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Benefits and Barriers of the use of technology in older people: the ethical importance of the digital divide

Beneficios y Barreras del uso de la tecnología en personas mayores: la importancia ética de la brecha digital

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Abstract:

Currently, Information and Communication Technologies (ICTs) are present in daily life, in most contexts where older adults operate. Thus, the purpose of this study was to analyze the barriers and benefits of technology use among older adults attending the Institute for Older Adults in Hidalgo during June 2025. A quantitative, non-experimental, cross-sectional, and descriptive study was conducted with a non-probability sample of nine older adults, who were interviewed and surveyed about their technology use. The analysis of the results, using percentage frequencies, shows that the most frequently used devices are mobile phones and smart TVs; the main barrier being the lack of training in the use of technological devices. Therefore, the relevance of ICT use and the need for digital literacy training focused on older adults are emphasized.

Keywords:

Older adult, technology, cell phone.

Resumen:

En la actualidad las Tecnologías de la Información y Comunicación (TIC) se encuentran presentes en la vida cotidiana, en la mayoría de los contextos en los que se desenvuelven las personas mayores. Asi, el propósito del presente estudio fue analizar las barreras y beneficios del uso de la tecnología en las personas adultas mayores que acuden al Instituto de las personas Mayores, en Hidalgo, durante junio de 2025. Para lo que se empleó un estudio cuantitativo, no experimental, transversal y descriptivo; con una muestra no probabilística de nueve personas mayores, a quienes se les aplicó, mediante entrevista, una encuesta sobre el uso de la tecnología. Donde el análisis de los resultados, mediante el porcentaje de frecuencias que, muestra que los dispositivos más utilizados son el teléfono móvil y la televisión inteligente; siendo la principal barrera la falta de capacitación para el uso de los dispositivos tecnológicos. Por lo que se enfatiza la relevancia del uso de las TIC y la necesidad de una alfabetización digital enfocada a las personas mayores.

***Palabras Clave**:*

Adulto mayor, tecnología, celular.

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INTRODUCTION

The use of ICTs in older adults represents social and emotional benefits (Aguirre & Manasía, 2021). The perception of utility has been referred to as a determining factor in technological adoption, as pointed out by Martínez-Alcalá et al. (2022). In this sense, the research supports the idea that technology not only fulfills an instrumental function, but also acts as a means of social inclusion and strengthening emotional well-being in old age. The advancement of information and communication technologies (ICTs) has made great changes in people's daily lives, in all areas: education, communication and access to services. In this scenario, the use of technology in older adults has become a topic of social and academic interest, this in the face of the increase in the aging population worldwide. The World Health Organization highlights that active ageing involves enhancing opportunities for participation, safety and well-being, elements in which technology can play a fundamental role. (World Health Organization [WHO], 2022). Several studies have proven that the appropriate use of mobile devices, online services and digital platforms can enhance the autonomy, cognitive stimulation and social inclusion of older adults. Similarly, technology helps us with access to health services through telemedicine; This helps us improve the quality of life and general well-being of the elderly population. (Czaja et al., 2019). Different studies have indicated that older adults use ICTs mostly to communicate with family and friends. Aguirre and Manasía (2021) point out that ICTs strengthen social ties and facilitate access to information resources; However, they also highlight the existence of barriers such as the lack of digital literacy, fear of the use of devices and the difficulties derived from an inaccessible technological design. In this sense, Martínez-Alcalá et al. (2022) mention that when technologies are appreciated as practical and easy to use, there is a greater willingness to integrate them into daily life. However, the authors mention that the lack of adequate training limits learning about the benefits of using technology. According to the Pew Research Center (2021), despite the fact that the management approach has been increasing among older adults, its frequency of use and confidence are still low compared to other age groups. The National Observatory of Technology and Society (ONTSI, 2024) mentions that the frequent use of the internet by older people has progressively increased in recent years, particularly in activities related to communication. Different studies indicate that digital exclusion is not limited to access to devices or internet connection, but also includes the development of digital skills and the design of devices according to the needs of the elderly. In this sense, age is configured as a determining factor, since the older the risk of technological exclusion increases, especially in rural contexts and in people with less schooling or health problems, which limits their active participation in an increasingly digitalized society (Zhang & Ma, 2026). Likewise, the digitalisation of essential services, such as administrative procedures and access to information, has generated new forms of social inequality, due to the fact that a significant part of the elderly population lacks the necessary skills to use them autonomously, leaving them in a situation of dependency or exclusion (Fundación Ferrer i Guàrdia, 2022). Therefore, the study of the digital divide in this population group is essential to understand the challenges of the social and generational gaps that allow us to visualize the problems of social exclusion based on age and promote strategies that guarantee equitable access to information and communication technologies, which implies generating public policies with an ethical and bioethical sense that favor a distributive justice that takes into account age for equitable access to the goods and services that the State grants and regulates among civil society. The digital divide in older adults is an associated problem, social, economic and territorial factors. In Latin America, access to and use of the internet in this population group is conditioned by variables such as educational level, income, and place of residence, with rural areas being the most affected by limited technological infrastructure and scarce opportunities for digital training (Ullmann & Sunkel, 2019). In addition, the low frequency of use and the performance of basic digital activities show inequalities in the appropriation of technologies, which restricts their social participation and access to online services (Erazo Rivera et al., 2025). In this context, reducing the digital divide becomes essential to promote active ageing, autonomy and social inclusion of older people.

ETHICS AND BIOETHICS

The use of technology in older adults not only implies a social and technological phenomenon, but also an ethical dimension related to dignity, autonomy, health and social justice. From the perspective of bioethics, equitable access to digital technologies can be considered a fundamental element to guarantee respect for human rights and the quality of life of this population group. One of the fundamental principles of bioethics is the principle of autonomy, which states that every person has the right to make informed decisions about their own lives (Beauchamp & Childress, 2019). In the case of older adults, access to and proper use of technology strengthens their autonomy by allowing them to communicate, get information, and manage services independently. The World Health Organization (2022) highlights that active ageing involves ensuring conditions that favour participation and well-being in old age. From this perspective, digital inclusion becomes a social and ethical responsibility, as it contributes to respect for human dignity and the reduction of situations of exclusion. In addition, the development of technologies aimed at older adults must consider the principle of non-maleficence, avoiding designs that generate frustration, dependency or vulnerability to digital fraud. For this reason, digital literacy and accessible design are not only educational strategies, but also ethical commitments aimed at protecting this population. Consequently, the analysis of the use of technology in older adults from the perspective of bioethics allows us to understand that digital inclusion is not only a technical process, but an issue linked to human rights, equity and social justice. Therefore, the purpose of this study was to analyze the barriers and benefits of the use of technology in older adults who attend the Institute for the Elderly, in Hidalgo, during June 2025.

METHODOLOGY

Type of study

Quantitative, non-experimental, cross-sectional and descriptive

Population and sample

Seniors attending the National Institute of Older Adults, in Hidalgo, in June 2025. The sample consisted of 9 older adults, aged between 61 and 79 years, selected through non-probabilistic sampling for convenience, due to the accessibility and availability of the participants.

Instruments

Survey on the use of technological devices, their ease, barriers and opinion, with Likert-type answer options.

Procedure

1. Request for access to the authorities of the National Institute for Older Adults, in Hidalgo;

2. Invitation to voluntary and anonymous participation of the elderly, with the signing of the informed consent. 3. Application of the survey, through interview, in an approximate time of 15 minutes per participant.

DATA ANALYSIS

Because the scale of the responses was of the Likert type; it is considered a categorical ordinal scale; therefore, descriptive statistics of frequency, in percentages, were used for the analysis of the data. As well as measures of central tendency (mean) and dispersion (range), for age; as it is an interval-type variable.

RESULTS

The sample was made up of 9 older adults aged between 61 and 79 years, with an average age of 70 years. This data indicates that the surveyed population is within the stage of intermediate and advanced older adulthood.

Where, as can be seen in Table 1, 77.85% report being female, 44.4% have primary education, 77.8% are not economically active and 44.4% are alone.

Table 1
Sociodemographic characteristics of the participating older people.

Level of education			
	Female	Male	Total
High School	11.1%	0.0%	11.1%
Primary	33.3%	11.1%	44.4%
Professional	11.1%	11.1%	22.2%
Technical	22.2%	0.0%	22.2%
Economically active			
	Female	Male	Total
No	55.6%	22.2%	77.8%
Yes	22.2%	0.0%	22.2%
Who you live with			
	Female	Male	
Granddaughter	11.1%	0.0%	11.1%
Couple	33.3%	11.1%	44.4%
Alone	33.3%	11.1%	44.4%
Gender			
	Female	Male	
Total	77.8%	22.2%	100.0%

Source. Own elaboration.

Of these, 100% of the participants indicated that they used a mobile phone, followed by the percentage of people who use smart television (Table 2).

Table 2
Technological device used by the participating elderly people.

	Female	Male	
TMobile phone	77.8%	22.2%	100.0%
Computer de escritorio	0.0%	11.1%	11.1%
Laptop	11.1%	0.0%	11.1%
Tablet	11.1%	0.0%	11.1%
Smart TV	66.7%	11.1%	77.8%

Source. Own authorship.

Regarding the frequency of use of technological devices, mobile phones and smart televisions are reported as the most used, with the lowest frequency in the use of desktop computers (Table 3).

Table 3
Frequency of use of technological devices by the participating elderly people.

Mobile phone			
	Female	Male	Total
Daily	77.8%	11.1%	88.9%
Weekly	0.0%	0.0%	0.0%
Monthly	0.0%	11.1%	11.1%
Never	0.0%	0.0%	0.0%
Desktop			
	Female	Male	Total
Daily	0.0%	0.0%	0.0%
Weekly	0.0%	11.1%	11.1%
Monthly	0.0%	0.0%	0.0%
Never	77.8%	11.1%	88.9%
Laptop			
	Female	Female	Total
Daily	11.1%	0.0%	11.1%
Weekly	0.0%	0.0%	0.0%
Monthly	0.0%	0.0%	0.0%
Never	66.7%	22.2%	88.9%
Tablet			
	Female	Male	Total
Daily	11.1%	0.0%	11.1%
Weekly	0.0%	0.0%	0.0%
Monthly	0.0%	0.0%	0.0%
Never	66.7%	22.2%	88.9%
Smart TV			
	Female	Male	Total
Daily	66.7%	11.1%	77.8%
Weekly	0.0%	0.0%	0.0%
Monthly	0.0%	0.0%	0.0%
Never	11.1%	11.1%	22.2%

Source. Own elaboration.

With regard to the benefits of the use of technology, perceived; as shown in Table 4, although many of the elderly report high levels of satisfaction in the use of mobile phones; On most devices, satisfaction is at low levels.

Table 4
Satisfaction with the use of technological devices by the participating elderly people.

Mobile phone			
	Female	Male	Total
Extremely satisfied	22.2%	0.0%	22.2%
Very satisfied	11.1%	0.0%	11.1%
Moderately satisfied	44.4%	11.1%	55.6%
Poco satisfecho	0.0%	0.0%	0.0%
Not at all satisfied	0.0%	11.1%	11.1%
No response	0.0%	0.0%	0.0%

Desktop			
	Female	Male	Total
Extremely satisfied	0.0%	0.0%	0.0%
Very satisfied	0.0%	11.1%	11.1%
Moderately satisfied	11.1%	0.0%	11.1%
Poco satisfecho	11.1%	0.0%	11.1%
Not at all satisfied	11.1%	11.1%	22.2%
No response	44.4%	0.0%	44.4%
Laptop			
	Female	Male	Total
Extremely satisfied	0.0%	0.0%	0.0%
Very satisfied	0.0%	0.0%	0.0%
Moderately satisfied	22.2%	0.0%	22.2%
Poco satisfecho	11.1%	11.1%	22.2%
Not at all satisfied	11.1%	0.0%	11.1%
No response	33.3%	11.1%	44.4%
Tablet			
	Female	Male	Total
Extremely satisfied	0.0%	0.0%	0.0%
Very satisfied	0.0%	0.0%	0.0%
Moderately satisfied	22.2%	0.0%	22.2%
Poco satisfecho	11.1%	0.0%	11.1%
Not at all satisfied	11.1%	11.1%	22.2%
No response	33.3%	11.1%	44.4%
Smart TV			
	Female	Male	Total
Extremely satisfied	22.2%	11.1%	33.3%
Very satisfied	11.1%	11.1%	22.2%
Moderately satisfied	33.3%	0.0%	33.3%
Poco satisfecho	0.0%	0.0%	0.0%
Not at all satisfied	0.0%	0.0%	0.0%
No response	11.1%	0.0%	11.1%

Source. Own elaboration.

However, despite the fact that the largest percentage of participants perceive the use of technology as useful and necessary, few consider it interesting; with a percentage that, although based, identifies it as complicated; as can be seen in the following table.

Table 5
Opinion of the use of technology by the participating seniors.

Helpful			
	Female	Male	Total
Yes	44.4%	22.2%	66.7%
No	33.3%	0.0%	33.3%
Necessary			
	Female	Male	Total
Yes	66.7%	22.2%	66.7%
No	11.1%	0.0%	11.1%
Interesting			
	Female	Male	Total
Yes	11.1%	11.1%	22.2%
No	66.7%	11.1%	77.8%
Intimidating			
	Female	Male	Total
Yes	0.0%	0.0%	0.0%
No	77.8%	22.2%	100.0%
Complicated			
	Female	Male	Total
Yes	11.1%	0.0%	11.1%
No	66.7%	22.2%	88.9%

Source. Own elaboration.

In addition, most of the participants report not having received training in the use of the devices; although they all express their desire to learn (Table 6).

Table 6
Training in the use of technological devices by the participating elderly people.

Usage Training			
	Female	Male	Total
Yes	22.2%	11.1%	33.3%
No	33.3%	11.1%	44.4%
Interés para formarse			
	Female	Male	Total
Yes	77.8%	22.2%	100.0%
No	0.0%	0.0%	0.0%

Source. Own elaboration.

Thus, as can be seen in Table 7, the main barrier to the use of technology is the lack of knowledge, according to what was reported by the participants, where the cost is presented as irrelevant.

Table 7
Perception of barriers to the use of technology by the participating older people.

Lack of technical knowledge			
	Female	Male	Total
Yes	66.7%	22.2%	88.9%
No	11.1%	0.0%	11.1%
Difficulty learning new things			
	Female	Male	Total
Yes	22.2%	11.1%	33.3%
No	55.6%	11.1%	66.7%
Vision or hearing problems			
	Female	Male	Total
Yes	11.1%	0.0%	11.1%
No	66.7%	22.2%	88.9%
Associated costs			

	Female	Male	Total
Yes	0.0%	0.0%	0.0%
No	77.8%	22.2%	100.0%

Lack of interest

	Female	Male	Total
Yes	22.2%	11.1%	33.3%
No	55.6%	11.1%	66.7%

Fear of making mistakes

	Female	Male	Total
Yes	22.2%	11.1%	33.3%
No	55.6%	11.1%	66.7%

Source. Own elaboration.

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Similarly, the device reported as easiest to use is the smart television, while among the most complicated devices is the desktop computer; presenting a variety in the complexity in terms of the use of mobile phones (Table 8).

Table 8
Perception of ease of use of technological devices by the participating elderly people.

Mobile phone

	Female	Male	Total
Very easy	0.0%	0.0%	0.0%
Very easy	22.2%	11.1%	33.3%
Very easy	22.2%	11.1%	33.3%
Very easy	22.2%	0.0%	11.1%
Very easy	11.1%	0.0%	11.1%

Desktop

	Female	Male	Total
Very difficult	22.2%	11.1%	33.3%
Difficult	0.0%	0.0%	0.0%
Neutral	11.1%	0.0%	11.1%
Easy	0.0%	0.0%	0.0%
Very easy	0.0%	0.0%	0.0%
No response	44.4%	0.0%	44.4%

Laptop

	Female	Male	Total
Very difficult	22.2%	11.1%	33.3%
Difficult	0.0%	0.0%	0.0%
Neutral	22.2%	0.0%	22.2%
Easy	0.0%	0.0%	0.0%
Very easy	0.0%	0.0%	0.0%
No response	33.3%	11.1%	44.4%

Tablet

	Female	Male	Total
Very difficult	22.2%	11.1%	33.3%
Difficult	0.0%	0.0%	0.0%
Neutral	22.2%	0.0%	22.2%
Easy	0.0%	0.0%	0.0%
Very easy	0.0%	0.0%	0.0%
No response	33.3%	11.1%	44.4%

Smart TV

	Female	Male	Total
Very easy	0.0%	0.0%	0.0%
Very easy	11.1%	0.0%	11.1%
Very easy	0.0%	0.0%	0.0%
Very easy	33.3%	11.1%	44.4%
Very easy	22.2%	11.1%	33.3%
No response	11.1%	0.0%	11.1%

Source. Own elaboration.

CONCLUSION

The findings of the present research are aligned with previous studies that highlight the social and emotional benefits of ICT use in older adults (Aguirre & Manasía, 2021). Likewise, the results confirm that the perception of usefulness is a determining factor in technological adoption, as pointed out by Martínez-Alcalá et al. (2022).

Thus, the purpose of this research was to analyze the barriers and benefits of the use of technology in older adults who attend the Institute for the Elderly, in Hidalgo, during June 2025.

However, some difficulties related to learning in the use of devices and access to the internet were also observed, which highlights the existence of digital divides that limit the full use of these tools. This indicates the need to continue promoting digital literacy strategies aimed at this sector of the population.

In conclusion, technology has become a key element for the well-being of older adults, as it favors their social inclusion, strengthens their independence and improves their access to information. Therefore, it is essential to promote accessible training programs, design devices with characteristics adapted to their needs and promote family and institutional accompaniment in the technological learning process.

RECOMMENDATIONS

Implement digital literacy programs aimed at older adults.

Create applications with inclusive approaches, considering aspects such as font size, etc.

Develop public policies for digital inclusion that prioritize older people in rural contexts and with a lower level of education.

Promote intergenerational spaces for technological learning, where family members or young people support the teaching process.

REFERENCES

Aguirre, F., & Manasía, N. (2021). Uso de las tecnologías de la información y la comunicación por adultos mayores. Información Tecnológica, 32(3), 3–12. https://doi.org/10.4067/S0718-07642021000300003

Beauchamp, T. L., & Childress, J. F. (2019). *Principles of biomedical ethics* (8th ed.). Oxford University Press.

Czaja, S. J., Boot, W. R., Charness, N., & Rogers, W. A. (2019). *Designing for older adults: Principles and creative human factors approaches* (3rd ed.). CRC Press.

Erazo Rivera, J., Villavicencio, J. O., & Viteri Espinoza, E.L. (2025). Estrategias para reducir la brecha digital en adultos mayores: Un estudio de caso. *Publicar Ciencia, 1*(1), 1–15.

Fundación Ferrer i Guàrdia. (2022). La brecha digital en España: Factores de desigualdad y exclusión social en la población vulnerable.

Martínez-Alcalá, C. I., Rosales-Lagarde, A., Pérez-Pérez, Y. M., & López-Noguerola, J. S. (2022). Factores asociados a la aceptación de la tecnología digital en personas mayores: Revisión sistemática. *Revista Española de Geriatría y Gerontología, 57*(4), 230–237. https://doi.org/10.1016/j.regg.2022.01.003

Observatorio Nacional de Tecnología y Sociedad. (2024). *Uso de las tecnologías digitales por las personas mayores en España*. ONTSI.

Pew Research Center. (2021). *Internet use among older adults*. https://www.pewresearch.org/internet/2021/04/07/intern et-use-among-older-adults/

Ullmann, H., & Sunkel, G. (2019). *Las personas mayores de América Latina en la era digital: superación de la brecha digital*. Comisión Económica para América Latina y el Caribe (CEPAL). https://repositorio.cepal.org/handle/11362/44580

World Health Organization. (2022). *Ageing and health*. https://www.who.int/news-room/fact- sheets/detail/ageing-and-health

Zhang, Y., & Ma, Z. (2026). *Digital exclusion among middle-aged and older adults in China: Age-period-cohort evidence from three national surveys, 2011–*
2022. [8]Fundación Ferrer i Guàrdia. (2022). *La brecha digital en España: Factores de desigualdad y exclusión social en la población vulnerable*.