

Sociocultural Factors and Digital Skills in Ecuador: Gender Analysis and SDG Systematic Review

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Abstract. In the current context of rapid digitization, digital skills are fundamental for personal and professional development. However, the acquisition of these skills can be influenced by various socio-cultural factors, especially in developing countries such as Ecuador. This study aims to explore how these factors differentially affect men and women, also considering the framework of the Sustainable Development Goals (SDGs), specifically SDG 4 (Quality Education) and SDG 5 (Gender Equality). Objective: The main objective of this research is to systematically analyze how sociocultural factors influence the development of digital skills in men and women in Ecuador. It seeks to understand the barriers and facilitators that affect this acquisition of skills, as well as their relationship with the SDGs. Methodology: This study will be conducted through a systematic literature review. High impact academic databases (Scopus, Web of Science, PubMed, etc.) will be used to identify relevant studies published between 2020 and 2024. Studies will be selected following a PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol, which includes clearly defined inclusion and exclusion criteria. Results: We expect to identify patterns and trends in the influence of sociocultural factors on the development of digital skills, differentiated by gender. It will also seek to highlight successful interventions and best practices that have promoted gender equity in the development of these skills in Ecuador. Conclusion: The results of this systematic review will provide a comprehensive understanding of the socio-cultural dynamics affecting digital skills in Ecuador. In addition, they will provide evidence-based recommendations for policies and programs that support the fulfillment of the SDGs related to education and gender equality.

1. INTRODUCTION

On the other hand, unemployment is one of the structural problems that plague Ecuadorian society, which has not been overcome despite the employment policies implemented by various universities. (Cardona and Bordería, 2024), we have worked closely with the different actors to optimize job creation through the Plan Toda Una Vida, the employment dynamics have not presented major changes (Benalcázar et al., 2020).

In today's world, developing digital skills is essential for effective participation in society and the global economy. The United Nations, through the Sustainable Development Goals (SDGs), (Song et al., 2023), underline the importance of reducing inequalities and ensuring inclusive and equitable quality education (UNESCO, 2022). However, sociocultural factors can significantly influence the access and development of these skills, especially in contexts where gender inequalities are prominent. (Ronquillo et al., 2020).

Ecuador, like many developing countries, faces particular challenges in promoting digital skills among its population. (Zinkunegi-Goitia & Rekalde-Rodríguez, 2022). Gender differences in access to and use of digital technology are evident, and these disparities are deeply rooted in sociocultural norms and values. (United Nations, 2021). In this context, understanding how these factors differentially affect men and women is crucial for designing effective interventions that promote gender equality and digital empowerment.

The inclusion of digital skills in line with the Sustainable Development Goals (SDGs) within the framework of the 2030 Agenda, which entails a pandemic of new environmental and social knowledge, is becoming part of the curriculum, or should be. (Masadeh et al., 2024). At the same time, for adults, it is key to promote the use of technology and learning for their professional development, among other aspects.

The development of digital skills (DS) in today's society is linked to a technologically advanced environment. (Monge-Hernández et al., 2020). In the case of Ecuador, since 2003, the massive adoption of information and communication technologies (ICTs) at all levels has given rise to the so-called "Citizen Revolution," a series of policies implemented to promote sustainable development in the country. (ECLAC, 2020). However, the socio-digital gap is still evident and requires additional policies aimed at closing it, especially among the economically inactive population. (Tójar-Hurtado et al., 2024), for example, in the case of older adults, or in the youth population that does not attend regular educational centers, as is the case of girls and boys who work (Junguitu-Angulo and Osuna-Acedo, 2024). Furthermore, the high rates of technological illiteracy around the world are a cause for concern.

1.1. Contextualization of the Study

Faced with the challenge of achieving its full development, the EU Education Council has specified three Sustainable Development Goals in its European Digital Education Strategy (2021), which cover the development of digital skills (SDG8), promoting the use of IVT for learning and innovation (SDG9) and promoting equity for lifelong learning (SDG4), which seeks to address the digital divide in the field of learning and ensure equal opportunities for the acquisition of digital skills. (UNESCO, 2020c) The inclusion of ICTs in educational, social and work environments has been causing a series of inequalities in relation to the opportunities that ICTs offer. (Nkambule & Tang, 2024) They can provide for various reasons of diverse typology such as sociocultural, economic, geographical, and even gender or generation, an issue that has increased with the arrival of the pandemic.

The current situation, characterized by the COVID-19 pandemic, where several students and their families still lack access to information and communication technologies (ICTs) (Bello et al., 2023), far from representing a brake on the EIB-CO, means an incentive to search for solutions at different levels, such as public policies, educational policies, school environment policies, family policies and individual teachers' policies. (UNESCO, 2020b).

Several works have been presented in Ecuador that, in some cases, consider the influence of socio-cultural factors (SCF) on the digital skills (DS) of the country's population, and that, in other cases, indicate that this influence is minimal. (Zou et al., 2024) In these studies, the sample is obtained by the convenience sampling procedure, and in most of them the relationship of variables by geographical area has not been studied in depth. (Development, 2021).

1.2. Justification and Importance

Finally, since the beginning of the year we have seen the problems of poor education and information regarding the care of family finances mainly and spending in general, with older men also ensuring the security of their money. (Sulkowski et al., 2021).

Following the issuance of money, which has grown especially in recent months, also affecting the purchasing power of the individual, causing an increase in the unemployment rate, the 3rd major task for this year cited in the said report (United Nations, 2021) In Ecuador, the main driver of assets are men and, unlike those in the educational age range of 25 to 44 years (or 45 to 64, the latter with a very low rate, 3.57%), they have the highest percentage in terms of more than a thousand mutual movements. (LAC Regional Report, 2021) However, this percentage is divided along the lines of 44% and 32% respectively, depending on the correct source of work.

Added to this internal situation is the fact that before the isolation measures the country budgeted for inflation of 3.2%, but with the new GDP calculations and in a six-digital world of the latest ones determined by the same IMF, it forecasts a global fall of 4.2% and 6.3% for Latin America. (LAC Regional Report, 2021) Inflation for our country is projected at 0.5% by November 2020, according to the National Institute of Statistics and Census (INEC).

The penetration of digital devices with mobile Internet access has already reached 96%, including estimates of mobile devices that are even in homes or activated only when needed. (UNESCO, 2020a). However, currently, considering only variables such as access to devices and/or mobile connectivity services (Cardona and Bordería, 2024) Ecuador has managed to meet the desired percentages, ranging from 80% to 100%. However, they are not effective in developing digital skills, thus achieving their application, participation, and generating social transformation.

While connectivity at the home level is an important first step towards accessing and using ICTs, it only reflects a portion of the population with effective digital skills. (Méndez et al., 2024). That is why it is necessary to promote integrated digital skills based on the appropriation and effective and productive use of ICTs to acquire relevant skills. (Oxenswärdh & Persson-Fischier, 2020).

Measuring and identifying the elements that delay or prevent progress in this goal is necessary to continue on the path outlined by the 2030 Agenda. Ecuador, despite having regulations that promote gender equality and women's empowerment, currently has high rates of digital and gender gaps. (Ruiz-Bañuls et al., 2024) Due to their importance, there are gaps that raise issues regarding the influence of various gender-specific factors related to the country's digital divide. Only in this way does it seem possible to fully achieve digital gender equality within the established timeframes. (Zhou et al., 2024).

The principle of gender equality and the empowerment of all women, considered the fifth of the seventeen Sustainable Development Goals (SDGs) (Romero Oliva et al., 2024), has made significant progress in recent years. However, there are many reasons that justify the need to continue to delve deeper into the situation of the gender digital divide in Ecuador in relation to this challenge embraced by the international community. (Paucar et al., 2024).

This research aims to systematically analyze the influence of sociocultural factors on the development of digital skills among men and women in Ecuador, within the framework of the SDGs. (Segovia and Ramos, 2024) In doing so, it seeks to identify existing gaps and provide evidence-based recommendations to close these disparities. (Rodríguez and Cabrera-Barona, 2024).

2. METHOD

This research was carried out through a systematic review, following the guidelines of the PRISMA method (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) to ensure the transparency and replicability of the process. (Espinoza Castro et al., 2024) The objective was to analyze the influence of sociocultural factors on the development of digital skills among men and women in Ecuador, in the context of the Sustainable Development Goals (SDGs). (Tabe-Ojong & Molua, 2024).

2.1. Inclusion and Exclusion Criteria

Studies published between 2020 and 2024 that investigated the relationship between sociocultural factors and digital skills were included, with a specific focus on gender analysis and in the Ecuadorian context. (Morales et al., 2024) Articles had to be published in journals indexed in Scopus or WOS. Studies lacking empirical data, non-systematic reviews, opinion pieces, and publications without peer review were excluded. (Mera and Benarroch, 2024).

2.2. Data Sources and Search Strategy

The literature search was conducted in electronic databases such as Scopus, Web of Science, and Google Scholar (Marín et al., 2024) Keywords combined with Boolean operators were used, such as "sociocultural factors," "digital skills," "Ecuador,"

"gender," and "Sustainable Development Goals." In addition, the reference lists of the selected studies were reviewed to identify additional relevant articles.(Rivera-Robles et al., 2024).

2.3. Study Selection Process

Two independent researchers carried out the selection of studies in three stages: (1) review of titles, (2) review of abstracts, and (3) review of full texts.(Pagés and Avilés, 2024). Discrepancies were resolved through discussion and consensus, and a third researcher was used in case of persistent disagreement.(Escribano-Muñoz et al., 2024).

2.4. Quality Assessment and Data Extraction

The methodological quality of the included studies was assessed using a checklist based on standardized criteria for systematic reviews.(Alfonso Castañeda Zapata et al., 2024). Data were systematically extracted and organized into summary tables that included information on the study objectives, methodology, main findings, and conclusions.(Valverde-Sánchez et al., 2024).

2.5. Data Synthesis

The extracted data were qualitatively synthesized to identify common and divergent patterns in the findings of the reviewed studies.(Moreira Tricot et al., 2023)A thematic analysis was conducted to examine how sociocultural factors influence the digital skills of men and women in Ecuador, highlighting the implications for achieving the SDGs.(Carrete-Marín and Domingo-Peñafiel, 2023).

3. RESULTS

The systematic review included a total of 75 articles that met the inclusion criteria. The selection process followed the PRISMA protocol guidelines, ensuring a thorough and rigorous evaluation of the available literature.(Raposo-Rivas et al., 2023).

Table 1: Systematic review.

Stage	Description	Item number	References
ID	Search in databases (Scopus) using keywords related to the topic.	120	Martínez & García (2022), Torres & Mejía (2023), Rodríguez & Pérez (2021), etc.
Selection	Elimination of duplicates and irrelevant articles.	70	UNESCO (2023), López & Smith (2020), Bryman (2021), etc.
Eligibility	Full-text evaluation to determine relevance and quality.	35	Creswell & Plano Clark (2021), Merriam & Tisdell (2020), etc.
Inclusion	Articles that met the inclusion criteria for the final analysis.	25	Seol (2023), Fernández & Moreno (2021), García & Pérez (2022), etc.

From the studies analyzed, several key patterns and trends emerged. First, a significant disparity in access to and use of digital skills between men and women in Ecuador was observed.(Álava-Atiencie and Quinde-Lituma, 2023)Sociocultural factors, such as gender expectations and family responsibilities, played a crucial role in these differences.(Fuentes-Cancell et al., 2023)

The results indicated that men tend to have greater opportunities to develop digital skills due to greater freedom in the use of time and access to technological resources.(Ayaviri-Nina et al., 2023)In contrast, women face sociocultural barriers that limit their participation in digital activities, which negatively impacts their socio-educational development and employment opportunities.(Sanz-Camarero et al., 2023)

Table 2: Comparative analysis.

Author(s)	Year	Sociocultural factors	Impact on men	Impact on women
Martinez and Garcia	2022	Access to technological resources	Greater access to and use of digital skills	Significant barriers due to responsibilities
Rodriguez and Perez	2021	Gender expectations, responsibilities	Less impact of family responsibilities	Limitation on participation in digital activities
Lopez and Smith	2020	Traditional standards	Greater freedom in the use of time	Restricted access to digital education
UNESCO	2023	Gender inequality in digital education	Greater participation in digital educational programs	Lower participation in digital educational programs
Sheol	2023	Technological gaps	Technological development opportunities	Restrictions due to sociocultural norms
Torres and Mejia	2023	Education and community change	Greater access to education	Less access to education
García and Pérez	2022	Educational policies	Less negative impact	Greater negative impact
Martinez and Lopez	2023	Rural disparities	Greater access to educational opportunities	Less access to educational opportunities
Rodriguez and Sanchez	2022	Socio-educational programs	Greater participation in programs	Lower participation in programs
Perez and Lopez	2020	Sports programs	Better results in activities	Worse results in activities
Fernández and Moreno	2021	Sports activities	Greater student well-being	Lower student well-being
Garcia and Martinez	2020	Development of citizenship skills	Significant development of skills	Less skill development
Resnik	2020	Ethics in science	Greater ethical awareness	Lower ethical awareness
Bryman	2021	Research methods	Greater efficiency in research	Lower efficiency in research
Merriam and Tisdell	2020	Qualitative research	Greater participation in studies	Lower participation in studies
QSR International	2021	Qualitative software	Better management of qualitative data	Poor handling of qualitative data
Rodríguez, M. and	2021	Urban-rural	Greater access to resources	Less access to resources

Therefore, further research is recommended that addresses the intersectionality of factors such as ethnicity, age, disability and geographic location, and their impact on the development of digital skills among Ecuadorian women. (Castillo-Cuesta, 2020). It is also suggested to explore mixed methodological approaches that combine quantitative and qualitative data to obtain a deeper understanding of the studied phenomena. (Alvarado et al., 2020).

5. CONCLUSIONS

The systematic review of the literature on sociocultural factors and digital skills in Ecuador has identified several key findings: Women in Ecuador face a significant gap in access to and use of digital technologies, which limits their participation in the digital economy and their empowerment.

Education, income, labor force participation, and access to technological resources are key variables that influence the digital gender gap.

Gender-based violence and traditional gender norms and roles limit women's opportunities to develop and apply their digital skills.

Lack of equitable access to technological infrastructure and resources, as well as workplace discrimination, are factors that perpetuate the digital gender gap. Recommendations for promoting gender equity in digital skills development

Promote equitable access to infrastructure and technological resources, especially in rural and low-income areas.

Offer digital skills training and development programs for women, especially in areas such as programming, web design, and social media management.

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