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Mayra D'Armas Regnault [1], Agustín Mejías Acosta[2], Eduardo Vargas Cano[3], Luis Castillo Salvatierra [4]

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ABSTRACT

Context: Digital competence is understood as the critical, safe, and responsible use of digital technologies for learning, work, and participation in society, according to the European Union's DigComp 2.2 Framework. **Objective:** This study analyzes digital competencies among students at a Venezuelan university, focusing on their self-perception and application within educational environments. **Method:** The research adopts a quantitative approach and employs a validated scale that assesses six key dimensions: content management, digital empathy, use of digital media, digital security, communication, and content creation. **Results:** The sample comprised 127 undergraduate students from technical disciplines, mostly under the age of 25. Participants demonstrated acceptable levels in information retrieval, digital communication, and cybersecurity. Deficiencies were identified in areas such as plagiarism detection and digital content creation. The STATIS analysis revealed a generational gap, with students over 30 years old showing lower levels of digital competence. The study highlights the importance of developing targeted training programs to enhance these skills, particularly among vulnerable groups, with an emphasis on digital empathy and security. **Conclusions:** The study recommends institutional and longitudinal interventions to promote digital literacy, enhance educational equity, and reduce the digital divide.

Keywords: STATIS analysis; digital literacy; digital divide; digital competencies; higher education; Venezuela

RESUMEN

Contexto: El concepto de competencia digital se entiende como el uso crítico, seguro y responsable de tecnologías digitales para aprender, trabajar y participar en la sociedad, de acuerdo con el Marco DigComp 2.2 de la Unión Europea. **Objetivo:** Este estudio analiza las competencias digitales en estudiantes de una universidad venezolana, centrándose en su autopercepción y aplicación en entornos educativos. **Método:** La investigación adopta un enfoque cuantitativo y emplea una escala validada que evalúa seis dimensiones: gestión de contenidos, empatía digital, uso de medios digitales, seguridad, comunicación y creación de contenidos. **Resultados:** La muestra estuvo conformada por 127 estudiantes de carreras técnicas, en su mayoría jóvenes menores de 25 años, quienes mostraron niveles aceptables en búsqueda de información, comunicación digital y seguridad informática. Se identificaron deficiencias en áreas como la detección de plagio y la creación

[1] PhD en Administración y Dirección de Empresas, Universidad Estatal de Milagro, Ecuador. Correo electrónico: mdarmasr@unemi.edu.ec. https://orcid.org/0000-0002-6288-1566
[2] Doctor en Ingeniería, Universidad de Carabobo, Venezuela. Correo electrónico: amejiasa@uc.edu.ve. https://orcid.org/0000-0002-6887-1836
[3] Magíster en Gerencia de Construcción, Universidad de Carabobo, Venezuela. Correo electrónico: eevargas@uc.edu.ve. https://orcid.org/0000-0003-1293-1550
[4] Magíster en Tecnologias de la Informacion, Universidad Estatal de Milagro, Ecuador. Correo electrónico: lcastillos1@unemi.edu.ec. https://orcid.org/0000-0002-1111-2740

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de contenidos digitales. El análisis STATIS reveló una brecha generacional, siendo los estudiantes mayores de 30 años los que mostraron menores niveles de competencia. Se destaca la importancia de desarrollar programas formativos dirigidos a mejorar estas competencias, especialmente en grupos vulnerables, con énfasis en empatía y seguridad digital. **Conclusiones:** El estudio sugiere la necesidad de intervenciones institucionales y longitudinales para promover la alfabetización digital, fortalecer la equidad educativa y cerrar la brecha digital.

Palabras clave: análisis STATIS; alfabetización digital; brecha digital; competencias digitales; educación superior; Venezuela.

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INTRODUCTION

Currently, the digital revolution has profoundly transformed all spheres of society, including the educational sector. Higher education is at a turning point where digital competencies have become a determining factor both for professional development and the educational quality offered to students (Martzoukou et al., 2020). This digital transformation has accelerated significantly in recent years, partly due to the COVID-19 pandemic, which forced educational institutions to rapidly migrate toward virtual teaching-learning environments (Tejedor et al., 2020, cited in Alonso-García et al., 2022).

The European Union, through its Digital Competence Framework for Citizens (DigComp 2.2), has established clear guidelines regarding the digital skills necessary for effective participation in today's society. This framework defines digital competence as "the safe, critical, and responsible use of digital technologies for learning, work, and participation in society" (European Union, 2022). In the specific context of higher education, digital competencies acquire an additional dimension by constituting not only a set of instrumental skills for handling technological tools, but also capabilities for content creation, effective communication in virtual environments, cybersecurity, and problem-solving through digital resources (Mengual-Andrés et al., 2016).

Venezuela has not been immune to these global changes. Venezuelan universities have faced the challenge of adapting their teaching methodologies and technological infrastructures to respond to the demands of an increasingly digitized world. However, this process has been hindered by various socioeconomic and political factors that have affected the country during the last decade. The combination of a prolonged economic crisis, frequent interruptions in electrical supply, and limitations in internet connectivity has created a particularly challenging scenario for the development of digital competencies in the Venezuelan university environment (Candia, 2023).

Despite these difficulties, it is essential to analyze the current state of digital competencies in Venezuelan higher education institutions. This analysis will allow for the identification of strengths and weaknesses, as well as guide institutional policies that promote the development of these skills in both teachers and students. As indicated by Wang et al. (2021), measuring digital competencies in the university context constitutes the first step to implementing effective improvement strategies in this area. The present study focuses on evaluating digital competencies at a Venezuelan university, analyzing both the self-perception of these skills and their effective implementation in teaching-learning processes.

Theoretical Aspects of Digital Competencies

The concept of digital competencies has evolved significantly in recent decades, moving from a notion centered mainly on technical and operational skills to a more holistic understanding that integrates cognitive, ethical, and social aspects. Van Laar et al. (2018) define 21st-century digital competencies as "a set of skills, knowledge, and attitudes that enable individuals to use digital technologies to participate effectively in all areas of modern life."

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The European Union (2022) identifies five key areas of digital competence: information and data literacy, communication and collaboration, digital content creation, security, and problem-solving. This framework has been widely adopted as an international reference for designing educational policies and training programs in digital competencies. In the specific field of higher education, Mengual-Andrés et al. (2016) have proposed an adapted framework that incorporates additional dimensions related to digital pedagogy and research through technological tools.

In the Latin American context, various studies have addressed the evaluation of digital competencies in university institutions. León-Pérez et al. (2020) analyzed self-perception regarding emerging digital skills among Mexican higher education students, finding significant disparities according to the area of study and participants' socioeconomic level. Meanwhile, Candia (2023) notes that in many countries in the region, including Venezuela, a significant gap persists between basic digital skills (such as internet navigation or office application use) and advanced digital competencies necessary for knowledge production and educational innovation.

The importance of digital competencies in the university environment transcends the mere instrumental use of technological tools. According to Wang et al. (2021), these skills constitute a determining factor for academic success and students' subsequent job market insertion. In an increasingly digitized labor market, higher education must assume the responsibility of training professionals capable of adapting to a constantly evolving technological environment.

The development of digital competencies in higher education requires a systemic approach that considers multiple dimensions. Fan and Wang (2022) identify four essential components: technological infrastructure, teacher training, curriculum design, and institutional culture. The interaction between these elements largely determines the success of initiatives aimed at strengthening digital skills in the university context.

Faculty training constitutes a critical factor in this process. Alonso-García et al. (2022) highlight that teachers' digital competencies significantly influence their pedagogical practices and, consequently, the development of these same skills by students. The authors note the need to implement specific training programs that allow university professors to acquire not only technical skills but also pedagogical competencies for the effective integration of digital technologies into their teaching methodologies.

The relationship between digital competencies and academic performance has been the subject of numerous studies in recent years. Widowati et al. (2023) have analyzed the factors affecting students' academic performance, concluding that digital literacy, along with self-efficacy and academic engagement, exerts significant influence on learning outcomes.

This relationship acquires special relevance in hybrid or completely virtual teaching contexts, where digital skills constitute a prerequisite for effective participation in educational processes. As indicated by Tomaš et al. (2024), the COVID-19 pandemic revealed significant inequalities in access to and use of digital resources among university students, differentially affecting their learning opportunities.

METHODOLOGY

The present study employed a quantitative approach with a cross-sectional descriptive design to evaluate digital competencies in university students. The research was based on the Digital Competencies Measurement Scale developed by Fan & Wang (2022), subsequently validated by Kryukova et al. (2022) and Urakova et al. (2023), ensuring the robustness of the employed instrument. The sample consisted of 127 undergraduate students from the Faculty of Engineering, Architecture, and Technology at a Venezuelan university, selected through non-probabilistic convenience sampling. A 95% confidence level and 5% margin of error were established to determine sample size. Before the application, informed consent was obtained from participants and approval from the institution's Ethics Committee.

Digital Competencies Measurement Scale (Fan & Wang, 2022) was applied, which consists of six main dimensions: Access to Digital Content Management, Digital Empathy, Use of digital media, Digital Security, Communication of Digital Content, and Creation of Digital Content (Table 1). The instrument uses a 5-point

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Likert scale (1=Never to 5=Always) with a total of 27 items.

Table 1. Digital competencies measurement scale

Dimension: Variables	
Access to Digital Content Management	Digital **Security**
V01 I have applications that keep me up to date with the news	V16 I avoid inappropriate behavior on social networks
V02 I can search for and access information in digital environments	V17 I am careful with my personal information and that of others
V03 I can use different media to store and manage information	V18 I can identify harmful behaviors that can affect me
V04 I can search for the information I need on the internet	V19 I Before carrying out a digital activity, I evaluate the consequences
V05 I can understand the information I obtain from the Internet	V20 When sharing digital information, I consider my privacy and security
Digital **Empathy**	**Communication** of Digital Content
V06 I respect other people in digital environments	V21 I know how to communicate through different digital media
V07 I take into account the opinions of others in digital environments	V22 I can communicate with other people in digital environments
V08 I can put myself in others' shoes in digital environments	V23 I know how to communicate with others in different ways (images, texts, videos, etc.)
V09 I am willing to help other people in digital environments	
V10 I informed myself before commenting on a topic	V24 I share information and content through digital tools
Use of Digital Media	**Creation** of Digital Content
V11 I can complete digital c ontent related to my tasks	V25 I know different ways to create and edit digital content
V12 I can use digital media to detect content plagiarism	V26 I can transform information and organize it in different formats
V13 I use digital media to solve tasks and exercises	V27 I can present what I want to convey in digital environments
V14 I can create and edit digital content required in my studies	
V15 I skillfully use digital software to complete learning tasks.	

In this research, the psychometric properties of the scale were analyzed, with special emphasis on its validity and reliability. Validity, understood as the instrument's capacity to accurately measure the intended construct, was evaluated from multiple perspectives. Evidence of content validity was obtained through an exhaustive bibliographic review of digital competencies in university contexts.

Additionally, the STATIS method (Structuration des Tableaux à Trois Indices de la Statistique) was implemented to examine structural similarities between the constructs that make up the digital competencies measurement scale. This multivariate analysis, initially proposed by L'Hermier des Plantes (1976) and subsequently developed by Lavit (1988) and Lavit et al. (1994), is designed to integrate multiple data tables containing observations on the same set of variables under different experimental conditions or temporal moments.

The STATIS method allows exploration of the internal structure of each data set individually, in order to obtain optimal weights that facilitate the construction of a common and consensual representation of all tables in a Euclidean space (Abdi et al., 2012). The procedure is structured in three main stages: *interstructure*, which evaluates similarity between tables; *compromise*, which generates a global representative configuration; and *intrastructure*, which examines the projection of each data set onto the consensus structure. For the purposes of this study, the first two were applied.

In the interstructure phase, similarity between different tables is evaluated through the construction of configuration matrices (Olivares et al, 2017). Given a set of matrices $X^{[K]}$, where k represents each condition or period, the following matrices are used, $M^{[K]}$: diagonal matrix with variable weights for table *k; D:* common diagonal matrix with observation weights. Matrices $W^{[K]}$ are constructed as:

$$W^{[K]} = X^{[K]} M^{[K]} X^{[K]'}$$

Similarity between matrices is evaluated with the Hilbert-Schmidt internal product (HS):

$$\langle W_k | W_{k'} \rangle_{HS} = tr\{W_k D W_{k'} D\}$$

This product allows calculation of the RV vectorial correlation coefficient (Escoufier, 1973), which indicates structural correlation between matrices:

$$\rho_{k,k'} = \frac{\langle W_k | W_{k'} \rangle_{HS}}{\langle W_k | W_k \rangle_{HS} \quad \langle W_{k'} | W_{k'} \rangle_{HS}}$$

When the RV coefficient approaches 1, it indicates high congruence between compared structures, implying that no significant differences exist between factorial structures of conditions k and k'. In terms of the STATIS method, this suggests that individuals present similar behavior under both analyzed conditions.

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The second phase, compromise, aims to synthesize the common structure among all matrices through construction of a W compromise or consensus matrix (Olivares et al, 2017), from the following weighted sum of matrices (Lavit et al., 1994):

$$W = \sum_{k=1}^{k} \alpha_k W_k$$

Where coefficients α_k are obtained from the first eigenvector associated with the vectorial correlations matrix S:

$$\alpha_k = \frac{1}{\sqrt{\lambda_1^{(c)}}} \left(\sum_{k=1}^{k} \sqrt{S_{kk}} \right) U_{1k}^{(S)}$$

The use of STATIS proved particularly valuable for this research, as it allowed identification of latent structural patterns and internal consistencies between different data blocks, thus improving understanding of the structural validity of the evaluated dimensions.

For data processing, Microsoft® Excel was employed as a preliminary information organization tool, while advanced statistical analyses were executed through RStudio version 2024.04.2+764. This latter platform was especially useful for implementing STATIS analysis, which allowed exploration of complex multidimensional relationships between the various components of digital competencies under study.

RESULTS

Sample Characterization

The study sample was predominantly composed of male students (74%). Regarding age, the most representative group was those under 20 years old. Concerning the studied program, the majority comes from various disciplines, while 14% study Industrial Engineering. Related to academic semester, 66% were in the first four cycles (Basic Cycle). A notable aspect is that 91% of participants have regular internet access, and only 9% lack this connectivity. All have cell phones, and 50% currently work.

Descriptive Analysis

Access to digital content management

The levels of access and skills related to digital content management, variables V01 to V05, are presented in Figure 1. The bars are divided into different colors representing competence levels: dark green (most competent), light green, yellow, orange, and red (least competent). It is observed that students have greater competence in searching for information they need on the internet (V04) and in searching and accessing information in digital environments (V02), as they present high percentages in the most competent levels and the highest scores (4.24 and 4.13 respectively). Conversely, V01 (having applications to stay informed) shows a lower proportion in high levels and the lowest score (3.59), indicating lesser presence of this practice.

Digital empathy

Digital empathy (Figure 2) shows the competence level in five variables related to respect and consideration toward others in digital environments. Most students manifest high levels of digital empathy, especially in V06 (Respect for other people) and V10 (I inform myself before commenting on a topic), with the highest competence levels (67% and 56% respectively) and the highest average scores (4.35 and 4.25). Variables with competence levels that may be improvement opportunities are V09 (Willingness to help) and V08 (Ability to put oneself in another's place), where average scores of 3.81 and 3.89 respectively are recorded.

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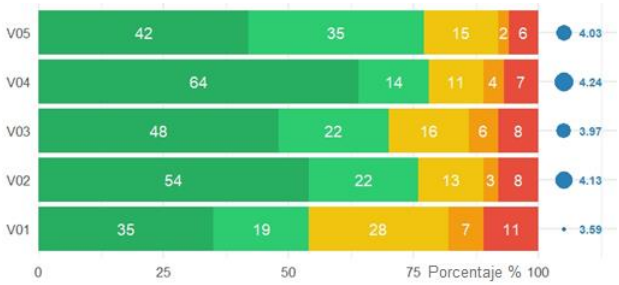

Figure 1. Access to Digital Content Management

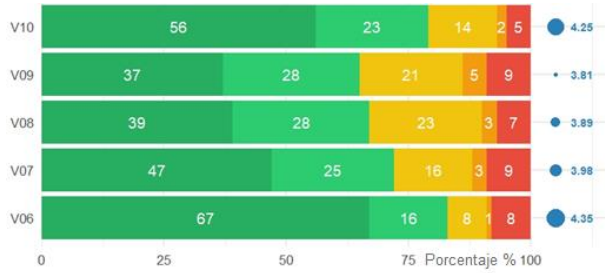

Figure 2. Digital Empathy

Use of Digital Media

In the "Use of digital media" dimension, it is observed that participants show greater competence in using digital media to solve tasks and exercises (V13, mean 3.99). They also positively highlight the ability to complete digital content related to their tasks (V11, mean 3.89) and the creation and editing of digital content required in studies (V14, mean 3.86). However, significant opportunity areas are identified regarding plagiarism detection through digital media (V12), which obtained the lowest score (mean 3.2), with 58% negative responses. Likewise, the ability to use digital software in learning tasks (V15, mean 3.54) presents room for improvement, with 46% negative responses.

Digital Security

Results from the "Digital security" dimension show a high level of awareness about safe practices in digital environments (Figure 4). Item V17 ("I am careful with my personal information and that of others") stands out with the highest mean (4.44) and 76% very positive responses. This is followed by V18 ("I am capable of identifying harmful behaviors that may affect me") with a mean of 4.36 and 86% positive evaluations. Avoidance of inappropriate conduct on social networks (V16) obtains a favorable evaluation (mean 4.28) with 80% positive responses, although it presents 9% very negative evaluations.

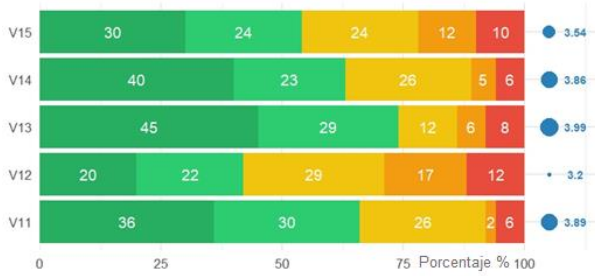

Figure 3. Use of Digital Media

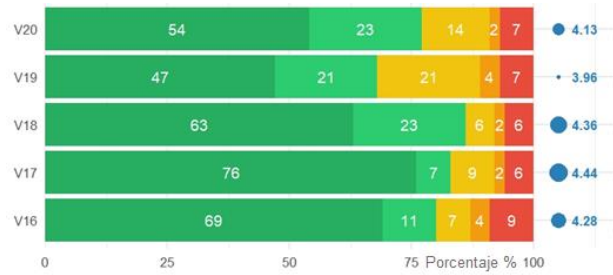

Figure 4. Digital Security

Communication of Digital Content

Regarding results from the "Communication of Digital Content" dimension (Figure 5), variable V22 ("I can communicate with other people in digital environments") has the highest mean (4.35) with 84% positive responses. Very close are variables V21 ("I know how to communicate through different digital media") and V23 ("I know how to communicate with others in different ways"), with means of 4.23 and 4.22 respectively, and over 75% positive evaluations in both cases. On the other hand, variable V24 ("I share information and content through digital tools") obtains the lowest score (3.8) and shows more heterogeneous distribution, with 64% positive responses versus 16% negative evaluations.

Creation of Digital Content

Results from the "Digital content creation" dimension (Figure 6) show moderate competence levels with mean scores ranging between 3.5 and 3.65. Variable V26 ("I can transform information and organize it in different formats") obtains the highest evaluation (mean 3.65) with 56% positive responses, although 28% of participants maintain a neutral position and 16% express difficulties in this area. Second, V27 ("I am capable of presenting what I want to convey in digital environments") reaches a mean of 3.52, with 52% positive evaluations, but presents the highest percentage of neutrality (32%), suggesting some insecurity in effective

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communication skills in digital media. Variable V25 ("I know different ways to create and edit digital content") records the lowest score (mean 3.5) and the greatest negative polarization, with 23% unfavorable responses.

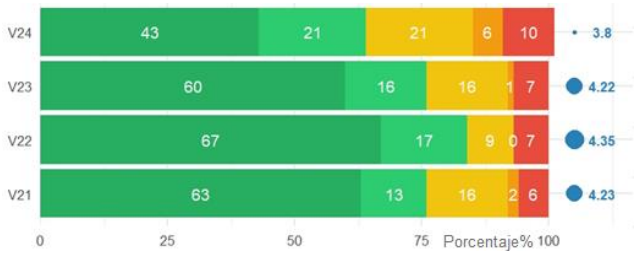

Figure 5. Communication of Digital Content

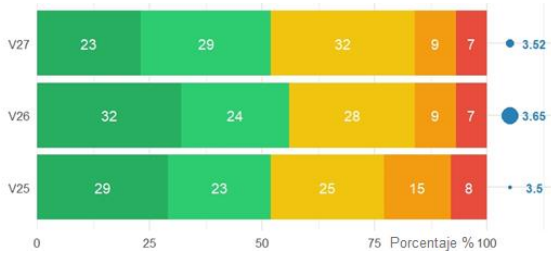

Figure 6. Creation of Digital Content

Multivariate Analysis

Interstructure

The Interstructure Figure 7(a) shows the global structure of relationships between evaluated age groups, in this case <20 years, 20-25 years, 25-30 years, and >30 years, based on digital competence dimensions. Arrows emerging from the graph's center represent each group's projection in the common analysis space. The angle between vectors suggests that groups share similar patterns regarding their digital competencies. Variance explained by the first 2 components captures almost all variability, reaching 95.37%. Particularly, groups <20 years, 20-25 years, and 25-30 years' present vectors forming very acute angles, indicating very similar behaviors when responding to questions associated with different scale dimensions. These angles imply that these groups' digital competencies are consistent with each other. On the other hand, the >30 years' group appears more distant in the graph, suggesting certain distance in projection which could indicate that people >30 years have lesser familiarity with some evaluated dimensions, possibly reflecting a gap in terms of digital competencies between this group and younger ones.

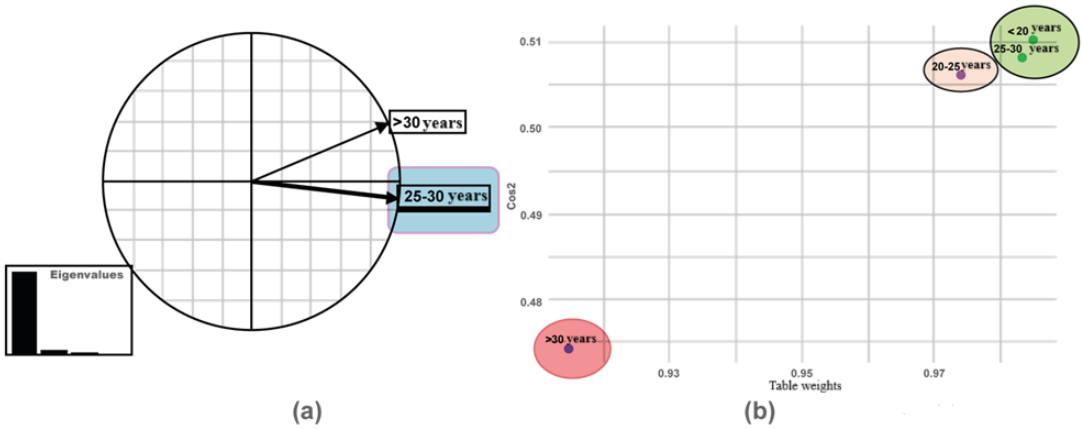

Figure 7. Interestructure, Weights y Cos^2

Note: (a) The Interstructure graph shows the projection of age groups. (b) The Weights and Cos^2 graph shows the relationship between the weight of each age group in the analysis and the quality of its representation in the common space (Cos^2).

Figure 7(b) shows the relationship between table weights and Cos^2 for different age groups, giving us a clear vision of how these groups contribute and are represented in STATIS analysis. Younger groups, such as <20 years, 20-25 years, and 25-30 years, are grouped in the upper right part of the graph, indicating they have both high weight in analysis, close to 0.97, and excellent representation in common space, with Cos^2 superior to 0.50. This suggests these age groups are well represented and have strong and consistent impact on analyzed dimensions. In contrast, the >30 years' group is more separated, in the lower left part of the graph, with lower weight, around 0.93, and Cos^2 inferior to 0.48, indicating this group is not as well represented in projected space and has lesser contribution in general analysis.

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Vectorial Correlation Index (RV)

RV Figure 8 reveals similarities in digital competencies between different evaluated age groups. Cells show correlation coefficients between each pair of groups, where a value of 1.00 indicates perfect similarity, while lower values reflect lesser correspondence. Results show that younger groups, such as <20 years, 20-25 years, and 25-30 years, present very high correlations among themselves, close to 1. This would indicate that digital competencies in these three groups are practically identical, revealing very similar familiarity and management of digital tools.

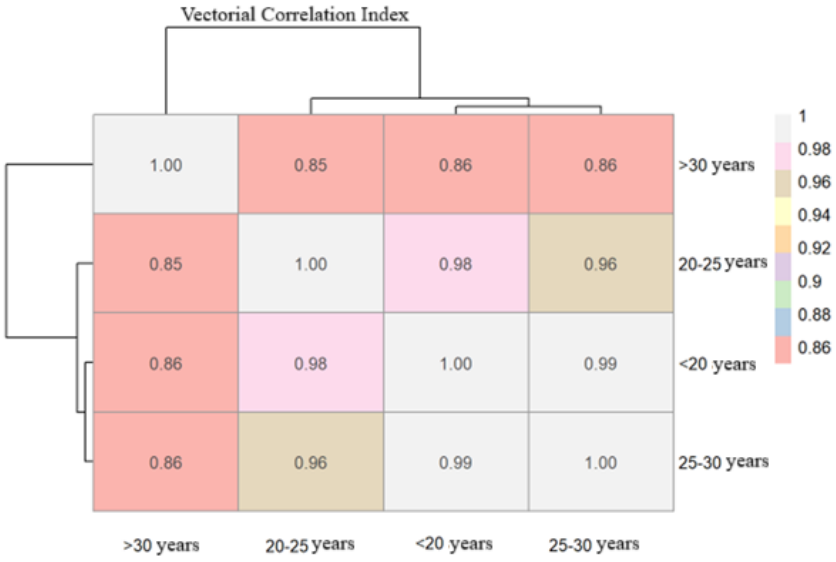

Figure 8. RV Coefficient

The >30 years' group shows lower correlations, around 0.85 and 0.86, when compared with other groups. This result suggests that people over 30 years have digital competencies that differ from younger groups. Hierarchical separation observed in the dendrogram reinforces this idea, as it clusters younger groups closely, while the >30 years' group is clearly more distant. Although younger groups share similar patterns in digital tool use, those >30 years have a distinct profile, possibly reflecting lesser competence in using these technologies.

This analysis demonstrates that a certain gap exists in digital competencies between those over 30 years and younger groups, which could have implications in terms of training needs or technological adaptation for these older groups.

Compromise

The Compromise Figure 9 shows the projection of digital competence dimensions in the first two principal components of STATIS analysis, allowing visualization of how each dimension contributes to variability between different age groups in the study. In this analysis, each dimension has a specific weight and direction in the component space, helping identify which dimensions best explain differences between groups.

Dimension D2, representing "Digital Empathy," and dimension D4, associated with "Digital Security," are strongly projected in the upper left quadrant of the graph. This projection indicates that both digital empathy, which includes skills such as respect toward others in digital environments, and digital security, are key dimensions that distinguish age groups in the digital competencies space. Their location in the graph suggests these dimensions have notable influence on variability explained by the second principal component. Although both dimensions have strong weight in the second component, they also exert slight negative influence on the first component, suggesting groups vary not only in their capacity to empathize but also in effectiveness with which they communicate through different digital media.

Dimension D5, related to "Communication of Digital Content", has more neutral projection between the two components, indicating it has considerable weight in both axes. This reflects that skills related to

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communication through different media and digital environments are fundamental to understanding differences between age groups. This dimension's position in the graph suggests groups vary in their capacity to handle aspects of online communication, implying important differences between them in how they communicate through different digital media and how they share their information.

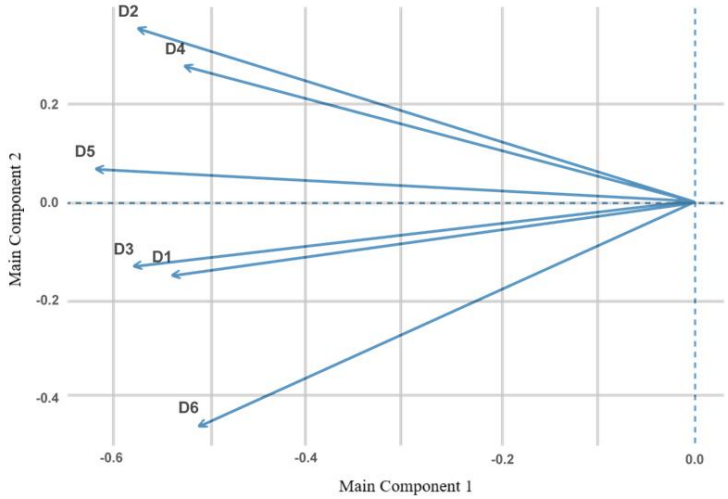

Figure 9. Compromise

Dimensions D1 and D3, representing "Access to Digital Content Management" and "Use of Digital Media", respectively, project close to the origin of the two principal components, indicating lesser influence on variability explained by these components. Although these dimensions are important, their projection close to origin suggests they are not the principal factors affecting age groups in analysis. It's possible that skills related to search, access, and information management, as well as digital media use for daily tasks, are more balanced between groups, with less variability compared to other dimensions.

Finally, dimension D6, corresponding to "Digital Content Creation," has clearly more distant projection in the lower left quadrant of the graph, with strong negative contribution in both components. This indicates that digital content creation and presentation skills are those most distant between evaluated groups. This dimension's position in the graph suggests some groups may have lesser ability in this area, generating greater separation in terms of digital competencies.

Intraestructure

The Intrastructure Figure 10 shows the projection of different age groups' digital competencies, and how they align or disperse within each group in the space of the first two principal components. Vectors represent individuals within each age group, and their proximity or dispersion reflects similarity in their digital competencies. In the <20 years' group, vectors are quite concentrated and aligned, suggesting greater homogeneity in individuals' responses, implying digital competencies are similar among them. However, some individuals (55, 112, 82, and 123) distance considerably from the group, suggesting some have responses distinct from the rest.

The 20-25 years' group shows similar tendency, with most vectors grouped and aligned, indicating great similarity in digital competencies within this group. However, vectors such as those associated with numbers 40, 87, and 114 project farther from center, indicating there are individuals with digital competencies that differ slightly from the majority. In the 25-30 years' group, there is greater dispersion, suggesting digital competencies within this group are more diverse. Vectors such as numbers 49 and 17 project far from center, indicating some individuals have competencies very distinct from the group average. In the >30 years' group, even greater dispersion is observed, with several vectors distant from center (19, 91, 62, and 103). This suggests within this group there is greater variability in digital competencies, with some individuals showing digital skills considerably different from the rest of the group. Generally, younger groups seem to have more homogeneous digital competencies, while older groups, especially those over 30 years, show greater diversity

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in their responses, indicating lesser uniformity in digital competencies compared to younger groups.

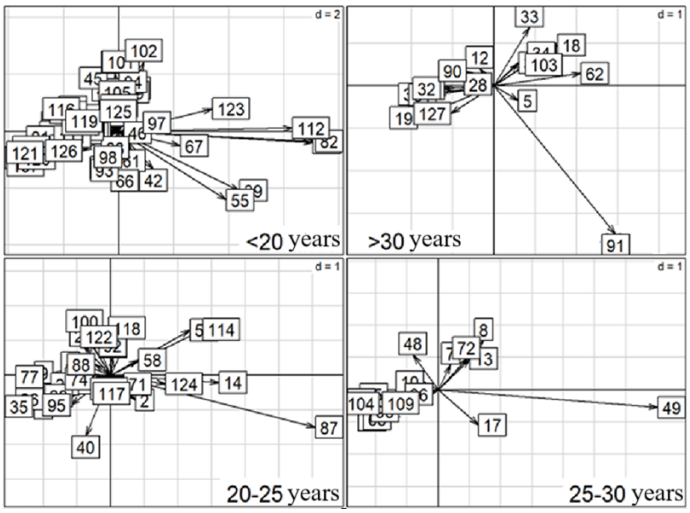

Figure 10. Intraestructure

DISCUSSION

Observed differences between age groups have important educational implications. Lesser homogeneity in digital competencies of students over 30 years suggests the need to implement specific programs directed at reducing this gap, especially in areas such as communication and digital security, in line with Audrin et al. (2024) recommendations regarding digital skills development in professional environments. Interstructure analysis shows clear similarity between younger groups (<20 years, 20-25 years, and 25-30 years), evidencing homogeneous behaviors in their digital competencies, consistent with León-Pérez et al. (2020), who identified that younger students tend to present similar patterns in self-perception of their emerging digital skills. In contrast, the >30 years' group shows notable differentiation, confirming the generational digital gap documented by Wang et al. (2021) in university students.

High vectorial correlation index (RV) values between the three younger groups, close to 1, confirm these similarities, while lower correlations of the >30 years' group (around 0.85 and 0.86) evidence significant differences. These results align with findings by Martzoukou et al. (2020), who observed that older students present distinct patterns in their self-perceived digital competencies.

Compromise analysis reveals that "Digital Empathy" and "Digital Security" dimensions are fundamental differentiating elements between age groups, with strong projection in the upper left quadrant of the graph. This coincides with what Friesem (2016) points out, who highlights digital empathy as an essential competence in the digital age, and with propositions by Unay-Gailhard et al. (2023) about the importance of digital empathy in contemporary virtual environments.

The "Digital content communication" dimension shows neutral projection between the two principal components, indicating its transversal relevance. This finding corresponds with what Kure et al. (2023) identified, who signal digital communication skills as critical for education. Meanwhile, "Digital content Creation" appears projected in the lower left quadrant, suggesting greater differences between groups, which agrees with descriptive results showing lower scores in this dimension.

Finally, intrastructure analysis reveals greater homogeneity in digital competencies of younger groups, particularly in those under 20 years and the 20-25 years' group, while older groups present greater dispersion. This heterogeneity in groups over 25 years, and especially in those over 30 years, could be explained by variability in exposure and use of technologies throughout their lives, as suggested by Abaddi (2024) and Varenyk and Piskova (2024) in their studies on digital skills in different contexts.

CONCLUSIONS

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Digital competencies analysis revealed a significant generational pattern: groups under 25 years exhibit greater homogeneity in their digital skills, particularly in communication and content management, suggesting uniform exposure to technology and deep integration into their daily lives. In contrast, participants aged 25-30 and especially those over 30 show considerable dispersion (heterogeneity) in their competencies, likely reflecting variable technological experiences throughout their lives. This marked demarcation in the >30 years' group reinforces the concept of generational digital gap, where some individuals present significantly different relationships with technological tools, evidencing distinct degrees of adaptation and familiarity with the digital environment.

The study highlights important dimensions such as Digital Empathy and Digital Security that seem to be key in competency differentiation between groups. Competencies associated with interactions in digital environments and effective use of communication through different platforms reveal themselves as key elements that explain much of the observed differences. While younger groups seem more efficient in mastering these competencies, older groups show a challenge, reinforcing the need for interventions aimed at facilitating these areas.

Among study limitations is that the sample comes from a single university, which might not reflect the diversity of digital competencies in other institutions or geographic contexts. Additionally, the study's cross-sectional nature does not allow evaluation of how these digital competencies might evolve over time or based on different external factors, such as professional technology use. The sample could be expanded in future research including more people from other contexts and regions, to obtain a more representative vision of digital skills in different age groups. A longitudinal study would help understand how these skills develop over time and under influence of factors such as professional experience or continuing education. It is recommended to implement programs directed at older groups to boost their aspects of communication and digital security literacy and reduce the apparent gap observed, so that more active participation in the digital environment becomes possible.

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