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Professional Development, Organizational Support, and Technological Attitudes as Predicting Factors for Iranian EFL Teachers' Integration of Technology

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ABSTRACT

Objective: The objective of this study was to investigate the extent to which teacher-related factors, namely technological attitudes, perceived organizational support, and engagement in professional development, predict English language teachers' instructional use of technology.

Methods: This study employed a quantitative, correlational research design. Data were collected from 95 English language teachers through a questionnaire measuring technological attitudes, professional development, and organizational support. The construct validity of the instrument was confirmed via factor analysis, and multiple regression analysis was conducted to examine the predictive power of the three teacher-related variables on instructional technology use.

Results: The results of the multiple regression analysis indicated that technological attitudes, professional development, and organizational support were all significant predictors of teachers' instructional use of technology. Among these variables, technological attitudes emerged as the strongest predictor, as evidenced by the standardized regression coefficients.

Conclusion: The findings highlight the pivotal role of teachers' technological and pedagogical dispositions in effective technology integration. They suggest that fostering positive technological attitudes, alongside sustained professional development and institutional support, is essential for maximizing the instructional benefits of technology and enhancing student learning outcomes.

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1. Introduction

In recent years, technological advancements have increasingly reshaped educational environments, leading to heightened attention to the integration of digital tools in second language (L2) classrooms, irrespective of teachers' specific areas of expertise. Nevertheless, the extent to which technology is incorporated into instructional practices differs considerably, largely due to variations in teachers' and learners' perceptions of technological resources. Previous research has consistently demonstrated that educators' attitudes, beliefs, and self-efficacy play a decisive role in determining both the adoption and instructional use of technology (Aytaç et al., 2024). Teachers who hold favorable views toward technology and feel confident in its use tend to integrate digital tools more frequently and more meaningfully, whereas negative perceptions may restrict long-term and effective implementation (Alieto et al., 2024; Clipa et al., 2023; Pourhosein Gilakjani, 2018).

Successful technology integration is influenced by multiple interrelated factors, including teacher-related characteristics, learner readiness, access to technological resources, and alignment with curricular objectives. For instance, Putri et al. (2022) reported that English teachers' beliefs about digital preparedness, along with their efforts to strengthen digital competence, significantly shaped their classroom use of technology. In addition, organizational conditions, such as administrative support, leadership practices, availability of infrastructure, and access to instructional resources, have been identified as critical enablers of effective technology integration (Sellami et al., 2024).

Despite the potential benefits of educational technologies, many teachers encounter persistent obstacles when attempting to embed digital tools into their teaching. Common challenges include limited professional development opportunities, inadequate technological infrastructure, and insufficient institutional encouragement, all of which may undermine teachers' motivation and consistency in technology use (Ahmadi, 2018; Gangmei & Thomas, 2025; Kusrini et al., 2025). Among these factors, teachers' technological attitudes (TA) appear to be particularly influential, as they shape the design and implementation of technology-enhanced instructional materials. Beyond general perceptions, teachers' understanding of both the advantages and potential drawbacks of technology integration also plays an important role in determining their instructional choices (Arabzamani et al., 2021).

Teachers' awareness of the pedagogical implications of technology, both positive and negative, contributes to informed decision-making and supports their willingness to engage in continuous professional development (Hwang et al., 2022). Recent empirical evidence from EFL contexts further indicates that teachers who perceive digital tools as effective in promoting learner engagement, interaction, and language development are more inclined to integrate technology into lesson planning and delivery (Ridha & Fithriani, 2025).

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Technology may be employed by teachers for diverse instructional purposes, ranging from classroom management tasks (e.g., monitoring learner behavior) to teacher-centered activities such as content presentation, as well as student-centered practices that encourage learner autonomy and active participation. When used effectively, technology can streamline administrative processes while also supporting a transition from traditional instructional approaches to more interactive, collaborative, and cognitively demanding learning environments (Gangmei & Thomas, 2025). Importantly, teachers with comparable levels of technological competence may nevertheless differ substantially in how they utilize digital tools; for example, some may rely on interactive whiteboards solely for information delivery, whereas others use them to foster collaboration and higher-order interaction. Such differences underscore the need for further investigation into the underlying factors that shape teachers' decisions regarding technology integration.

1.1. Statement of the Problem

Gaining a clear understanding of how teachers incorporate technology into their instructional practices is of growing importance. Although the presence of digital tools in classrooms has expanded considerably, teachers' attitudes toward technology remain a decisive factor in determining the success of integration efforts (Gilakjani, Sheikhy, Montashery, & Alizadeh, 2019; Scherer et al., 2019; Teo et al., 2021). Existing research suggests that effective technology use extends beyond mere availability of technological resources and is shaped by teachers' beliefs, levels of institutional support, and pedagogical orientations (Petko et al., 2018; Tondeur et al., 2021).

Despite wider access to digital technologies, integrating them into teaching practices continues to be a multifaceted and challenging process. Many empirical studies have relied predominantly on the frequency of technology use as a measure of integration, often neglecting the instructional intent and pedagogical quality of technology-mediated practices (Aldunate & Nussbaum, 2013; Scherer et al., 2020). Furthermore, comprehensive investigations that simultaneously examine multiple predictors of teachers' technology use remain limited (Scherer et al., 2019). Prior research has also identified structural barriers, such as insufficient Internet access and limited technological infrastructure, as persistent obstacles to meaningful integration (Johnson et al., 2016; OECD, 2020).

Within the Iranian EFL context, research has largely concentrated on teachers' perceptions and general views regarding technology use (Ashrafzadeh & Sayadian, 2015; Pourhossein Gilakjani, 2017). However, entrenched teacher-centered instructional practices, coupled with inadequate technological pedagogical content knowledge, continue to restrict effective and purposeful technology integration in classrooms (Amiri & Saberi, 2019; Karimi & Eskandari, 2022). These gaps highlight the need for further empirical inquiry into the factors that influence teachers' instructional use of technology in this context.

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1.2. Significance of the Study

The present study is significant in that it explores key determinants of technology integration in Iranian high school EFL classrooms, a context that has received limited empirical attention despite increased access to educational technologies. By examining the predictive roles of teachers' technological attitudes, perceived organizational support, and professional development experiences, the study goes beyond simplistic measures of technology use and focuses on the underlying factors that contribute to meaningful instructional integration.

From a theoretical perspective, the findings offer a more holistic understanding of technology integration by incorporating individual, institutional, and developmental dimensions. From a practical standpoint, the results may assist policymakers, school administrators, and teacher educators in designing more effective professional development initiatives and supportive organizational policies. Additionally, the study provides context-specific insights that may facilitate the promotion of more effective, learner-centered technology use within Iranian EFL education.

1.3. Objectives of the study

The main objective of this study is to examine the extent to which teacher-related factors predict technology integration in Iranian high school EFL classrooms. Specifically, the study aims to investigate how teachers' technological attitudes, professional development, and perceived organizational support influence their instructional use of technology. To achieve these aims, the study addresses the following research questions:

1. Does high school teachers' technological attitude significantly predict their use of technology?
2. Does high school teachers' professional development significantly predict their use of technology?
3. Does organizational support significantly predict high school teachers' use of technology?

2. Review of the Related Literature

The integration of technology in educational settings is a complex phenomenon shaped by a combination of personal, institutional, and contextual influences. Recent scholarship highlights that successful technology integration depends not solely on the availability of digital resources but also on teachers' beliefs, professional skills, and the organizational environments in which they operate (Scherer et al., 2019; Tondeur et al., 2021). In the context of English as a Foreign Language (EFL) instruction, additional considerations, such as pedagogical approaches, curriculum

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requirements, and language-specific learning objectives, further mediate how technology is utilized in classroom practice (Rahimi & Fathi, 2022).

Recent empirical studies commonly classify the determinants of technology integration into three broad categories: teacher-related factors (including attitudes, self-efficacy, and professional competence), organizational factors (such as leadership support, infrastructure, and institutional incentives), and contextual constraints (including workload, policy mandates, and assessment practices) (Petko et al., 2018; Scherer et al., 2020). Among these dimensions, teachers' technological attitudes, engagement in professional development (PD), and perceptions of organizational support (OS) have repeatedly been identified as central predictors of meaningful technology integration, extending beyond simple measures of frequency of use (Teo et al., 2021; Tondeur et al., 2020).++In line with this body of research, the present study concentrates on three interrelated dimensions: (1) teachers' technological attitudes, (2) perceived organizational support, and (3) professional development. The following sections synthesize recent literature related to these constructs and review the theoretical perspectives that inform research on technology integration in educational contexts.

2.1. Theoretical Framework

A number of theoretical models have been proposed to explain teachers' adoption and integration of technology in instructional settings. Among the most widely cited is the Technology Acceptance Model (TAM), which conceptualizes technology adoption as a function of perceived usefulness and perceived ease of use (Davis, 1989). Empirical extensions of TAM within educational contexts have consistently demonstrated that teachers' attitudes toward technology strongly predict both their intention to use digital tools and their actual instructional practices (Scherer et al., 2019; Teo et al., 2021). Within EFL classrooms, perceptions of the pedagogical value of technology have been shown to contribute to sustained and purposeful adoption (Rahimi & Fathi, 2022).

Another influential framework is Technological Pedagogical Content Knowledge (TPACK), which highlights the interconnected nature of teachers' technological, pedagogical, and subject-matter knowledge (Koehler & Mishra, 2009). Recent studies suggest that teachers who possess well-developed TPACK are better equipped to integrate technology in ways that enhance pedagogical effectiveness, particularly when supported by ongoing professional development opportunities and adequate institutional resources (Koh et al., 2019). In language education contexts, strong TPACK has been associated with improved instructional design, increased learner engagement, and the development of communicative competence (Tseng et al., 2019).

In addition to TAM and TPACK, constructivist learning theory continues to provide an important conceptual foundation for technology integration research. Constructivist perspectives emphasize learning as an active and socially mediated process in which learners construct

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knowledge through interaction and meaningful engagement rather than passive information reception (Feng & Sumettikoon, 2024). Digital technologies are well aligned with constructivist principles, as they enable collaboration, support learner autonomy, and facilitate authentic language use (Gangmei & Thomas, 2025). Recent studies in EFL contexts indicate that teachers who adopt constructivist pedagogical orientations are more inclined to integrate technology in ways that promote learner-centered and communicative classroom practices (Ridha & Fithriani, 2025).

Taken together, the Technology Acceptance Model, the TPACK framework, and constructivist learning theory offer a comprehensive conceptual lens for examining how teachers' attitudes, professional competencies, and contextual support systems interact to shape technology integration in EFL classrooms.

2.2. Technological Attitudes

Teachers' attitudes toward technology are widely acknowledged as a key factor shaping the extent and quality of technology integration in instructional contexts. Empirical research consistently demonstrates that educators who view technology as useful, accessible, and pedagogically relevant are more likely to incorporate digital tools in meaningful and purposeful ways (Scherer et al., 2019; Teo et al., 2021). Such positive orientations are associated not only with more frequent technology use but also with instructional practices that emphasize learner engagement, interaction, and student-centered learning environments (Tondeur et al., 2021).

Within EFL classrooms, teachers' technological attitudes play an important role in shaping instructional design, resource selection, and interactional patterns. Studies have shown that teachers who hold favorable views toward educational technologies tend to employ digital tools to support communicative language teaching, collaborative tasks, and learner autonomy (Rahimi & Fathi, 2022; Ridha & Fithriani, 2025). In contrast, negative perceptions, such as concerns about technical problems or doubts regarding the instructional value of technology, may discourage integration even when teachers have sufficient access to resources and training opportunities (Clipa et al., 2023).

Recent large-scale investigations further suggest that technological attitudes function not only as direct predictors of technology use but also as mediating variables between professional development and classroom implementation (Aytaç et al., 2024). In other words, professional development initiatives are more likely to result in effective technology integration when they successfully enhance teachers' confidence, beliefs, and overall disposition toward technology. This evidence underscores the pivotal role of technological attitudes in contemporary models of technology integration.

2.3. Professional Development

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Professional development is widely regarded as a central mechanism for preparing teachers to integrate technology effectively into their instructional practices. Contemporary perspectives conceptualize PD as an ongoing, collaborative, and practice-oriented process rather than isolated or short-term training activities (Darling-Hammond et al., 2020). Effective PD initiatives typically emphasize experiential learning, alignment with pedagogical goals, and sustained instructional support (Tondeur et al., 2021).

Recent empirical studies indicate that technology-oriented professional development positively influences teachers' digital competence, instructional creativity, and willingness to experiment with innovative teaching tools (Gangmei & Thomas, 2025). In EFL contexts, PD has been shown to strengthen teachers' capacity to integrate technology for developing language skills, conducting assessment, and enhancing learner engagement (Rahimi & Fathi, 2022).

The growing availability of online and blended professional development programs has further expanded access to training by reducing constraints related to time and location (Hwang et al., 2022). Nevertheless, research cautions that the effectiveness of PD depends heavily on its relevance to teachers' instructional needs and its alignment with broader school-level support systems (Aytaç et al., 2024). Without pedagogical coherence, follow-up opportunities, and institutional backing, PD initiatives may have limited impact on sustained classroom practice.

2.4. Organizational Support

Organizational support represents another critical determinant of teachers' technology integration practices. This construct refers to the extent to which educational institutions provide adequate technological infrastructure, leadership support, technical assistance, time allocation, and encouragement for the use of digital tools in teaching (Sellami et al., 2024). A growing body of research indicates that supportive leadership and a positive institutional culture significantly facilitate teachers' experimentation with and long-term adoption of educational technologies (Tondeur et al., 2021).

Empirical evidence suggests that strong administrative support enhances teachers' motivation, reduces technology-related anxiety, and fosters collaboration around instructional innovation (Scherer et al., 2020). In EFL contexts, access to reliable infrastructure, pedagogically informed guidance, and institutional recognition has been associated with higher levels of meaningful and sustained technology integration (Rahimi & Fathi, 2022).

Within the Iranian EFL context, however, research indicates that organizational challenges persist despite improvements in access to digital tools. Limited institutional encouragement, insufficient professional development opportunities, and heavy teaching workloads continue to constrain effective technology use (Karimi & Eskandari, 2022; Soleimani & Arabloo, 2018). Recent findings emphasize that in the absence of coherent organizational policies and sustained

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institutional support, individual teachers' efforts are unlikely to result in substantial or transformative changes in instructional practice (Gangmei & Thomas, 2025).

3. Materials and Methods

3.1. Research Design

This study employed an ex post facto research design, as no experimental manipulation or intervention was implemented. Causal relationships among variables were not examined due to the absence of random assignment, control groups, and direct control over the independent variables. Accordingly, the study adopted a quantitative, correlational approach aimed at exploring the relationships among multiple variables through statistical association rather than causal inference. The design primarily focused on identifying correlations and predictive relationships among teacher-related factors and technology integration.

3.2. Participants

The participants consisted of 95 male and female English language teachers aged between 27 and 46 years, with teaching experience ranging from 5 to 22 years. Their academic backgrounds included bachelor's degrees in English Language Teaching or English Language Translation, as well as master's and doctoral degrees in English Language Teaching. Most participants were employed as public high school teachers, while others worked in private high schools or served as part-time university instructors.

Due to the limited availability of eligible participants, purposive convenience sampling was employed. Although participants demonstrated varying levels of computer literacy, the majority held International Computer Driving License (ICDL) Level 1 and Level 2 certifications, which primarily cover basic computer skills and fundamental digital competencies such as online information searching and word processing.

3.3. Instruments and Procedure

Data were collected using a structured questionnaire designed to assess teachers' perceptions and practices related to instructional technology use. The survey comprised three sections corresponding to the main predictor variables identified in the study: teachers' technological attitudes (TA), professional development (PD), and perceived organizational support (OS).

The technological attitudes construct was measured using a 14-item scale adapted from the instrument developed by Christensen and Knezek (2002), focusing on teachers' perceptions of technology use in educational settings. Professional development was assessed using 16 items adapted and modified from a survey originally developed by Soloway and Norris (1999). Perceived organizational support was measured through 16 items adapted from Anderson and Plomp's (2009) survey, with modifications made to ensure contextual relevance to the target population.

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An iterative review process was undertaken to refine the adapted items. Five university instructors with experience in educational technology reviewed the questionnaire and provided feedback on item clarity and relevance. Based on their suggestions, revisions were made to enhance alignment between the items and the constructs under investigation. To establish construct validity, exploratory factor analysis was subsequently conducted. The results supported a three-factor structure comprising 40 items in total. As a result of this process, the number of items was reduced from 14 to 12 for the TA scale, from 16 to 13 for the PD scale, and from 16 to 15 for the OS scale.

Prior to full-scale data collection, a pilot study was conducted with 25 high school teachers to assess item reliability, identify problematic items, and estimate the anticipated response rate. Reliability analysis yielded satisfactory internal consistency coefficients, with Cronbach's alpha values of .84 for technological attitudes, .86 for professional development, and .81 for organizational support.

Although online surveys offer several advantages, limited access to reliable internet services among participants made online data collection impractical. Consequently, a paper-based version of the questionnaire was administered. Participation in the study was entirely voluntary, and participants received a formal written invitation prior to completing the survey. No incentives were offered, and confidentiality was ensured by not collecting identifying information such as participants' names.

The questionnaire employed a five-point Likert scale ranging from strongly agree (5) to strongly disagree (1). Scores for each construct were calculated by averaging participants' responses across relevant items. Mean scores closer to 5 indicated highly positive perceptions, scores around 4 reflected positive perceptions, and scores closer to 1 or 2 represented negative perceptions.

To examine the relationships between the dependent variable (technology integration) and multiple independent variables, multiple regression analysis was employed since it allows for predicting the dependent variable by estimating the unique contribution of each predictor through its respective regression coefficient.

3.4. Data Analysis

In this study, the mean scores for each factor were used as input for regression analyses to examine the relationships between the independent variables, teachers' technological attitudes (TA), perceived organizational support (OS), and professional development (PD), and the dependent variable, namely teachers' perceptions of technology integration in their classrooms. Multiple regression analysis was employed to assess the predictive power of these independent variables.

Before conducting the main analyses, the assumptions underlying multiple regression—normality, linearity, homoscedasticity, and independence of residuals—were evaluated.

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Standardized residual plots, normal probability plots, histograms, and the Durbin–Watson statistic were used to ensure that the data met these assumptions.

A standard multiple regression procedure was then performed to determine the extent to which TA, OS, and PD predicted teachers' technology integration. The overall fit of the model was assessed using the correlation coefficient (R), the coefficient of determination (R^2), the adjusted R^2, and the results of the ANOVA. The unique contribution of each predictor was evaluated using standardized regression coefficients (Beta weights), t-values, significance levels, and 95% confidence intervals. The relative influence of each independent variable was interpreted by comparing the magnitudes of their standardized Beta coefficients, providing insight into which factors most strongly affected technology integration in the classroom.

4. Results

4.1. Normality, Linearity, And Homoscedasticity Tests of Residuals

Assessing normality, linearity, and homoscedasticity is essential for verifying that the assumptions of multiple regression are met (Pallant, 2005). In this context, residuals represent the differences between the observed and predicted values of the dependent variable, in this study, teachers' integration of technology in their instructional practices. The normality assumption is satisfied when residuals are approximately normally distributed around the predicted values of the dependent variable. Linearity is confirmed when a linear relationship exists between the residuals and the predicted scores, while homoscedasticity is indicated by a consistent variance of residuals across all levels of the independent variables. As illustrated in Figure 1, the scatterplot of standardized residuals demonstrates an approximately uniform distribution, with most residuals concentrated near the center ($y = 0$) and a symmetrical spread around the horizontal axis. These observations suggest that the assumptions of normality, linearity, and homoscedasticity were reasonably met, supporting the suitability of the data for multiple regression analysis.

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Dependent variable: Teachers' integration of instructional technology

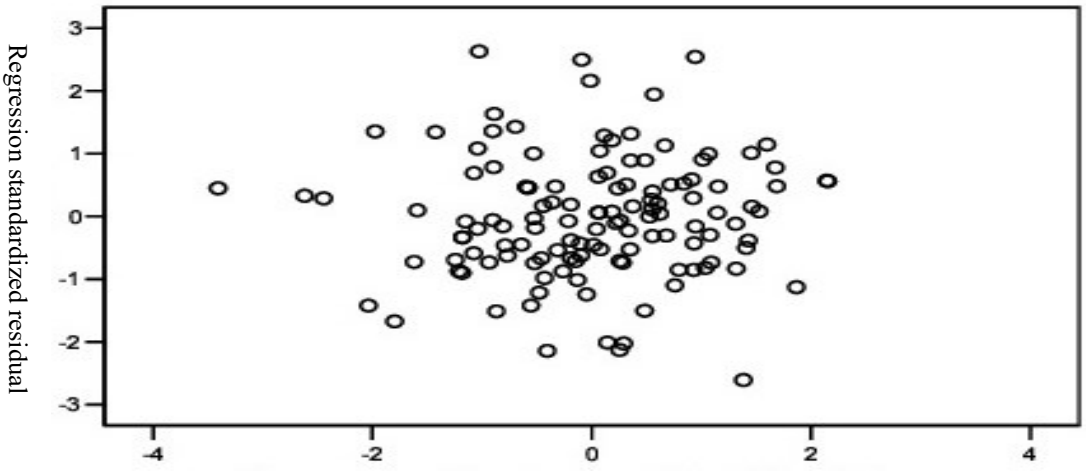
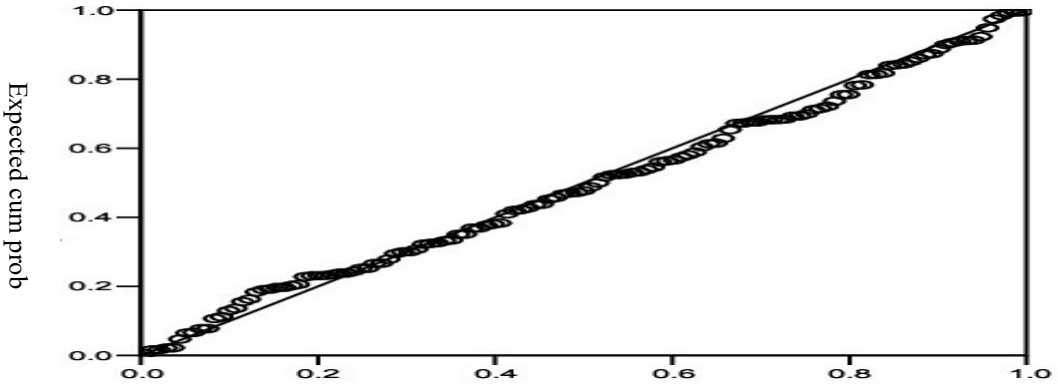


Figure 1. Residuals standardized against standardized predicted values

As shown in Figure 1, the scatter of points does not display any discernible pattern, indicating that the assumptions of linearity and homoscedasticity (homogeneity of variance) are satisfied. This conclusion is further supported by the normal probability plot of the standardized regression residuals presented in Figure 2, which demonstrates an approximately linear distribution, confirming the normality of residuals.

Dependent variable: Teachers' integration of instructional technology



cum prob; Regression standard predicted

Dependent variable: Teachers' integration of instructional technology

Figure 2. Probability plot

In the normal probability plot, the diagonal line passing through the lower and upper quartiles indicates that the residuals lie approximately along a straight line, suggesting that the error terms

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are normally distributed. Additionally, the histogram of standardized regression residuals (Figure 3) demonstrates an approximately normal distribution ($M = 4.59 \times 10^{-16}$, $SD = 0.977$).

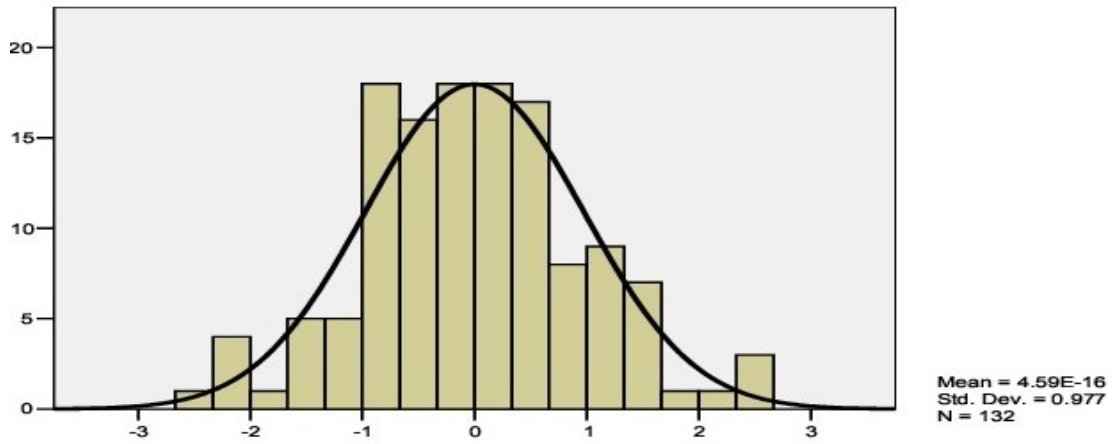


Figure 3. Histogram of standardized residuals regression

4.2. Test of Significance of the Combined Factors (SCF)

To examine the simultaneous contribution of the three independent factors (teachers' technological attitudes, professional development, and organizational support) to technology integration, a standard multiple regression analysis was conducted. The model summary is presented in Table 1.

Table 1. Standard regression model summary

Model	R	R^2	Adjusted R^2	Std. Error						Durbin Watson
					R^2 Change	F Change	df 1	df2	Sig. F Change	
1	.76	.51	.50	.34	.51	25.61	3	92	.000	1.73

a Predictors: (Constant), Factor1, Factor2, Factor3
b Dependent Variable: Integration: Teachers' integration of instructional technology

It was indicated that the regression model was statistically significant, $F(3, 92) = 25.61$, $p < .0005$, with a multiple correlation coefficient of $R = 0.76$. The coefficient of determination ($R^2 = 0.51$) and the adjusted R^2 (0.50) suggest that approximately 50% of the variance in teachers' technology integration can be explained by the combined effects of the three predictors. The analysis of variance (ANOVA), summarized in Table 2, provides information on the variation accounted for by the model and confirms the statistical significance of the regression, indicating that the set of independent variables reliably predicts teachers' use of technology in the classroom.

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Table 2. ANOVA: Regression significance

Model		Sum of Square	df	Mean Square	F	Sig.
1	Regression	7.53	3	3.49	952.49	.000 (a)
	Residual	3.41	92	.13		
	Total	9.95	95			

a Predictors: (Constant), Factor1, Factor2, Factor3
b Dependent Variable: Integration: Teachers' integration of instructional technology

The analysis of variance shows that the regression sum of square is 7.5, and the total sum of square is 9.9. It means the regression model explains about 7.5/9.9 (51%) of all the variability in the dataset.

4.3. Tests of Significance of Individual Factors (SIF)

The standardized regression coefficients (Beta weights) were used to assess the unique contribution of each of the three independent factors to the dependent variable, as summarized in Table 3.

Table 3. Regression coefficients standard regression model

Model		Unstd Coefficients		Std Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	Constant	-.03	.40		-.08	.938	-.81	.75
	Factor 1	.32	.09	.30	3.52	0.01	.14	.51
	Factor 2	.24	.10	.29	3.64	.000	.10	.33
	Factor 3	.21	.06	.25	2.49	.112	.05	.46

a Dependent Variable: Teachers' integration of instructional technology

For teachers' TA (Factor 1), the association between teachers' TA and technology use was statistically significant, $t = 3.52$, Beta = 0.295, $p = .001$, indicating that more positive attitudes are linked to higher levels of classroom technology integration. For Factor 2, Teachers' perceptions of OS were also significantly related to their technology integration, $t = 3.64$, Beta = 0.282, $p = .001$, suggesting that greater support from the institution enhances technology use in teaching. For Factor 3, PD, the relationship between teachers' professional development and technology integration was significant as well, $t = 2.49$, Beta = 0.274, $p < .001$, demonstrating that participation in professional development activities positively influences the adoption of instructional technology.

4.4. The Importance of the Factors

To evaluate the comparative impact of the predictors, the standardized Beta coefficients were examined alongside partial coefficients. Standardization places all variables on the same scale, allowing for direct comparison of their relative contributions. Table 4 presents the Beta values, t-statistics, significance levels, and 95% confidence intervals for each factor in descending order of importance.

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Table 4. Relative significance of factors: Beta values

Factor	Beta	t-statistic	Sig.	CI
Factor1	.295	3.52	.001	[.14, .51]
Factor2	.282	3.64	.000	[.10, .33]
Factor3	.274	2.49	.014	[.05, .46]

Based on the standardized Beta coefficients, teachers' TA (Factor 1) contributed the most to predicting classroom technology integration. OS (Factor 2) also had a meaningful impact, although its contribution is slightly lower in terms of statistical significance. PD (Factor 3) demonstrated a significant, albeit smaller, effect on teachers' technology integration, indicating that all three factors are important predictors, with varying degrees of influence.

5. Discussion

The results of this study indicate that teachers' technological attitudes (TA) emerged as the strongest and most influential predictor of technology integration in Iranian high school EFL classrooms. While professional development (PD) and organizational support (OS) also demonstrated significant relationships with technology use, their predictive power was comparatively lower. These findings emphasize that teachers' internal beliefs, perceptions, and dispositions toward technology play a central role in shaping instructional practices. Although contextual factors such as infrastructure and institutional support facilitate technology adoption, it is ultimately teachers' attitudes that determine whether technology is meaningfully integrated into classroom pedagogy.

Consistent with previous research, these results reinforce the idea that teachers' instructional decisions regarding technology are primarily guided by their beliefs and attitudes rather than external conditions alone (Scherer et al., 2019; Teo et al., 2021). Educators with positive attitudes tend to perceive digital tools as pedagogically valuable, manageable, and aligned with instructional objectives. As a result, they are more likely to experiment with technology and sustain its use in meaningful ways. Conversely, even when schools provide adequate resources and training, skeptical or negative attitudes can limit the effective adoption of technology. These findings underscore that successful technology integration is not merely a logistical challenge but fundamentally a pedagogical and psychological one.

The study also suggests that Iranian EFL teachers generally recognize the pedagogical benefits of technology, including its potential to enhance student engagement, interaction, and learning outcomes. This awareness appears to motivate teachers to adopt instructional technologies when supporting conditions, such as access to resources, training opportunities, and institutional encouragement, are available. These results align with contemporary perspectives emphasizing that teachers' motivation and enthusiasm for technology are closely linked to their understanding of its

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instructional value (Rahimi & Fathi, 2022; Tondeur et al., 2020). In EFL contexts, where fostering communicative competence and active learner participation is crucial, positive perceptions of technology can facilitate the implementation of learner-centered and constructivist teaching approaches.

Furthermore, the findings are consistent with research highlighting technological attitude as a key determinant of both the frequency and quality of technology use (Ertmer et al., 2015; Scherer et al., 2020; Tondeur et al., 2021). Teachers with favorable attitudes tend to move beyond surface-level applications, such as simple content delivery, and use technology to promote collaboration, critical thinking, and authentic language practice. This indicates that fostering positive attitudes is essential for encouraging transformative, rather than merely substitutive, technology integration in EFL classrooms.

From a theoretical perspective, the findings can be interpreted using the Diffusion of Innovations theory, particularly the concept of relative advantage. Teachers are more likely to adopt technology when they perceive it as superior to traditional methods for achieving instructional goals. In this study, the strong influence of TA suggests that teachers view technology as an effective means to enhance teaching quality and improve student learning. This interpretation aligns with more recent research indicating that perceived pedagogical value and instructional relevance are key drivers of technology adoption (Scherer et al., 2019; Teo et al., 2021). Similarly, Habibi et al. (2020) argue that teachers adopt technology more readily when it complements existing instructional practices rather than radically altering them.

Although PD and OS were weaker predictors compared to TA, their significant contributions highlight their supportive roles in technology integration. Professional development provides opportunities for teachers to enhance technological competence, pedagogical knowledge, and confidence in using digital tools. Research shows that sustained, practice-oriented PD is particularly effective in facilitating meaningful technology use (Darling-Hammond et al., 2020). In this study, PD appears to reinforce teachers' positive attitudes and supports the translation of beliefs into classroom practice.

Organizational support similarly plays a critical role by shaping the broader context in which technology integration occurs. Elements such as administrative leadership, access to resources, technical assistance, and institutional encouragement influence teachers' willingness and capacity to integrate technology. The findings align with prior studies suggesting that supportive organizational environments enable teachers to plan, implement, and sustain technology-enhanced lessons more effectively (Sellami et al., 2024; Zhang, 2022). In the Iranian EFL context, where heavy workloads and curriculum demands are common, organizational support is particularly important for reducing barriers and fostering a culture of innovation.

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Overall, these results indicate that while PD and OS are necessary for technology integration, they are insufficient without teachers' positive attitudes. Technological attitudes function as a central driving force, mediating the influence of contextual supports on actual classroom practice. This underscores the importance of a holistic approach to technology integration that addresses teachers' beliefs, professional learning, and institutional conditions simultaneously. By fostering positive attitudes toward technology and aligning PD and OS with pedagogical objectives, stakeholders can promote more effective and sustainable technology integration in Iranian EFL classrooms.

6. Conclusion

This study explored three key aspects of teachers' technology integration in Iranian high school EFL classrooms. By focusing on technology use for instructional purposes, it identified the primary predictors of teachers' technology adoption aimed at enhancing student learning and supporting traditional teaching objectives. The analysis examined the contribution of individual factors, technological attitudes (TA), professional development (PD), and organizational support (OS), to teachers' integration of technology. The findings indicated that teachers' TA was the strongest predictor, highlighting the central role of teachers' acceptance and attitudes toward technology in determining its classroom use. Additionally, the results underscored the importance of well-structured PD programs and supportive administrative policies, which provide teachers with the knowledge and resources necessary to implement technology effectively.

The study offers several practical implications for teaching and learning. Teachers' willingness to integrate technology can advance pedagogical goals and promote more progressive, learner-centered instruction. Accordingly, PD programs and organizational support initiatives should emphasize the development of both technological skills and instructional strategies to ensure that technology use is pedagogically meaningful. In EFL contexts, efficient technology use can enhance professional growth and improve student outcomes (Zhang, 2022). Schools and educational administrations are encouraged to provide practical technological resources and ongoing support to facilitate sustained and effective technology integration. Such measures can help teachers enhance their digital competence and apply technology in ways that improve the overall quality of English language education.

Several limitations of the study should be noted. First, the sample was selected through non-probability convenience sampling, which limits the representativeness of the participants and requires caution when generalizing the findings. Second, the study focused specifically on Iranian EFL teachers who possessed basic technological knowledge, which may restrict the applicability of results to other teacher populations.

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Future research could address these limitations by employing larger, more representative samples, developing more comprehensive and reliable measures of teachers' goals for technology use, and complementing survey data with interviews and classroom observations. Such approaches would provide a deeper understanding of the factors influencing teachers' technology integration and offer further insights into effective strategies for supporting digital pedagogy in EFL education.

Author Contributions

The author was solely responsible for all aspects of the study, including conceptualization, methodology, data collection, formal analysis, validation, investigation, resources, data curation, writing, original draft preparation, writing, review and editing, visualization, project administration, and funding acquisition. The author has read and agreed to the published version of the manuscript.

Data Availability Statement

Not applicable here.

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Ethical considerations

All stages of the research were conducted in accordance with established ethical standards. The author adhered strictly to principles of research integrity and avoided data fabrication, falsification, plagiarism, and any form of academic misconduct.

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Conflict of interest

The author declares no conflict of interest. The author confirms that there are no personal, financial, or professional relationships that could be perceived as influencing the representation or interpretation of the research findings. No external funding was received for this study.

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