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EXPLORING RESISTANCE TO ICT USE AMONG ECUADORIAN UNIVERSITY STUDENTS

EXPLORANDO LA RESISTENCIA AL USO DE LAS TIC ENTRE ESTUDIANTES UNIVERSITARIOS ECUATORIANOS

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Abstract

This paper analyzes resistance to ICT use among university students in Ecuador, highlighting technological anxiety and disinterest as key factors. Using an empirical methodology, data from 293 youths were collected through online surveys. The results indicate that technological anxiety and disinterest in ICT are significant predictors of resistance, while technological self-efficacy showed no significant relationship. It suggests that the adoption of pedagogical strategies that increase familiarization and training in ICT can mitigate resistance. This analysis contributes to the development of educational policies that promote the effective use of ICT, emphasizing the importance of updating educational programs and integrating emerging technologies to improve higher education. The study underscores the need to address resistance to ICT through a holistic approach that considers technological, pedagogical, and organizational aspects, preparing students for a digitalized world.

Keywords: Resistance to ICT, Technological anxiety, Disinterest in ICT, Higher education, Technological self-efficacy

1. Introduction

The incursion of Information and Communication Technologies (ICT) in higher education has radically transformed the educational landscape, offering unprecedented opportunities for pedagogical innovation and access to knowledge. In this context of constant change, ICTs have established themselves as fundamental tools for teaching and learning, allowing for greater interactivity, accessibility, and flexibility in educational processes. However, the adoption and effective integration of these technologies into learning environments are not without challenges, particularly when facing resistance from university students. This resistance is a complex and multifaceted phenomenon that goes beyond simple reluctance to change, encompassing a variety of psychological, cultural, and structural factors that can significantly influence the effectiveness of technological integration strategies.

In Ecuador, as in many other educational contexts, it has been observed that resistance to the use of ICT among university students represents a significant obstacle to the full realization of the educational benefits these technologies promise. Despite the growing presence of ICTs in higher education institutions, questions remain about how to overcome the barriers that limit their acceptance and effective use by students. The academic literature has begun to address this issue, identifying factors such as technological anxiety, skepticism about the relevance of ICTs, and social norms as key elements that can affect students' willingness to adopt these tools in their education.

Against this backdrop, the present study embarks on a comprehensive investigation to better understand the nature of resistance to ICT among a representative sample of university students in Ecuador. By adopting a rigorous empirical methodology, this work aims to unravel the complexities underlying students' attitudes and behaviors towards ICT, identifying the specific factors that contribute to resistance and exploring the implications of these findings for the design and implementation of more effective educational strategies.

The relevance of this study extends beyond the academic sphere, offering valuable insights for educators, administrators, and policymakers in education. By clarifying the roots of resistance to ICT and proposing solutions grounded in empirical evidence, this work aspires to facilitate a more harmonious and productive integration of digital technologies in higher education. Ultimately, it is hoped that the outcomes of this research will contribute to the creation of learning environments that are not only technologically advanced but also inclusive, responsive, and adaptive to the needs and expectations of students, thereby enhancing the quality and relevance of university education in the 21st century.

This study, therefore, not only sheds light on the challenges associated with the adoption of ICT in the Ecuadorian context but also paves the way for the improvement of pedagogical practices and the strengthening of the educational infrastructure. By addressing student resistance from a holistic and evidence-based perspective, it seeks to make a significant difference in the way ICT is integrated into higher education, ensuring that these tools effectively serve their educational purposes and prepare students for the challenges and opportunities of an increasingly digitalized world.

2. Literature review

Attitude toward ICT

The digital era has marked a distinct before and after in the way we interact with the world around us, rendering ICT indispensable tools for personal, professional, and academic development (ECLAC, 2021). However, the effective integration of these technologies into our daily lives is not without its challenges, among which attitude towards ICT plays a decisive role. The way we perceive and relate to technology can significantly influence our willingness to adopt and use it efficiently (Haleem et al., 2022). This study delves into the understanding of such attitudes through the analysis of three critical variables: technological anxiety, disinterest in ICT, and technological self-efficacy.

Technological Anxiety

Technological anxiety is a psychological phenomenon that represents an emotional reaction to the use of technologies, especially ICTs. This anxiety is manifested through feelings of tension, worry, and a negative predisposition towards digital tools, significantly influencing an individual's willingness to adopt and effectively use these technologies (Kummer et al., 2017).

The relevance of this construct in the digital era is undeniable, as the penetration of ICTs in all aspects of daily and professional life demands constant adaptation to new tools and platforms (Pfaffinger et al., 2020). In the educational context, technological anxiety takes on a particularly critical dimension, as it can hinder not only the adoption of digital technologies by students and educators but also their utilization to enrich the teaching-learning process (Ahma et al., 2023).

Existing evidence suggests a significant correlation between technological anxiety and resistance to the use of ICTs (Alkhawaja et al., 2021; Ávila & Paba, 2023; Bagherian & Haddad, 2023). Various studies have examined this relationship, finding that individuals with high levels of anxiety towards technology tend to avoid its use, resulting in lower digital competence and, consequently, a limited integration of technological resources in their educational or professional practice (Alkhawaja et al., 2021; Katsarou, 2021; Timotheou et al., 2023; Vuorikari et al., 2022). In this sense, Gunasinghe & Nanayakkara (2021) demonstrated that technological anxiety is a significant predictor of resistance to the use of online learning platforms among university students, suggesting that

negative emotions associated with technology can be a greater obstacle to its adoption than the lack of technical skills per se.

The impact of technological anxiety on resistance to the use of ICTs extends beyond the individual sphere, affecting the effectiveness with which educational institutions and organizations can implement technological innovations. The presence of technological anxiety among potential users of these tools can lead to slower, limited, or even failed technological adoption, underscoring the importance of addressing this phenomenon within technological change management strategies (Revilla et al., 2017; Al-Adwan et al., 2023).

To deal with the negative impact of technological anxiety on resistance to the use of ICTs, the development of interventions focused on reducing this anxiety is crucial. This can include providing adequate training and technical support, fostering positive experiences with technology from early stages, and adopting pedagogical strategies that promote users' confidence and digital competence (Revilla et al., 2017; Gabbiadini et al., 2023; Alkhawaja et al., 2021). Undoubtedly, understanding the role of technological anxiety and its effective management emerges as a relevant component to facilitate the transition to increasingly digitalized educational and work contexts. Therefore, we hypothesize as follows:

Hypothesis 1 (H1). *There is a significant positive relationship between technological anxiety and resistance to the use of ICTs. This implies that, the higher the levels of technological anxiety in individuals, the greater their resistance to the use of digital technologies.*

Disinterest in ICT

Disinterest in ICT emerges as a response of indifference towards the adoption and use of digital technological tools. This attitude may manifest a lack of intrinsic motivation to actively incorporate ICT into daily activities, whether they are educational, professional, or personal. Understanding disinterest in ICT lies in its ability to negatively influence the effective integration of digital technologies by individuals, thereby limiting opportunities for innovation and improvement at their various levels of social engagement (Scialdone & Zhang, 2010).

Evidence suggests a determinative relationship between disinterest in ICT and resistance to its use (López-Sánchez et al., 2023; Nasu, 2019). Where individuals who do not perceive tangible value or direct benefits derived from the use of ICT are likely to develop an attitude of disinterest. In this manner, Helsper (2021) explored how the perception of ICT's irrelevance in achieving personal or academic goals contributes to a growing disinterest, which in turn fosters resistance towards adopting these technologies. This disinterest is associated not only with a lower likelihood of voluntarily using ICT but also with a negative attitude towards learning and developing new digital skills.

The impact of disinterest in ICT on resistance to the use of these technologies is significant, as it can lead to an expanded digital divide, not only in terms of access but also in regards to the capability and willingness to effectively utilize digital

technologies (Kuhn et al., 2023). Within educational contexts, disinterest can restrict the incorporation of innovative teaching methods and the exploitation of the potential educational benefits of ICTs (Gkrimpizi et al., 2023).

To counteract disinterest and its negative effects, it is crucial to implement pedagogical strategies and policies that promote the value and relevance of ICTs (UNESCO, 2023). This includes the development of educational programs that demonstrate practical applications and direct benefits of the technologies, as well as the promotion of a culture of continuous learning that motivates individuals of all ages to actively participate in the digital society (Arteaga & Valdiviezo, 2020). Ultimately, addressing disinterest in ICT is fundamental to ensuring an inclusive and equitable technological integration that fully leverages the opportunities digital technologies offer for individual and collective progress. Therefore, we hypothesize as follows:

Hypothesis 2 (H2). *Disinterest in ICT is positively related to resistance to its use. This suggest that disinterest or apathy towards information and communication technologies increases the likelihood of resistance to using these tools.*

Technological self-efficacy

Self-efficacy, a concept coined by Bandura (1997), refers to the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations. In the context of ICT, self-efficacy translates into the confidence individuals have in their ability to use these technologies effectively (Li et al., 2024). The significance of this construct is emphasized in the digital age, where technological competence is essential for educational, professional, and personal success. Self-efficacy in the use of ICT not only drives the adoption and exploration of new digital tools but also facilitates a deeper and more meaningful integration of these technologies into daily life (Mhlongo et al., 2023).

Existing evidence points to a positive relationship between technological self-efficacy and the effective use of ICT. Research has shown that individuals with high ICT self-efficacy are more likely to adopt and experiment with new technologies, also displaying greater resilience in the face of technological challenges (Kundu, 2020; Rohatgi, et al., 2016; Yang, 2023). Specifically, Mlambo et al. (2020) found that technological self-efficacy significantly mediated the relationship between ICT training and the effective use of these tools in educational settings, suggesting that confidence in one's technological abilities is a critical factor for leveraging the educational potential of ICT.

The impact of self-efficacy on resistance to ICT use is notable, as low self-efficacy can lead to avoidance of technologies, limiting learning and development opportunities (Jokisch et al, 2020). In contrast, fostering self-efficacy can reduce resistance to ICT use, promoting a more open and proactive attitude towards technological learning. It is imperative, therefore, to design educational and training interventions that strengthen technological self-efficacy, providing individuals with the tools and support necessary to navigate the digital world

confidently. This approach will not only improve ICT adoption and use but also prepare individuals to face the challenges and seize the opportunities of the information society. Therefore, we hypothesize as follows:

Hypothesis 3 (H3). *Self-efficacy negatively predicts resistance to the use of ICT. In other words, individuals with high technological self-efficacy will show less resistance to the use of digital technologies.*

2. Materials and Methods

Research objectives

The primary objective of this study is to identify the predictive variables associated with resistance to the use of ICT by higher education students, from their own perspective. Three variables related to this phenomenon have been selected: technological anxiety, disinterest in ICT, and self-efficacy, all derived from the construct of attitude towards ICT. The specific objectives include:

- Empirically verify the relationship between technological anxiety, disinterest in ICT, the perception of its utility, and resistance to the use of ICT.
- Establish a predictive model for the variables that influence resistance to the use of ICT.

Study environment and sample

This cross-sectional study was conducted in the Ecuadorian coastal provinces of Los Ríos, Manabí, Guayas, and El Oro. Primary data from university students were collected through online survey questionnaires. For data collection, a self-administered questionnaire was used, obtaining valid responses from 293 university students using the convenience sampling technique. The questionnaire consisted of two parts: The first section collected general data such as age, gender, place of residence, availability of a computer and internet, university major, and proficiency in using WORD, EXCEL, and POWERPOINT (see Table 1).

Table 1. Descriptive data

Variable	Category	Frequency	Percentage
Gender	Men	111	37.88%
	Women	182	62.12%
Has a PC at home	Yes	279	95.22%
	No	14	4.78%
Has internet access at home	Yes	284	96.93%
	No	9	3.07%
Has taken certified e-courses	Yes	169	59.09%
	No	117	40.91%
Level of studies	Until two years	168	57.34%
	Upper two years	125	42.66%
Age	16 to 20	135	46.55%

	21 to 24	110	37.93%
	25 to 28	30	10.34%
	29 to 32	14	4.83%
	Over 32	1	0.34%
Time in hours using ICTs	1 to 5	115	39.25%
	6 to 10	131	44.71%
	Over 10	47	16.04%
Field of study	Health	31	10.73%
	Tourism	4	1.38%
	Engineering's & Sciences	28	9.69%
	Agriculture Sciences	5	1.73%
	Economic Sciences	221	76.47%

The second part included a 5-point Likert scale of attitudes, focused on two main dimensions: Student behavior towards the use of ICT (technological anxiety and disinterest in ICT) and University students' perception of the use of ICT (self-efficacy). This part of the questionnaire was based on the ad hoc model proposed by López et al. (2019) for the study on the use of ICT in the performance of university students in Mexico. In total, the scale consisted of 16 items corresponding to the construct of attitude towards ICT, plus the dependent variable. In terms of the instrument's reliability, Cronbach's Alpha coefficients were obtained, exceeding 0.70, which is considered acceptable for the set of items on the scale. This suggests a reasonably good internal consistency and that they effectively and coherently measure the same variable (see Table 2).

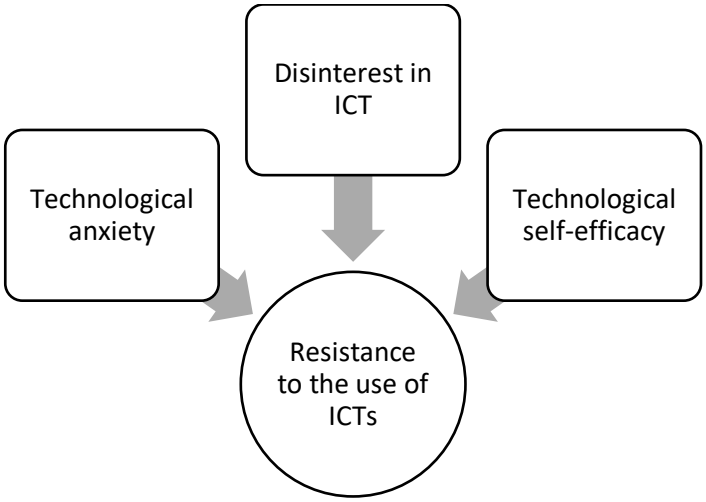
Table 2. Items of the "Attitude towards ICT" scale

Construct	Variables	Items	Alpha de Cronbach
Attitude toward ICT	Technological Anxiety	I have difficulty sleeping when I accumulate a lot of ICT-related work	0.891
		I find it hard to relax after a long day of working with ICT	
		Finishing my workday with ICT leaves me exhausted	
		Ending work with ICT drains me so much that I have no energy for further activities	
		Working with technologies hampers my ability to concentrate afterwards	
		Working with technologies causes me tension and anxiety	
		I resist using technologies for fear of making mistakes	
		Working with ICT makes me feel uncomfortable, irritable, and impatient	
		Whenever possible, I avoid using ICT	

Disinterest in ICT	Over time, my interest in ICT has decreased I find myself increasingly less engaged with using ICT I don't trust much in the contribution of technologies to my work or activities	0.726
Technological self-efficacy	People say that I am good at using technologies In my opinion, I am effective at using technologies I feel very comfortable using ICT in my work	0.728

In Figure 1, the variables involved in this study are shown; namely, three independent variables that have been obtained through the sum of average scores of all the items that make up each respective scale, and the dependent variable resistance to the use of ICT.

Figure 1. Study variables



3. Results

Prior to the application of binary logistic regression, a correlation analysis (Spearman's Rho) was conducted to empirically determine the factors that show a statistically significant correlation with the overall perception of digital competence level. This justified the inclusion of these factors in the subsequent analysis, as detailed in Table 3.

Table 3. Spearman's Rho correlation coefficients and significance of scales with the independent item

		Technological anxiety	Disinterest in ICT	Technological self-efficacy
Resistance to the use of ICTs	Coef.	0.503**	0.415**	-0.172*
	Sig.	0.000	0.000	0.003

*. The correlation is significant at the 0.05 level (2-tailed)
**. The correlation is significant at the 0.01 level (2-tailed)

To develop the predictive model, the methodology of binary logistic regression was employed. This method was selected for its ability to handle dichotomous dependent variables and to assess the impact of several independent variables simultaneously (Harrell, 2015). Within the model, only the three independent variables that demonstrated statistically significant correlations were included, ensuring the relevance and significant contribution of each predictor to the model. The dependent variable was transformed into dichotomous based on the following criterion:

- Rating 1 ≥ x ≤ 3 = Low level of resistance to the use of ICTs.
- Rating 3 < x ≤ 5 = High level of resistance to the use of ICTs.

The model is specified as follows: $\log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n$ [1]

Where *p* is the probability of resistance to the use of ICTs, β_0 is the model's constant, $\beta_1, \ldots, \beta_n$ are the coefficients of the independent variables $X_2, \ldots, X_n$, which include technological anxiety, disinterest in ICT, and self-efficacy, as well as control variables such as age, semester, availability of a computer and internet. The fit of the model was assessed using Nagelkerke's R^2, which provides an estimate of the variability explained by the model on a scale from 0 to 1 (Brage, 2020). Wald tests were conducted to assess the significance of each coefficient, and goodness of fit was verified through the Hosmer and Lemeshow test. The Odds Ratios derived from the beta coefficients offer an interpretable measure of the change in the odds of resistance to the use of ICT for each unit change in the predictor variables (Aedo et al., 2010).

Parameter estimation was carried out using the maximum likelihood method. Before proceeding with the interpretation of the coefficients, the absence of multicollinearity among the variables was verified. Additionally, diagnostic tests were conducted to ensure the adequacy of the logistic model, including residual analysis and checking for linearity in the relationship between the independent variables and the logit-transformed dependent variable. This analysis not only facilitated the identification of factors associated with resistance to the use of ICT but also allows for quantifying the magnitude and direction of these relationships, providing a solid foundation for the development of practical recommendations and educational policies.

The regression model was developed using a stepwise procedure, identifying two significant factors influencing the dependent variable, resistance to the use of

ICT. These factors include technological anxiety and disinterest in ICT. Although technological self-efficacy was analyzed as a potential predictor, it was not significant in the final model (*p*-value = 0.115).

The results of the binary logistic regression are summarized in Table 4. The Wald test for the model's coefficients shows *p*-values less than 0.05, indicating statistical significance for the variables of technological anxiety and disinterest in ICT. This suggests a significant relationship between these factors and resistance to the use of ICT, allowing us to reject the null hypothesis in favor of the alternative, which proposes a significant correlation between the studied independent variables and resistance to the use of ICT.

Table 4. Results of the binary logistic regression

Dimension/ Variable	B	Standard Error	Wald	p-value	Exp (B)	95% C.I. EXP (B)	
						Low	High
Technological anxiety	0.968	0.178	29.506	0.000	1.380	1.268	1.539
Disinterest in ICT	0.582	0.166	12.237	0.000	1.559	1.403	1.774
Semester	-0.085	0.047	3.373	0.066	0.918	0.838	1.006
Constant	-0.767	0.241	10.165	0.001	2.153	0.838	1.006

Note. Nagelkerke' R^2 is 0.373

The variable technological anxiety showed a positive coefficient of 0.968 with a standard error of 0.178. This effect was significant (Wald = 29.506, p < 0.000), suggesting that an increase in technological anxiety is associated with an increase in the likelihood of resistance towards the use of ICT. The odds ratio Exp(B) of 0.380 suggests that a unit increase in technological anxiety is associated with a 38% increase in the likelihood of resistance to the use of ICT. This suggests that interventions aimed at reducing technological anxiety could be effective in decreasing resistance towards ICT.

Disinterest in ICT was also positively associated with resistance towards the use of ICT, with a coefficient of 0.582 (Wald = 12.237, p < 0.001). This implies that individuals with greater disinterest in ICT are more likely to resist its use. The odds ratio of 0.559 implies that an increase of one unit in disinterest towards ICT increases the likelihood of resistance by 55.9%. This finding underscores the importance of designing pedagogical strategies that increase interest and the perceived utility of ICT among students.

Among all the sociodemographic variables, only the semester variable was included in the final model, which presented a negative coefficient of -0.085

(Standard Error = 0.047), but this effect was not statistically significant (Wald = 3.373, p = 0.066), suggesting a trend where age has a decreasing effect on the likelihood of resistance to ICT, although without sufficient evidence to establish a definitive impact at the conventional level of significance.

Therefore, technological anxiety and disinterest in ICT were identified as significant predictors of resistance towards the use of ICT among this group of university students. On the other hand, technological self-efficacy provided statistically non-significant results. The model reached a Nagelkerke's R2 index of 0.394, indicative that nearly 40% of the variability in resistance to the use of ICT can be explained by the predictors included in the model, reflecting a moderate predictive capacity.

The goodness of fit of the generated model has been evaluated using various statistical tests. The omnibus test yields a significance value of 0.000, which indicates that the inclusion of the variables in the model significantly increases its predictive capacity (see Table 5).

Table 5. Omnibus test of model coefficients

Chi-square	gl.	Sig.
94.974	3	0.000

Furthermore, the model was subjected to evaluation using the Hosmer and Lemeshow Test, a goodness-of-fit test for logistic regression models that compares observed frequencies with expected frequencies in subgroups of the dataset. A result with a high p-value (in this case, 0.372) suggests that there is no significant difference between the observed values and the values expected by the model, indicating a good fit of the model to the data. In this context, with a p-value of 0.372, the model appears to fit well to the data (See Table 6).

Table 6. Hosmer & Lemeshow Test

Chi-square	gl.	Sig.
8.652	8	0.372

Regarding the classification ability of the model, it is shown that the model predicts resistance to the use of ICT compared to actual observations, using a cutoff value of 0.5. A 65% of the low cases (no resistance) were correctly classified, while 80.5% of the high cases (with resistance) were also correctly classified. The overall percentage of correct classification is 74%, indicating that the model has a moderate capacity to accurately predict resistance to the use of ICT based on the included variables (See Table 7).

Table 7. Classification matrix

Observed		Predicted		
		Resistance to the use of ICTs		% Cumulative
		Low	High	
Resistance to the use of ICTs	Bajo	80	43	65.0
	Alto	33	136	80.5
Overall percentage				74.0

a. cutoff value 0.500

Once the predictive model has been established, the resulting logistic regression equation is shown below: Logit (p) = – 0.767 + 0.968 (Technological anxiety) + 0.582 (Disinterest in ICT) – 0.085 (Semester).

4. Conclusions

The adoption of ICT in higher education is not just a global trend but an imperative necessity in the digital age. This study has demonstrated that, despite the evident and potential benefits ICT can offer, there is significant resistance among university students in Ecuador, primarily marked by technological anxiety and disinterest towards digital technologies. These findings highlight the gap between modern educational expectations and the reality perceived by students, underscoring the need to address these challenges to facilitate an effective transition towards more integrated and technologically advanced learning environments.

Technological anxiety emerges as a critical factor limiting students' willingness to adopt and use ICT in their educational process. This phenomenon, characterized by fear and insecurity towards the use of new or unfamiliar technologies, can be mitigated through pedagogical strategies focused on familiarization and technological training. It is essential that educational institutions implement training programs that not only address the technical aspects of ICT but also promote a mindset of growth and adaptability in the face of technological innovations (Alenezi, 2023).

The disinterest shown by students towards ICT suggests a disconnection between the curricular content and the demands of digital competencies relevant for the 21st century. To counteract this trend, it is essential that universities review and update their educational programs, effectively integrating ICT not only as teaching tools but also as an essential part of learning and professional development (UNESCO, 2023). The incorporation of collaborative projects, problem-based learning, and the use of digital platforms can serve as catalysts to increase interest and active participation of students in their own learning process.

It is necessary to emphasize the importance of developing policies and educational practices that facilitate the effective inclusion of ICT in higher education. This implies not only the provision of adequate technological

infrastructures but also the development of teaching capacities to guide and motivate students in the effective use of these tools. Likewise, it is crucial to foster an educational culture that values innovation and adaptability, preparing students to face the challenges and opportunities of the digital era with confidence and competence (Haleem et al., 2022).

Consequently, the urgent need to address resistance to ICT among university students is highlighted, through comprehensive strategies that involve curricular updating, technological training, and the development of an innovative educational culture (Gkrimpizi et al., 2023). By overcoming these obstacles, higher education institutions in Ecuador and around the world can unlock the full potential of ICT, not only to enrich the educational experience but also to empower students as competent and versatile global citizens in an increasingly digitalized world.

In this way, a fertile field is opened for future research, especially regarding the identification of effective strategies for the integration of emerging technologies in the classroom and the development of digital competencies among the student population. Exploring these areas will significantly contribute to the advancement of knowledge in this field and the development of educational practices that effectively respond to the demands and challenges of today's society.

Additionally, exploring the underlying causes of technological anxiety and disinterest towards ICT, the impact of educational interventions on the perception and use of technologies, and analyzing the long-term effects of ICT integration on learning outcomes are promising areas for future research. Therefore, overcoming resistance to ICT in higher education requires a holistic approach that addresses technological, pedagogical, organizational, and ethical aspects.

Collaboration among administrators, educators, students, and other stakeholders is crucial to create learning environments that not only improve the educational experience but also prepare students to thrive in a digitally interconnected world. It is necessary to reflect on the transformative role that ICT can play in higher education, not only as tools for content delivery but as facilitators of deeper and more meaningful learning. Adapting to technological change should not be seen merely as an operational necessity but as an opportunity to rethink and revitalize pedagogy, making learning more interactive, collaborative, and tailored to the individual needs of students (Obidovna, 2023).

The commitment of educational institutions to technological innovation must be accompanied by an effort to understand and mitigate the barriers perceived by students. This involves not only identifying and addressing the specific causes of technological anxiety and disinterest but also creating learning environments where students feel supported and empowered to explore and effectively use ICT (García & Silvia, 2022). Moreover, the successful integration of ICT in higher education depends on a systematic approach that includes continuous assessment of technological needs, teacher professional development, and the promotion of an institutional culture that values flexibility, innovation, and

inclusion. Collaboration between universities, the technology sector, and other educational actors can accelerate this process, leveraging the experience and resources available to overcome challenges and maximize the potential of emerging technologies.

Finally, it is essential to recognize that technology alone is not the solution to all educational challenges. Its integration should be considered as part of a broader strategy aimed at improving the quality and relevance of higher education, preparing students for success in an increasingly complex and technologically advanced world. Critical reflection on the implementation and impact of ICT in education will advance towards a future in which technology and pedagogy work together to enrich the learning experience and promote the comprehensive development of students.

Limitations

The study on resistance to ICT use in higher education in Ecuador presents several limitations inherent to its design and methodology that are relevant for the interpretation and generalization of its findings. First, its focus on university students from specific coastal provinces limits the ability to extend its conclusions to other educational contexts, both within and outside of Ecuador, due to the cultural, economic, and educational particularities of the region studied.

Moreover, the use of convenience sampling might introduce selection biases, as it does not guarantee a representative sample of the university population as a whole, thus restricting the applicability of the results to a broader population. The research also primarily focused on technological anxiety, disinterest towards ICT, and self-efficacy, leaving aside other potentially influential variables such as institutional support, available technological infrastructure, and socioeconomic factors, whose exploration could provide a deeper understanding of resistance to ICT. Additionally, the cross-sectional nature of the study prevents establishing causal relationships between the variables examined.

Lastly, collecting data through self-administered online questionnaires can lead to self-report biases, including the propensity to respond in a socially desirable manner or the difficulty in accurately self-assessing attitudes and behaviors towards ICT. These limitations underline the need to approach the results with caution and serve as a starting point for future research that aspires to a more profound and generalizable understanding of resistance to ICT use in higher education.

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