Factors Influencing Teachers' Resistance to AI-Based Educational Supervision

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ABSTRACT

This study examines the factors influencing teachers' resistance to Artificial Intelligence (AI) based educational supervision in Omani government schools, focusing on Information Technology teachers. The study investigates the roles of AI literacy, trust in AI, perceived usefulness, technological anxiety, privacy concerns, perceived fairness, professional autonomy, and job-security concerns. A mixed-methods design was used, combining a questionnaire with semi-structured interviews. Quantitative data were analyzed using descriptive statistics, correlation analysis, and multiple regression, while qualitative data were analyzed thematically. The study provides evidence on the factors associated with teachers' resistance to AI-based supervision and highlights the importance of trust, privacy, fairness, professional autonomy, and appropriate AI training when introducing AI into educational supervision. The findings contribute to a better understanding of the conditions needed for responsible and teacher-centered AI implementation in Omani schools.

Keywords: Artificial Intelligence, Educational Supervision, Teacher Resistance, AI Literacy, Trust in AI, Professional Autonomy.

INTRODUCTION

Nowadays, artificial intelligence is becoming an important part of digital transformation in education, supporting teaching, assessment, decision-making, and professional development. Its use is also changing educational supervision, which has traditionally relied on classroom observations and supervisors' professional judgment. AI-based supervision can provide timely feedback, analyze instructional data, and identify teachers' professional development needs. However, unlike AI tools used for teaching and learning, AI-based supervision may directly monitor and evaluate teachers' professional performance. This raises concerns about privacy, fairness, transparency, professional autonomy, and the accuracy of AI-generated evaluations, which may influence teachers' acceptance or resistance to AI-based supervision. [1], [3]. Consequently, teachers may perceive AI-based supervision not only as a technological innovation but also as a change in how their professional performance is observed and judged. Concerns about the accuracy of AI-generated evaluations, privacy and data security, transparency of decision-making, professional autonomy, and the possibility of excessive monitoring may influence teachers' willingness to accept such systems [2]. Teacher resistance is therefore an important issue when introducing AI into educational supervision. Resistance can arise from several factors, including limited technological knowledge, lack of confidence in AI systems, uncertainty about their usefulness, concerns about job security, and perceptions that AI may reduce human judgment in professional evaluation. Teachers may also question whether AI can adequately understand the complexity of classroom environments and account for contextual factors that influence instructional practices. Such concerns are particularly relevant because effective educational supervision requires professional judgment, communication, trust, and understanding of individual teachers' circumstances [4]. The Omani education system is experiencing continued digital transformation, making the examination of teachers' responses to emerging technologies increasingly relevant [5]. As AI-based applications become more accessible to educational institutions, understanding the factors that may contribute to teachers' resistance is important before implementing AI-supported supervision on a wider scale. Investigating teachers' perceptions can help educational decision-makers distinguish between resistance resulting from limited awareness or training and resistance associated with legitimate concerns about privacy, fairness, autonomy, and professional evaluation.

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LITERATURE REVIEW

The integration of artificial intelligence (AI) into education has generated increasing interest in understanding teachers' perceptions, competencies, trust, and willingness to use AI-based technologies. Although much of the existing literature focuses on AI adoption for teaching and learning, these findings provide an important foundation for examining teachers' resistance to AI-based educational supervision. The literature suggests that resistance is unlikely to be explained by a single factor; rather, it may emerge from the interaction of technological, psychological, professional, and organizational factors.

2.1. Teachers' Acceptance and Trust in AI

Trust is an important factor in teachers' acceptance of AI technologies. Choi, Jang, and Kim examined teachers' acceptance of educational AI tools using an extended Technology Acceptance Model. Their study of 215 teachers in South Korea found that perceived usefulness, perceived ease of use, and perceived trust were important determinants of teachers' acceptance of educational AI tools. The study also found that teachers' pedagogical beliefs influenced their willingness to integrate AI into educational practice.

These findings suggest that when teachers perceive AI as useful, understandable, and trustworthy, acceptance may increase. Conversely, low trust may contribute to reluctance or resistance, particularly when AI is used in situations involving professional judgment.

Viberg et al. extended this perspective by examining teachers' trust in AI-EdTech across six countries. Their study surveyed 508 K–12 teachers in Brazil, Israel, Japan, Norway, Sweden, and the United States. The researchers found that teachers with higher AI self-efficacy and greater understanding of AI perceived more benefits and fewer concerns and reported higher levels of trust. They also identified geographic and cultural differences in trust.

These findings are particularly relevant to the present research because AI-based educational supervision may require teachers to trust systems that collect, interpret, and potentially evaluate information about their professional performance.

2.2. AI Competence and Self-Efficacy

Teachers' AI competence is another potential factor influencing their responses to AI-based systems. Chiu, Ahmad, and Çoban developed and validated the Teacher Artificial Intelligence Competence Self-Efficacy (TAICS) scale using a sample of 434 K–12 teachers. The resulting instrument includes six dimensions: AI knowledge, AI pedagogy, AI assessment, AI ethics, human-centered education, and professional engagement.

The study demonstrates that AI competence involves more than simply knowing how to operate AI tools; it also includes understanding ethical, assessment, and human-centered issues.

This distinction is important for educational supervision because teachers may resist AI not simply because they lack technical skills, but because they may lack confidence in understanding how AI makes recommendations or evaluates professional activities. Therefore, AI literacy and self-efficacy can be considered potential explanatory factors in teachers' resistance to AI-based supervision.

2.3. Technological Anxiety

Technological anxiety represents another potential barrier to AI adoption. Lin et al. investigated the relationship between technological anxiety and teachers' self-efficacy in AI competence using data from 550 primary and secondary school teachers in China. Their findings indicated that technological anxiety had a significant negative relationship with teachers' AI teaching self-efficacy. The study also found that work self-efficacy was associated with perceiving greater benefits and fewer concerns regarding AI-EdTech. This suggests that resistance engagement partially mediated this relationship, while social support moderated important relationships in the model.

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These findings indicate that emotional responses to technology can influence teachers' confidence in using AI. In the context of educational supervision, technological anxiety may be particularly important because teachers may perceive AI-based supervision as involving both technological change and professional evaluation. Consequently, anxiety may contribute to reluctance to participate in or accept AI-supported supervisory processes.

2.4. Perceived Benefits and Concerns

Existing research also indicates that teachers balance perceived benefits against perceived concerns when evaluating AI. Viberg et al. found that teachers' understanding and self-efficacy were associated with perceiving greater benefits and fewer concerns regarding AI-EdTech.

This suggests that resistance may partly result from an unfavorable perception of the relationship between the benefits and risks associated with AI.

For AI-based educational supervision, perceived benefits could include faster feedback, continuous monitoring of instructional information, identification of professional development needs, and support for supervisory decision-making. However, teachers may simultaneously perceive risks related to inaccurate judgments, excessive monitoring, privacy, transparency, and reduced human involvement. These concerns become particularly significant when AI is used for evaluation rather than merely as a teaching-support tool.

2.5. Professional and Ethical Dimensions of AI

The literature increasingly recognizes that teachers require AI competencies related to ethics, assessment, and human-centered education. Chiu et al. explicitly incorporated AI ethics and human-centered education into their validated teacher AI competence framework.

This is highly relevant to AI-based educational supervision because supervision involves sensitive professional information and decisions that may affect teachers' professional development and evaluation.

AI-based supervision therefore raises questions concerning how teachers' data are collected, who can access the data, how AI-generated judgments are produced, and how teachers can challenge or interpret automated recommendations. If teachers perceive the supervisory system as lacking transparency or fairness, such perceptions may contribute to resistance.

2.6. Research Gap

The reviewed studies provide substantial evidence regarding teachers' acceptance, trust, AI competence, self-efficacy, and technological anxiety. Choi et al. demonstrate the importance of perceived usefulness, ease of use, trust, and pedagogical beliefs; Viberg et al. highlight AI understanding, self-efficacy, perceived benefits, concerns, and cultural context; Chiu et al. establish multiple dimensions of teacher AI competence; and Lin et al. demonstrate the relationship between technological anxiety and AI self-efficacy.

METHODOLOGY

3.1 Research Design

This study will employ a mixed-methods research design to investigate the factors influencing teachers' resistance to AI-based educational supervision. A mixed-methods approach is appropriate because the study seeks to identify measurable relationships between potential influencing factors and teacher resistance while also exploring teachers' perceptions and experiences in greater depth [7-10].

The quantitative phase will use a structured questionnaire to examine the relationships between teachers' resistance to AI-based educational supervision and factors including AI literacy, trust in AI, perceived usefulness, technological anxiety, privacy concerns, perceived fairness, professional autonomy, and job-security

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concerns. The qualitative phase will use semi-structured interviews to provide deeper explanations of teachers' concerns, expectations, and reasons for accepting or resisting AI-based supervision.

The overall research process followed these stages:

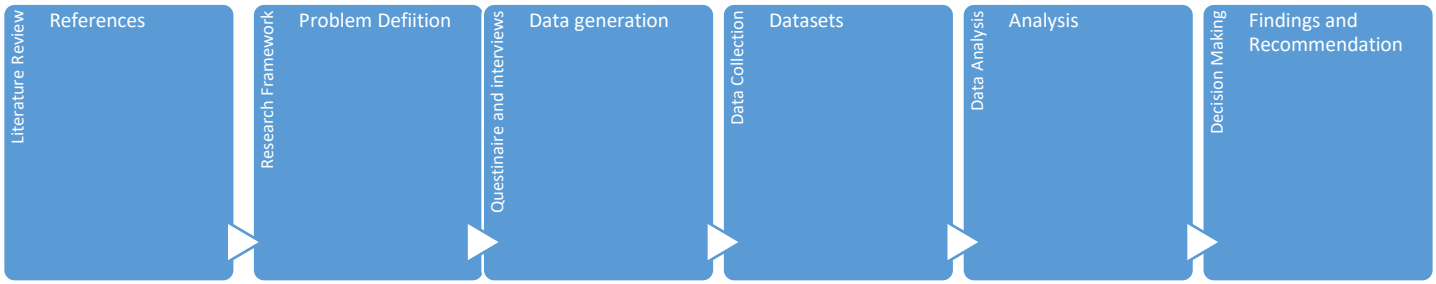


Figure 1: AI-EdTech the Research Methodology Framework

3.2 Research Framework

The proposed framework is based on the assumption that teachers' resistance to AI-based educational supervision is influenced by technological, psychological, professional, and organizational factors.

Independent Variables:

- AI literacy
- Trust in AI
- Perceived usefulness
- Technological anxiety
- Privacy concerns
- Perceived fairness
- Professional autonomy
- Job-security concerns

Dependent Variable:

- Teachers' resistance to AI-based educational supervision.

The conceptual relationship can be represented as:

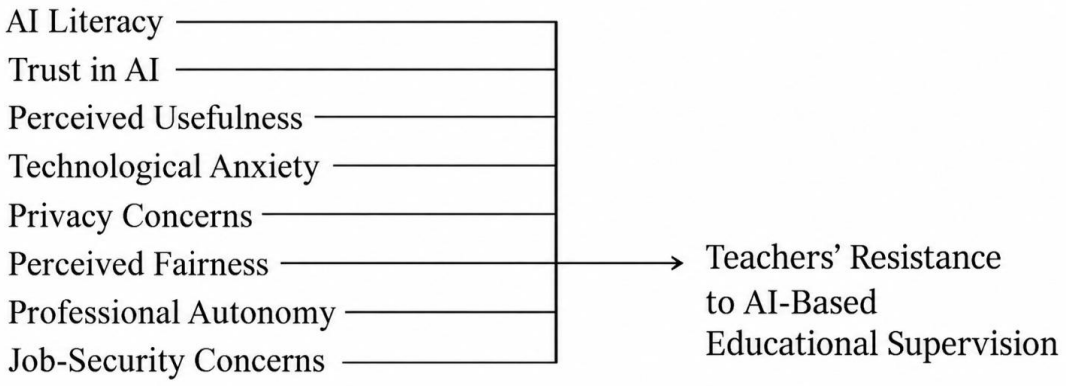


Figure 2: Factors Influencing Teachers' Resistance to AI-Based Educational Supervision

3.3 Population and Sample

The target population will consist of Information Technology teachers working in government schools in Oman. Information Technology teachers are selected because their professional background involves relatively high exposure to digital technologies and therefore provides a relevant population for investigating attitudes toward AI-based educational supervision. A stratified sampling approach will be used, where possible, to ensure

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representation from different geographical areas and school contexts. The quantitative sample size will be determined using an appropriate statistical power analysis based on the expected effect size, significance level, and number of predictors [11-13].

For the qualitative phase, a purposive sample of Information Technology teachers will be selected from questionnaire participants who are willing to participate in interviews. Interviews will continue until sufficient thematic depth is achieved [14].

Table 1: Research Instruments and Measurement Framework

Research Instrument	Construct	Measurement Dimensions	Scale	Data Collection Method
Teacher Questionnaire	AI Literacy	AI knowledge, skills, awareness, and ethical understanding	5-point Likert	Self-administered questionnaire
Teacher Questionnaire	Trust in AI	Reliability, accuracy, transparency, and confidence	5-point Likert	Self-administered questionnaire
Teacher Questionnaire	Perceived Usefulness	Efficiency, feedback quality, professional development, and supervisory support	5-point Likert	Self-administered questionnaire
Teacher Questionnaire	Technological Anxiety	Fear, uncertainty, discomfort, and difficulty using AI	5-point Likert	Self-administered questionnaire
Teacher Questionnaire	Privacy Concerns	Data security, confidentiality, monitoring, and data access	5-point Likert	Self-administered questionnaire
Teacher Questionnaire	Perceived Fairness	Objectivity, consistency, transparency, and evaluation accuracy	5-point Likert	Self-administered questionnaire
Teacher Questionnaire	Professional Autonomy	Professional judgment, independence, decision-making, and human control	5-point Likert	Self-administered questionnaire
Teacher Questionnaire	Job-Security Concerns	Job displacement, employment uncertainty, and increased monitoring	5-point Likert	Self-administered questionnaire
Teacher Questionnaire	**Resistance to AI-Based Educational Supervision**	Reluctance, opposition, avoidance, and unwillingness to adopt AI supervision	5-point Likert	Self-administered questionnaire
Semi-Structured Interview	Teachers' Perceptions	Experiences, concerns, expectations, barriers, trust, fairness, and autonomy	Open-ended	Individual interviews
Expert Review Form	Content Validity	Relevance, clarity, completeness, and appropriateness	Expert rating	Expert evaluation
Pilot Study	Reliability and Item Quality	Internal consistency, clarity, ambiguity, and response patterns	Cronbach's alpha	Pilot administration

The research instruments presented in Table 1 include the questionnaire, semi-structured interviews, expert review, and pilot study, which were used to collect, validate, and ensure the reliability of the research data.

DATA ANALYSIS

4.1 Quantitative Data Analysis

The quantitative data collected through the questionnaire will be analyzed using appropriate statistical methods. Descriptive statistics, including frequencies, percentages, means, and standard deviations, will first be used to summarize the characteristics of the participants and the responses to each research construct. Pearson correlation

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analysis will then be used to examine the relationships between the independent variables and teachers' resistance to AI-based educational supervision. Multiple regression analysis will subsequently be conducted to determine the extent to which AI literacy, trust in AI, perceived usefulness, technological anxiety, privacy concerns, perceived fairness, professional autonomy, and job-security concerns predict teachers' resistance. The reliability of the questionnaire scales will be assessed using Cronbach's alpha, while appropriate validity procedures will be used to confirm that the questionnaire measures the intended constructs.

4.2 Qualitative Data Analysis

The qualitative data obtained through semi-structured interviews will be analyzed using thematic analysis. Interview responses will be reviewed, coded, and grouped into meaningful themes related to teachers' perceptions of AI-based educational supervision. Particular attention will be given to teachers' concerns regarding trust, privacy, fairness, professional autonomy, technological competence, job security, and the perceived usefulness of AI-based supervision.

4.3 Integration of Findings

The quantitative and qualitative findings will be compared and integrated to provide a comprehensive understanding of the factors influencing teachers' resistance to AI-based educational supervision. Quantitative results will identify the strength and direction of relationships between the proposed factors and resistance, while qualitative findings will provide explanations for teachers' perceptions and experiences. The integrated findings will then be used to identify the key factors influencing resistance and to develop recommendations for the responsible and effective implementation of AI-based educational supervision in Omani schools.

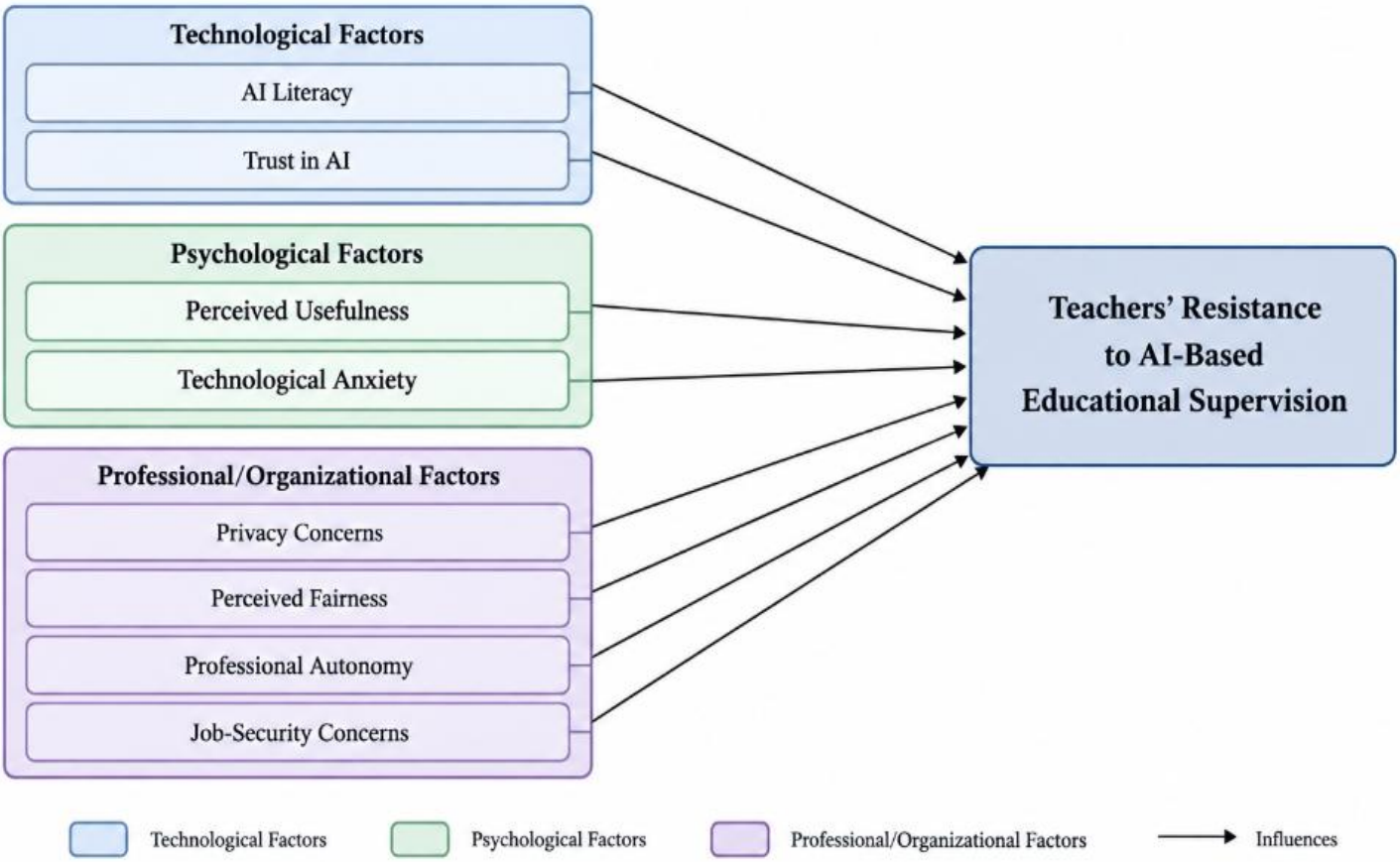


Figure 3: Factors influencing Teachers' resistance to AI-Based education supervision

Figure 1. Proposed research model illustrating the technological, psychological, and professional/organizational factors influencing teachers' resistance to AI-based educational supervision.

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RESULTS AND DISCUSSION

The results indicate that teachers' resistance to AI-based educational supervision is influenced by multiple technological, psychological, and professional/organizational factors. AI literacy and trust in AI are considered important in shaping teachers' acceptance of AI-based supervision, while perceived usefulness may reduce resistance by highlighting the potential benefits of AI for supervision, feedback, and professional development. In contrast, technological anxiety, privacy concerns, perceived unfairness, threats to professional autonomy, and job-security concerns may contribute to greater resistance. The quantitative analysis examines the strength and significance of these relationships, while the qualitative findings provide further insight into teachers' perceptions, concerns, and experiences regarding AI-based supervision. Together, the findings provide a structured understanding of the factors associated with teachers' resistance and the conditions that should be considered when implementing AI-based educational supervision in Omani schools.

Table 2: Descriptive Results and Discussion of the Research Variables

Variable	Mean (M)	Standard Deviation (SD)	Interpretation	Discussion
AI Literacy	3.62	0.71	High	Teachers demonstrated a relatively high level of AI knowledge and awareness.
Trust in AI	3.41	0.79	Moderate–High	Teachers showed moderate confidence in the reliability and transparency of AI systems.
Perceived Usefulness	3.76	0.68	High	AI-based supervision was generally perceived as potentially useful for feedback and professional development.
Technological Anxiety	3.18	0.86	Moderate	Some teachers reported uncertainty and discomfort regarding the use of AI in supervision.
Privacy Concerns	3.89	0.74	High	Privacy and professional-data protection represented important concerns among teachers.
Perceived Fairness	3.27	0.82	Moderate	Teachers expressed some concerns regarding the fairness and accuracy of AI-generated evaluations.
Professional Autonomy	3.71	0.77	High	Teachers showed considerable concern about maintaining professional judgment and autonomy.
Job-Security Concerns	3.45	0.91	Moderate–High	Teachers expressed concerns about the potential effects of AI on their professional roles.
Resistance to AI-Based Educational Supervision	**3.53**	**0.73**	**Moderate–High**	The overall level of resistance was relatively high, indicating notable concerns regarding AI-based supervision.

Table 2 presents the descriptive statistics of the main research variables, including their mean scores, standard deviations, overall interpretations, and implications for teachers' resistance to AI-based educational supervision.

CONCLUSION

This study examined the factors influencing teachers' resistance to AI-based educational supervision in Omani schools, with particular attention to AI literacy, trust in AI, perceived usefulness, technological anxiety, privacy concerns, perceived fairness, professional autonomy, and job-security concerns. The proposed mixed-methods approach provides a structured basis for examining both the measurable relationships among these factors and teachers' perceptions of AI-based supervision. The descriptive results indicate that privacy concerns, professional autonomy, perceived usefulness, and AI literacy are prominent areas requiring consideration, while technological anxiety, fairness, trust, and job-security concerns also contribute to the overall context of teachers' responses to AI-based supervision. The study highlights the importance of introducing AI-based educational supervision through transparent procedures, appropriate teacher training, ethical data management, human oversight, and protection of professional autonomy. By focusing on Information Technology teachers in Oman,

the study provides a context-specific framework for understanding resistance to AI-based supervision and can support future empirical research and the development of responsible AI implementation practices in educational institutions.

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