RESEARCH-ARTICLE

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Research on Artificial Intelligence Technology Trust of University Teachers

Yingying Nie
College of Education
Capital Normal University
Beijing, China
527667645@qq.com

Yankun Cui
School of Ideological and Political Education and Moral Education
Beijing Institute of Education
Beijing, China
cyk0122@126.com

Shanshan Lou*
Business School
University of International Business and Economics
Beijing, China
202406254@uibe.edu.cn

Abstract

With the deep integration of artificial intelligence (AI) technology in education, university faculty's trust in AI directly influences their adoption willingness and teaching effectiveness. This study employs a questionnaire survey method to collect 200 samples, systematically examining the current state of AI trust among university teachers through the framework of Technology Trust Theory. Descriptive statistical analysis reveals that teachers' overall trust in AI technology remains moderate. T-test analysis identifies gender-based differences in technical trust, while one-way ANOVA further demonstrates variations across age, educational background, academic rank, discipline, institution type, and teaching experience. Notably, teachers' educational qualifications and institutional types significantly impact their AI trust levels.

CCS Concepts

• **Applied computing**; • **Education**; • **Computer-assisted instruction**;

Keywords

Artificial Intelligence Technology, Technology Trust, University Faculty

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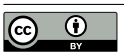
1 Introduction

In the era where artificial intelligence is accelerating transformation in higher education, teachers 'trust in AI technology has become a key factor for its deep integration into educational practices. As a crucial component of national strategy, AI-powered higher education has been elevated to the core of China's innovation system and talent development strategy. Since the introduction of policies such as the "New Generation Artificial Intelligence Development Plan", "Education Informatization 2.0 Action Plan", and "Higher Education Artificial Intelligence Innovation Action Plan", the government has continuously promoted the deep integration of AI with higher education. The goal is to build an intelligent, personalized, and ubiquitous new educational ecosystem that comprehensively enhances the quality, efficiency, and innovation capabilities of higher education. This top-level policy guidance not only emphasizes technological innovation but also explicitly identifies teachers as the key implementers, driving intelligent transformations in educational models.

Higher education institutions face widespread trust deficits in AI technology implementation, creating a significant disconnect between policy advocacy and practical application. Many AI tools exhibit the "high deployment, low utilization" dilemma in teaching and administrative practices, with faculty members showing reluctance, hesitation, or inability to effectively use AI—a prevalent phenomenon. The lack of trust manifests in multiple structural dimensions: First, occupational identity anxiety is prevalent. Faculty members generally worry that AI may undermine their professional autonomy, educational ethics, and teaching value, particularly in humanities disciplines and highly interactive teaching scenarios where such concerns directly hinder the formation of supportive beliefs. Second, technical black box effects and system unreliability. The opacity of AI algorithms, unexplainable model decisions, and operational instability or occasional errors make it difficult for teachers to trust AI's functional outputs. Furthermore, data security risks and algorithmic biases further intensify doubts about AI's reliability. Third, functional mismatch and poor usability. Existing AI tools significantly deviate from actual teaching and research needs, with some products being "form over substance" in design—complex operation procedures, high learning costs, poor compatibility with existing work patterns, and inadequate technical support systems. Fourth, ambiguous value perception and lack of effective evidence. Teachers face significant challenges in obtaining direct evidence regarding AI's impact on teaching quality, research output, or administrative efficiency. The lack of high-credibility empirical studies and exemplary cases has resulted in insufficient empirical foundations for beneficial beliefs.

While existing research predominantly focuses on technological development, policy advocacy, and pedagogical innovation, systematic exploration of AI trust mechanisms among university faculties remains underdeveloped. There is a notable absence of theoretical frameworks explaining how teachers perceive, evaluate, and gradually establish trust in AI technologies, as well as in-depth

*Corresponding author.



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investigations into the causes, mechanisms, and intervention strategies underlying trust dilemmas. To address these gaps, this study investigates the university faculty's AI technology trust through multidimensional approaches including psychological cognition, emotional acceptance, and behavioral willingness.

Our paper has two contributions to literature.

First, in the current teaching environment, how is the level of trust of college teachers in artificial intelligence technology?

Second, is there any obvious deficiency or challenge in college teachers' trust in artificial intelligence technology?

2 Theoretical analysis and conceptual definition

2.1 Research history of technology trust

Trust is a highly complex and multidimensional phenomenon (Lewis J.D. & Weigert A.J..1985). In the beginning, technology trust was studied using the measurement dimension of interpersonal trust. Muir (1987) first proposed the concept of technical trust in the design of decision aids and constructed a technical trust model(Muir BM, 1987). Based on Barber's interpersonal trust model, he proposed that technological trust is based on the trustworthy traits of the trusted party. Most of the research on human-technology trust migrated to the trust relationship between people and ended up ignoring the trust relationship between people and technology instead. Scholar Benbasat (2005) studied consumer trust in online recommendation agents. It was found that in online transactions, consumers place their trust in online recommendation agents, indicating the existence of a trust relationship between people and information technology products (Benbasat, I. & Wang, W., 2005).

It was later realized that there is a difference between interpersonal trust and human-technology trust and that they need to be studied separately. Scholars Lankton & Mcknight (2011) used interpersonal trust dimensions to measure Facebook and technical trust dimensions to measure Access respectively. The results of the study showed that interpersonal trust dimensions have a good effect on Facebook trust measurement because people still feel that they are communicating with people when they are using Facebook, often being perceived as an online expansion of interpersonal relationships (Lankton, N. K. & McKnight, D. H., 2011; Carter M & Thatcher JB,2011). However, there is a tendency to adopt the technological trust dimension to measure Access because it is a typical human-technology interaction that is less reflective of human characteristics. Whether to use the technology trust dimension or the interpersonal trust dimension to measure people's trust in technology usually depends on the "human-like" nature of the technology. Scholars Lee and Moray (1992) showed that the operator's trust in the automated system depends mainly on the operator's perception of the system's technical capabilities and technical effectiveness, as well as the operator's understanding of the characteristics and processes of the management system behavior (Lee, J. & Moray, N., 1992). And this trust an automated system will influence whether it is used or not. Scholar McKnight (Mcknight, 2005) emphasized that the understanding of technological trust needs to focus on the nature of technology, and proposed three dimensions of technological trust: functionality, reliability, and helpfulness, which are used to measure the degree of people's trust in technology (Benbasat, I. & Wang, W., 2005; Staw B.M. & Cummings L.L..1980; Bunker B.B. & Rubin J.Z..1995).

2.2 Definition of trust in artificial intelligence technology

Technological trust is often defined as the attitude of people who are willing to use automated machines in the face of uncertainty. Scholar Lee (2004) defines trust as an attitude in which an agent is willing to help achieve an individual's goals in a situation characterized by uncertainty and vulnerability (Lee JD. & See KA., 2004). Muir (1987) argues that technological trust is based on the trustworthy traits of the trusted party (Lee, J. & Moray, N., 1992). Lippert (2001) argues that technological trust is a belief in which an individual is willing to place himself/herself in a vulnerable situation based on expectations of technological predictability, reliability, and utility. placed in vulnerable situations, a belief that is influenced by an individual's preference for trusting technology (Lippert, S. K., 2001). McKnight conducted a systematic study of technological trust, defining it as the degree to which an individual is willing to rely on technology because of his or her belief that the technology itself exhibits desirable qualities. He utilized three subordinate concepts of interpersonal trust, namely trust propensity, trust belief, and trust intention, to interpret technology trust. Scholar Pan Zhengkai(2022) believes that teachers' technology trust is the positive expectation that teachers hold towards digital technology under certain uncertain situations and believes that digital technology can steadily perform its functional characteristics according to the pedagogical presuppositions, thus facilitating the achievement of pedagogical goals(Pan Zhengkai, 2022;Qin,F.Li,K.&Yan,J,2020). According to Wang Xianwen(2017), teachers' technological trust is teachers' trust in technology, and the definition of this concept should be based on the nature of educational information technology(Wang Xianwen, 2017).

Existing definitions of teachers' technological trust focus on the characteristics of technology and neglect the subjective perspective of teachers. Therefore, this study defines teachers' technology trust as a comprehensive psychological state in which teachers form subjective judgments about the reliability, functionality, and usefulness of technology based on their own inherent trust in technology in the process of teaching and learning, and then generate a willingness to use, rely on, and assume potential risks of the technology in a specific context.

3 Research Design

3.1 Model construction

Based on the classic trust theories of Mayer Mayer (1995) and McKnight McKnight (2005), this study integrates the empirical explorations of domestic scholars on the technology trust framework and deconstructs technology trust into three core level one dimensions. They are technology trust propensity, technology trust belief, and technology trust intention. Technology trust propensity can be subdivided into two secondary dimensions of trust belief and trust attitude. Technology trust beliefs can be divided into three secondary dimensions of helpful trust beliefs, functional trust beliefs, and reliability trust beliefs. Technological trust intention can

Table 1: Table of average scores of First-level indicators of trust in artificial intelligence technology among university teachers

First-level indicators				
	N	Mean value		Standard deviation
		Statistics	Standard error	
Trust tendency of AI	200	3.5558	0.07498	1.06033
Trust belief of AI	200	3.5472	0.07136	1.00917
Trust intention of AI	200	3.5775	0.07471	1.05659
Number of effective cases	200			

Table 2: Table of average scores of Second-level indicators of trust in artificial intelligence technology among university teachers

Second-level indicators				
	N	Mean value		Standard deviation
		Statistics	Standard error	
Trust Conviction	200	3.5617	0.08119	1.14819
Trust Attitude	200	3.55	0.07392	1.04545
Beneficial Trust Belief	200	3.5267	0.07622	1.07785
Reliability Trust Belief	200	3.5417	0.07687	1.08718
Functional Trust Belief	200	3.5733	0.07314	1.03439
Dependency Willingness	200	3.5833	0.07779	1.1001
Subjective Probability of Dependence	200	3.5717	0.07727	1.09278
Number of effective cases	200			

be divided into two secondary dimensions of dependence willingness and subjective dependence probability (Mayer, R. C., Davis, J. H., & Schoorman, F. D., 1995; Benbasat, I. & Wang, W., 2005; Floridi,L.2008).

3.2 Research approach

In this study, the questionnaire method was used to explore in depth the current situation of AI technology trust among university teachers and its problems. Two hundred questionnaires were distributed using random sampling. With descriptive statistical analysis, the overall situation of college teachers' trust in AI technology was analyzed in detail, and the specific performance of each dimension was explored in detail. In addition, a difference-in-difference analysis was conducted to gain a more comprehensive understanding of the influence of demographic background variables on college teachers' trust in AI technology. Comparison of the mean values of the questionnaire data further clarified the actual level of trust in AI technology among teachers in higher education.

4 Empirical Results and Analysis

4.1 Descriptive statistical analysis of multi-dimensional trust in artificial intelligence technology among university teachers

In this study, data statistics and analyses were conducted on the three-dimensional scores of college teachers' AI technology trust. It aims to reveal the main problems faced in the current AI technology trust of college teachers, as well as teachers' self-evaluation of their own AI technology trust. The results of the survey data enable a more comprehensive understanding of the level of development of college teachers' AI technology trust in different dimensions. These data not only provide an objective description of college teachers' AI technology trust but also provide strong support for the subsequent development of improvement strategies.

As shown in Table 1, the average scores of the three first-level indicators of college teachers' trust in AI technology are relatively close. Among them, "technology trust intention" scores the highest, with a mean value of 3.578, while "technology trust belief" scores the lowest, with a mean value of 3.547. Table 2 shows that the mean scores of the seven level 2 indicators have a balanced distribution, with small differences, and the scores of each dimension range from 3.53 to 3.58. The scores for each dimension range from 3.53 to 3.58.

4.2 Differential analysis of artificial intelligence technology trust among university teachers

This study examines the differences in demographic variables such as gender, age, position and education across dimensions. The following independent samples t-test and one-way ANOVA were used to test. The results are shown below:

More than half of the participants in this survey were female (103) and 48.5% (97) were male. The results showed no significant differences were found for all seven dimensions ($p>0.05$). This indicates that the performance of teachers of different genders on these trust dimensions is basically the same and there is no significant difference.

Teachers who participated in the survey came from a variety of age groups. According to one-way ANOVA, there was no significant

difference in the ratings of teachers of different age groups on the seven dimensions of trust (p>0.05), indicating a high degree of consistency in the respondents' answers regardless of age or gender.

There are 14 college teachers who participated in the survey with the education of specialization and below, 68 with the education of bachelor's degree, 76 with the education of master's degree, and 42 with the education of doctoral degree. According to the data it is shown that trust beliefs, trust attitudes, helpful beliefs, functional beliefs, and willingness to rely are significant (P<0.05) in different educational backgrounds. Among them, trust attitude has strong significance (P<0.01). Reliability belief, subjective dependence probability are not significant. It indicates that there is a significant difference in the level of trust in AI technology among college teachers with different academic degrees, especially in the dimensions of trust beliefs, trust attitudes, helpful beliefs, functional beliefs, and willingness to rely. And the difference is very obvious in the trust attitude, the higher the education, the stronger the trust attitude towards AI technology. In the dimensions of reliability belief and subjective dependence probability, there is no significant difference.

Teachers who participated in the survey can only blame the largest number of associate professors a total of 83; the smallest number of assistant professor title, only 4; lecturers 46; professors 42; and other titles 25. According to the data, the sample titles reached by college teachers do not show significant differences for any of the seven dimensions. It indicates that college teachers with different job titles are the same in terms of trust in AI technology and there is no differential difference.

The college teachers who participated in the questionnaire survey of this study were from various disciplines. According to the data shows: now that there is no significance in the overall and dimensional levels of trust in AI technology among college teachers of different disciplines i.e. there is no difference in the trust in AI technology.

Teachers in the survey varied in their years of teaching. According to the data, there is no significance in the overall and dimensional levels of trust in AI technology among college teachers of different teaching ages. That is, there is no difference in trust in AI technology.

The primary and secondary school teachers who participated in the questionnaire survey of this study came from different levels of schools. According to the data, there is a particularly significant difference (p<0.01) between the dimensions of trust in AI technology among teachers from different schools of higher education. Teachers from vocational undergraduate colleges and specialized colleges scored significantly higher on trust in AI technology than the scores from other types of schools, in addition to this, 985 and 211 colleges and universities (non-985) scored close to and significantly higher than the scores of teachers from general undergraduate colleges and universities on all dimensions.

5 Conclusion

Descriptive statistics were used to obtain the overall and dimensional mean scores of university teachers' trust in artificial intelligence technology. The average values for technical trust tendency (3.447), teaching resource processing capability (3.56), technical trust belief (3.55), and technical trust willingness (3.58) showed relatively small score differences across seven sub-dimensions, ranging between 3.45 and 3.63. Overall, all seven dimensions scored below 4 points, indicating that while university teachers' trust in AI technology reaches the average score of 3 points, it has not yet reached a high-trust state. Analysis of demographic variables revealed that the university faculty's educational qualifications and institution type significantly influence their trust in AI technology. From a multi-dimensional perspective, the key factors significantly influencing university faculty's trust in artificial intelligence primarily include academic qualifications and institution type. Regarding their trust attitudes toward AI, these factors remain dominant. For belief in AI-assisted capabilities, educational background and institutional type prove most influential. Reliability beliefs are predominantly shaped by institution type, while functional belief is mainly determined by academic credentials and institutional affiliation. The willingness to rely on AI shows significant correlation with educational background and institutional type, whereas subjective reliance probability demonstrates strong ties to institution type. In summary, institutional type exerts substantial influence across all dimensions of technological trust in AI among university faculty, warranting close attention. Additionally, the role of academic qualifications in shaping faculty's AI trust requires further investigation.

References

[1] Lewis J.D.,Weigert A.J..1985.Trust as a Social Reality.Social Forces,(63):967-985.
[2] Muir BM.1987.Trust between humans and machines,and the design of decision aids.International Journal of Man-Machine Studies,27(5-6):527-539.
[3] Benbasat I,Wang W.2005.Trust In and Adoption of Online Recommendation Agents.Journal of the Association for Information Systems,(6):72-100.
[4] McKnight,D.H.2005.Trust in information technology.The Blackwell encyclopedia of management,7:329-331.
[5] Carter M,Thatcher JB,et al.2011.Trust in a specific technology:An investigation of its components and measures.Acm Transactions on Management Information Systems,2(2):1-25.
[6] Lankton NK,Mcknight DH.2011.What does it mean to trust facebook?:examining technology and interpersonal trust beliefs.Acm Sigmis Database,42(2):32-54.
[7] Lee JD,See KA.2004.Trust in automation:designing for appropriate reliance.Human Factors:The Joural of the Human Factors and Ergonomics Society,46(1):50-80.
[8] Lee,J,and Moray,N.1992.Trust,control strategies,and allocation of functions inhuman-machine systems.Ergonomics,(35):1243-1270.
[9] S.K.Lippert.2001.An Exploratory Study Into The Relevance of Trust in the Context of Information Systems Technology(Doctoral Dissertation,The George Washington University,Washington,DC.
[10] Floridi,L.2008.Artificial intelligence's new frontier:Artificial companions and the fourth revolution.Meta philosophy,39(4):651-655.
[11] Bunker B.B.,Rubin J.Z..1995.Conflict,cooperation and justice.San Francisco:Jossey Bass,p133-173.
[12] Staw B.M.,Cummings L.L..1980.Research in Organizational Behavior.Greenwich:JAI Press,p3-43.
[13] Mayer, R. C., Davis, J. H., & Schoorman, F. D..1995.An integrative model of organizational trust. Academy of Management Review, (3):709–734.
[14] Wang Xianwen.2017. Research on Teachers 'Technological Trust. East China Normal University.
[15] Pan Zhengkai..2022.Digital Technology Acceptance Among Primary and Secondary School Teachers: A Perspective of Technological Trust and Risk Perception. East China Normal University.
[16] Qin,F.Li,K.&Yan,J.2020.Understanding user trust in artificial intelligence-based educational systems:Evidence from China[J].British Journal of Educational Technology,(5):1693-1710.