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THE IMPACT OF ARTIFICIAL INTELLIGENCE ON EDUCATION: INSIGHTS FROM THE REPUBLIC OF SERBIA

Abstract: Artificial intelligence (AI) is becoming increasingly relevant to educational practice, raising questions about teachers' willingness and capacity to integrate AI tools into their professional work. This study examined factors associated with secondary school teachers' behavioral intention to use AI in the Republic of Serbia within an extended Technology Acceptance Model (TAM). The study focused on self-efficacy, AI-related anxiety, perceived usefulness, and perceived ease of use and additionally examined the associations of behavioral intention with perceived pedagogical impact and perceived changes in teachers' professional roles. Data were collected from 120 secondary school teachers using an online questionnaire adapted from the Teachers' Acceptance of Artificial Intelligence in Education (TAAI) instrument and analyzed using descriptive statistics, Pearson correlation analysis, and linear regression. Self-efficacy and perceived ease of use were significant positive predictors of behavioral intention to use AI, whereas AI-related anxiety and perceived usefulness did not make significant unique contributions in the corresponding regression models. Behavioral intention was positively associated with perceived changes in teachers' professional roles and perceived pedagogical impact, although both associations were small. The findings suggest that teachers' intention to use AI is more closely related to their confidence in using AI and its perceived ease of use than to their general perception of its usefulness. In the Serbian secondary education context, the results point to the importance of practical AI competencies and institutional support while also indicating that favorable perceptions and behavioral intention should not be equated with actual AI adoption. The study provides empirical evidence on teachers' acceptance of AI in a national educational context in which such research remains limited.

Keywords: artificial intelligence, behavioral intention, teachers, technology acceptance, secondary education, Republic of Serbia.

1. Introduction

Artificial intelligence (AI) has become an increasingly important component of contemporary education, introducing new possibilities for teaching, learning, assessment, and educational decision-making. Its growing presence in educational practice has also raised questions concerning teachers' readiness to adopt AI, the competencies required for its effective use, and the broader pedagogical and institutional implications of its integration.

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Teachers play a central role in this process, as the successful implementation of AI depends not only on technological availability but also on their willingness and capacity to integrate these tools into professional practice. Although international research has increasingly examined teachers' acceptance of AI and the factors associated with its adoption, empirical evidence from the Republic of Serbia remains limited, particularly in secondary education.

Against this background, the present study examines teachers' readiness for AI integration in the Serbian educational context. Drawing on the Technology Acceptance Model (TAM) and an adapted version of the Teachers' Acceptance of Artificial Intelligence in Education (TAAI) scale, the study considers technological, psychological, and pedagogical dimensions of AI adoption. Particular attention is given to teachers' self-efficacy, AI-related anxiety, perceived usefulness, perceived ease of use, behavioral intention to use AI, and perceptions of its pedagogical impact and implications for teachers' professional roles.

1.1 Artificial Intelligence as a Driver of Educational Transformation

Artificial intelligence (AI) has become one of the most significant technological forces shaping contemporary education. Unlike previous waves of educational digitalization, AI is not merely introducing new instructional tools but fundamentally transforming how knowledge is created, delivered, assessed, and managed. Consequently, the integration of AI has shifted educational research beyond questions of technological adoption toward broader discussions concerning pedagogical innovation, institutional change, and the future role of teachers within increasingly digital learning environments.

Recent literature consistently identifies AI as a catalyst for educational transformation, particularly through personalized learning, intelligent tutoring systems, automated assessment, learning analytics, and decision support for teachers and educational institutions (Garzón et al., 2025; Holmes et al., 2019; Yang, 2024). These technologies enable the adaptation of instructional content to learners' individual needs, provide immediate feedback, reduce teachers' administrative workload, and support evidence-based educational decision-making (Sharma & Srivastava, 2019). Consequently, AI is increasingly viewed as a means of improving educational quality, accessibility, and efficiency rather than simply as a technological innovation.

However, contemporary research also demonstrates that the educational impact of AI extends beyond classroom practice. Rather than functioning solely as a collection of digital tools, AI increasingly influences the organizational and structural dimensions of education by reshaping curriculum design, assessment strategies, institutional governance, and educational policy (Perrotta & Selwyn, 2020). From this perspective, education can be understood as a socio-technical system in which technological innovation interacts with pedagogical principles, organizational structures, institutional regulations, and human competencies. This systemic perspective suggests that successful AI integration depends not only on technological capabilities but also on the capacity of educational institutions and teachers to adapt to changing educational environments.

Despite widespread recognition of AI's transformative potential, scholars remain divided regarding its long-term educational implications. Optimistic perspectives emphasize increased personalization, improved learning outcomes, enhanced accessibility, and greater instructional efficiency (Farahani & Ghasmi, 2024; Nadkova Petrova, 2026). In contrast, critical perspectives highlight concerns regarding academic integrity, algorithmic bias, data privacy, excessive dependence on AI-generated content, and the possible erosion of students' critical thinking and teachers' professional autonomy (Kooli, 2023; Selwyn, 2019; Simikić & Aleksić, 2025; UNESCO, 2023). These contrasting findings indicate that AI itself neither guarantees educational improvement nor inevitably threatens educational quality. Instead, its educational value depends largely on the ways in which it is pedagogically integrated, institutionally regulated, and ethically governed.

This debate has shifted the focus of recent research from technological capabilities toward human and organizational factors influencing AI implementation. Increasing attention has therefore been devoted to teachers' readiness, professional competencies, institutional support, and educational policies as critical determinants of successful AI adoption. Consequently, understanding teachers' attitudes and readiness for AI integration has become one of the central research priorities in contemporary educational research, providing the theoretical foundation for the present study.

1.2 Teachers' Readiness for AI Integration

The successful integration of artificial intelligence into education depends not only on technological development but also on teachers' readiness to adopt and effectively use AI-supported educational practices. As educational technologies become increasingly sophisticated, teachers are expected to move beyond basic digital literacy and develop competencies that enable them to critically evaluate, responsibly implement, and pedagogically integrate AI into teaching and learning. Consequently, teacher readiness has emerged as one of the central concepts in contemporary AI-in-education research.

Although the concept of teacher readiness has been defined in different ways, contemporary studies generally agree that it extends beyond technical proficiency. It encompasses a combination of knowledge, skills, beliefs, attitudes, and confidence that enable teachers to integrate AI into educational practice effectively. Recent international frameworks developed by UNESCO (2023, 2024) emphasize that teachers should not only understand the technical principles underlying AI systems but also recognize their pedagogical potential, ethical implications, and social consequences. Similarly, OECD (2021) argues that AI integration requires teachers to develop new professional competencies that support critical thinking, responsible technology use, and data-informed educational decision-making.

Within this context, AI competencies have increasingly been recognized as an extension of digital competencies. While digital competence primarily refers to the effective and safe use of digital technologies, AI competencies include the ability to understand the capabilities and limitations of AI systems, critically evaluate AI-generated content, address ethical issues such as transparency and bias, and meaningfully integrate AI into instructional practice (Long & Magerko, 2020; Metić, 2026; UNESCO, 2023). Accordingly, AI literacy represents the foundational level of understanding AI technologies, whereas AI competencies encompass their pedagogically appropriate and ethically responsible application in educational settings.

Recent empirical studies indicate that teachers' readiness for AI integration is influenced not only by their competencies but also by several psychological factors. Among these, self-efficacy has consistently been identified as one of the strongest predictors of technology adoption. Teachers who perceive themselves as capable of learning and applying AI tools are generally more willing to experiment with innovative teaching approaches and integrate AI into classroom practice. Conversely, lower levels of self-efficacy are frequently associated with uncertainty, reluctance to adopt new technologies, and reduced behavioral intention to use AI (Farahani & Ghasmi, 2024; Nadkova Petrova, 2026).

Another factor frequently examined in the literature is AI-related anxiety. The rapid development of generative AI has generated concerns regarding technological complexity, professional uncertainty, ethical responsibility, and the possible replacement of certain teaching activities. Nevertheless, previous findings remain inconsistent. While some studies report that technology-related anxiety negatively affects teachers' willingness to adopt AI, others suggest that its influence becomes substantially weaker when teachers possess adequate competencies, institutional support, and prior experience with digital technologies. These findings indicate that confidence in

one's professional abilities may play a more important role than anxiety itself in determining teachers' readiness for AI integration.

Taken together, previous research suggests that teacher readiness should be understood as a multidimensional construct that combines technological competence, pedagogical knowledge, psychological readiness, and institutional support. Rather than representing a single individual characteristic, readiness reflects teachers' capacity to adopt AI responsibly while preserving educational quality and professional autonomy. This multidimensional perspective provides the theoretical foundation for the present study, in which teachers' readiness is examined through the interrelationships among self-efficacy, AI-related anxiety, perceived usefulness, perceived ease of use, and behavioral intention to use artificial intelligence in education.

1.3 Technology Acceptance of Artificial Intelligence in Education

The successful implementation of artificial intelligence in education depends not only on the availability of technological solutions but also on users' willingness to adopt and integrate these technologies into everyday educational practice. Consequently, understanding the factors that shape teachers' acceptance of AI has become one of the central issues in educational technology research. Among the theoretical frameworks developed to explain technology adoption, the Technology Acceptance Model (TAM), originally proposed by Davis (1989), remains one of the most widely applied and empirically validated models across various educational settings.

According to TAM, individuals' behavioral intention to use a particular technology is primarily determined by two cognitive beliefs: perceived usefulness and perceived ease of use. Perceived usefulness refers to the extent to which an individual believes that using a technology will improve job performance or facilitate task completion, whereas perceived ease of use reflects the degree to which the technology is perceived as effortless to learn and operate. These beliefs shape users' attitudes toward technology and ultimately influence their intention to adopt and continuously use it.

The rapid development of artificial intelligence has renewed scholarly interest in TAM, particularly in educational contexts where teachers are expected to integrate AI into increasingly complex pedagogical activities. Unlike conventional educational technologies, AI systems perform cognitive functions traditionally associated with teachers, including content generation, assessment support, adaptive instruction, and learning analytics. Consequently, technology acceptance in AI-supported education extends beyond technical usability and increasingly involves teachers' confidence, professional judgment, and perceptions of AI's educational value.

Recent studies consistently demonstrate that perceived usefulness remains one of the strongest predictors of teachers' willingness to adopt AI technologies. Teachers are more likely to integrate AI into their professional practice when they perceive that these tools enhance instructional quality, reduce administrative workload, facilitate lesson preparation, or improve student learning outcomes. Likewise, perceived ease of use positively influences teachers' readiness to experiment with AI applications, particularly among those with limited prior experience in using advanced educational technologies. Although these relationships have been confirmed across different educational contexts, their strength often varies depending on teachers' digital competencies, institutional support, and previous experience with educational innovation.

However, contemporary research increasingly suggests that technology acceptance cannot be fully explained by cognitive beliefs alone. Extensions of the Technology Acceptance Model have therefore incorporated psychological and contextual factors, including self-efficacy and technology-related anxiety, to provide a more comprehensive explanation of individuals' willingness to engage with emerging technologies. In the context of artificial intelligence in

education, these factors may be particularly relevant because teachers are required not only to recognize the potential value and usability of AI tools but also to develop confidence in their ability to use them and to respond to uncertainty associated with rapidly evolving technologies (Şimşek et al., 2025).

Within the original TAM, perceived usefulness and perceived ease of use represent the central beliefs underlying behavioral intention to use a technology (Davis, 1989). Teachers' intention to use technology is shaped by a complex combination of individual and contextual factors, suggesting that behavioral intention cannot be adequately understood through technological characteristics alone (Watson & Rockinson-Szapkiw, 2021). Accordingly, the present study extends the TAM framework by incorporating self-efficacy and AI-related anxiety as psychological factors that may contribute to teachers' behavioral intention to use AI.

Accordingly, the present study adopts TAM as its principal theoretical framework while extending it with psychological and pedagogical variables relevant to teachers' perceptions of artificial intelligence in education. Perceived usefulness (PU) refers to the extent to which teachers believe that the use of AI can improve their teaching performance and contribute to educational practice, whereas perceived ease of use (PEOU) refers to the extent to which teachers perceive AI tools as relatively easy to learn and use. Behavioral intention (BI) represents teachers' stated intention or willingness to use AI in their future educational practice and is treated as the principal acceptance-related outcome in the proposed model.

Recent studies indicate that technology-acceptance perspectives remain relevant in the emerging context of generative AI. Using the TAM framework, Obenza et al. (2024) reported positive attitudes and strong behavioral intention toward GenAI use, while related research has shown that learners' favorable perceptions are associated with the perceived educational benefits of these technologies (Chan & Hu, 2023).

Two psychological constructs are incorporated alongside the core TAM variables. Self-efficacy refers to teachers' perceived confidence in their ability to understand and use AI tools effectively in educational practice. AI-related anxiety refers to feelings of concern, uncertainty, or apprehension associated with the use of artificial intelligence. Their inclusion reflects the assumption that teachers' behavioral intention may depend not only on their perceptions of the technology but also on their perceived capability to use it and their emotional responses to its adoption.

The study additionally examines two variables reflecting teachers' perceptions of the broader educational implications of artificial intelligence. Perceived pedagogical impact (PPI) refers to teachers' perceptions of the potential contribution of AI to teaching and learning processes, including instructional quality and learning outcomes. Perceived changes in teachers' professional roles refer to the extent to which teachers perceive AI as being associated with changes in their professional responsibilities and role within the educational process. Unlike the core TAM constructs, these variables are not conceptualized as direct measures of technology acceptance. Rather, they represent teachers' perceptions of the pedagogical and professional implications associated with AI and are examined in relation to behavioral intention.

It is therefore important to distinguish between several related but conceptually different terms used in AI-in-education research. In the present study, AI readiness is used as a broader concept referring to teachers' preparedness to engage with AI, including relevant beliefs, confidence, and psychological responses. AI acceptance refers more specifically to teachers' evaluations and willingness to engage with AI technologies, as represented by the TAM-related constructs. Behavioral intention refers to the stated intention to use AI and does not constitute evidence of actual technology use. Similarly, AI adoption and actual use refer to the implementation and use of

AI in practice and were not directly measured in this study. Consequently, the empirical findings are interpreted primarily in terms of factors associated with teachers' behavioral intention to use AI rather than as evidence of actual AI adoption or successful AI integration.

1.4 Opportunities and Challenges of Artificial Intelligence in Education

The growing adoption of artificial intelligence has created unprecedented opportunities for improving educational processes while simultaneously introducing new pedagogical, ethical, and organizational challenges. Rather than representing two separate dimensions, the benefits and risks associated with AI are closely interconnected. Consequently, contemporary research increasingly emphasizes that the educational value of AI depends not on the technology itself but on the manner in which it is implemented, regulated, and integrated into teaching and learning.

One of the most frequently discussed advantages of AI is its capacity to support personalized learning. Intelligent tutoring systems, adaptive learning platforms, and generative AI applications can analyze learners' progress, identify individual strengths and weaknesses, and provide customized instructional materials and immediate feedback. Such capabilities enable teachers to differentiate instruction more effectively and support students with diverse learning needs, thereby contributing to greater educational equity and improved learning outcomes (Baidoo-Anu & Ansah, 2023; Garzón et al., 2025; Holmes et al., 2019). However, researchers also caution that excessive reliance on algorithmically generated recommendations may reduce learners' autonomy and critical engagement if AI systems are used without appropriate pedagogical guidance.

Another widely recognized benefit concerns the improvement of teaching efficiency. Artificial intelligence can automate routine administrative tasks, assist in lesson planning, generate instructional materials, and support formative assessment, allowing teachers to devote more time to complex pedagogical activities and student interaction (Luckin et al., 2016). Nevertheless, this increased efficiency has generated concerns regarding the changing nature of teachers' professional responsibilities. Rather than replacing teachers, AI is increasingly redefining their role, shifting the emphasis from information delivery toward mentoring, facilitation, critical evaluation, and the design of meaningful learning experiences. Consequently, successful AI integration requires teachers to develop new professional competencies while maintaining pedagogical autonomy.

Alongside these pedagogical opportunities, AI has considerable potential to improve educational accessibility and inclusion. AI-powered tools can support students with diverse educational needs through personalized learning pathways, automated translation, speech recognition, and assistive technologies that facilitate participation in the learning process (UNESCO, 2023). Such developments contribute to reducing educational inequalities and expanding access to high-quality educational resources. At the same time, unequal access to digital infrastructure, technological resources, and teacher training may widen existing educational disparities between schools, regions, and social groups. This digital divide remains one of the principal obstacles to equitable AI implementation, particularly in educational systems with uneven technological development.

Despite these opportunities, ethical considerations remain among the most significant challenges associated with AI adoption in education. Current literature highlights concerns regarding data privacy, algorithmic bias, transparency of AI-generated decisions, intellectual property, and academic integrity (Kooli, 2023; UNESCO, 2023; UNICEF, 2021). The widespread availability of generative AI has intensified debates about plagiarism, authenticity of student work, and appropriate assessment methods. Moreover, AI systems may generate inaccurate, incomplete, or biased information, emphasizing the necessity of critical evaluation rather than unquestioning acceptance of AI-generated content. These concerns reinforce the argument that AI literacy should

encompass not only technical proficiency but also ethical awareness and responsible decision-making.

Overall, contemporary research suggests that artificial intelligence should neither be viewed as a universal solution to educational challenges nor as a threat to traditional teaching. Instead, its educational impact depends on the interaction between technological capabilities, teachers' professional competencies, institutional support, and educational policy. Accordingly, the successful integration of AI requires a balanced approach that maximizes its pedagogical potential while addressing ethical, organizational, and societal challenges. This perspective provides the conceptual foundation for examining teachers' perceptions of AI implementation in the present study.

1.5 Artificial Intelligence in Serbian Education

The digital transformation of education has become one of the strategic priorities of educational policy in the Republic of Serbia over the past decade. National policy documents emphasize the development of digital competencies, modernization of educational infrastructure, and the integration of innovative technologies into teaching and learning. More recently, artificial intelligence has been recognized as an important component of this broader digital transformation, with national strategies highlighting its potential to improve educational quality, strengthen innovation, and prepare students for participation in a knowledge-based society.

The existing regulatory framework provides a favorable foundation for AI integration through documents such as the *Strategy for the Development of Education and Upbringing until 2030*, the *Strategy for the Development of Artificial Intelligence in the Republic of Serbia*, and national frameworks for teachers' digital competencies (Government of the Republic of Serbia, 2021, 2025; Ministry of Education, Science and Technological Development of the Republic of Serbia, 2019). These initiatives demonstrate a clear institutional commitment to educational modernization and the responsible use of emerging technologies. Furthermore, recent policy developments have increasingly aligned Serbian educational priorities with international recommendations proposed by UNESCO and the OECD regarding digital transformation and AI competencies.

Despite this strategic orientation, the practical implementation of artificial intelligence in Serbian education remains uneven. AI-supported educational practices are largely driven by individual teachers' initiatives rather than by systematically coordinated institutional policies (Polovina & Dinić, 2025). Considerable differences exist among schools with respect to technological infrastructure, access to AI tools, professional development opportunities, and teachers' digital competencies. Consequently, the extent to which AI is integrated into classroom practice often depends on individual motivation and experience rather than on standardized educational guidelines.

An additional challenge concerns the absence of comprehensive pedagogical and ethical frameworks governing the educational use of artificial intelligence. Although national strategies acknowledge the importance of AI, practical recommendations regarding classroom implementation, assessment procedures, data governance, academic integrity, and teachers' professional responsibilities remain relatively underdeveloped. As a result, many teachers continue to rely on personal experience and self-directed learning when incorporating AI into their instructional practice.

These circumstances highlight the importance of examining teachers' readiness for AI integration within the Serbian educational context. While international research has produced substantial evidence regarding technology acceptance and AI adoption in education, empirical studies conducted in Serbia remain relatively limited, particularly those investigating the relationships

among self-efficacy, AI-related anxiety, perceived usefulness, perceived ease of use, behavioral intention, and perceptions of educational transformation. Addressing this gap may contribute not only to a better understanding of teachers' experiences but also to the development of evidence-based educational policies that support the responsible and sustainable integration of artificial intelligence into the Serbian education system.

1.6 Conceptual Framework

The conceptual framework of this study is grounded in the Technology Acceptance Model (TAM) (Davis, 1989), which has been widely applied to explain individuals' acceptance of digital technologies across different contexts. According to TAM, perceived usefulness (PU) and perceived ease of use (PEOU) represent central beliefs associated with behavioral intention to use a technology. In the present study, behavioral intention (BI) is treated as the principal acceptance-related outcome and refers to teachers' stated intention to use artificial intelligence in educational practice rather than to their actual use or adoption of AI.

To account for psychological factors that may be particularly relevant to the acceptance of artificial intelligence in education, the framework extends the core TAM variables by incorporating teachers' self-efficacy and AI-related anxiety. Self-efficacy reflects teachers' confidence in their ability to understand and use AI tools effectively, whereas AI-related anxiety reflects apprehension or uncertainty associated with their use. These variables are examined alongside perceived usefulness and perceived ease of use as factors potentially contributing to teachers' behavioral intention to use AI.

The framework also includes two variables reflecting teachers' perceptions of the broader educational implications of artificial intelligence: perceived pedagogical impact and perceived changes in teachers' professional roles. These variables are conceptually distinguished from the determinants of behavioral intention and are not treated as direct measures of AI acceptance. Rather, the study examines whether teachers' behavioral intention is associated with their perceptions of AI-related pedagogical and professional changes. Given the cross-sectional nature of the research design, these relationships are interpreted as statistical associations rather than evidence that behavioral intention causes changes in teachers' professional roles or perceptions of pedagogical impact.

Accordingly, the proposed framework distinguishes between factors examined as predictors of behavioral intention and variables examined in association with behavioral intention. Self-efficacy, AI-related anxiety, perceived usefulness, and perceived ease of use constitute the predictor component of the model, whereas perceived pedagogical impact and perceived changes in teachers' professional roles represent broader perceptual variables examined in relation to behavioral intention. This distinction enables the extended TAM framework to incorporate psychological and pedagogical dimensions while maintaining conceptual separation between technology acceptance, behavioral intention, and teachers' perceptions of the educational implications of AI.

Figure 1 illustrates the conceptual framework and the hypothesized relationships examined in the study.

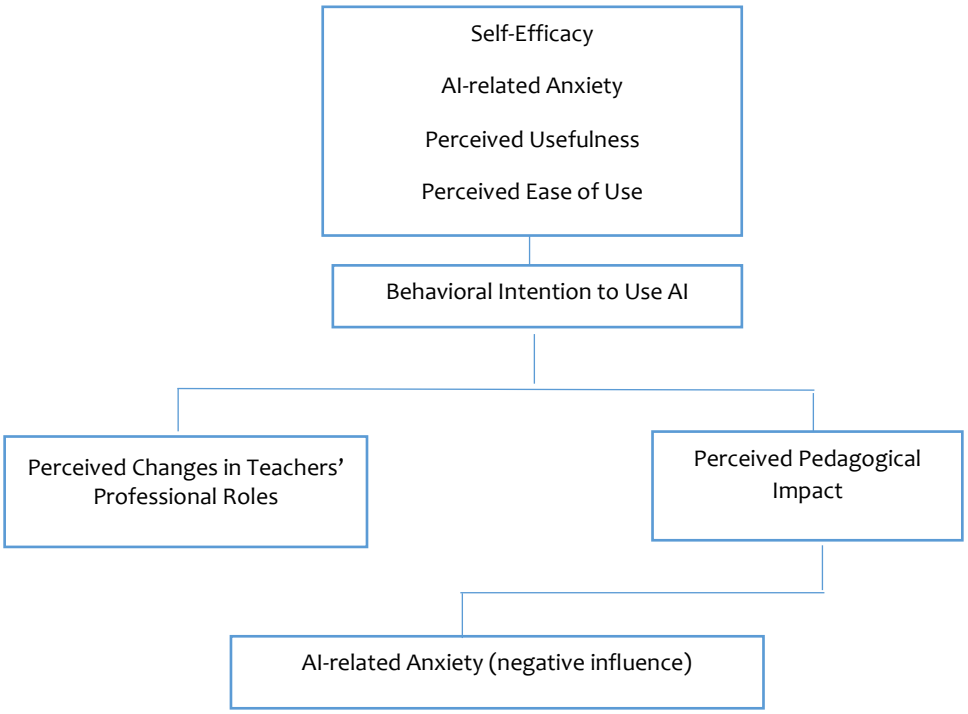

Figure 1. *Conceptual framework of the study*

The proposed conceptual framework builds on the Teachers' Acceptance of Artificial Intelligence in Education (TAAI) instrument developed by Guo et al. (2025) by integrating its core technology-acceptance dimensions with context-specific dimensions related to perceived pedagogical impact and perceived changes in teachers' professional roles within the Serbian educational context.

The proposed conceptual framework is informed by the Teachers' Acceptance of Artificial Intelligence in Education (TAAI) instrument developed by Guo et al. (2025), from which the technology-acceptance and psychological dimensions examined in the present study were adapted. The framework additionally incorporates perceived pedagogical impact and perceived changes in teachers' professional roles as context-specific variables reflecting teachers' perceptions of the broader educational implications of AI. These additional variables are conceptually distinguished from the core acceptance-related constructs and are examined in relation to behavioral intention rather than as components of the original TAM.

1.7 Aim and Hypotheses

The aim of this study was to examine factors associated with secondary school teachers' behavioral intention to use artificial intelligence in educational practice in the Republic of Serbia. Drawing on an extended Technology Acceptance Model (TAM), the study examined the relationships of teachers' self-efficacy, AI-related anxiety, perceived usefulness, and perceived ease of use with behavioral intention to use AI. In addition, the study investigated the associations between behavioral intention and teachers' perceptions of the pedagogical impact of AI and changes in their professional roles.

Based on the theoretical framework and previous research presented above, the following hypotheses were formulated:
H1. Teachers' self-efficacy positively predicts behavioral intention to use artificial intelligence in education.
H2. AI-related anxiety negatively predicts behavioral intention to use artificial intelligence in education.
H3a. Perceived usefulness positively predicts behavioral intention to use artificial intelligence in education.
H3b. Perceived ease of use positively predicts behavioral intention to use artificial intelligence in education.
H4. Behavioral intention to use artificial intelligence is positively associated with teachers' perceptions of changes in their professional roles.
H5. Behavioral intention to use artificial intelligence is positively associated with the perceived pedagogical impact of artificial intelligence.

The proposed hypotheses were examined using descriptive statistics, reliability analysis, Pearson correlation analysis, and linear regression models. For H1, H2, H3a, and H3b, regression analyses were used to examine the statistical contribution of the proposed predictors to behavioral intention. H4 and H5 were examined as associations between behavioral intention and the respective pedagogical and professional variables. Given the cross-sectional design of the study, these relationships are interpreted as statistical associations and predictive relationships rather than evidence of causal effects.

2. Methods

2.1 Research Design

This study employed a quantitative research design to examine teachers' readiness for the integration of artificial intelligence into educational practice and to examine factors associated with their behavioral intention to use AI in teaching. The study was guided by the conceptual framework developed from the Technology Acceptance Model (TAM) and extended with constructs reflecting teachers' self-efficacy, AI-related anxiety, perceived pedagogical impact, and perceptions of changes in teachers' professional roles.

A cross-sectional survey design was adopted to collect empirical data from secondary school teachers in the Republic of Serbia. This design was considered appropriate because it enables the examination of relationships among psychological, technological, and pedagogical variables within a natural educational setting while providing empirical evidence regarding teachers' acceptance of artificial intelligence at a specific point in time.

The study examined six multi-item constructs: perceived usefulness, perceived ease of use, self-efficacy, AI-related anxiety, behavioral intention to use artificial intelligence, and perceived pedagogical impact. In addition, one single-item variable assessed teachers' perceived changes in their professional roles associated with AI. Thus, the analytical framework comprised six multi-item constructs and one additional single-item variable. Consistent with the proposed conceptual framework, perceived usefulness, perceived ease of use, self-efficacy, and AI-related anxiety were examined as predictors of behavioral intention. Perceived pedagogical impact and perceived changes in teachers' professional roles were examined as variables associated with behavioral intention. Given the cross-sectional design, these relationships were interpreted as statistical associations or predictive relationships and not as evidence of causal effects.

2.2 *Participants*

The study was conducted on a sample of 120 secondary school teachers employed in public secondary schools across different regions of the Republic of Serbia. Participants were recruited using a convenience sampling approach. A convenience sampling approach was used because probability-based recruitment of secondary school teachers at the national level was not feasible within the scope of the study. Participation in the study was voluntary and anonymous, and all respondents provided informed consent prior to completing the questionnaire.

The sample included teachers of various subject areas and differed in terms of gender, age, teaching experience, and educational background, providing a diverse representation of secondary school teachers. Although the sample was not intended to be nationally representative, it was considered sufficiently heterogeneous to examine teachers' attitudes toward artificial intelligence and the relationships among the variables included in the proposed conceptual framework.

Data were collected through an online questionnaire distributed during the 2025/2026 academic year. Participation was entirely voluntary, and respondents were informed about the purpose of the study, the anonymity of their responses, and the exclusive use of the collected data for scientific research. No personally identifiable information was collected, and participants were free to withdraw from the survey at any stage without consequences. **Table 1** presents the demographic characteristics of the participants.

Table 1. *Sociodemographic Characteristics of the Respondents*

Variable	**f**	%
Gender		
Female	71	59.17
Male	49	40.83
Age (years)		
25-45	65	54.17
46-65	55	45.83

2.3 *Instrument*

Data were collected using a structured questionnaire developed on the basis of the Teachers' Acceptance of Artificial Intelligence in Education (TAAI) instrument proposed and validated by Guo et al. (2025). The original TAAI framework comprises five dimensions relevant to teachers' acceptance of artificial intelligence in education: perceived usefulness (PU), perceived ease of use (PEOU), self-efficacy (SE), AI-related anxiety (ANX), and behavioral intention (BI). These dimensions provided the principal theoretical and measurement basis for the acceptance-related part of the questionnaire used in the present study.

The questionnaire used in this research represented an adapted version of the TAAI framework rather than a verbatim reproduction of the complete original instrument. Selected items reflecting the five TAAI dimensions were translated from English into Serbian and linguistically adapted to the context of secondary education in the Republic of Serbia. The adaptation was intended to preserve the conceptual meaning of the original dimensions while ensuring that the wording was understandable and relevant to Serbian secondary school teachers. A formal back-translation procedure was not conducted, and the adapted questionnaire was not subjected to a separate pilot study prior to the main data collection. These aspects of the adaptation procedure are acknowledged as methodological limitations and are considered when interpreting the reliability and generalizability of the findings.

The administered questionnaire contained five items assessing perceived usefulness, five items assessing perceived ease of use, five items assessing self-efficacy, four items assessing AI-related anxiety, and five items assessing behavioral intention to use AI. All items were formulated as statements and rated on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree).

In addition to the TAAI-related dimensions, five study-specific items were included to capture teachers' perceptions of the broader pedagogical and professional implications of artificial intelligence in education. One of these items assessed whether AI changes the role of teachers in education and was analyzed separately as a single-item measure of perceived changes in teachers' professional roles. The remaining four items were used to operationalize perceived pedagogical impact (PPI), covering teachers' perceptions of AI-related changes in educational assessment, the development of competencies relevant to the labor market, the organization of the teaching process, and the management of educational institutions. These additional variables were not part of the original TAAI instrument and were included to address the broader objectives of the present study.

Accordingly, the analytical framework comprised six multi-item constructs—perceived usefulness, perceived ease of use, self-efficacy, AI-related anxiety, behavioral intention, and perceived pedagogical impact—and one additional single-item variable measuring perceived changes in teachers' professional roles. Internal consistency was assessed separately for each multi-item scale using Cronbach's alpha. Because perceived changes in teachers' professional roles were assessed using a single item, internal consistency reliability was not applicable to this variable.

Before constructing the composite scores used in the statistical analyses, item-level reliability diagnostics were examined. Where individual items demonstrated inadequate psychometric performance, the composition of the corresponding scale was reconsidered and any exclusions were documented in the reliability analysis. The final number of items retained for each scale and the resulting Cronbach's alpha coefficients are reported in the Results section.

Table 2 presents the variables included in the questionnaire and distinguishes between the number of items administered and the number of items included in the final statistical analyses. Internal consistency was subsequently assessed for each multi-item scale using Cronbach's alpha, and the obtained reliability estimates are reported together with the descriptive statistics in the Results section.

Table 2. *Questionnaire variables and item composition*

Variable	Items administered	Items included in analysis
Perceived Usefulness (PU)	5	5
Perceived Ease of Use (PEOU)	5	5
Self-Efficacy (SE)	5	5
AI-related Anxiety (ANX)	4	3
Behavioral Intention (BI)	5	5
Perceived Pedagogical Impact (PPI)	4	4
Perceived changes in teachers' professional roles	1	1

Note. Perceived changes in teachers' professional roles were assessed using a single item and were therefore not treated as a multi-item scale; consequently, Cronbach's alpha was not applicable. One AI-related anxiety item was excluded from the composite score following item-level reliability analysis because of a very low corrected item–total correlation.

2.4 Data Collection Procedure

Data were collected during the 2025/2026 academic year using an online questionnaire created in Google Forms. The survey was distributed electronically to secondary school teachers employed in public secondary schools across different regions of the Republic of Serbia. A convenience sampling approach was adopted, as participation depended on teachers' willingness to voluntarily complete the questionnaire.
Before accessing the survey, all participants were informed about the objectives of the study, the voluntary nature of participation, and the anonymity and confidentiality of the collected data. Participants provided informed consent electronically before completing the questionnaire. No personally identifiable information was collected, and all responses were processed exclusively for scientific research purposes. The questionnaire required approximately 10–15 minutes to complete. A total of 120 responses were collected. All 120 questionnaires were sufficiently complete for inclusion in the statistical analyses; therefore, no respondents were excluded from the final dataset. The initial and final sample size was consequently N = 120. Prior to statistical analysis, the dataset was screened for missing values, potential data entry errors, and outliers.

The assumptions required for the application of parametric statistical procedures were subsequently evaluated, including normality, linearity, homoscedasticity, multicollinearity, and the presence of influential observations. This preliminary screening ensured the quality and reliability of the data used in the subsequent analyses.

The study was conducted in accordance with the ethical principles governing educational research, including voluntary participation, informed consent, confidentiality, anonymity, and the responsible management of research data.

2.5 Data Analysis

The collected data were analyzed using IBM SPSS Statistics software. Data analysis was conducted in several stages to ensure the validity and reliability of the obtained results.

Initially, descriptive statistical analyses were performed to summarize the characteristics of the sample and to examine the distribution of the study variables. Measures of central tendency and variability, including means and standard deviations, were calculated for all constructs. The internal consistency of the measurement instrument was evaluated using Cronbach's alpha coefficient, with values above 0.70 considered indicative of satisfactory reliability (Field, 2018).

Prior to the regression analyses, assumptions concerning influential and multivariate outlying observations, multicollinearity, residual normality, linearity, and homoscedasticity were examined. Mahalanobis distance and Cook’s distance were used to identify potentially influential observations, while variance inflation factor (VIF) and tolerance statistics were examined in the multiple regression models to assess multicollinearity. Residual normality was evaluated using the Shapiro–Wilk test, whereas linearity and homoscedasticity were assessed by inspection of plots of standardized residuals against standardized predicted values. Potentially unusual observations were retained when their Cook’s distance indicated that they did not exert substantial influence on the corresponding regression model.

Pearson's correlation analysis was performed to examine the relationships among the study variables. To investigate the factors associated with teachers' behavioral intention to use artificial intelligence, multiple linear regression analysis was employed. Subsequently, simple linear regression analyses were conducted to examine the associations between behavioral intention teachers' perceptions of changes in their professional roles and on the perceived pedagogical impact of artificial intelligence.

Regression results are reported using unstandardized coefficients (B), standard errors (SE), standardized coefficients (β), 95% confidence intervals, coefficients of determination (R^2 and adjusted R^2), and ANOVA statistics. This analytical approach enabled a comprehensive examination of the proposed conceptual framework and the testing of the research hypotheses.

1. Results

3.1 Descriptive Statistics and Reliability Analysis

Descriptive statistics and internal consistency coefficients for all study variables are presented in **Table 3**. Overall, the participants reported relatively high levels of behavioral intention to use artificial intelligence (*M* = 4.47, *SD* = 0.42), perceived usefulness (*M* = 4.42, *SD* = 0.32), and perceived pedagogical impact (*M* = 4.29, *SD* = 0.38). Among all constructs, self-efficacy obtained the lowest mean score (M = 3.17, SD = 0.51), suggesting that although teachers generally expressed positive attitudes toward AI, many were still uncertain about their own ability to use AI effectively in teaching.

Table 3. *Descriptive Statistics and Reliability Coefficients*

Construct	**M**	**SD**	**Cronbach's α**
Perceived Usefulness (PU)	4.423	.324	.542
Perceived Ease of Use (PEOU)	3.570	.430	.691
Self-Efficacy (SE)	3.168	.507	.806
AI-related Anxiety* (ANX)	3.911	.500	.522
Behavioral Intention (BI)	4.467	.415	.748
Perceived Pedagogical Impact (PPI)	4.285	.380	.641

Note. M = mean; SD = standard deviation. Reliability was assessed using Cronbach's alpha coefficient. Cronbach's alpha values reflect the reliability of the adapted version of the TAAI instrument administered in the Serbian educational context. *One item from the Anxiety dimension was removed prior to the final analysis because of its extremely low corrected item–total correlation.*

The internal consistency of the multi-item scales was assessed using Cronbach's alpha. Self-efficacy demonstrated good internal consistency (α = .806), while behavioral intention showed acceptable internal consistency (α = .748). Perceived ease of use (α = .691) and perceived pedagogical impact (α = .641) demonstrated moderate internal consistency, with the coefficient for perceived ease of use approaching the conventional .70 threshold. Lower internal consistency was observed for perceived usefulness (α = .542) and AI-related anxiety (α = .522).

The AI-related anxiety measure initially comprised four items. Item-level reliability diagnostics indicated that the item "I believe that the use of AI may negatively affect students" had a very low corrected item–total correlation (r = .04). This item was therefore excluded from the composite anxiety score, and the final AI-related anxiety scale was calculated using the remaining three items. The other multi-item composite scores were calculated as the arithmetic mean of their respective items.

The comparatively low reliability estimates for perceived usefulness and AI-related anxiety indicate limited internal consistency of these measures in the present sample and therefore warrant particular caution when interpreting findings involving these variables. Some caution is also appropriate when interpreting results involving perceived pedagogical impact and perceived ease of use. These findings are additionally considered in the limitations of the study.

3.2 Correlation Analysis

Pearson's correlation analysis was conducted to examine the relationships among the study variables. The results are presented in **Table 4**.

Self-efficacy demonstrated a moderate positive correlation with behavioral intention to use artificial intelligence (r = .43, p < .001) and perceived pedagogical impact (r = .37, p < .001). In contrast, AI-related anxiety showed weak negative correlations with behavioral intention (r = –.16, p = .080) and perceived pedagogical impact (r = –.05, p = .600), neither of which reached statistical significance.

Regarding the Technology Acceptance Model constructs, perceived ease of use was moderately and positively correlated with perceived usefulness (r = .34, p < .001) and behavioral intention to use AI (r = .41, p < .001). No statistically significant association was found between perceived usefulness and behavioral intention (r = .07, p = .459). These findings provided the basis for the subsequent regression analyses.

Table 4. *Pearson Correlations Between the Study Variables*

Variables	**Pearson's r**	**p**
Self-Efficacy – Behavioral Intention	.423	<.001
Self-Efficacy – Perceived Pedagogical Impact	.374	<.001
AI-related Anxiety – Behavioral Intention	-.160	.080
AI-related Anxiety – Perceived Pedagogical Impact	-.048	.600
Perceived Usefulness – Perceived Ease of Use	.335	<.001
Perceived Usefulness – Behavioral Intention	.068	.459
Perceived Ease of Use – Behavioral Intention	.408	<.001

Note. Pearson's correlation coefficients are reported. Statistical significance was established at p < *.05.*

As shown in **Table 4**, self-efficacy and perceived ease of use were positively associated with behavioral intention to use AI, whereas AI-related anxiety showed no statistically significant relationship with behavioral intention. Perceived usefulness was positively correlated with perceived ease of use but was not significantly associated with behavioral intention. These findings provided preliminary support for the subsequent regression analyses.

3.3 Predictors of Behavioral Intention to Use AI: Self-Efficacy and AI-Related Anxiety

Prior to the regression analysis, the relevant assumptions were examined. One observation exceeded the specified Mahalanobis distance criterion (maximum observed value = 15.81; criterion = 13.82); however, its influence on the model was limited, as the maximum Cook's distance was .06. The observation was therefore retained. No evidence of multicollinearity was observed (VIF = 1.15; tolerance = .87). The Shapiro–Wilk test indicated a modest departure from normality of the residuals, $W(120)$ = .97, p = .020. Inspection of the standardized residual plot did not indicate substantial violations of linearity or homoscedasticity.

As presented in **Table 5**, self-efficacy was a statistically significant positive predictor of behavioral intention (β = .429, p < .001). In contrast, AI-related anxiety did not significantly predict behavioral intention (β = –.007, p = .935). The overall regression model was statistically significant, $F(2, 117)$ = 13.42, p < .001, R^2 = .187, adjusted R^2 = .173.

Table 5. Multiple Linear Regression Predicting Behavioral Intention to Use AI

Predictor	B	SE	β	p	95% CI
Constant	3.376	.432	-	<. 001	[2.520, 4.232]
Self-Efficacy	.352	.073	.429	< .001	[.253, .606]
AI-related Anxiety	-.006	.074	-.007	.935	[−.184, .169]

Note. Dependent variable: Behavioral intention to use AI.

The regression coefficients indicate that only self-efficacy made a unique and statistically significant contribution to the prediction of behavioral intention, whereas AI-related anxiety was not a significant predictor.

3.4 Predictors of Behavioral Intention to Use AI: Perceived Usefulness and Perceived Ease of Use

A multiple linear regression analysis was performed to examine whether perceived usefulness and perceived ease of use predicted teachers' behavioral intention to use artificial intelligence in educational practice. Assumption diagnostics for the regression model including perceived usefulness and perceived ease of use indicated no substantial problems. The maximum Mahalanobis distance was 10.29, below the specified criterion of 13.82, and the maximum Cook's distance was .34. Multicollinearity was not indicated (VIF = 1.13; tolerance = .89). The residual distribution did not significantly depart from normality, $W(120) = .98$, $p = .080$, and inspection of the standardized residual plot did not indicate substantial violations of linearity or homoscedasticity. The regression coefficients are presented in **Table 6**.

Table 6. *Multiple Linear Regression Predicting Behavioral Intention to Use AI*

Predictor	B	SE	β	p	95% CI
Constant	3.410	.497	-	<.001	[2.425, 4.395]
Perceived Usefulness	-.099	.114	- .077	.389	[-.254, .100]
Perceived Ease of Use	.419	.086	.434	<.001	[.257, .611]

Note. Dependent variable: Behavioral intention to use AI.

As shown in **Table 6**, perceived ease of use was a statistically significant positive predictor of behavioral intention to use AI ($\beta = .434$, $p < .001$). In contrast, perceived usefulness did not make a statistically significant contribution to the prediction of behavioral intention ($p = .389$). The regression model was statistically significant, $F(2, 117) = 12.14$, $p < .001$, $R^2 = .172$, adjusted $R^2 = .158$.

3.5 Associations of Behavioral Intention with Teachers' Professional Role Changes and Perceived Pedagogical Impact

Two simple linear regression analyses were conducted to examine the associations between teachers' behavioral intention to use artificial intelligence and (a) perceived changes in teachers' professional roles and (b) perceived pedagogical impact.

The first regression model indicated a statistically significant positive association between behavioral intention and teachers' perceptions of changes in their professional roles, $F(1, 118) = 5.17$, $p = .025$, explaining 4.2% of the variance ($R^2 = .042$, adjusted $R^2 = .034$). For the model involving perceived changes in teachers' professional roles, one observation exceeded the specified Mahalanobis distance criterion (maximum observed value = 16.12; criterion = 10.83). However, the maximum Cook's distance was .08, indicating that this observation did not exert substantial influence on the model, and it was therefore retained. The residuals departed significantly from normality, $W(120) = .72$, $p < .001$. Inspection of the standardized residual plot, however, did not indicate substantial violations of linearity or homoscedasticity. Given the departure from residual normality, this result should be interpreted cautiously.

For the model involving perceived pedagogical impact, one observation exceeded the specified Mahalanobis distance criterion (maximum observed value = 16.12; criterion = 10.83), but its influence was limited (maximum Cook's distance = .13), and the observation was retained. The residuals were approximately normally distributed, W(120) = .99, p = .570, and inspection of the standardized residual plot did not indicate substantial violations of linearity or homoscedasticity. The second model was also statistically significant, F(1, 118) = 7.13, p = .009, with behavioral intention explaining 5.7% of the variance in perceived pedagogical impact (R^2 = .057, adjusted R^2 = .049). The regression coefficients are presented in **Table 7**.

Table 7. *Simple Linear Regression Analyses Predicting Teachers' Role and Perceived Pedagogical Impact*

Dependent Variable	B	SE	β	p	95% CI
Teachers' Role					
Constant	3.792	.423	-	<.001	[2.953,4.630]
Behavioral Intention	.215	.094	.205	.025	[.026, .383]
Perceived Pedagogical Impact					
Constant	3.309	.367	-	<.001	[2.582,4.036]
Behavioral Intention	.218	.082	.239	.009	[.062, .416]

Note. Two separate simple linear regression models were estimated.

As shown in **Table 7**, behavioral intention to use artificial intelligence was positively and statistically significantly associated with both teachers' perceptions of changes in their professional roles (β = .205, p = .025) and perceived pedagogical impact (β = .239, p = .009). The association was slightly stronger for perceived pedagogical impact.

4. Discussion

The present study examined factors associated with secondary school teachers' behavioral intention to use artificial intelligence in the Republic of Serbia within an extended Technology Acceptance Model (TAM). The findings provide partial support for the proposed framework. Self-efficacy and perceived ease of use were significant positive predictors of behavioral intention, whereas AI-related anxiety and perceived usefulness did not make significant unique contributions. Behavioral intention was also positively associated with perceived changes in teachers' professional roles and perceived pedagogical impact, although both associations were small.

Self-efficacy emerged as a significant positive predictor of behavioral intention, supporting H1. This finding is consistent with Kong et al. (2024), who identified self-efficacy as an important factor associated with teachers' behavioral intention to use generative AI for teaching and learning, as well as with literature emphasizing the role of AI-related competencies in teachers' engagement with emerging technologies (Long & Magerko, 2020; Nadkova Petrova, 2026; UNESCO, 2023). The use of AI in education requires more than access to technological tools; teachers must also be able to evaluate AI-generated content and make informed pedagogical decisions about its use (Berg, 2023; Wiliamson et al., 2023). In this context, the relationship between self-efficacy and behavioral intention suggests that teachers' confidence in working with AI may be particularly relevant to their willingness to engage with these technologies.

AI-related anxiety, by contrast, did not significantly predict behavioral intention when examined together with self-efficacy, and H2 was not supported. Its bivariate relationship with behavioral intention was negative but non-significant (r = −.160, p = .080), while its unique contribution in the regression model was negligible (β = −.007, p = .935). Thus, anxiety did not explain additional

variance in behavioral intention after self-efficacy was taken into account. This result does not imply that concerns about AI are irrelevant; rather, such concerns were not independently related to behavioral intention in this sample. The finding should also be interpreted in light of the low internal consistency of the adapted anxiety measure ($\alpha = .522$) and the exclusion of one item following item-level reliability analysis. Further validation of a Serbian-language measure of AI-related anxiety is therefore needed before stronger conclusions can be drawn.

The results for the core TAM variables were also mixed. Perceived ease of use significantly predicted behavioral intention, supporting H3b and corresponding with previous evidence that PEOU contributes positively to teachers' intention to use technology (Sharma & Srivastava, 2019). Perceived usefulness, however, did not significantly predict behavioral intention, and H3a was not supported. This finding differs from the conventional TAM expectation that perceived usefulness is an important determinant of behavioral intention (Davis, 1989).

The result for perceived usefulness is particularly relevant because teachers reported a high mean score on this construct ($M = 4.42$), while its association with behavioral intention was weak and non-significant ($r = .068$, $p = .459$; $\beta = -.077$, $p = .389$). A similar gap between favorable perceptions of AI and its practical use has been reported among educators in Serbia, where recognition of AI's educational potential does not necessarily correspond to its regular use in teaching (Šović, 2025). One possible explanation is that the teachers in the present sample generally agreed that AI could be useful, leaving relatively little variation in PU scores, whereas differences in how manageable AI tools appeared to them were more closely related to behavioral intention. Perceived usefulness was also positively related to perceived ease of use ($r = .335$, $p < .001$), indicating some overlap between these evaluations without evidence of problematic multicollinearity. Because the PU scale showed low internal consistency ($\alpha = .542$), however, its non-significant coefficient should not be interpreted as evidence that perceived usefulness is generally unimportant for AI acceptance.

Taken together, the findings for H1–H3b indicate that behavioral intention in this sample was more closely related to teachers' confidence in using AI and its perceived ease of use than to their general evaluation of its usefulness or reported anxiety. This distinction is relevant in a context where teachers may recognize the potential value of AI before acquiring sufficient practical experience with particular tools. It also suggests that professional development should include opportunities for hands-on use and pedagogically relevant applications rather than focusing only on the potential benefits of AI. Such an approach is consistent with the emphasis on AI literacy, critical evaluation, ethical safeguards, and appropriate training in recent literature (Klimova & Pikhart, 2025). Because actual AI use was not measured, these results concern behavioral intention and should not be interpreted as evidence that greater self-efficacy or perceived ease of use necessarily leads to subsequent adoption.

Behavioral intention was positively associated with perceived changes in teachers' professional roles and perceived pedagogical impact, supporting H4 and H5. However, the corresponding models explained only 4.2% and 5.7% of the variance, respectively. These are small associations and do not indicate that behavioral intention produces professional-role or pedagogical changes. The H4 result requires additional caution because professional-role change was measured with a single item and the residuals in this model departed significantly from normality. The findings therefore indicate only that teachers with stronger intentions to use AI tended to perceive its professional and pedagogical implications more strongly. This interpretation is compatible with discussions of AI as a technology that may alter aspects of teachers' work, including facilitation, mentoring, learning-design activities, and evaluation of technology-generated information (Holmes et al., 2019; Selwyn, 2019), but the present study did not measure actual changes in professional practice.

The Serbian context adds an important dimension to these findings. National strategies have established digital competencies and artificial intelligence as areas of educational and technological

development (Government of the Republic of Serbia, 2021, 2025; Ministry of Education, Science and Technological Development of the Republic of Serbia, 2019). At the same time, recent Serbian evidence indicates that teachers' practical use of AI is constrained by differences in training, technological infrastructure, and institutional support (Šović, 2025). The relatively positive perceptions and high behavioral intention found in the present sample therefore should not be taken as evidence of systematic AI adoption across Serbian secondary schools. Professional development focused on practical AI competencies needs to be accompanied by institutional guidance, adequate technological conditions, and attention to ethical issues, assessment, data privacy, and teachers' professional judgment, in line with international recommendations for human-centered AI competencies (UNESCO, 2023, 2024).

Several limitations affect the interpretation of the findings. The cross-sectional design does not permit causal conclusions, the convenience sample of 120 secondary school teachers is not nationally representative, and self-reported behavioral intention cannot be equated with actual AI use. The questionnaire was adapted without formal back-translation or separate pilot validation, and internal consistency was low for perceived usefulness (α = .542) and AI-related anxiety (α = .522) and moderate for perceived pedagogical impact (α = .641) and perceived ease of use (α = .691). Perceived changes in teachers' professional roles were measured with a single item. Future research should therefore validate the adapted measures in larger and more diverse Serbian samples, develop a multi-item measure of professional-role changes, and examine whether behavioral intention is followed by actual AI use. Longitudinal and mixed-method studies could also clarify how teachers' experience with AI and institutional conditions shape these relationships over time.

2. Conclusion

This study found that secondary school teachers' behavioral intention to use AI was more closely related to self-efficacy and perceived ease of use than to perceived usefulness or AI-related anxiety. Although teachers reported high perceived usefulness, this construct did not make a significant unique contribution to behavioral intention. The findings therefore suggest that recognizing the educational value of AI and feeling prepared to work with AI tools are not equivalent aspects of technology acceptance.

Behavioral intention was also positively associated with perceived changes in teachers' professional roles and perceived pedagogical impact, but both associations were small. These findings concern teachers' perceptions and stated intentions rather than actual changes in teaching practice. They should therefore not be interpreted as evidence of AI-driven professional transformation or successful AI adoption.

In the Serbian secondary education context, the results indicate that attention to teachers' confidence and the practical usability of AI tools may be particularly relevant when supporting their engagement with AI. Opportunities to develop practical competencies should be accompanied by institutional guidance and conditions that enable teachers to evaluate and use AI appropriately in their professional practice. Given the cross-sectional design, convenience sample, and measurement limitations of the present study, further research is needed to determine whether these relationships are reproduced in broader samples and whether behavioral intention is subsequently reflected in teachers' actual use of AI.

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