Factors Influencing Speaking Proficiency Improvement in EFL Students under SPOC-based Blended Learning

Pan Bo[1,2], Fatmawati Binti Latada[1,*], Ahmad Muhaimin Bin Mohamad[1] & Shao Yubo[1]

[1]Centre for Human Science, Universiti Malaysia Pahang Al-Sultan Abdullah, 26600 Pahang, Malaysia

[2]Hebei Minzu Normal Uiniversity, 067000 Chengde, Hebei, China

*Correspondence: Centre for Human Science, Universiti Malaysia Pahang Al-Sultan Abdullah, 26600 Pahang, Malaysia. Tel: 60-19-228-6379. E-mail: fatma@umpsa.edu.my

Received: November 18, 2024 Accepted: February 5, 2025 Online Published: February 13, 2025

doi:10.5430/jct.v14n1p314 URL: https://doi.org/10.5430/jct.v14n1p314

Abstract

This study examines the impact of a SPOC-based blended learning model on enhancing EFL learners' willingness to engage in speaking practice, with a particular focus on Chinese university students. Although English education has gained prominence in China, many students still face significant challenges in developing spoken proficiency due to a lack of practice opportunities and high levels of anxiety. By integrating insights from the Technology Acceptance Model (TAM) and Expectation Confirmation Model (ECM-ISC), this research addresses these issues by demonstrating how the SPOC blended learning approach can effectively support language learning. Using a sample of 396 students from Chengde, Hebei Province, data analysis through SPSS and AMOS showed that the SPOC model enhances learners' confirmation and perceived usefulness. This increased perception of usefulness and alignment with expectations contributes to a reduction in anxiety, ultimately leading to a greater willingness to participate in speaking activities. As a result, the SPOC model not only improves learner engagement but also provides a practical and scalable solution for overcoming key obstacles, such as anxiety, in EFL speaking practice. These findings highlight the model's potential as an effective approach for fostering spoken English proficiency in higher education settings.

Keywords: SPOC-based blended learning, expectation confirmation model (ECM-ISC), English as a foreign language student, technology acceptance model, language anxiety

1. Introduction

In today's globalized world, English has become an essential medium of communication, transcending geographical boundaries and cultural differences (Deutschmann, 2021; Zilola et al., 2023). For Chinese students, English proficiency is not merely an academic requirement but a critical skill that significantly influences their educational achievements and future career prospects (Deutschmann,2021). Recognizing the importance of English, the Chinese government has implemented various educational policies to enhance English language teaching and learning. For instance, the Ministry of Education (MOE) mandated in 2001 that English be a compulsory subject starting from the third grade of elementary school, reflecting the growing domestic and international demand for English proficiency (Bai et al., 2024; Hu et al., 2024). The Revised Compulsory Education English Curriculum Standards (2022 Edition) emphasizes the cultivation of students' core competencies, particularly focusing on cultural awareness and intercultural communicative competence (Hu et al., 2024). Furthermore, the government has introduced several initiatives to strengthen English education, including making English a mandatory subject in elementary schools. However, despite these efforts, data from the EF English Proficiency Index indicate that China ranks 82nd out of 113 countries in terms of English proficiency, revealing a substantial gap between policy intentions and actual outcomes (de Girolamo et al., 2024).

One of the primary challenges facing Chinese EFL (English as a Foreign Language) students is the limited opportunity to practice speaking (Amoah & Yeboah, 2021). Traditional classroom environments often prioritize reading and writing skills over speaking, leading to students excelling in written exams but struggling with oral communication (Bsharat & Barahmeh, 2020). Environmental factors further exacerbate this imbalance, as many

students find themselves in situations where English is rarely spoken outside the classroom (Amoah & Yeboah, 2021). For instance, it is challenging for Chinese students to access native speakers or engage in immersive experiences that facilitate authentic language use in daily life (Wu, 2024, February). Additionally, the uniformity of classroom instruction can impede individual expression, as many Chinese English teachers employ a standardized approach to speaking practice that may not cater to the diverse needs and abilities of each learner (Wu, 2024, February). Consequently, students' personalized learning experiences are weakened (Wu, 2024, February).

SPOC (Small Private Online Courses) is a blended educational model that integrates online learning with traditional classroom instruction, offering students a personalized learning experience (Soufiane & Mohamed, 2021). This approach aims to address the challenges of traditional education, particularly the inability to meet individual learning needs in large classroom settings. In China, the Ministry of Education (MOE) has actively promoted the integration of information technology (IT) with education, facilitating the adoption of SPOCs in higher education institutions (Ruiz-Palmero et al., 2020). Notably, the National Medium- and Long-Term Education Reform and Development Plan (2010-2020) highlights the need to enhance the quality of education and improve students' English proficiency through innovative teaching methods (Dang et al., 2023). This policy framework has significantly increased the implementation of SPOCs, particularly in English language education, as educators seek to leverage technology to enhance student engagement and learning outcomes (Ruiz-Palmero et al., 2020).

In the realm of English language learning, the advantages of small private online courses (SPOCs) are multifaceted (Jiang et al., 2024). SPOCs allow educators to tailor instructional strategies to meet the diverse needs and skill levels of students, addressing a major limitation of traditional education where individual needs are often unmet due to large class sizes and standardized curricula (Jiang et al., 2024). Additionally, SPOCs offer flexibility and accessibility, enabling students to engage with course content at their own pace, thereby facilitating a better balance between academic responsibilities and personal commitments (Alston et al., 2022). The smaller class sizes in SPOCs foster increased interaction between instructors and students, creating a more collaborative learning environment (Hadad et al., 2021). Moreover, SPOCs often incorporate a variety of instructional methods (e.g., videos, discussion forums, and online assessments) to enrich the learning experience and stimulate student interest (Law et al., 2020).

Despite the numerous benefits that SPOCs bring to education, they also present significant challenges, particularly for university students studding in English. While SPOCs can be a valuable supplementary tool for language education, students' willingness to engage in online learning is a key factor in the successful implementation of SPOC-based blended learning models (Kuang & Liu, 2019; Jing et al., 2023). Learning intention refers to the underlying motivation that drives students to actively participate in educational content (Dörnyei, 2000). In the context of SPOCs, fostering strong learning intentions can significantly enhance students' willingness to engage in speaking activities and practice their speaking skills (Jing et al., 2023). Effective strategies to boost motivation include the use of interactive assignments, peer feedback mechanisms, and practical applications of language skills (Jing et al., 2023).

However, despite the potential benefits of integrating learning intentions into the SPOC framework, a gap remains in the research on the effective interplay of these elements. Existing studies often neglect specific motivational factors that influence English learning participation in speaking practice within SPOC environments, such as whether EFL students can overcome anxiety and increase their willingness to engage in speaking activities in a SPOC-based blended learning environment (Jing et al., 2023). Therefore, this study aims to investigate the factors influencing EFL students' willingness to continue learning in SPOC blended learning environments through the lenses of the Technology Acceptance Model (TAM) and the Expectation-Confirmation Model of Information System Continuance (ECM-ISC). It also examines whether these influences can help EFL learners overcome their anxieties. Theoretically, this research seeks to provide new insights into the factors affecting English majors' willingness to continue learning, thus filling a gap in the quantitative research on blended learning. Practically, this study addresses the specific needs of stakeholders, offering references and policy support for the implementation of SPOC-based blended learning, and providing recommendations for blended learning course providers and platform designers.

2. Literature Review

2.1 Impact of the SPOC Blended Learning Model on EFL Students

Several studies have demonstrated that the SPOC blended learning model has a significant positive impact on EFL students. For instance, Wang and Tang (2023) reported that the personalized nature of SPOC enhances students' engagement and motivation, leading to improved learning outcomes and a higher willingness to continue learning. Similarly, Jiang Wuxue (2023) and Jiang et al. (2024) conducted a meta-analysis of 32 studies and concluded that

SPOC has a moderately positive effect on various language skills, including writing and speaking, especially in vocational education contexts. Yang (2021) and Jiang et al. (2024) highlighted that the integration of SPOC into English writing instruction not only improves students' writing abilities but also enhances their overall language proficiency through targeted practice and feedback.

Sui (2017), Peng and Wang (2024) observed that student motivation and engagement increase due to the hybrid nature of SPOC, which combines traditional classroom methods with online resources, allowing teachers to provide comprehensive feedback. Guo (2017) compared the effectiveness of the MOOC and SPOC models, emphasizing that SPOC is better suited for EFL learners who require more direct instruction and interaction, which ultimately contributes to the development of speaking and listening skills. Finally, Hamoen et al (2022) and Wei et al. (2024) discussed how SPOC fosters active learning through collaborative activities and peer interactions, which are crucial for language acquisition. Overall, these studies suggest that the SPOC blended learning model effectively enhances EFL students' engagement, motivation, and language proficiency by offering individualized instruction and creating an interactive learning environment.

2.2 Influential Factors Affecting the Improvement of EFL Students' Speaking Proficiency

Research indicates that both internal factors inherent to EFL learners and external environmental influences significantly affect their willingness to engage in speaking practice (Hwang et al.,2024). First, several external factors shape the language learning experience of EFL students. Key among these are perceived usefulness and perceived ease of use (Wu et al., 2024); students are more motivated to participate in speaking activities when they perceive third-party speaking practice platforms as beneficial and easy to use (Tseng & Yeh, 2019).

Second, internal factors play a crucial role in influencing students' willingness to practice speaking. For instance, Zhang & Umeanowai (2024) found that learners with clear, self-set expectations for their language skills exhibited higher motivation to communicate in English, leading to increased speaking practice. Tsao (2021) and Majchrzak (2024) reported that EFL learners with a strong self-identity related to their language abilities demonstrated greater confidence and a heightened willingness to engage in oral communication, which contributed to improved speaking proficiency. Additionally, Meşe and Sevilen (2021) and Cai et al. (2024) highlighted that students who were satisfied with their previous language learning experiences were more inclined to continue participating in speaking activities, suggesting a positive feedback loop between satisfaction and ongoing engagement.

2.3 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is a theoretical framework used to study users' acceptance of new technologies, focusing on how users' attitudes toward technology influence their willingness to adopt it (Marangunić & Granić, 2015; Belmonte et al.,2024). In the field of education, TAM is widely applied to examine factors influencing students' acceptance of digital learning tools (Ly & Doeur, 2024). One of the key components of TAM is perceived usefulness, which plays a crucial role in determining students' acceptance. Students are more inclined to use a learning tool (e.g., an online learning platform) when they believe it can enhance their learning efficiency and is easy to use (Tseng & Yeh, 2019; Wang et al.,2024).

In the context of SPOC within a blended learning model, the perceived usefulness and ease of use of online learning platforms can significantly increase students' willingness to engage in learning activities (Jiang, 2024). Therefore, this study aims to explore whether EFL learners' willingness to participate in oral communication activities can be enhanced when they perceive that the online learning component of the SPOC model has high operational utility.

2.4 Expectation-Confirmation Model of Information System Continuance (ECM-ISC)

The Expectation-Confirmation Model of Information System Continuance (ECM-ISC), proposed by Bhattacherjee (2001), is based on the Expectation Confirmation Theory (ECT) and the TAM (Fig.2.1). The ECM is a cognitive theory that explains how users' satisfaction with a technology or service is influenced by their prior expectations and actual experiences. Originally developed in the fields of psychology and marketing, ECM examines the relationship between users' expectations before using a system and their satisfaction after experiencing its performance.

The TAM introduced by Davis (1989), is an information systems theory that explores how users accept and use information systems. TAM suggests that perceived usefulness and perceived ease of use are key factors that influence users' acceptance behaviors. In the context of ECM-ISC, these factors are critical in shaping users' continued intention to use a technology, as their satisfaction is determined by whether the technology meets or exceeds their initial expectations.

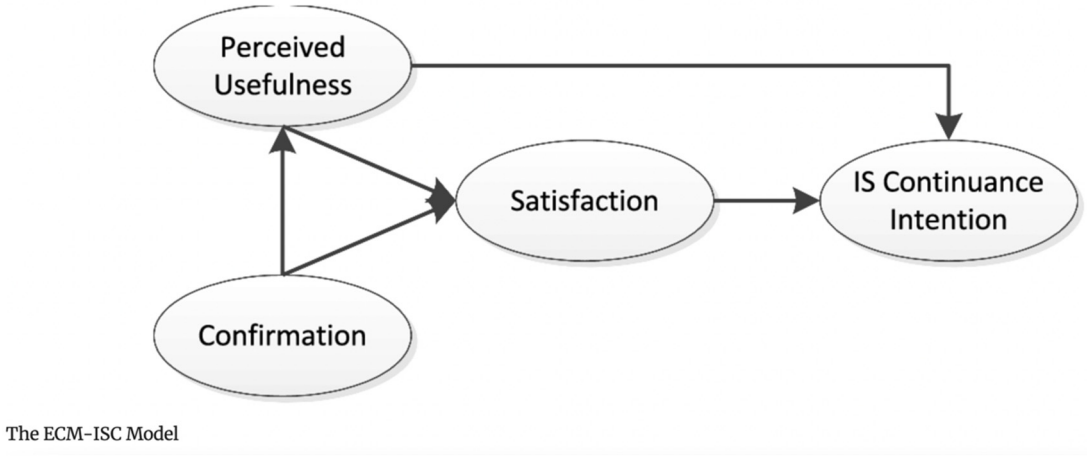

Figure 1. From: Examining Key Factors of Beginner'S Continuance Intention in Blended Learning in Higher Education

2.5 Expectation-Confirmation Model of Information System Continuance (ECM-ISC)

As illustrated in Figure 2.1, the ECM-ISC model comprises four core variables: perceived usefulness, confirmation, satisfaction, and the intention to continue using the information system. In the field of education, researchers have applied ECM-ISC to understand student engagement and satisfaction (Mo et al.,2024). For example, when students' expectations of an online learning platform are met or exceeded, their satisfaction increases, making them more likely to continue using it (Bhattacherjee, 2001; Pan et al., 2024). Students whose learning experiences align with their initial expectations are more likely to develop positive attitudes toward future learning opportunities (Sinha & Singh, 2023; Wang et al., 2024). Moreover, satisfaction derived from blended learning environments has been linked to improved academic performance and increased motivation (Wang et al., 2021; Ly & Doeur, 2024).

In this study, three specific variables are examined: Perceived Usefulness, which refers to users' perceptions of the system's effectiveness after use and aligns with the concept of perceived usefulness in the TAM; Confirmation, which assesses the extent to which users' initial expectations are met; and Satisfaction, which evaluates users' contentment with the blended learning experience. These variables are used to explore how they impact EFL learners' willingness to engage in speaking practice. By examining these factors within a SPOC context, this study aims to determine whether students' perceptions of the usefulness and ease of use of online learning components can enhance their motivation to improve their speaking skills.

2.6 The Effect of Anxiety on EFL Learners' Willingness to Practice Speaking

In English as a Foreign Language (EFL) learning, most students experience anxiety when speaking orally (Valizadeh, 2021; Sakkir et al., 2023; Rongxi & Yuxi, 2024). For instance, Guna's (2023) study found that EFL students often feel nervous and uneasy during oral presentations. This emotional state can be classified into facilitating anxiety, which helps enhance performance, and hindering anxiety, which leads to self-doubt and fear. However, when students perceive that online learning platforms effectively support their learning objectives, their anxiety levels tend to decrease, thereby increasing their willingness to engage in speaking practice (Yeh & Wang, 2019; Wei et al.,2024). Additionally, having clear achievement expectations can motivate students to set specific goals, boosting their confidence when facing challenges (Zhang & Zhang, 2023; Daniel et al.,2024). Positive self-identity also plays a role in enhancing students' confidence in their abilities, which can further reduce anxiety (Wang et al., 2021; Daniel et al., 2024).

Finally, high levels of satisfaction with the blended learning environment have been shown to positively influence students' attitudes toward the learning process, reducing anxiety associated with uncertainty (Meşe & Sevilen, 2021; Pan et al., 2024). Therefore, this study uses anxiety as an indicator to examine how these factors influence EFL learners' willingness to participate in oral language learning activities.

3. Research Objectives and Hypotheses

Based on the ECM-ISC model illustrated in the figure, this study aims to investigate the factors influencing EFL learners' willingness to engage in speaking practice. To account for the specific context of second language learning, this study incorporates an additional variable, anxiety, into the original model (Figure 2). Anxiety is included to better capture the common psychological barriers that EFL learners experience during oral expression. One of the core objectives of this research is to identify factors that can alleviate learners' anxiety and subsequently enhance their willingness to engage in spoken language learning.

Specifically, confirmation in the model indirectly influences learners' willingness to learn by affecting perceived usefulness (H1) and satisfaction (H3). Additionally, perceived usefulness not only directly increases willingness to learn (H2), but also enhances it further by boosting satisfaction (H4). In this model, anxiety is linked to confirmation and perceived usefulness: confirmation and perceived usefulness influence learners' anxiety levels through paths H5 and H6, respectively. In turn, anxiety directly impacts willingness to learn (H8) and indirectly affects learners' motivation through changes in satisfaction (H7).

By analyzing the relationships among these variables, this study seeks to identify which factors effectively reduce EFL learners' anxiety during oral expression. The findings aim to enhance learners' motivation and willingness to participate in speaking activities, providing both theoretical and practical insights for improving second language oral instruction.

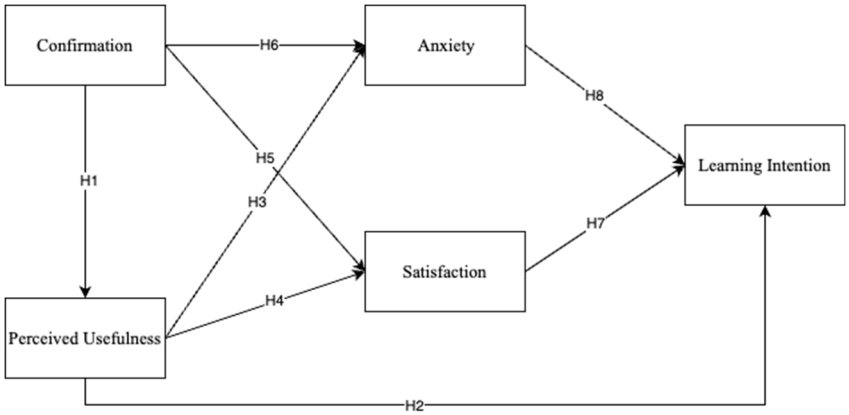

Figure 2. Conceptual Framework

3.1 Hypothesis

Direct Regression Hypotheses (Direct Effects)

H1: Confirmation has a positive effect on perceived usefulness.

H2: Perceived usefulness has a positive effect on learning intention.

H3: Confirmation has a negative effect on anxiety.

H4: Perceived usefulness has a positive effect on satisfaction.

H5: Perceived usefulness has a positive effect on satisfaction.

H6: Confirmation has a negative effect on anxiety.

H7: Satisfaction has a positive effect on learning intention.

H8: Anxiety has a negative effect on learning intention.

Mediation Hypotheses

H9: Satisfaction partially mediates the relationship between perceived usefulness and learning intention.

H10: Satisfaction partially mediates the relationship between confirmation and learning intention.

H11: Anxiety partially mediates the relationship between perceived usefulness and learning intention.

H12: Anxiety partially mediates the relationship between confirmation and learning intention.

H13: Perceived usefulness partially mediates the relationship between confirmation and learning intention.

H14: Perceived usefulness partially mediates the relationship between confirmation and satisfaction.

H15: Perceived usefulness partially mediates the relationship between confirmation and anxiety.

4. Method

4.1 Sample and Procedure

This study employs a quantitative research method, analyzing data from 396 EFL learners at universities in Chengde, Hebei Province, China. Guided by the Technology Acceptance Model (TAM) and the Expectation Confirmation Model (ECM-ISC), structural equation modeling (SEM) was conducted using AMOS 24.0 to examine the path relationships between variables and the model fit. SPSS 26.0 supported descriptive statistics and reliability/validity tests. Data were collected through stratified cluster sampling, with standardized scales measuring latent variables such as technology acceptance, expectation confirmation, and speaking anxiety. The research design followed a two-stage process: measurement model validation and structural model analysis.

Data for this study were collected from October 2023 to August 2024 in Chengde City, Hebei Province, China. Chengde is located near Beijing, the capital of China, and serves as a key node connecting the Beijing-Tianjin-Hebei region. This geographic advantage attracts a significant number of foreign tourists and facilitates cultural exchanges, providing university students with opportunities to effectively disseminate traditional Chinese culture. However, there is a relative shortage of spoken English education resources in Hebei Province, particularly in terms of qualified faculty and teaching facilities. According to the Seventh National Census, Chengde has a resident population of 3,354,400, but only 429,263 individuals hold a college degree or higher（CMPG, 2023),. This indicates that resources for higher education in the region are relatively limited (Chengde Municipal People's Government, 2023).

Moreover, Hebei Province has a large student population and intense competition for employment. Statistical data show that the urbanization rate of Chengde is 59.12%, and the proportion of the population aged 15-59 years is 60.29% (CMPG, 2023). This demographic trend suggests a substantial group of young people facing significant employment pressure. Consequently, college students in Chengde need to enhance their competitiveness through effective speaking practice to adapt to the increasingly challenging job market. Collectively, these factors underscore the urgent need for college students in Chengde to improve their English-speaking skills.

In this study, EFL college students were surveyed on their willingness to learn spoken English using a structured questionnaire. The questionnaire covered demographic information, self-assessment of spoken English proficiency (e.g., fluency in conversing with native speakers), willingness to participate in small online classes, perceived usefulness and perceived ease of use of learning spoken English through the SPOC model, performance expectations, self-identification, and satisfaction with learning spoken English through SPOC. A stratified sampling method was employed to ensure the representativeness of the sample. Three universities in Hebei Province were selected: Hebei University, Yanshan University, and Hebei Normal University. To reduce sampling bias, participants included freshmen to senior students from various majors.

The researcher distributed the questionnaire via a link shared on a WeChat public platform. Participants were given a 15-minute time limit to complete the questionnaire, and responses exceeding this time limit were considered invalid. As an incentive, respondents received a 5 RMB coupon upon completing the survey.

Table 1. The Distribution of the Sample Drawn from Different Three Universities in This Study

Universities	Proportionate stratified Sample size	Sampling procedure	Number of sample
Chengde Medical University	11325	$n=\frac{N}{1+N(e)^2}$	The total population of 38347 Therefore, has 396 sample size.
Hebei Petroleum University of Technology	15000	$n=\frac{38347}{1+38347(0.05)^2}$	Ref. Yamane, Taro, (1967).
Hebei Normal University for Nationalities	12022	Therefore, n=395.870	

4.2 Measurement Scales

4.2.1 Perceived Usefulness of the SPOC Model

The Perceived Usefulness of the SPOC Model reflects EFL learners' subjective evaluation of the effectiveness of the blended learning model in enhancing their English learning (Nejkovic & Tosic, 2018). High perceived usefulness indicates that learners believe the SPOC model significantly improves their learning efficiency and overall learning outcomes. To assess this variable, the questionnaire included the following items:1.I believe that the SPOC model helps me improve my oral English expression.2.I feel that the SPOC model's learning arrangement enhances my learning efficiency.3.I believe that the SPOC blended learning model increases my engagement and interaction in oral practice.4.I feel that the learning materials provided by the SPOC model help me better understand the course content. Participants responded to these items on a five-point Likert scale, ranging from "strongly disagree" to "strongly agree."

4.2.2 EFL Learners' Confirmation of the SPOC Model

Confirmation of the SPOC Model reflects EFL learners' evaluation of whether their initial expectations were met after experiencing the SPOC blended learning model (Jiang & Liang, 2023). High levels of confirmation indicate that learners perceive the effects of the SPOC model as meeting or exceeding their initial expectations. The following items were included to measure this variable:1. I believe that the SPOC model has met my expectations.2. My actual learning experience with the SPOC model aligns with my initial expectations.3. I feel that the SPOC model has been more helpful than I initially expected.4. My sense of achievement in learning has increased, consistent with my expectations, through the SPOC model. Participants rated these items on a five-point Likert scale, ranging from "strongly disagree" to "strongly agree."

4.2.3 EFL Learners' Satisfaction with the SPOC Model

Satisfaction with the SPOC Model measures the overall satisfaction level of EFL learners with the blended learning approach (Jiang, 2024). High satisfaction levels suggest that learners have had a positive learning experience and acknowledge the effectiveness of the SPOC model. The following items were used to assess this variable:1. I am satisfied with my learning experience using the SPOC model.2. I feel that the SPOC model meets my learning needs.3. I am pleased with the overall experience of using the SPOC model.4.I believe that the SPOC model is an effective way to learn. Responses were collected on a five-point Likert scale, from "strongly disagree" to "strongly agree."

4.2.4 Anxiety in EFL Speaking Conversations

The Anxiety Scale for EFL Speaking Conversations measures the nervousness and discomfort that learners experience during oral English conversations. High anxiety levels may hinder learners from expressing themselves confidently and negatively impact their oral learning experience (Akkakoson, 2016). The following items were included in the scale:1. I feel nervous when speaking English in conversations.2. I worry about making mistakes when expressing myself in English.3. I find it challenging to express my ideas during English conversations.4. I feel uneasy due to fear of being judged for my English proficiency. Participants answered these items on a five-point Likert scale, ranging from "strongly disagree" to "strongly agree."

4.2.5 EFL Learners' Intention to Learn Spoken English

The Intention to Learn Spoken English reflects learners' intentions and motivation to continue participating in spoken English activities in the future. High willingness to learn indicates a positive attitude and strong motivation to further improve spoken English skills (MacIntyre & Blackie, 2012). The following items were used to measure this variable:1. I am willing to continue learning spoken English through the SPOC model.2. I am motivated to improve my spoken English skills.3. I plan to actively participate in more spoken English training in the future.4. I am interested in learning spoken English for the long term. Participants responded to these items using a five-point Likert scale, from "strongly disagree" to "strongly agree."

5. Results

5.1 Demographic Characteristics

The sample for this study consisted of 396 EFL learners. Of these, 100 were male participants (41.32% of the total sample) and 142 were female participants (58.68%), indicating a slightly higher proportion of female learners. The grade distribution revealed that sophomores represented the largest group of participants, which may reflect a strong demand for online courses at this educational level. Additionally, over 45% of the respondents reported that they

"usually" or "often" use online courses for oral English learning, demonstrating a high level of acceptance of the SPOC model.

Moreover, more than half of the participants indicated difficulties in communicating with native English speakers, and 64% expressed a need to enhance their speaking skills. This finding highlights a significant demand among current learners to improve their English-speaking proficiency, providing strong support for the relevance of this study's focus on the SPOC model as a tool for developing oral communication skills.

Table 2. Demographic

Item	Options	Frequency	Percentage (%)
Gender	Male	100	41.32
	Female	142	58.68
Grades	Freshman year	48	19.83
	Sophomore	76	31.4
	Junior	59	24.38
	Senior	59	24.38
Do you use an online course for English speaking training or learning	Not at all	75	18.94
	Seldom	50	12.63
	Sometimes	90	22.73
	Usually	101	25.51
	Often	80	20.2
Do you communicate fluently with native English speakers?	Not at all	88	22.22
	Seldom	83	20.96
	Sometimes	78	19.7
	Usually	82	20.71
	Often	65	16.41
Do you have a need to improve your English-speaking skills?	Not at all	44	11.11
	Seldom	54	13.64
	Sometimes	42	10.61
	Usually	143	36.11
	Often	113	28.54
Overall		396	100

5.2 Reliability and Exploratory Factor Analysis

The quantitative data analysis for this study involved two main processes: (1) descriptive statistics and reliability assessment using SPSS 26 statistical software, and (2) structural equation modeling (SEM) analysis using AMOS. AMOS was utilized to assess the correlation coefficients among variables and to conduct path analysis within the structural equation model.

Table 3 presents the results of the reliability analysis for each construct, using Cronbach's alpha as the measure of internal consistency. A higher Cronbach's alpha value, closer to 1, indicates stronger internal consistency of the scale (Schober et al., 2021). The analysis showed that all constructs had Cronbach's alpha coefficients exceeding 0.8, which indicates high internal consistency. This finding is consistent with the generally accepted threshold that a Cronbach's alpha value of 0.7 or above suggests good reliability (Schober et al., 2021). Therefore, the scales used in this study demonstrate robust reliability, indicating that the measurements are consistent and reliable across the different constructs.

Table 3. Reliability

Construct	Item	Cronbach α
Perceived Usefulness	A1	0.891
	A2	
	A3	
	A4	
Confirmation	B1	0.879
	B2	
	B3	
	B4	
Satisfaction	C1	0.897
	C2	
	C3	
	C4	
Anxiety	D1	0.901
	D2	
	D3	
	D4	
Learning Intention	E1	0.874
	E2	
	E3	
	E4	

To enhance the analysis of information richness, an initial factor analysis was performed to assess the suitability of the dataset (Shrestha, 2021). As shown in the table above, the smallest Kaiser-Meyer-Olkin (KMO) value was 0.874, which exceeds the recommended threshold of 0.6. This indicates that the dataset meets the requirements for factor analysis and confirms its adequacy (Shrestha, 2021). Additionally, Table 4 presents the results of Bartlett's test of sphericity, which was significant ($p < 0.05$), providing further evidence that the data are appropriate for conducting factor analysis.

Table 4. KMO & Bartlett's Sphericity Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.901
Bartlett's Test of Sphericity	4871.295	3568.239
	190	276
	0.000	.000

5.3 Confirmatory Factor Analysis

To assess the structural validity of the measurement model, this study conducted a Confirmatory Factor Analysis (CFA) to evaluate the relationships between latent and observed variables. The model (Model 5.1) includes five latent constructs: Confirmation, Perceived Usefulness, Satisfaction, Anxiety, and Learning Intention (Thompson, 2004). Each latent variable was measured using multiple observed items, all of which had standardized factor loadings greater than 0.7, indicating high validity for the measurement of the constructs (Thompson, 2004).

The correlation coefficients between latent variables also showed significant positive relationships. For instance, the correlation coefficient between Confirmation and Perceived Usefulness was 0.40, while the correlation coefficient between Perceived Usefulness and Satisfaction was 0.5. These significant correlation coefficients demonstrate strong construct validity among the latent variables and provide further evidence supporting the structural validity of the measurement model.

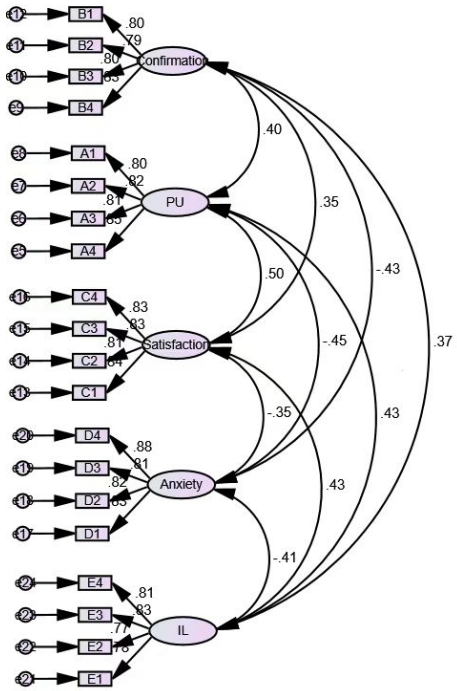

Figure 3. Confirmatory Factor Analysis, CFA Model

Table 5. Confirmatory Factor Analysis Results of the Measurement Model

Path Relationship			Estimate	S.E.	C.R.	P	STD
A4	<---	Perceived Usefulness	1				0.845
A3	<---		0.907	0.049	18.681	***	0.81
A2	<---		0.964	0.051	19.041	***	0.821
A1	<---		0.905	0.049	18.374	***	0.801
B4	<---	Confirmation	1				0.829
B3	<---		0.885	0.051	17.496	***	0.799
B2	<---		0.925	0.054	17.134	***	0.786
B1	<---		0.911	0.052	17.566	***	0.802
C1	<---	Satisfaction	1				0.842
C2	<---		0.959	0.051	18.762	***	0.811
C3	<---		0.997	0.051	19.41	***	0.83
C4	<---		0.985	0.051	19.399	***	0.83
D1	<---	Anxiety	1				0.833
D2	<---		0.969	0.051	18.948	***	0.818
D3	<---		0.975	0.053	18.549	***	0.806
D4	<---		1.072	0.051	20.901	***	0.879
E1	<---	Intention	1				0.778
E2	<---	Learning	1.002	0.064	15.572	***	0.771
E3	<---		1.058	0.063	16.834	***	0.83
E4	<---		1.002	0.061	16.442	***	0.811

The results of the Confirmatory Factor Analysis (CFA) are presented in Table 5. The standardized factor loadings for the items of each latent construct were all above 0.77, indicating strong explanatory power of the observed variables for the latent variables, thereby supporting the construct validity of the measurement model. Additionally, the critical ratio (C.R.) for all items was significantly higher than 1.96 ($p < 0.001$), further confirming the significance of the relationships between the observed items and their respective constructs (Thompson, 2004). The small standard errors (S.E.) and stable standardized loadings (STD) suggest that the measurement model exhibits strong reliability and validity (Thompson, 2004). Overall, these findings indicate that the scales used in this study have high internal consistency (Thompson, 2004).

Table 6 presents the results of the convergent validity (Average Variance Extracted, AVE) and composite reliability (CR) tests for the constructs in this study (Farrell, 2010). The AVE values for all constructs exceeded the threshold of 0.5, ranging from 0.636 to 0.696. This indicates good convergent validity, as the observed variables effectively explain their corresponding latent constructs (Farrell, 2010). Furthermore, the composite reliability (CR) values for all constructs were above 0.7, ranging from 0.875 to 0.902. These findings suggest high internal consistency of the constructs and confirm that the measures meet the accepted criteria for reliability (Farrell, 2010).

Table 6. Convergent Validity and Combined Reliability Tests

Variables	AVE	CR
PU	0.672	0.891
Confirmation	0.647	0.88
Satisfaction	0.686	0.897
Anxiety	0.696	0.902
IL	0.636	0.875

Table 7 presents the correlation matrix between the constructs and the results of the discriminant validity analysis. The diagonal values in bold represent the square root of the AVE for each construct, which are used to assess discriminant validity. According to Fornell and Larcker's (1981) criteria, the square root of the AVE should be greater than the correlation coefficients between the constructs to demonstrate good discriminant validity. The results show that the square root values of the AVE for the constructs (ranging from 0.798 to 0.834) are higher than their respective correlation coefficients with other constructs, indicating strong discriminant validity (Farrell, 2010).

Additionally, the correlation coefficients between the constructs were consistent with theoretical expectations. For instance, there was a significant positive correlation between Perceived Usefulness and Satisfaction ($r = 0.449$), and between Satisfaction and Learning Intention ($r = 0.382$). Conversely, negative correlations were observed between Anxiety and other constructs; for example, the correlation coefficient between Anxiety and Perceived Usefulness was -0.405. These negative correlations suggest that anxiety may adversely affect the learning experience and reduce learners' willingness to engage in spoken English activities.

Table 7. Correlation Matrix and Discriminant Validity Analysis of Constructs

Variable	Perceived Usefulness	Confirmation	Satisfaction	Anxiety	Intention Learning
PU	**0.819**				
Confirmation	0.35	**0.804**			
Satisfaction	0.449	0.315	**0.828**		
Anxiety	-0.405	-0.383	-0.312	**0.834**	
IL	0.38	0.326	0.382	-0.364	**0.798**

Table 8 demonstrates that the model exhibits an excellent fit with the data. Key fit indices, including the chi-square to degrees of freedom ratio ($\chi^2/df = 1.293$), Goodness-of-Fit Index (GFI = 0.952), and Root Mean Square Error of Approximation (RMSEA = 0.027), all meet the recommended thresholds, indicating a well-fitting model. Furthermore, additional indices such as the Normed Fit Index (NFI), Incremental Fit Index (IFI), and Comparative Fit Index (CFI) also exceed the threshold of 0.9, confirming strong model validity and supporting the robustness of the measurement structure.

Table 8. Model Fit Indices

Fit Indices	Chi-square ($\chi 2$)	*df*	$\chi 2/df$	GFI	RMSEA	NFI	RFI	IFI	TFI	CFI
Criteria	-	-	<3	>0.9	<0.10	>0.9	>0.9	>0.9	>0.9	>0.9
Value	206.901	160	1.293	0.952	0.027	0.958	0.951	0.99	0.988	0.99

5.4 Correlation Analysis of Variables

As shown in Table 9, Pearson correlation analysis was conducted to explore the relationships among the variables. The results indicate significant correlations between each pair of variables, with all correlations being significant at the 99% confidence level ($p < 0.01$). The correlation coefficients (r) for each variable are greater than 0, suggesting a significant positive correlation among all five variables analyzed.

Table 9. Zero-Order Correlations Analysis between variables in the Conceptual Framework

Dimension	Mean	Standard Deviation	Learning Intention	Perceived Usefulness	Confirmation	Satisfaction	Anxiety
PU	3.415	0.951	1				
Confirmation	3.4	0.966	0.380**	1			
Satisfaction	3.411	0.952	0.326**	0.350**	1		
Anxiety	3.411	0.98	0.382**	0.449**	0.315**	1	
IL	2.574	1.01	-0.364**	-0.405**	-0.383**	-0.312**	1

* $p<0.05$ ** $p<0.01$

According to Table 9, the correlation analysis revealed significant relationships among the key variables in this study. Perceived Usefulness showed a strong positive correlation with Satisfaction ($r = 0.449$, $p < 0.01$), indicating that participants who perceived the SPOC model as useful were more likely to be satisfied with their learning experience. Additionally, Confirmation was positively correlated with both Learning Intention ($r = 0.380$, $p < 0.01$) and Satisfaction ($r = 0.315$, $p < 0.01$), suggesting that when learners' expectations are met, they exhibit a greater willingness to continue learning and report higher satisfaction levels.

Conversely, Anxiety was negatively correlated with both Perceived Usefulness ($r = -0.405$, $p < 0.01$) and Learning Intention ($r = -0.364$, $p < 0.01$), indicating that higher levels of anxiety are associated with lower perceptions of the model's usefulness and reduced willingness to continue learning. These findings imply that managing anxiety may be essential for enhancing learners' positive perceptions of the SPOC model and sustaining their motivation to learn.

5.5 Structural Equation Modeling: Mediation Analysis Using AMOS

The Structural Equation Modeling (SEM) analysis using AMOS evaluated the relationships among Confirmation, Perceived Usefulness, Satisfaction, Anxiety, and Learning Intention. The results of the model fit tests indicate that the SEM model has a good fit with the data, demonstrating both direct and indirect effects among these variables (Ullman & Bentler, 2012). The standardized path coefficients provide a comprehensive understanding of the causal relationships, confirming the mediation effects present in the model (Ullman & Bentler, 2012).

The relationships among Confirmation, Perceived Usefulness, Anxiety, Satisfaction, and Learning Intention were analyzed using the Structural Equation Model (SEM) in Figure 4, with the path analysis results summarized in Table 10. This analysis illustrates the pathways through which these variables contribute to the formation of users' willingness to learn.

First, the results show that Confirmation has a significant positive effect on Perceived Usefulness, with a path coefficient of 0.40. This indicates that when users confirm that the system meets their expectations, they are more likely to perceive it as useful. Additionally, Confirmation has a negative effect on Anxiety, with a path coefficient of -0.29. This finding suggests that higher levels of confirmation reduce users' anxiety, and this effect is highly significant ($p < 0.001$).

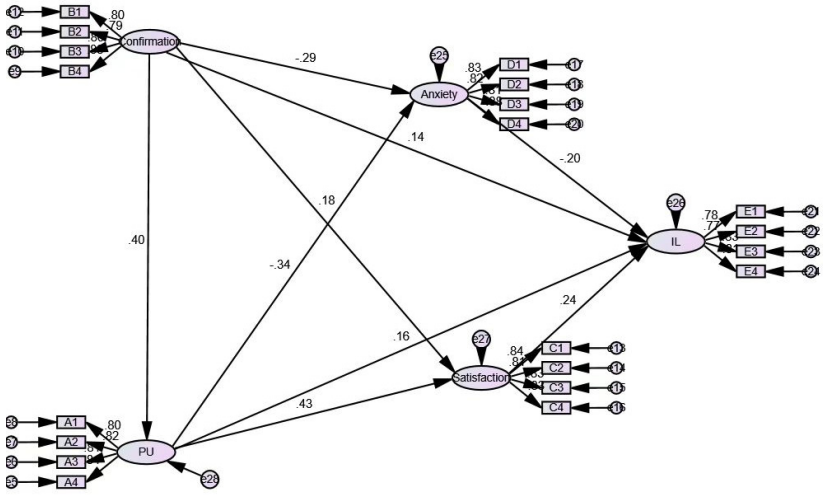

Figure 4. Structural Equation Modeling Path Diagram，SEM Path Diagram

Perceived Usefulness has a strong positive effect on Satisfaction, with a path coefficient of 0.43, indicating that users feel more satisfied when they perceive the system as useful. Furthermore, Satisfaction has a significant positive impact on Learning Intention, with a path coefficient of 0.24. This implies that increased satisfaction directly enhances users' willingness to continue learning. In addition, Perceived Usefulness directly increases Learning Intention, with a path coefficient of 0.15, suggesting that users are more willing to engage in learning activities when they perceive the system as highly useful, even without accounting for satisfaction.

Conversely, Anxiety negatively affects Learning Intention, with a path coefficient of -0.20. This indicates that users' willingness to learn is inhibited when they experience higher levels of anxiety during use. There is also a negative relationship between Anxiety and Perceived Usefulness, with a path coefficient of -0.34, suggesting that increased anxiety diminishes users' perceptions of the system's usefulness.

Table 10. Path Analysis Results Table

Path Relationship			Estimate	S.E.	C.R.	P	STD
PU	<---	Confirmation	0.398	0.056	7.059	***	0.396
Anxiety	<---	Confirmation	-0.291	0.056	-5.169	***	-0.292
Satisfaction	<---	PU	0.424	0.057	7.496	***	0.434
Satisfaction	<---	Confirmation	0.179	0.055	3.274	0.001	0.183
Anxiety	<---	PU	-0.339	0.056	-6.036	***	-0.342
IL	<---	Anxiety	-0.185	0.055	-3.345	***	-0.203
IL	<---	Satisfaction	0.219	0.057	3.846	***	0.236
IL	<---	PU	0.146	0.06	2.439	0.015	0.162
IL	<---	Confirmation	0.127	0.054	2.327	0.02	0.139

In the path regression analysis, the model fit assessment results showed that all the fit indices met the recommended criteria, indicating a well-fitting model. As shown in Table 11, the chi-square to degrees of freedom ratio (χ^2/df) is 1.303, which is below the threshold of 3, suggesting a good model fit. The Goodness-of-Fit Index (GFI) is 0.951, the Normed Fit Index (NFI) is 0.958, the Relative Fit Index (RFI) is 0.950, the Incremental Fit Index (IFI) is 0.990, the Tucker-Lewis Index (TLI) is 0.988, and the Comparative Fit Index (CFI) is 0.990. All these values exceed the standard cutoff of 0.9, demonstrating strong model fit and high consistency between the structural equation model and the observed data.

Moreover, the Root Mean Square Error of Approximation (RMSEA) is 0.028, which is significantly lower than the threshold of 0.05, further confirming the excellent fit of the model with minimal error. Overall, all fit indices meet or exceed the recommended standards, indicating that the constructed structural equation model provides a reasonable

explanation of the data and confirming the applicability and robustness of the proposed path and model structure.

Table 11. Model Fit Indices

Fit Indices	Chi-square ($\chi 2$)	*df*	$\chi 2/df$	GFI	RMSEA	NFI	RFI	IFI	TFI	CFI
Criteria	-	-	<3	>0.9	<0.10	>0.9	>0.9	>0.9	>0.9	>0.9
Value	209.759	161	1.303	0.951	0.028	0.958	0.95	0.99	0.988	0.99

According to the results of the mediation analysis presented in Table 12, Satisfaction and Anxiety, as key mediating variables, exhibited parallel mediation effects that significantly influenced the relationships between Perceived Usefulness (PU), Confirmation, and Intention to Learn (IL). Specifically, the study examined the indirect effects of PU and Confirmation on learning intentions through two parallel mediating pathways: Satisfaction and Anxiety.

Table 12. Mediation Analysis

Effect Type	Pathway	Estimate	Lower	Upper	P	Proportion of Effect (%)
Indirect Effect	PU → Satisfaction → IL	0.093	0.044	0.155	0.001	30.79%
	Confirmation → Satisfaction → IL	0.039	0.013	0.08	0.001	17.73%
	PU → Anxiety → IL	0.063	0.027	0.121	0	20.86%
	Confirmation → Anxiety → IL	0.054	0.022	0.099	0	24.55%
	Confirmation → PU → IL	0.169	0.109	0.238	0.001	48.56%
	Confirmation → PU → Satisfaction	-0.135	-0.205	-0.081	0.001	31.69%
Direct Effect	PU → IL	0.146	0.035	0.271	0.012	
	Confirmation → IL	0.127	0.026	0.233	0.016	
	Confirmation → Satisfaction → IL	0.179	0.077	0.297	0.001	
	Confirmation → Satisfaction	-0.291	-0.412	-0.173	0.001	
Total Effect	PU → Satisfaction → IL	0.302	0.195	0.413	0.001	
	Confirmation → IL	0.22	0.109	0.33	0.001	
	PU → IL	0.348	0.236	0.469	0.001	
	Confirmation → Satisfaction	-0.426	-0.544	-0.312	0.001	

6. Discussion

This study explored EFL learners' willingness to engage in speaking practice and the factors influencing it by integrating the TAM with the ECM-ISCwithin the context of the SPOC hybrid teaching model. Based on the results of SEM, the research hypotheses were tested, and the relationships between variables, along with their specific path effects, were systematically analyzed. The validation of hypotheses, analysis results, and corresponding conclusions are discussed below.

Hypothesis H1 was supported, with a path coefficient of 0.40 ($p < 0.001$). This indicates that when learners' experiences with the SPOC model align with their expectations, their perceptions of the system's usefulness are significantly enhanced. These findings suggest that perceptions of Confirmation, as a leading variable, increase learners' positive evaluations of the system's functionality, thereby boosting their willingness to use it, validating key insights from the TAM (Al-Adwan et al., 2023).

Hypothesis H2 was also confirmed, with a path coefficient of 0.18 ($p = 0.012$). This suggests that when learners perceive the SPOC model as effective in supporting their learning, they exhibit a stronger intention to continue learning. Perceived Usefulness directly enhances learning motivation and further influences learners' willingness through the moderating effects of other affective factors (Su & Chiu, 2021). Perceived enjoyment and attractiveness influence Chinese elementary school students' intention to use interactive video learning. (e.g., satisfaction and anxiety), validating its importance in enhancing positive learning attitudes (Su & Chiu, 2021).

Hypothesis H3 was not supported; instead, a negative relationship was found, with a path coefficient of -0.291 ($p < 0.001$). This indicates that when users have high perceptions of confirmation, their expectations of the system also increase. If the system's performance does not fully meet these heightened expectations, it may result in reduced

Satisfaction. This finding highlights a potential negative effect of high confirmation, where unmet expectations diminish user satisfaction, impacting the overall experience negatively (Browne et al., 2014).

The analysis also supported Hypotheses H4 and H5, with path coefficients of 0.43 and 0.34 ($p < 0.001$), respectively. This suggests that learners feel more satisfied when they perceive the SPOC model as beneficial to their learning process. High Perceived Usefulness not only improves functional evaluations of the system but also enhances the overall learning experience, supporting the ECM-ISC model's core idea that Perceived Usefulness is a key determinant of Satisfaction (Tan & Shao, 2015).

Hypothesis H6was validated with a path coefficient of -0.29 ($p < 0.001$). This indicates that high levels of Confirmation effectively reduce learners' anxiety. By meeting students' expectations of system performance, the SPOC model alleviates uncertainty in the learning process, enhancing their psychological security (Zhu & Zhang, 2022).

Hypotheses H7 and H8 were supported, with path coefficients of 0.24 and -0.20 ($p < 0.001$), respectively. this shows that increasing satisfaction significantly boosts learners' willingness to engage in speaking practice, while increasing anxiety reduces their learning intention. These findings suggest that enhancing learner satisfaction and reducing anxiety are effective strategies for improving engagement in speaking practice within a blended learning environment (Lane et al., 2021).

Regarding the mediating effects, Hypotheses H9 and H10 were supported. The indirect effects were 0.093 and 0.039, accounting for 30.79% and 17.73% of the total effects, respectively ($p = 0.001$). These results highlight the important role of Satisfaction as a mediating factor, effectively explaining the impact of perceived usefulness and confirmation on learning intention (Panigrahi et al., 2021).

Hypotheses H11 and H12 were also validated, with indirect effects of 0.063 and 0.054, accounting for 20.86% and 24.55% of the total effects, respectively ($p < 0.001$). These findings suggest that perceived usefulness and confirmation indirectly enhance learning intention by alleviating learners' anxiety, underscoring the importance of anxiety as a negative mediator (Cho & Seo, 2024).

Hypothesis H13 was confirmed, with an indirect effect of 0.169, representing 48.56% of the total effect ($p = 0.001$). This finding emphasizes the central role of perceived usefulness as a key mediator, linking confirmation to Learning Intention and highlighting its significant contribution to user experience (Sinha & Singh, 2022).

The hypotheses H14 and H15 were also validated. Hypothesis H14 had an indirect effect of 0.172, accounting for 39.02% of the total effect ($p < 0.001$). This indicates that high levels of Confirmation enhance Satisfaction by increasing Perceived Usefulness. Hypothesis H15had an indirect effect of -0.123, accounting for 32.78% of the total effect ($p < 0.001$). This suggests that higher confirmation not only directly reduces Anxiety but also indirectly alleviates Anxiety through enhanced Perceived Usefulness (Maduku et al., 2023).

In summary, this study validated the pivotal role of the SPOC hybrid teaching model in increasing EFL learners' willingness to engage in speaking practice. By integrating the TAM and ECM-ISC models and introducing anxiety as an essential affective variable, this study uncovered the multiple path effects of confirmation and perceived usefulness in increasing satisfaction, reducing anxiety, and ultimately enhancing learning intention. These findings provide empirical support for designing online learning platforms and instructional strategies and lay a theoretical foundation for further exploration of the relationship between user emotions and behavioral intentions in future research (Pozón-López et al.,2021).

7. Conclusion

This study integrated the Technology Acceptance Model (TAM) and the Expectation Confirmation Model (ECM-ISC) to investigate how the SPOC blended teaching model enhances EFL learners' willingness to engage in speaking practice. Key findings reveal three interrelated pathways:

First, Confirmation significantly strengthened learners' Perceived Usefulness by aligning SPOC's flexible design with their expectations (Jia & Zhang, 2021; Qin & Tan, 2022). It also indirectly reduced anxiety, a critical psychological barrier in language learning, thereby boosting confidence and participation (Pozón-López et al., 2021).

Second, Perceived Usefulness emerged as a central mediator, directly increasing learning intention and indirectly improving outcomes through higher satisfaction and reduced anxiety (Wang et al., 2022; Chen, 2024). Learners' autonomy in selecting resources and schedules enhanced their sense of accomplishment, reinforcing the model's value.

Third, Satisfaction and Anxiety played opposing roles. Satisfaction strengthened the link between perceived usefulness and learning intention (Jiang, 2024), while anxiety reduction (driven by confirmation and perceived usefulness) encouraged active speaking practice by alleviating fear of mistakes (Jiang, 2024). Notably, perceived usefulness partially mediated confirmation's effects on satisfaction and anxiety, emphasizing its role in building trust and engagement (Tam et al., 2020).

In summary, optimizing the SPOC model requires prioritizing learner expectations (to enhance confirmation), perceived value (to drive satisfaction), and anxiety reduction (to foster confidence). These strategies provide empirical guidance for designing SPOC-based language courses (Tam et al., 2020). Future research should explore how cultural and educational contexts influence these pathways to refine global language-learning frameworks.

8. Limitations and Future Research

This study, while offering valuable insights into the factors influencing EFL learners' willingness to engage in spoken language practice within a SPOC-based blended learning environment, has several limitations. Firstly, the research context was confined to a specific group of university students, which may limit the generalizability of the findings to other educational settings or different age groups. Additionally, the study relied on self-reported measures, which can be subject to response biases and may not fully capture the complexity of learners' experiences and emotions in a digital learning environment.

For future research, expanding the participant pool to include learners from diverse educational contexts and age groups would enhance the generalizability of the findings. Further exploration of cultural differences in technology acceptance and confirmation in EFL settings could also provide a deeper understanding of how cultural factors influence learning behaviors and preferences. Lastly, incorporating qualitative methods, such as interviews or focus groups, could offer richer insights into the emotional and cognitive processes underlying learners' responses, thereby strengthening the theoretical framework and practical implications of future studies.

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Acknowledgments

Not applicable.

Authors contributions

Not applicable.

Funding

Not applicable.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Sciedu Press.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.