submit a continuation form to IRB annually for approval of an extension.

All Email inquiries should be directed to: irb@mga.edu

Completed by IRB:
IRB PROJECT #:
☐ Exempt
☐ Expedited Review
☐ Full Review
☐ Revised/Continuing

INSTITUTIONAL REVIEW BOARD (IRB)

STUDENT APPLICATION FOR THE REVIEW OF RESEARCH INVOLVING HUMAN SUBJECTS

Directions: Please complete Sections I - IV.

Submission Instructions: Email an electornic copy of the completed IRB Application, proposal, and attachments to irb@mga.edu in the following format:

SECTION I: Review Type Requested (CLICK ON CHECK BOX)

☒ Exempt
☐ Expedited Review
☐ Full Review
☐ Revised/Continuing

SECTION II:

1. Name of Principal Investigator	Phone:	Email:
Patrick Harris	706.248.1250	Patrick.harris@mga.edu

2. Name of Faculty/Doctoral Research Project Advisor	Phone:	Email:
Dr. Alex Koohang	478.471.2801	Alex.koohang@mga.edu

3. Title of Project:	Project Start Date:	End Date:
Faculty Perspectives Toward Artificial Intelligence in Higher Education	January 2, 2024	April 30, 2024

4. Age Range of Subjects: 18-99

5. Type of subject: ☒ Adult ☒ Non-student ☐ Minor ☐ CI Student
☐ Other (describe):

6. Subjects (CLICK ON CHECK BOX): ☒ Normal Volunteer ☐ In-patient ☐ Out-patient ☐ Intellectually disabled
☐ Pregnant women & fetuses ☐ Individual with limited civil freedom

7. Estimated # of Subjects/participants: 100
# of Treatment Subjects *(If Applicable)*: **# of Control Subjects *(If Applicable)*:**

SECTION III:
Please check the appropriate response for the following questions. Please be brief and concise in your responses to each of these questions. Failure to respond to any questions will cause significant delays.

8. ☐ Yes ☒ No	Will subjects receive payment or extra credit point compensation for participation? If yes, detail amount, form, and conditions of award. If compensation will be provided via a drawing or lottery, please see guidance on IRB website.

Explanation:

DIRECTIONS: In a total of no more than two pages, please answer questions 9-16. Please be brief and concise in your responses to each of these questions. Failure to respond to any questions will cause significant delays

9. ☐Yes ☒No	**Will the subjects be deceived, misled, or have information about the project withheld? If so, identify the information involved, justify the deception, and describe the debriefing plan if there is one.**

Explanation:

Research Protocol Description (Please attach surveys and instruments to the IRB Application):

10. Describe the objectives and significance of the proposed research below.

Here is a description of the objectives and significance of the proposed research:

This study has several key objectives:

- Quantify faculty awareness, knowledge, and usage of AI systems in higher education. This will establish a baseline understanding of current faculty familiarity with AI across academia.
- Statistically compare AI receptiveness amongst faculty across years of experience, academic fields, public/private institutions, and demographics. Identifying variation is crucial for policy development.
- Identify significant correlational relationships between familiarity with AI and willingness to integrate AI tools in pedagogy/research. This can reveal predictors of adoption.
- Test the hypotheses that receptiveness to AI decreases with years of teaching experience but increases in technology-related disciplines. This directly examines factors influencing perspectives.
- Generalize the findings to inform institutional policies and processes for effective, sustainable, and faculty-supported AI adoption in higher education. The overarching goal is guiding best practices.

The significance of this research is timely as higher education stands at the brink of an AI revolution. However, limited data exists regarding faculty readiness and attitudes, which are crucial for implementation success. This study will provide data-driven insights to guide AI integration policies that proactively address teacher needs and concerns. Understanding diverse faculty perspectives is vital for ethical, sustainable AI adoption that enhances pedagogical and research excellence across disciplines.

11. Describe methods for selecting subjects and assuring that their participation is voluntary. Attach a copy of the consent or assent forms and/or recruitment flyer/poster that will be used. If no consent form will be used, explain the procedures used to ensure that participation is voluntary. Sample consent/assent forms and recruitment flyer/poster as well as related information are available on the IRB website.

Subjects will comprise a nationwide sample of approximately 100-150 higher education faculty members. They will be recruited by a professional survey company using stratified random sampling to ensure proportional representation across key attributes including years of teaching experience, academic discipline, and public/private institution type. This sampling method enables generalization of findings to the broader target population of higher education faculty in the United States.

An informed consent page will precede the online survey. This will outline the study's purpose, procedures, voluntary nature of participation, risks/benefits, and researcher contact information. Participants will need to provide consent electronically before accessing the full survey. They can withdraw consent at any time by exiting the survey.

No identifiable information will be collected, and IP addresses will be untracked to protect anonymity. Subjects can skip any survey questions they are not comfortable answering. Participation is completely voluntary, and no coercion or deception techniques will be used in either recruitment or data collection processes. Allowing subjects to withdraw consent and leave questions unanswered guarantees voluntary involvement.

12. Describe the details of the procedures that relate to the subject's participation below. Attach copies of all questionnaires or test instruments. In addition, attach a copy of the technical portion of the grant application if this project is part of a sponsored funding request.

Here are details describing the procedures related to the subjects' participation:

- Subjects will receive an email invitation from the survey company containing a link to the online questionnaire.
- Upon clicking the link, subjects will first be presented with the informed consent page. After reading the details and providing consent, they can access the full survey.
- The survey will take approximately 10-15 minutes to complete. It will include Likert scale questions measuring the constructs of interest: AI familiarity, attitudes toward adoption, perceived benefits/concerns, and demographics.

- Subject responses will be anonymously collected by the survey company. No identifying information is gathered. IP addresses will be untracked to protect privacy.
- Subjects can skip any survey questions they prefer not to answer. Participation is fully voluntary.
- The online format allows subjects to take the survey at a time and place convenient to them. The questionnaire is designed to be completed in one sitting.
- After submission, a thank you page will appear, and subjects will be emailed a debriefing statement.
- The data will be statistically analyzed by the researcher to address the study aims without any subject identifiers.
- Raw data will be securely stored encrypted on a password protected computer and destroyed after 3 years upon study completion.

13. Describe below the methods that will be used to ensure the confidentiality of all subjects' identities and the stored data (include how data will be handled after research is completed). Confidentiality of data is required.

Here are the methods that will be used to ensure confidentiality of the subjects' identities and the stored data:

- No identifying information such as names, email addresses, or IP addresses will be collected from subjects during the anonymous online survey.
- Subject responses will be de-identified and assigned a random ID number for analysis purposes.
- The survey data will be securely stored in an encrypted file on a password protected computer only accessible to the researcher.
- Any printed data will be kept in a locked filing cabinet in the researcher's office.
- Only aggregated statistical results will be published that do not reveal individual subject responses.
- The raw data will be destroyed after 3 years upon completion of the study by permanently deleting the encrypted file. Any printed copies will be shredded at that time.
- The survey company assisting with recruitment will not have access to the response data, which goes directly to the researcher. A confidentiality agreement governs their role.
- The study results may inform recommendations for institutions, but no identifying details about subjects will ever be disclosed.

14. Describe below the risks to the subjects and precautions that will be taken to minimize the risks to the subjects. Risk goes beyond physical risk and includes risks to the subject's dignity and self-respect, as well as psychological, emotional, employment, legal, and/or behavioral risk. (Note: There is always minimal risk (s) associated with a project.)

Here are the potential risks to subjects and precautions to be taken:

- There are no anticipated physical, psychological, economic, or legal risks to subjects beyond those ordinarily encountered in daily life.
- However, there is minimal risk of temporary emotional discomfort or loss of dignity while answering survey questions about perspectives on AI.
- To minimize this, subjects can skip any questions they do not feel comfortable answering.
- Their responses are completely anonymous which reduces self-presentation bias and distress risks.
- The informed consent outlines their right to withdraw participation at any time.
- No deception is used which could lead to psychological impacts after debriefing.
- For any concerns, the researcher's contact information is provided.
- Data security precautions maintain confidentiality which lowers employment or reputation risks from data exposure.
- Study results will only be published in aggregate form without identifying details.

15. Describe below the benefits of the project to science and/or society. Also describe benefits to the subject if any exist. The IRB must have sufficient information to decide that the benefits outweigh the risks of the project.

Here are the anticipated benefits of this research:

- For individual subjects, potential benefits include gaining greater self-awareness about their perspectives on AI by thoughtfully completing the survey. However, direct benefits are minimal.
- For science, this project will significantly contribute to knowledge about faculty attitudes toward AI adoption across disciplines, which is presently lacking. The data can reveal patterns, correlations, and test hypotheses to advance understanding.
- For society, the findings will inform higher education institutions looking to integrate AI technologies in teaching and research. Guiding policies and strategies that account for diverse faculty viewpoints will lead to more equitable, ethical, and effective AI adoption.
- Enhanced pedagogical and research excellence across higher education stemming from purposeful AI integration ultimately benefits students and scientific advancement.

- This research fills a timely gap as higher education enters an era of rapid technological change. The insights are valuable for sustainable progress and innovation.

16. Describe below how the results of your study will be disseminated.

Here is a description of how the results of this study will be disseminated:

- The researcher plans to present the findings at Middle Georgia State University to fulfill course grade requirements.
- The researcher may publish the findings in peer-reviewed academic journals related to educational technology and higher education policy. Publication will ensure other scholars have access to this research.
- The researcher may present the results at conferences on learning technologies and educational innovation. This will facilitate wider dissemination to stakeholders.
- The researcher may develop policy briefs tailoring the findings for institutional leadership audiences to be made available online. Making the research accessible can enable evidence-based decision making.
- The researcher may highlight findings demonstrating practical value through media interviews, podcasts, and news stories on outlets covering higher education. This extends dissemination to the general public.
- The researcher may house a copy of the dissertation in the university library's open-access institutional repository for public availability once approved. This also enables future scholars to access this study.

Through multi-faceted dissemination including a presentation at MGA, the findings from this timely research on faculty perspectives of AI may achieve broad distribution to drive discussion and usage among scholars, policymakers, higher ed institutions, and the interested public.

APPLICATION FOR THE REVIEW OF RESEARCH INVOLVING HUMAN SUBJECTS

SECTION IV – ASSURANCES

This protocol review form has been completed and typed. By submitting this form to the MGA Institutional Review Board by email, from my MGA email account, I affirm that I am familiar with the ethical and legal guidelines and regulations (i.e., The Belmont Report, The Code of Federal Regulations Title 45 Part 46, and MGA's Policy) and will adhere to them. Should material changes in procedure involving human subjects become advisable, I will submit them to the IRB for review prior to implementing the change. I understand that I must notify the IRB when the project is completed. Furthermore, if any problems involving human subjects occur, I will immediately notify the IRB. I understand that IRB review must be conducted annually and that continuation of the project beyond one year requires submission of another IRB form for IRB approval.

☒ Check this box to indicate that you affirm the above statement.

Patrick Harris	Patrick Harris	12/1/23
Principal Investigator Name (Students only)	**Signature**	**Date**
	Alex Koohang Digitally signed by Alex Koohang Date: 2023.11.07 13:26:17 -05'00'	
Faculty Advisor Name	**Signature**	**Date**

End of Application – THIS SECTION MUST BE COMPLETED FOR IRB REVIEW.

Middle Georgia
State University

Department of Political Science
100 University Parkway, Macon, GA 31206
478.757.2544 mga.edu

November 9, 2023

TO: Dr. Alex Koohang & Patrick Harris

FROM: Dr. John Powell Hall
Institutional Review Board Chair 2023-2024
Middle Georgia State University

SUBJECT: Approval of Project # O - 202311
Title: "Faculty Perspectives Toward Artificial Intelligence in Higher Education"

I am pleased to inform you that your project has been approved under the Exempt Review protocol of the Middle Georgia State University Institutional Review Board. Your project complies with the IRB guidelines for exempt proposals, including "research projects which present no more than minimal risk and therefore can be reviewed without a convened meeting."

If you wish to make any changes to this protocol, you must disclose your plans before you implement them so the IRB Board can assess their impact on your project. In addition, you must report to the Board any unexpected complications arising from the project that affect your participants. Approval of this project is for a period of one year from the date of this letter, the maximum duration permitted by the Federal Office for Human Research Protections (OHRP). If the project will not be completed by November 8, 2024, then you must submit a Renewal Form notifying the IRB of the continuation of this project. It is recommended that you keep your unit supervisor informed about the status of this project. If you have any questions regarding this project, please contact the current Chair of the IRB at irb@mga.edu.

Sincerely,

Dr. John Powell Hall
IRB Chair
2023-2024