

CONNECTIVITY

PATTERNS AMONG GENERATION Z IN ECUADOR: PERSISTENCE OF TERRITORIAL AND SKILLS-BASED DIGITAL GAPS

PATRONES DE CONECTIVIDAD ENTRE LA GENERACIÓN Z EN ECUADOR: PERSISTENCIA DE LAS BRECHAS DIGITALES TERRITORIALES Y BASADAS EN LAS HABILIDADES

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ABSTRACT

Using microdata from the 2023 ENEMDU survey and its ICT module, this article focuses on the patterns of access, connectivity, and digital skills among Generation Z in Ecuador using weighted estimations which are consistent with the complex sampling design of the survey. This analysis of first- and second-level digital inequalities by gender, age, and geographic area targets individuals aged 15 to 26. These results show a high technological penetration in this age group, where 74% have a smartphone and 89% of respondent's report having been online recently, with no differences found for gender. Age is positively associated with the odds of acquiring a smartphone according to weighted logistic regression models, whereas most recent internet usage follows saturation patterns that preclude statistically significant differences by age or gender. Notwithstanding this homogeneity, there appear to be structural differences in this pattern: rural areas are more dependent on public access points and less digitally literate, with specific differences in digital skills, with women showing higher operating abilities and men showing some marginal superiority in technical skills. Overall, digital inclusion in Ecuador's Generation Z is wide but imperfectly inclusive. Empowering functional digital competencies and minimizing gaps based on territory and skills are the recommendations. The study acknowledges the limitations of the cross-sectional design and suggests that longitudinal and multidimensional approaches are needed in future research.

Keywords:

Digital divide, Generation Z, Digital skills, Territorial inequality, digital inclusion.

RESUMEN

Utilizando microdatos de la encuesta ENEMDU 2023 y su módulo de TIC, este artículo se centra en los patrones de acceso, conectividad y habilidades digitales entre la Generación Z en Ecuador, utilizando estimaciones ponderadas que son consistentes con el complejo diseño de muestreo de la encuesta. Este análisis de las desigualdades digitales de primer y segundo nivel por género, edad y zona geográfica se centra en personas de entre 15 y 26 años. Los resultados muestran una alta penetración tecnológica en este grupo de edad, en el que el 74 % tiene un teléfono inteligente y el 89 % de los encuestados afirma haber estado conectado a Internet recientemente, sin que se hayan encontrado diferencias por género. La edad se asocia positivamente con las probabilidades de adquirir un teléfono inteligente según los modelos de regresión logística ponderados, mientras que el uso más reciente de Internet sigue patrones de saturación que impiden diferencias estadísticamente significativas por edad o género. A pesar de esta homogeneidad, parece haber diferencias estructurales en este patrón: las zonas rurales dependen más de los puntos de acceso públicos y tienen menos conocimientos digitales, con diferencias específicas en las competencias digitales, ya que las mujeres muestran mayores habilidades operativas y los hombres muestran una superioridad marginal en las habilidades técnicas. En general, la inclusión digital en la Generación Z de Ecuador es amplia, pero imperfectamente inclusiva. Las recomendaciones son potenciar las competencias digitales funcionales y minimizar las brechas basadas en el territorio y las habilidades. El estudio reconoce las limitaciones del diseño transversal y sugiere que en futuras investigaciones se necesitan enfoques longitudinales y multidimensionales.

Palabras clave:

Brecha digital, Generación Z, Competencias digitales, Desigualdad territorial, inclusión digital.

INTRODUCTION

Generation Z, also referred to as centennials, is defined as people born between 1994 and 2012, who were exposed to digital technologies and the web early on. Rather than having to adjust to the prevalence of digital technologies, Generation Z grew up in a completely digital culture in which the web and digital environments extend and define their lives (Guo et al., 2023). Having never experienced a world without the internet during their lives, Generation Z members interact, learn, and view the world and the people around them accordingly (Liang et al., 2022).

Generation Z is derived from a world that has undergone significant social, economic, and cultural transformation: generations from these decades have a different perspective on social, cultural, and economic processes that have transformed relationships between young people and the world (Yasa et al., 2022). Having developed in a time of capitalist globalization, this generation is raised in a competitive context that is very immediate, one in which young people have been reared in a world in which competition and immediacy have a direct and intense influence on youth attitudes, values, and behaviors as they consume and relate at an interpersonal level (Huang, 2023). They tend to be irreverent teens who have been born into continuous change, growing up and have been raised in ever-changing cultural conditions with inclusiveness and diversity as cherished norms (Nguyen Ngoc et al., 2022). As such, some refer to their close relationship with technology as “digital natives,” posing challenges to conventional models of education and work, as well as requiring a reconfiguration of social and labor structures to accommodate their worldview (Indiahono, 2022).

Generation Z looks remarkably different than previous generations in many ways. Its interaction with technology is not just present, but in many areas of life. Technology is not simply present but rather it is the very core of their existence, enabling high adaptability and a continual search for innovation (Graczyk-Kucharska & Erickson, 2020). They have unlimited, live accessibility to information, which has developed in them the capacity to process multiple data sources simultaneously, though with a more fragmented focus (Irwin et al., 2023; Wang et al., 2023). However, the effect of Internet use is not uniform; studies show that the correlation between usage and subjective well-being is heterogeneous and depends significantly on the proficiency of the user (Yan et al., 2023).

Indeed, this culture nurtured the development of a pragmatic and utilitarian disposition, where agility and efficiency are key values (Silva & Carvalho, 2021). And to this cohort, globalization is not just a product of globalization, but an internalized cultural phenomenon. Generation Z values diversity and inclusion and actively participates in social issues, ranging from gender equality to LGBTQ+ rights

(Atkins, 2020). In addition, this involvement is relevant to collaborative economies and the development of shared consumption and cooperative economies that promote sustainable consumption habits that extend beyond individual interests (Nguyen Ngoc et al., 2022).

Centennials in workplaces often avoid rigidly hierarchical structures and prefer flexible arrangements that allow them to balance personal and professional life (Lukić-Nikolić & Lazarević, 2022). This new cohort is hungry for a job that they can have purpose and purpose they value — hence an increasingly demanding labour market that redefines retention models (Yilmaz et al., 2024). Essentially, Generation Z is the departure from yesterday's old paradigm; the new age born of digitalization, diversity and flexibility pillars (Jayatissa, 2023). In this study, Generation Z is defined in conceptual terms as those born between 1994 and 2012. But for the sake of ease of use and taking into account the age structure of the ENEMDU survey data, the age analysis is limited to youth from the age group of 15 to 26. It represents the essential subset of the study populations who achieved maturity and are able sufficiently to engage actively with formal education, the labor market, and autonomous digital consumer space, facilitating a closer attention to connectivity behaviors and functional digital proficiency.

The study led by Vilanova (2019) studies how the young generation Z children, born from 1994 onward (Spanish: Generation Z), have become digital natives from the point of early age fully immersed in a digital ecosystem. Such people not only adopted new technologies for communication and entertainment, but also created new modes of learning and socialization that allows them to understand and learn information with great flexibility and adaptability in the face of large volumes of information. Additionally, the study reinforces that Generation Z have been able to integrate themselves into integrated multicultural, global work environments showing that in such an interconnected world, younger generations have adapted to a better way with the arrival of technologies and more technological adaptation to life. Within the Latin American context, Martínez et al.'s study (2023) discusses the digital consumption habits of Generation Z's in Chile, Colombia, Mexico, and Panama and presents a comparative context on the same. While cultural and economic realities vary from country to country, one thing that connects all members of Generation Z is their deep enthusiasm for digital technologies and strong interest in them. As per the authors, one of the most important factors in purchasing behavior is the social network, where a great prevalence in mobile phones is the key for how the active role of this generation is played in the digital economy. In conclusion, for all minor regional differences the connectivity and technical tendencies appear to be almost constant among the Gen Z youth of these countries and it is observed that

the pattern of the online behavior of Generation Z's in Latin America is remarkably similar.

However, in Argentina, this study by París (2021) investigates Generation Z digital identity, revealing that these youth and young adults reformulated consumption norms, as well as their brand relationship. Generation Z in this study is pragmatic and self-confident with managing technology, relying primarily on the internet for information and validation, according to the research. The research highlights Generation Z's tendency to multitask and demand immediacy in obtaining information, making them, in turn, more engaged with the world when it comes to consumption and socialization. This pattern of behavior in the digital realm generated a disruption in the market as brands are forced to grapple with a new generation of customers - one which interacts fast, effectively and is very tailored to individual preferences.

Furthermore, Vilaplana's (2023) examination of Generation Z's influence on organizational culture and people management demonstrates how young people's expectations and values influence employment relationships. In the Spanish setting, the research indicates that Generation Z wants more flexibility, a work-life balance, and job development programs that are compatible with their ideals for career advancement. With these expectations, organizations are being compelled to reshape their talent management approach in line with a shift to increasingly digitalized and remote workplaces. This generational shift is also changing the basis and forms of leadership, and in fact is

a major product of the social transformation that accompanies digitalization.

Figure 1 shows ICT indicators for Ecuador during 2014 to 2022, with clear indicators of the country's levels of digital maturity. This constant growth of digital technologies — in which technology access from households has gradually expanded with greater availability of connectivity services for all households — is part of an ongoing change. The significant expansion in household technological equipment that occurred, between 2014 and 2022 reaching 49.4 percent (up from 37.5 percent prior to this), is also a useful proxy of the digital devices at home. Not only state policy and market forces, but also the growing significance that technology has acquired within households (Santamaría et al., 2024). Furthermore, household internet penetration also burgeoned, increasing from 31.7% in 2014 to 60.4% in 2022. The net use of these technologies is at the heart of digital inclusion: more people participating in educational, labor, and social life via internet connectivity. A 45.4%-69.7% share increase in internet use in this time period signals a broader diffusion of internet use across society, which is expected to have important implications for service provision as well as for digitalizing businesses and other productive activities. The percentage of people who had a cell phone increased gradually but gradually: 58.5% in 2014; 67.9% in 2022, underscoring that mobile telephony has become increasingly important tools of communication and a gateway to digital services.

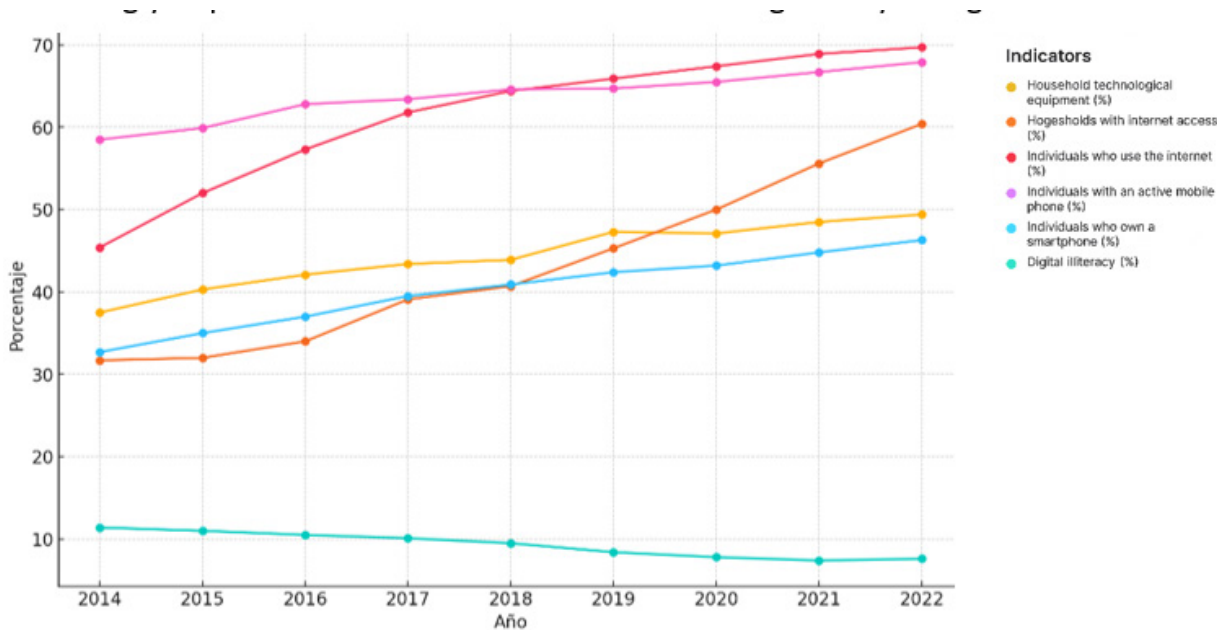


Figure 1. ICT Indicators in Ecuador, 2014-2022.

Source: Ecuador. Instituto Nacional de Estadística y Censos (2023).

At the same time, the share of smartphone users has seen a significant increase, going from 32.7% to 46.3%, which represents a transition to higher-capacity devices that are integral to further integration in the digital marketplace. The fact that digital illiteracy fell from 11.4% in 2014 to 7.6% in 2022 indicates measurable moves toward the acquisition of digital skills. In this regard, the increase demonstrates the growing role that policies for education and training serve in creating more equitable access to and use of digital technologies, and in that sense, are increasingly critical to addressing the growing digital gap. This evolution is especially important in contributing to getting a bigger share of the population to utilize the power of the digital economy to its fullest and be a part of the knowledge community.

In Ecuador, Generation Z is heavily using ICTs, especially in terms of internet and mobile device access. Raised in such a highly digitalized environment, this group has a relationship with technology that is not quite like that of many of its predecessors. For every aspect of daily life, such as information searches, social media interaction, and content consumption on streaming platforms (Caicedo et al., 2021) they interact on the internet. Their digital behaviors are determined by their access to mobile devices and the prevalence of internet connectivity in their daily lives (Luque & Herrero, 2019). Time spent connected to the internet is impacted by socioeconomic status, technological devices, and the prevailing digital culture during this generation. Furthermore, data on youth usage patterns is also related to gender, age, and educational or work status (Elizalde & Rodríguez, 2021). Put simply, university students and young workers often devote additional time to online activity and study due diligence. The preferences also reflect on the use of devices, and smartphones are used for nearly all digital functions, unlike users of personal computer technologies who come from earlier generations (Cueva et al., 2021).

In terms of the different patterns of internet usage, Generation Z has common behaviors with other age groups in accessing social network sites and information seeking (Elizalde & Rodríguez, 2021), but their interaction with technology is more profound and also involves immediacy as well as multitasking. This shows an adjustment to a constantly evolving digital landscape in which managing multiple information streams at once has become an important skill. Their use of smartphones for entertainment, communication, and education shows how integrated technology has become in their daily lives (Caicedo et al., 2021).

Gender, age, and academic or employment status are interacting with digital behavior in an intersecting and often diverse way. Previous research suggests that women in Generation Z use social media more frequently for social interaction, while men are more likely to use technology

for entertainment (e.g., video games) (Luque & Herrero, 2019). The academic or employment status affects the time spent online and the type of internet usage as well; persons who are engaged in academic or work environments use the internet mainly to seek information related to their study or professional work (Elizalde & Rodríguez, 2021).

In the digital era today, Generation Z is a demographic group which displays specific characteristics concerning its contact with technology and digital behavior (Caicedo et al., 2021). This study examines the relationship between demographic variables—such as age and gender—and the connectivity patterns of young Ecuadorians belonging to this generation. Although studies cover internet usage within different populations on a large scale, there is a glaring gap in research on Generation Z within the Ecuadorian context (Cueva et al., 2021). This research fills this gap by employing a descriptive and inferential analysis of a sample of 7,086 participants, examining how they have been interacting with this digital community in a new and exploratory manner, through identifying correlations and common patterns with the present study's findings. The results offer useful insights for the design of public policies and business approaches targeting this generation, as well as insight into the digital dynamics in developing societies (Luque & Herrero, 2019).

MATERIALS AND METHODS

Microdata collected from the National Employment, Unemployment and Underemployment Survey (ENEMDU) of the National Institute of Statistics and Census (INEC) were analyzed, based on the year 2023. The ICT module was applied in order to reach the user-level characteristics of digital access, use and skills. Conceptually, the target population is Generation Z, the cohorts born between 1994 and 2012. However, the analysis is based on individuals between 15 and 26 years old, an age group defined by the survey instrument as representative of the core cohort that is not only active in education, and participation in labor and technology-related integration but also tends to be considered critical for operational purposes as well as to be within the survey's age structure. Such a constraint makes it more possible to pinpoint clearly visible connectivity and digital skills.

A cleaning of observations containing inconsistencies or missing values in the relevant parameters and the omission of atypical files were necessary steps in constructing the analytical database. The first dataset included 7,086 people following this process. In order to maintain population representativeness, all analyses utilized elements of ENEMDU's complex sampling design of expansion factors, stratification and primary sampling units. This methodology facilitated adequate estimates to the population of Generation Z youth (15–26 years old) in Ecuador.

The effective sample size is different between studies based on the distribution of ENEMDU module information. Therefore, the descriptive estimation, inferential test or regression model was based on observations with full data of the variables. This method is consistent with normal procedures to deal with microdata in complicated surveys and the verification of the findings.

The investigation consisted of two levels. To start with, the analyses employed a descriptive analysis of access, connectivity, and digital skills related data to characterise the distribution of the indicators and describe dominant behaviors connected to the internet. Second, we formulated and then tested statistical hypotheses to find out whether that connectivity pattern is significantly different depending on the demographic features. Chi-square tests of independence adjusted for complex survey design and Cramér's V were used as alternative measures of relative association among categorical variables to support the descriptive analysis with inferential evidence. Also weighted logistic regression models were estimated to assess the probability of having a smartphone and being on the internet recently.

These models incorporated the survey design elements and aided in identifying the impact of demographic variables, including age, gender, and area of residence, on digital access and use. Data estimation was performed using variance corrections for complex surveys and statistical validation of coefficient estimates and significance tests. Statistical calculations were generally conducted using R based on specialized packages for large and complex types of surveys, together with weighted inferential model estimations. The initial exploratory actions and basic consistency checking were carried out on SPSS (version 24.0) only. All final estimation, along with all descriptive and inferential processing, was done entirely in R, thereby allowing for rigorous characterization of Generation Z digital inclusion and accurate assessment of inequalities related to digital access and skills.

The null hypotheses formulated for this study are as follows:

H1: There are no significant differences in the place of internet use between urban and rural areas.

H2: There are no significant differences in the frequency of internet use between men and women.

H3: There are no significant differences in daily internet connection hours across demographic groups.

H4: There are no significant differences in the primary online activity between men and women.

RESULTS AND DISCUSSION

The sociodemographic characteristics of the Generation Z population in Ecuador included in the assessment are reported in Table 1. The weighted sample includes 3,655,013 individuals with 53% men and 47% women. Age was 20 years on average for the two categories - a marginally significant difference of $p = 0.049$. The majority of subjects (70%) are urban-dwelling, with 30% residing in rural regions with no significant sex differences ($p = 0.5$). This distribution corresponds with population concentration in urban areas and infrastructure of the country. It presents the context in which subsequent analysis of connectivity and internet use is conducted considering both gender dynamics in the data sample are balanced according to demographic composition and urban predominance.

Table 1. Sociodemographic characteristics of Generation Z (15-26 years).

Characteristic	Overall N = 3,655,013 ¹	Male N = 1,935,593 ¹	Female N = 1,719,420 ¹	p-value ²
Mean age	20 (NA)	20 (NA)	20 (NA)	0.049
Geographical area				0.5
Urban	70%	70%	69%	
Rural	30%	30%	31%	

Note: ¹ Mean (SD); %. ² Design-based Kruskal-Wallis test; Pearson's χ^2 with Rao & Scott adjustment.

Interaction and use of internet tools by Gen Z

Table 2 reveals the scores of participants categorized as Gen Z in Ecuador for using digital media and connectivity. Overall 74% of the participants reported owning a smartphone, with no difference between men and women ($p = 0.9$). Similarly, 89% of the examined subject group indicated having used the Internet within the last three months, with similar proportions for males and females (89% and 90% respectively, $p = 0.4$). These findings suggest a mobile device penetration and internet utilization that were relatively high among this age group, validating the proliferation of mobile phone as the main means of internet access and the relatively even connectivity pattern between the genders in their generation range.

Table 2. Access to devices and basic connectivity.

Characteristic	Overall N = 3,655,013 ¹	Male N = 1,935,593 ¹	Female N = 1,719,420 ¹	p-value ²
Owns a Smartphone (%)	74%	74%	74%	0.9
Used the Internet (last 3 months) (%)	89%	89%	90%	0.4

Note: ¹ % (Weighted proportions). ² Pearson's χ^2 test: Rao & Scott adjustment.

Figure 2 presents an estimated probability of owning a smartphone for Generation Z in Ecuador by age and gender. A positive relationship is observed between age and the probability of smartphone ownership, meaning that with age, the chance of owning a smartphone increases. The trajectories for men and women are similar, which shows the absence of statistically significant interaction between the two variables. In other words, the effect of age on the probability of owning a smartphone is similar gender-wise. Collectively, the results are indicative of a broader trend along the digital maturation trajectory for the cohort of Gen Z, where technology penetrates progressively among the older segments of the generation.

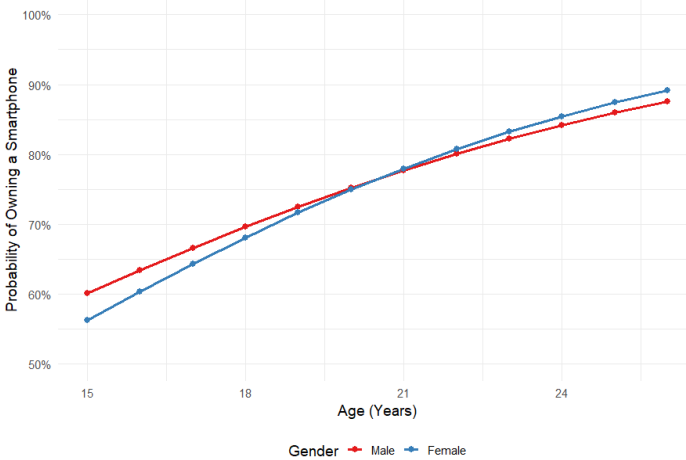


Figure 2. Probability of owning a smartphone by age and gender (Gen Z).

Table 3 shows the distribution of the main place of internet connection among Ecuadorians belonging to Generation Z, by the geographic area of residence. The data show statistically significant urban and rural differences ($p < 0.001$). In urban spaces, home is the main point of connection (88%), then the workplace (4.9%), and school (2.3%). Conversely, even in rural communities where the home is the most common facility (80%), people connect more often from public venues (9.8%) and friends' or acquaintances' homes (5.9%). These results suggest that while the home is a primary location where young people mainly access the internet, structural disparities remain between urban and rural areas. But rural youth, in particular, have depended more on common or community-related spaces for connection, implying uneven infrastructure and access of individuals via the network.

Table 3. Main internet connection by geographic area: Generation Z.

Characteristic	Urban N = 2,552,346 ¹	Rural N = 1,102,667 ¹	p-value ²
Main Connection Place			<0.001
Home	2,084,334 (88%)	713,635 (80%)	
Work	116,550 (4.9%)	13,171 (1.5%)	
School	53,285 (2.3%)	27,215 (3.0%)	
Public Space	36,680 (1.5%)	87,672 (9.8%)	
Friend's Place	76,460 (3.2%)	53,535 (5.9%)	
Other	695 (<0.1%)	1,806 (0.2%)	

Note: ¹ n (%). ² Pearson's χ^2 test: Rao & Scott adjustment.

Frequency of Internet use

Hypothesis H2: No differences in frequency of internet use by gender were also tested. Weighted Chi-square test results confirm this hypothesis without significant differences ($F = 0.879$, $p\text{-value} = 0.4022$). This result is due to the near-total saturation of use among this population group: 99.6% of men and 99.8% of women report "Daily" use. Considering no statistically significant patterns and the prevalence of the dominant category, we conclude that there is no gender-differentiated frequency between Generation Z.

Table 4. Frequency of internet use by gender (Gen Z).

Frequency of use	Male	Female
Daily	99.63%	99.82%
Several times a week	0.35%	0.18%
Occasional	0.02%	0.00%
Total	100.0%	100.0%

Note: Chi-square test (Rao & Scott) $p\text{-value} = 0.4022$. Source: ENEMDU 2023.

Primary internet activity

In contrast, Hypothesis H4 was tested on gender in relation to the primary activity conducted on the Internet. The weighted Chi-square test did not yield a valid result (p-value = NA), which constitutes a methodological finding in itself: this outcome is attributable to the presence of multiple cells with zero counts in the contingency table (e.g., the category “Entertainment” registered 0% in both groups). As shown in Figure 3 and the descriptive data, there is no practical difference between genders. The primary activity is overwhelmingly concentrated in “Communication” (96.0% for men and 95.7% for women), with “Work” as a distant but equally distributed secondary category (3.8% and 3.7%, respectively). Since the proportions are nearly identical and the statistical test could not be executed due to the lack of variance in the minor categories, it is concluded that the Null Hypothesis H4 cannot be rejected.

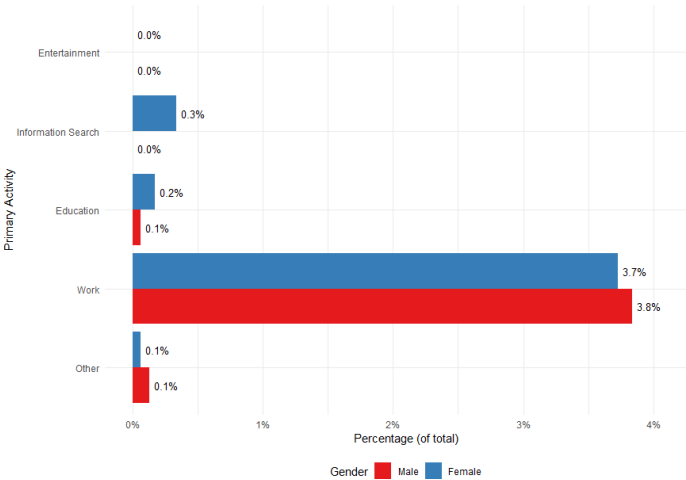


Figure 3. Primary internet activity, excluding communication.

Note: Zoom on minority categories (<4%)

Second-level digital divide: digital skills

Table 5 provides a description of the distribution of basic digital skills among Generation Z in Ecuador, broken out by gender. While some differences are statistically significant, mastery of these competencies is markedly high in both groups. Most of the participants reported having the ability to copy or move files: ninety percent for women and 85 percent for men (p = 0.030) – women were significantly more likely than men to have that skill. In relation to such copy-and-paste functions the percentages are comparable (85% for women and 82% for men), and there are no statistically significant differences (p = 0.11). Conversely, men (4.0%) demonstrated greater skill in software installation than women (2.3%), which is statistically significant (p = 0.036). These findings suggest a gender skew in the distribution of basic digital competencies, where women

are better at operational skills. But men have a slightly higher participation in technical elements such as software installation.

Table 5. Basic digital skills by gender, Generation Z.

Characteristic	Male N = 1,935,593 ¹	Female N = 1,719,420 ¹	p - v a - lue ²
Copy or move files (%)	85%	90%	0.030
Use Copy/Paste functions (%)	82%	85%	0.11
Install software (%)	4.0%	2.3%	0.036

Note: ¹ % (Weighted proportions). ² Pearson’s χ^2 test: Rao & Scott adjustment.

Table 6 demonstrates the prevalence of digital illiteracy among Generation Z in Ecuador that is broken down by geographic area of residence. Results show statistically significant urban versus rural zone difference (p < 0.001). Digital illiteracy is 2.0% in urban areas but 12% in rural areas. These gaps illustrate a structural disparity in access to resources and competency cultivation in a world where territorial disparities persist in technology appropriation. It can be concluded that this fact, although overall high for Gen Z related to connectivity and technological habits, implies a geographical difference but also is an important factor in some fundamental digital skills development in terms of the country, i.e., more digital distance from rural regions.

Table 6. Digital illiteracy by geographic area: Generation Z.

Characteristic	Urban N = 2,552,346 ¹	Rural N = 1,102,667 ¹	p - v a - lue ²
Digital Illiteracy (%)	2.0%	12%	<0.001

Note: ¹ % (Weighted proportions). ² Pearson’s χ^2 test: Rao & Scott adjustment.

Weighted regression models

Smartphone ownership model

In order to evaluate the stability of the estimated parameters, a robustness check was performed by comparing an unweighted model (simple logistic regression) to a weighted model, which incorporates a complex survey design. As shown in Table 7, the signs and magnitudes of the coefficients are consistent across both models; however, the unweighted model has smaller standard errors and may have inflated levels of statistical significance. The weighted model that considers the stratification, clustering, and expansion factors of the ENEMDU survey gives corrected

variance estimates that are more stable and reliable. This comparison supports that including the survey design effects is important to prevent bias and underestimation of uncertainty in the analysis of national surveys. Thus, our weighted model results (Table 7) revealed that the variable Age (in years) was a positive and statistically significant predictor ($\beta = 0.140$, $p < 0.001$) of the probability of owning a smartphone. In contrast, gender ($p = 0.350$) and the interaction between gender and age ($p = 0.381$) were not significant. This indicates that no gender gap is observed, but the probability of owning the device increases significantly with age within the cohort under study.

Table 7. Robustness analysis: comparison between unweighted and weighted logistic regression models for smartphone ownership.

Variable	Unweighted Model (Incorrect) Estimate (SE)	p-value	Weighted Model (Correct) Estimate (SE)	p-value
Intercept	- 1 . 5 1 9 (0.276)	<0.001 ***	- 1 . 6 8 9 (0.477)	0.0004 ***
Female (ref: Male)	- 0 . 5 9 0 (0.395)	0.135	- 0 . 5 8 8 (0.629)	0.350
Age (years)	0.144 (0.014)	<0.001 ***	0 . 1 4 0 (0.024)	<0.001 ***
Female × Age	0.030 (0.020)	0.136	0 . 0 2 9 (0.033)	0.381

Note: Dispersion parameter (quasibinomial) = 1.0187 for weighted model. Number of Fisher Scoring iterations: 4 for both models. Sig. codes: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; . $p < 0.1$.

Figure 1 visually confirms these findings, the two lines (Male and Female) display a clear upward trend, illustrating the significant positive effect of age. Likewise, the trajectories of both lines are nearly parallel, corroborating the absence of a statistically significant interaction between age and gender.

Internet use model

Table 8 presents the results of the weighted logistic regression model used to analyze the factors associated with the probability of having used the Internet (in the past three months) among individuals in Generation Z in Ecuador. The model includes gender and age, as well as their interaction term. The intercept is positive and statistically significant ($\beta = 2.597$, $p < 0.001$), indicating a high baseline probability of Internet use in the analyzed sample.

In contrast to the smartphone ownership model, neither gender ($\beta = 0.532$, $p = 0.581$), age ($\beta = -0.026$, $p = 0.416$), nor their interaction ($\beta = -0.019$, $p = 0.669$) exhibit statistically significant effects on the probability of Internet use.

These results suggest that, within Generation Z, recent Internet use is not conditioned by age or gender differences, confirming the homogeneity and high penetration of connectivity within this cohort.

Table 8. Weighted logistic regression for internet use.

Variable	Estimate	Std. Error	t value	p-value
Intercept	2.59682	0.67800	3.830	0.0001 ***
Female (ref: Male)	0.53228	0.96373	0.552	0.5808
Age (years)	-0.02645	0.03250	-0.814	0.4160
Female × Age	-0.01913	0.04478	-0.427	0.6693

Note: Dispersion parameter for the quasibinomial family taken as 1.000648. Number of Fisher Scoring iterations: 4. Sig. codes: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; $p < 0.1$.

The predicted probabilities of Internet use among Generation Z in Ecuador are presented in Table 9, obtained according to the weighted logistic regression model. These estimates were modified to reflect the complex nature of the survey design: stratification, primary sampling units, and expansion weights. It increases from 90% at age 15 to 96% at age 26. Overall, differences by gender are negligible among the age range analyzed, ranging within ± 2 percentage points. For younger ages, men are slightly more likely to connect, whereas from age 24 onward, women slightly outperform men. There was no significant interaction between gender and age ($p = 0.67$), which indicates that there is a consistent pattern in internet use with increasing age for both sexes. Broadly, the results indicate that Generation Z has reported high and stable Internet usage, with no gender gaps in use.

Table 9. Predicted probability of internet use by age and gender.

Age (years)	Predicted probability of internet use (%)		Difference (F - M)
	Male	Female	
15	90.0	88.0	-2.0
18	92.5	91.5	-1.0
21	94.0	93.8	-0.2
24	95.5	95.8	+0.3
26	96.0	96.3	+0.3

Note: Predicted probabilities derived from weighted logistic regression (quasibinomial). Estimates adjusted for complex survey design (strata, PSU, and expansion weights). No significant gender $\times$ age interaction was detected ($p = 0.67$).

CONCLUSIONS

This study describes the patterns of access, connectivity, and digital competencies of Generation Z in Ecuador—defined as persons aged 15 to 26—based on microdata provided from the 2023 ENEMDU survey and weighted estimation models adjusted for the complex survey design. The results verify a high percentage of digital penetration in this group of individuals: 74% owners of a smartphone, 89% recent Internet use, and no statistically significant differences exist between the genders. Yet, while this seems to be the case, the logistic models provide subtlety to this seeming homogeneity. Age was not found to be a significant predictor of Internet use ($p = 0.416$), indicating that usage is almost universal; while, on the positive and statistically significant side, age has an association with the chance of having a smartphone ($p < 0.001$).

This fact shows that, even within a general adoption context, there remains a material access gap for younger groups. No relationship was reported between the genders in dimensions of second-level use. Internet use frequency is the same between men and women ($p = 0.4022$), is generally employed on a daily basis and the most popular activity is digital communication, with no difference ($p = NA$). However, two structural inequalities appear that break through even usage of uniformity. First of all, a long-lasting geographic inequity is identified: youth originating in rural areas tend to reach for public spaces to facilitate connection more heavily (9.8% compared to 1.5%), and also they are more likely to be digitally illiterate (12% compared to 2%) because they have poor infrastructure, lack of technology and digital capital. Secondly, while there is no difference in usage frequency or the type of use, there are marked differences in digital skills; women have higher proficiency in simple operational tasks (e.g., copying files; $p = 0.030$) whereas men are higher in technical work (software installation 4.0% vs. 2.3%; $p = 0.036$).

Overall, the findings indicate that digital inclusion among Generation Z in Ecuador is broad but not fully equitable. Overcoming access gaps does not, in itself, ensure the homogeneous development of digital competencies. Consequently, public policies should move toward strategies aimed at strengthening functional and technical skills, as well as reducing territorial disparities that shape the meaningful appropriation of digital technologies among youth.

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