Tools at the Service of Public Administrations to Fight Digital Gender Inequalities

Herramientas al servicio de las administraciones públicas para luchar contra las desigualdades digitales de género

Juan Francisco Rodríguez Ayuso[1]

[1] Universidad Nacional de Educación a Distancia
@ jfrodriguez@der.uned.es

Resumen: El presente artículo busca poner de manifiesto cómo la irrupción de la sociedad de la información y, con ella, de las Nuevas Tecnologías de la Información y de la Comunicación, pese a sus bondades, han supuesto también importantes retos en la lucha contra la discriminación de género. Es más, tras su consolidación, podemos hablar de una nueva brecha digital de género que ha resultado ciertamente intensa en los entornos rurales, especialmente desfavorecidos en la implantación de la realidad virtual. Por ello, se establecen los mecanismos para la lucha contra esta nueva forma de discriminación, que deberán ser articulados preeminentemente por parte de las Administraciones Públicas en cuanto garantes de la igualdad entre todos los ciudadanos y la lucha por la satisfacción del interés general, que no ha de redundar sino en el bienestar de todos y todas. En consecuencia, se parte de una pequeña introducción que pone de manifiesto el contexto actual para pasar, seguidamente, a poner de relieve las directrices normativas para conseguir la igualdad de género en el campo de la sociedad de la información, así como algunas iniciativas relevantes llevadas a cabo por parte de los organismos públicos, concluyendo con posibles medidas a adoptar por las Administraciones en pro de la igualdad de género en el entorno digital, en las que se, junto a las previsiones legales, se tomarán también en consideración varias iniciativas públicas en pro de la integración de las mujeres en el entorno digital, procurando minorar las brechas digitales de género, destacando, al respecto, el IV Plan de igualdad de oportunidades entre mujeres y hombres 2003-2006 o, como no, el más reciente y actual, III Plan Estratégico para la Igualdad Efectiva de Mujeres y Hombres 2022-2025.

Palabras Clave: brecha digital, género, Administraciones Pública; entorno rural.

Abstract: This article seeks to highlight how the emergence of the information society and, with it, the New Information and Communication Technologies, despite their benefits, have also brought with them important challenges in the fight against gender discrimination. Moreover, after their consolidation, we can speak of a new digital gender gap that has certainly been intense in rural environments, which are particularly disadvantaged in the implementation of virtual reality. For this reason, mechanisms are established to fight against this new form of discrimination, which should be articulated primarily by the Public Administrations as guarantors of equality among all citizens and the fight for the satisfaction of the general interest, which should only result in the well-being of all. Consequently, the paper begins with a brief introduction that highlights the current context and then goes on to highlight the regulatory guidelines for achieving gender equality in the field of the information society, as well as some relevant initiatives carried out by public bodies, concluding with possible measures to be adopted by the Administrations in favour of gender equality in the digital environment, in which, together with the legal provisions, several public initiatives in favour of the integration of women in the digital environment will also be taken into consideration, trying to reduce digital gender gaps, highlighting, in this respect, the IV Plan for Equal Opportunities between Women and Men 2003-2006 or, of course, the most recent and current, III Strategic Plan for the Effective Equality of Women and Men 2022-2025.

Keywords: digital divide, gender, public administrations, rural environment.

1. BRIEF BACKGROUND

1.1. *Image, today*

The irruption, first, and then the unstoppable advance, of the information society (Castaño, 2016; Rey et al, 2018)[1] has created (from a quantitative and qualitative point of view) the foundations of a new integral model that has definitively transformed social, economic, political, educational, scientific, labour and, of course, technological relations (Sánchez, 2015). This phenomenon, whose definitive impetus is inextricably linked to the emergence of the network of networks and which is characterised by the absolute predominance of information as a dynamic (immaterial and intangible) element, constitutes a challenge of incomparable dimensions for reducing inequalities and achieving fairer and more equitable access to the opportunities, of all kinds, that have arisen from this digitalisation; The European Union forecasts estimate that the demand for jobs in the digital technologies, science and engineering sector will grow by 16% between 2016 and 2030 (European Commission, 2019), generating higher value-added jobs, quality and better working conditions (Instituto de la Mujer y para la Igualdad de Oportunidades, 2020).

However, as is usual in these cases, it is also not free of risks that can only lead to the opposite result, encouraging the emergence or intensification of gaps or biases that were hitherto unknown or, at least, partially invisible. Among these inequalities to be combated, gender-based inequalities are the most prominent (Ministerio de Industria, Turismo y Comercio, 2007)[2] a contrived element of justified discrimination. Indeed, beyond the additional concurrence of other aspects that contribute to aggravate these differences (age, level of education, or rurality, to mention some of the most relevant), the fact is that women are currently under-represented in all areas of decision-making concerning the New Information and Communication Technologies, This is particularly serious if we take into account the relevance and potential that the digital reality currently has in terms of reducing or eliminating these imbalances or, in other words, the

***

1 Some even speak of the 4th Industrial Revolution or Industry 4.0 Revolution to refer to a new stage, driven by the relentless drive of disruptive technologies, capable of causing a real blurring of the boundaries between the physical, the digital and even the biological.

2 Gender, for the purposes of this paper, is a "[s]ociological concept that refers to the social (as opposed to biological) differences between men and women that are learned, change over time, and vary widely both between and within cultures. It is therefore a social construct, whereas sex is a biological condition.

decisive importance that equal access to the Internet and the possibility of producing and receiving information autonomously has in terms of women's access to the information and knowledge society (Primo, 2003).

Recent data corroborate the above statement: if we look at the gender digital divides (Instituto de la Mujer y para la Igualdad de Oportunidades, 2020)[3] (understood as "[...] the difference between the percentage of men and the percentage of women in the use of ICT indicators") (Instituto Nacional de Estadística, 2022) or, in other words, "[...] the analytical concept that explains and measures the delay, with respect to men, that women suffer in the incorporation to the use of new technologies" (De Andrés et al, 2020)), we can see how women's access to and presence in technological environments is still limited, which, in a vicious circle, undermines the acquisition of those digital skills that will ultimately enable their decisive participation in the labour market and their full personal and social development (Mateos, 2019).

1.2. Legal framework

In view of the above, it is essential that the digitalisation of society is the result of a comprehensive policy that, by bringing together all social agents, manages to cover the entire population, especially women. In this sense, the Public Administrations, as we will have the opportunity to analyse in detail in later lines, will have the task of promoting positive and transversal measures to achieve this equal access, removing the obstacles (many of them apparently imperceptible) that prevent this integration from the detection, design, implementation and evaluation phase of the legislation to be developed and taking into consideration the diversity of women, as well as their different situations and needs (Martínez et al, 2010).

This legislation is currently based on a triple territorial dimension:

At the internal Spanish level, firstly, Law 30/2003, of 13 October, on measures to incorporate gender impact assessment in the normative

<div align="center">* * *</div>

3 Current doctrine tends to articulate the gender digital divide in three fundamental and seminal categories: the first gender divide focuses on discrimination in access to digital infrastructures and tools; the second focuses on underlying inequalities in digital uses and skills; and the third focuses on the benefits of ICT use in combating existing inequalities between men and women. Therefore, a relevant conclusion is that women, by the mere fact of being women, suffer from a gender digital divide (which is also a social divide); in this case, the inequalities with the opposite gender are not due to lower knowledge or skills, but to opportunities.

provisions drafted by the Government[4], which, in general terms (thus obviating any reference to the digital phenomenon as a key factor in the equality of men and women), establishes the obligation to include a gender impact study in all Spanish legislative developments. Specifically, the two precepts that comprise it entail a modification of Law 50/1997, of 27 November 1997, of the Government of Spain[5]:

The first of these modifies the second section of Article 22 of the latter Law, which regulates the exercise of the Government's legislative initiative. Subsequently, however, final provision 3.12 of Law 40/2015, of 1 October, on the Legal Regime of the Public Sector, amended Article 22 of the latter Law, which regulates the exercise of legislative initiative by the Government[6] completely modified the wording of this provision.

In this way, the references to gender impact as a specific element that must accompany the procedure for drafting bills by legislative initiative of the Government are eliminated, given that, in addition to disappearing from Law 50/1997, they do not find any correlative reference in Law 40/2015.

The second, for its part, adds a second paragraph to section 1.b) of Article 24 of Law 50/1997, which regulates, for its part, the procedure for drafting regulations.

Once again, and as before, final provision 3.12 of Law 40/2015 entailed a total transformation of this Article 24 of Law 50/1997, making any reference to gender non-existent in it.

Secondly, Organic Law 3/2007, of 22 March, for effective equality between women and men[7], which proceeds, this time, to establish the link between the advances brought about by ICTs and their direct repercussions on specific gender policies, in order to eliminate any element of discrimination. Thus, and emphasising the need for additional protection for women at risk of exclusion and/or located in rural areas (since they can aggravate the discrimination that is being combated), Article 8 of the regulation establishes a mandate that is clearly addressed to public administrations.

In order to achieve these objectives, the ninth additional provision imposed the obligation to set up a special fund of 3 million euros in each of the budget years 2007, 2008 and 2009. However, it would have been

***

---

4 Official State Gazette (hereinafter, BOE) no. 246, of 14 October 2003.
5 BOE no. 285, 28 November 1997.
6 BOE no. 236, of 02 October 2015.
7 BOE no. 71, 23 March 2007.

advisable to extend this same budgetary provision requirement to the following years, allowing for the prolongation of the implementation of activities which, under the protection of Article 28, would seek to approximate and, finally, achieve the intended gender equality for all.

At Community level, the principle of equal treatment between men and women was first introduced by the European Community in Article 141 (ex Article 119) of the Treaty of Rome, which requires that "[...] equal pay for male and female workers for equal work" be guaranteed.

The result of this evolutionary path has led to a whole range of actions by the European Commission on gender equality, such as (Comisión de Derechos de la Mujer e Igualdad de Género, 2009):

a) The *Roadmap for Equality between Women and Men (2006-2010)*, which aims to boost the gender equality agenda on the basis of six priority areas: economic independence on equal terms for men and women, reconciliation of private and professional life, equal representation in decision-making processes, eradication of all forms of gender-based violence, elimination of gender stereotypes and promotion of gender equality in external and development policies.

b) The *Daphne III* programme, the essential aim of which is the prevention and eradication of any violence, especially of a physical, sexual or psychological nature, against children, young people and, as far as women are concerned, as well as the protection of victims and groups at risk as a means of achieving a high level of physical and mental health protection, well-being and social cohesion throughout the European Union.

c) The *Progress* programme, which aims to provide financial assistance for the implementation of the objectives of the European Union in the field of employment and social affairs, promoting analysis, mutual learning, awareness-raising and dissemination activities, as well as assistance to the main actors in this field during the period 2007-2013.

d) The *Commission Communication "An Equality Union: A strategy for gender equality 2020-2025"*, which "[t]aims to achieve a gender-equal Europe where gender-based violence, sexual discrimination and structural inequalities between women and men are a thing of the past; a Europe where women and men, girls and boys, in all their diversity, are equal; where they are free to follow the path they choose in life, enjoy equal

opportunities to thrive and can participate in and lead European society on an equal footing" (Comisión Europea, 2020).

Finally, at the international level, we cannot overlook the importance of the United Nations Convention on the Elimination of All Forms of Discrimination against Women of 18 December 1979 (Asamblea General de Naciones Unidas, 1979) and in force since 1981, which was a milestone for the legal protection of women's equality, covering all areas (political, civil, social, economic and cultural) where inequalities may exist, by requiring all States parties to adopt special transitional measures to accelerate the achievement of de facto equality between the sexes.

2. ELEMENTS UNDERLYING GENDER DISCRIMINATION AND MEANS TO ACHIEVE GREATER EQUALITY AMONG ALL CITIZENS

There are many reasons why women start from an unfavourable position in the process of integration into the dynamics of the functioning of the information society. While some of these reasons lie at the very origin of this gender discrimination, others only increase it, creating a situation that hinders the effectiveness of measures which, if not adopted urgently, could aggravate a situation which is already unjustified (Pérez et al, 2019).

If we look at employment issues, even before the emergence and consolidation of the digital phenomenon, it seems clear that women are incorporated into the labour market to a lesser extent than men. It is logical to think, therefore, that they will be less permeable to the changes that, in this professional environment, will be generated by the irruption of the New Information and Communication Technologies. In addition to this, they will have a clearly lower income, all other things being equal, and less job stability.

Moreover, given the nature of the job itself, it is also predictable that women's jobs are less computerised, so that they tend to work in less computerised environments than men's. This results in a lower perception of the benefits that digitalisation brings with it. Possibly, the reason for this disparity lies in the lower interest that women have traditionally had in STEM disciplines (Instituto de la Mujer y para la Igualdad de Oportunidades, 2020), which, in turn, may be due to the existence of biases (e.g. due to inadequate educational practices, inherited cultural aspects, social influence in shaping technological interests or membership of male-dominated organisations (Sánchez, 2012)) which led, if not to a lesser vocation, at least to a lesser incentive in the promotion of this type of specialities; in any case, there are studies (Charles, 2009) which highlight a striking paradox: in societies with higher rates of gender equality, women are less represented than in less

egalitarian societies, arguing that this is due to the fact that in the former, women have a greater capacity to choose what they like, while in the latter, studies with a greater potential for generating resources or expectations of success are more important.

Lastly, if the employment relationship is not with someone else, but with their own employer, there is also a lower level of entrepreneurship by women in projects of a technological nature. *The Entrepreneurship Map for the year 2021* (South Summit, 2021) provides incontrovertible data: the profile of the entrepreneur in our country (in line with the European and international scenario and in a similar trend to that experienced in previous years) is made up of 20% women, while 80% are men; furthermore, only 9% of start-ups are made up exclusively of women, while 56% are made up solely of men and the rest (35%) are mixed teams. For this reason, and in line with the European Commission (Comisión Europea, 2022), it is vital for Public Administrations to implement actions aimed at promoting women's access to financing, improving access to the information necessary to access it, increasing their training and digital skills, allowing them to participate in professional networks and, in short, facilitating the reconciliation of their professional and personal lives.

If, on the other hand, we focus on cultural aspects, we can see that there is a clear separation between public spaces (linked to social recognition, traditionally reserved for men, known as "productive work") and private spaces (by antonomasia, reserved for women and more appropriate for family care, in what has come to be known as "reproductive work"). These gender biases or gender roles (understood as those biased inclinations towards a person or group based on their gender and which translate into a predisposition, partiality, prejudice or predilection when selecting, representing or making decisions about a person or group (González, 2014)) transfer to the collective imagination the idea that women have greater obligations or family responsibilities and, therefore, less time or availability, not only to be able to access the labour market in optimal or similar conditions to men, but also to access and use the Internet and, in short, to be competitive in digital skills in today's changing environment.

The family environment and the influence it exerts depending on gender is, therefore, unquestionable. The decisions taken by fathers and mothers (influenced, in turn, by the traditionally sexist education received), consciously or unconsciously, will condition, to a large extent, the perception that sons and daughters have of the skills for which they have a greater predisposition. Likewise, the professions they exercise may serve as a mirror of possible jobs they may pursue in the future. In short, the beliefs and

stereotypes held by parents in relation to their children have an important effect on the expectations and goals to which their children aspire (Sáinz, 2008).

The educational environment itself is crucial in the development of these stereotypes of women and, ultimately, in the gender digital divide. Thus, the stages prior to university education (primary and secondary education) show that the knowledge they acquire and the interaction they have with others (especially in the early stages when they learn to relate to others) are decisive in shaping gender roles (more and more of them linked to ICTs) (Instituto de la Mujer y para la Igualdad de Oportunidades, 2005).

From a more informal or playful perspective, elements such as leisure time, games or toys, as well as interaction with the peer group and its influence on the configuration of interests and skills, have a specific relevance in the technological sphere. In this sense, positive experiences developed in childhood and youth around the acquisition and development of digital competences and the use of ICTs generate greater confidence and help to generate skills and interests linked to the virtual sector. At this point, and in contrast to the immediately previous points, a factor external to the purely social or personal interrelationship (whether domestic or external) comes into play, such as marketing, which, if it uses sexist or otherwise differentiating language, can induce, pedagogically and psychologically, digital gender biases that are difficult to remedy in the subsequent development of the (often minor) users of the same (Vázquez et al, 2007).

In this line of immersion in purely virtual scenarios, the increase in sexual harassment of women in technological environments is particularly relevant. Whether in work spaces or in those that transcend the purely professional, the truth is that there are studies that show that, on certain digital platforms, STEM channels run by women accumulate a higher volume of comments and significantly higher proportions of comments related to their appearance or that are hostile, critical, negative, sexist or sexual (Amarsekara, 2019). This is not to mention actions, normally of a sexual nature, which are punishable under criminal law, such as sexting, which takes place (in progressively increasing numbers) via the Internet and which usually targets women, many of whom are minors, with the aggravation (of all kinds) that this entails.

To conclude, special attention should be paid to the gender digital divide and to the biases that are often at the root of this discrimination in one of the specific fields that are driving and consolidating the development of the digital field: data and, on these, the application of Artificial Intelligence tools (also known by its acronym AI), understood as "[...] the

simulation by machines and computer systems of processes typical of human intelligence" (Mateos, 2019). Consequently, the consolidated absence of women in the teams that develop this type of technology, in addition to the partial bias in favour of men of the information that enables decision-making at all levels, leads irremediably (as is generally the case in our societies) to an increasingly acute gender gap at the very heart of the information society and of the phenomena that enable its consolidation as a model of legal-social relations.

This phenomenon is known as "algorithmic discrimination" or "algorithmic bias" and describes systematic and repeated errors that create unfair results, such as arbitrarily giving privileges to one group of users (in this case, men) over others (others, to be more precise) (Asquerino, 2022; Nisa, 2021). For this reason, the human factor will be essential to provide the necessary support in the decision-making process concerning Artificial Intelligence, in order to avoid prejudices (and prejudices) or amoral decisions and, as far as we are concerned here, to avoid actions tending to generate or pronounce the gender digital divide currently prevailing in all these decisive fields of action. In this way, it will be possible to extend the benefits of these new techniques to the entire population, making women and other discriminated groups also aware of the opportunities they represent, involving them in their numerous applications, so that they can participate, on an equal footing, in their conception and development, thus ensuring that they are designed with their interests and needs in mind.

In this respect, part of the doctrine (West, 2019) recommends a number of strategies to counteract the described pernicious effects of these AI techniques:

Firstly, based on the obvious fact that Artificial Intelligence systems are often opaque, it is crucial that these tools are used in a transparent manner and that it is recorded and reported where they are used and for what purpose.

Secondly, thorough testing of these systems throughout their lifecycle will be mandatory. For this reason, and in order to be able to detect and demonstrate the existence of gender bias, discrimination or any other harm, it will be mandatory to carry out checks before they are put into operation, through independent auditing processes and permanent monitoring throughout the entire period they are in operation.

Thirdly, the vocation of any research that aims to mitigate or eradicate digital gender gaps or discrimination must certainly be more far-reaching, while at the same time seeking to produce a broader and more inclusive social analysis of the effects of Artificial Intelligence in different contexts.

This requires the participation of people who, in addition to experience and expertise, belong to different disciplines and are able to interact in a proactive and permanent way.

Fourthly, all of the above, i.e. any planning involving the use of Artificial Intelligence systems, must be preceded by a risk assessment to discern to what extent some technological tools and products should or should not be designed.

3. THE ROLE OF PUBLIC BODIES IN THE FIGHT AGAINST DISCRIMINATION ARISING FROM THE NEW INFORMATION AND COMMUNICATION TECHNOLOGIES

In view of the above, we can conclude that, despite the risks they present, the New Information and Communication Technologies are a great opportunity to make progress in the challenge of social cohesion (González, 2021). Therefore, any initiative in this field must prevent, sensu contrario, the generation or accentuation of inequalities between men and women, the gender digital divide, by extending the advantages of the information society to all citizens who are part of it.

Thus, achieving the inclusion of the principle of gender mainstreaming, with its transversal and permanent vocation, in actions, in the design of applicable legislation and in all public policies implemented by State bodies will be the priority objective to be achieved. This implies a change of mentality which, far from comprising specific or one-off actions, entails and requires a real transformation and a genuine reorganisation at all levels, so that it is capable of (Calidad e Igualdad de Oportunidades en las Políticas de Empleo, 2022):

Firstly, to require the commitment of all political structures and their decision-makers, women and men.

Secondly, to take into consideration, and truly integrate into all decision-making processes, the fundamental principle of equal opportunities between the sexes.

Thirdly, to demand the inclusion of this principle in each and every stage of the policy cycle, including planning, implementation, monitoring and evaluation.

Fourthly, to involve all technical and political decision-makers and social organisations.

Only on the basis of these actions will it be possible to incorporate women fully into economic, labour, political and, of course, social activity, encouraging them to acquire (regardless of their age, geographical location or social status) a true digital identity and to be able to assume sufficient

virtual skills to be able to access the potential opportunities that the information society offers and is capable of providing (Consejo Económico y Social, 2011).

At the same time, this will lead to other, equally or more important, benefits related to their safety, online and offline, acquiring sufficient skills to be able to detect abusive behaviour arising from cyber-violence or cybercrime scenarios (Castaño, 2008), frequent in spaces, such as these, where it is relatively easy to hide one's identity and act to the detriment of particularly vulnerable subjects (minors and women, for the most part).

All of the above, i.e. this approximation of rights between women and men, will irreversibly benefit society as a whole. According to the European Commission's own data, in the year 2020 (Comisión Europea, 2022), 90% of the jobs that will arise in a future dominated by ICTs will require and demand the acquisition of digital skills; therefore, excluding half of the population from the possibility of specialising in that which will generate wealth, employment and well-being for the population as a whole would be difficult to understand.

Therefore, in order to guarantee the common welfare that should govern their permanent action, there are many arguments that require Public Administrations to promote positive measures so that women can have equal access to the resources offered by Information and Communication Technologies, attracting female talent to this sector (González, 2017). Only in this way will they be able to generate and receive information sufficiently and autonomously, enabling their integration (which is only effective if it is total) and full respect for human rights in this new model of society (Arenas, 2011).

In short, the public sector must play an active role as a provider of services, resources and specialised training for women who require this reinforced protection, and as a catalyst that serves to join forces, make good practices visible and generate networks with business agents, whether national, European or international. It is therefore the task of the Public Administrations to actively fight against the preconceived idea that it is possible to achieve this gender equality naturally and without the need, therefore, to adopt effective measures on the part of those who must fight against any type of discrimination derived from attitudes and technological developments unrelated to the unequal conditions of access and knowledge between men and women (Martín et al, 2009).

For this reason, it will be essential to integrate the gender perspective and the fight against the digital divide that discriminates against women in

Red.es and ONTSI. What both consist of is very well reflected on the website of the former[8].

This necessarily involves taking into account the diversity of women, as well as the complex and different situations and needs that each of them present. It will also be necessary to address their expectations and uses of digital tools, which can be (and often are) substantially different from those of men, combating, as a corollary, the technophobia that many of them have (for the reasons already given throughout this study) and encouraging their *techno-interest* (Ministerio de Industria, Turismo y Comercio, 2022).

The result has been reflected in a wide variety of initiatives undertaken by public administrations, in a clear intention to put into practice the solution to those needs which, from a theoretical perspective, have been highlighted throughout this research. Thus, together with the legal provisions mentioned above (and partly as a consequence of them), several public initiatives have been developed in favour of the integration of women in the digital environment, in an attempt to reduce the gender digital divide; among them, it is worth highlighting, due to their impact:

a) The IV Plan for Equal Opportunities for Women and Men 2003-2006, which seeks to further develop the principle of gender mainstreaming, understood as "[...] the organisation (reorganisation), improvement, development and evaluation of political processes, so that a gender equality perspective is incorporated into all policies, at all levels and at all stages, by the actors normally involved in the adoption of political measures" (Consejo de Europa, 1999; Lombardo, 2003), articulating a series of actions in order to achieve cooperation with public bodies and institutions to incorporate the gender perspective in all policies, plans and strategies (Ministerio de Trabajo y Asuntos Sociales, 2021).

b) The II Action Plan for Equality of Women and Men in the Information Society of 2013, which, with respect to its predecessor, aimed to make progress in achieving several key objectives: increasing women's access, use and skills in the information society and reducing gender gaps in this area; increasing the presence and participation of women in the information society; promoting the presence of women in the

***

digital content industry, as well as in those of interest to women; increasing the number of women professionals and entrepreneurs with ICT skills; boosting the use of digital public services by women; generating confidence and security on the part of women in the digital sphere, and encouraging women to play a leading role in the New Technologies sector (Instituto de la Mujer, 2013; Fernández, 2014).

c) The more recent and current Third Strategic Plan for the Effective Equality of Women and Men 2022-2025, which is the Government's most important instrument for adapting the social and institutional evolution necessary to achieve an ever deeper reduction in gender discrimination. In this way, it serves as a framework and master plan and identifies, on the one hand, the main lines of action in those areas under the responsibility of the General State Administration, and, on the other, the strategic objectives considered to be a priority in the medium and long term (Instituto de las Mujeres, 2022).

d) Those implemented by the Women's Institute, part of the Ministry of Equality, such as digital literacy (improving women's ability to perform different tasks in a digital environment, acquiring skills to locate, research and analyse information, as well as being able to develop content and design proposals, through digital media); gender analysis; the union of associations in defence of the fight against the gender digital divide; the implementation of applications against gender violence; the so-called gender e-communication; digital training as a fundamental basis for guaranteeing equality between men and women; the financing of entrepreneurship, business strengthening and female leadership; its international expression; its reflection in leisure and culture; the increase in the presence of women in the New Information and Communication Technologies sector, or the development of technological applications aimed at protecting the health of the most disadvantaged women.

e) It also highlights, in conclusion, the Avanza Gender Plan, which "[...] promotes the regular use of digital services with the aim of promoting employment, business competitiveness, citizen participation and knowledge of the digital services available on

the network"[9] of groups in need of reinforced measures, such as women. This aid is aimed at the use of digital services, with a special focus on two lines of action:

Firstly, equality in the digital environment, aimed at promoting and improving women's employment.

Secondly, in the social sphere, which is aimed at people over 55 years of age and people with disabilities and dependent persons, to improve their employment, quality of life and citizen participation.

Consequently, projects whose subject matter is already covered by other specific plans launched by the Ministry of Industry, Trade and Tourism will be excluded; those which include the creation of tele-training platforms; when they are a continuation of others previously approved by the aforementioned Ministry within the framework of the Avanza Plan, or, as far as we are concerned here, those in which gender equality is not related to the employment in question.

4. CONCLUSIONS

From the above, we can conclude that several initiatives are being implemented by the Public Administrations to combat the gender gaps that have arisen as a result of the New Information and Communication Technologies. Many of them were already taking place, but in a very different scenario, while others are emerging directly at the dawn of the new digital scenario.

Among them, we have been able to highlight those which, in our opinion, are most relevant, such as those which, based on the triple regulatory support already mentioned (Law 30/2003, Organic Law 3/2007 and the Treaty of Rome, the latter at European level), are embodied in the following:

Firstly, the original IV Plan for equal opportunities between women and men 2003-2006, which explores the development of the principle of gender mainstreaming.

Secondly, the one that succeeds and gives continuity to the previous one, embodied in the II Action Plan for Equality of Women and Men in the Information Society of 2013, which, with respect to its predecessor, advances in several fundamental objectives, already pointed out.

***

9 https://portalayudas.mineco.gob.es/AvanzaCiudadaniaDigital

Thirdly, the one in which we are now immersed: the III Strategic Plan for the Effective Equality of Women and Men 2022-2025, which continues this path of deepening in favor of effective gender equality within today's digital society.

Finally, other initiatives, even more complementary, such as those undertaken by the Women's Institute or the Avanza Gender Plan, are equally relevant to give visibility to this relevant problem whose solution has begun, but for which there are still many steps to be taken.

It is certainly difficult to say which of these initiatives has had the greatest impact in the pursuit of the alleged goal of eliminating all gender discrimination based on or supported by the technological advances that are taking place at an ever-increasing speed in our environment. However, possibly the current Plan, although it is true that it is based on the not always easy achievements to date, is, in our modest opinion, the most ambitious framework of courageous measures implemented by the Public Administrations to achieve a qualitative leap that, to a large extent, achieves a greater dose of equality.

5. REFERENCES

Amarasekara, Inoka/Grant, James. 2019. Exploring the youtube science communication gender gap: a sentiment analysis. *Australian national centre for the public awareness of science*, 28.

Arenas Ramiro, Mónica. 2011. Brecha digital de género: la mujer y las nuevas tecnologías. *Anuario de la facultad de derecho*, 4, 97-125.

Arnaiz Vidella, Javier. 2017. El *sexting* en el código penal español. *Diario la ley*, 8995.

Asamblea General de las Naciones Unidas. 1979. *Convención sobre la eliminación de todas las formas de discriminación contra la mujer*.

Asquerino Lamparero, María José. 2022. Algoritmos y discriminación". En Morales Ortega, José María (coord.), *Realidad social y discriminación: estudios sobre diversidad e inclusión laboral*, Murcia, Laborum, 335-382.

Calidad e Igualdad de Oportunidades en las Políticas de Empleo. 2022. *Estrategias de mainstreaming de género en el ámbito del empleo*, Madrid, instituto de la mujer. Ministerio de Trabajo y Asuntos Sociales.

Castaño Collado, Cecilia. 2008. Nuevas Tecnologías y género: la segunda brecha digital y las mujeres". *Telos: cuadernos de comunicación e innovación*, 75, 24-33.

Castaño Collado, Cecilia. 2016. La brecha de género en la 4ª revolución industrial". *Gaceta sindical: reflexión y debate*, 27, 97-106.

Charles, Maria/Bradley, Karen. 2009. Indulging our gendered selves? Sex segregation by field of study in 44 countries. *American journal of sociology*, 4, 924-976.

Comes Raga, Ignacio. 2019. El delito de *sexting* en el código penal de 2015". In Lloria García, Paz/Cruz Ángeles, Jonatan (coords.), *La violencia sobre la mujer en el siglo xxi: género, derecho y tic*, Cizur Menor, Aranzadi Thomson Reuters, 155-178.

Comisión de Derechos de la Mujer e Igualdad de Género. Parlamento europeo. 2019. *Derechos de las mujeres e igualdad de género: información básica*.

Comisión Europea. 2020. *Comunicación de la comisión al parlamento europeo, al consejo, al comité económico y social europeo y al comité de las regiones "una unión de la igualdad: estrategia para la igualdad de género 2020-2025*, com (2020) 152 final.

Comisión Europea. 2022. *Women entrepreneurs* (https://ec.europa.eu/growth/smes/supporting-entrepreneurship/women-entrepreneurs_es).

Consejo Económico y Social. 2011. Sociedad de la información y brecha digital de género. In *Informes del consejo económico y social*, 1, 109-119.

De Andrés del Campo, Susana/Collado Alonso, Rocío/García Lomas Taboada, José Ignacio. 2020. Brechas digitales de género. Una revisión del concepto. *Etic@net: revista científica electrónica de educación y comunicación en la sociedad del conocimiento*, 1, 34-58.

European Commission. 2019. *The changing nature of work*, publications office of the European Union.

Fernández de Castro, Patricia. 2014. *Las políticas públicas de igualdad de género dirigidas al empoderamiento político de las mujeres: análisis evolutivo en el marco español y de la unión europea y estrategias de acción*, Toledo, Universidad de Castilla-La Mancha.

González Jiménez, Antonio José. 2021. La brecha digital, desigualdad social y de género. In Martín López, Miguel Ángel/Soria Rodríguez, Carlos (coords.), *Cuestiones transversales en la innovación de la docencia y la investigación de las ciencias sociales y jurídicas: especial referencia al impacto del covid-19, las nuevas tecnologías y metodologías, las perspectivas de género y la diversidad*, Madrid, Dykinson, 1465-1494.

González Moreno, Juana María. 2014. El sesgo masculino y de género del derecho de la Unión Europea en torno a la conciliación de la vida familiar y laboral. In Valencia Sáiz, Ángel (coord.), *Investigaciones en ciencias jurídicas: desafíos actuales del Derecho*, Málaga, Universidad de Málaga.

González Ramos, Ana María/Vergés Bosch, Nùria/Martínez García, José Saturnino. 2017. Las mujeres en el mercado de trabajo de las tecnologías". *Reis: revista española de investigaciones sociológicas*, 159, 73-90.

Instituto de la Mujer. Secretaría de Estado de Servicios Sociales e Igualdad. Ministerio de Sanidad, Servicios Sociales e Igualdad. 2013. *Plan de acción para la igualdad de oportunidades de mujeres y hombres en la sociedad de la información*.

Instituto de las Mujeres. Ministerio de Igualdad. 2022. *Plan estratégico para la igualdad efectiva de mujeres y hombres 2022-2025*.

Instituto de la Mujer y para la Igualdad de Oportunidades. Ministerio de Igualdad. 2005. *La situación actual de la educación para la igualdad en España*.

Instituto de la Mujer y para la Igualdad de Oportunidades. Ministerio de Igualdad. 2020. *Mujeres y digitalización. De las brechas a los algoritmos*, Madrid, Catálogo de publicaciones de la Administración General del Estado.

Instituto Nacional de Estadística. 2022. *Brecha digital de género* (https://www.ine.es/ss/satellite?l=es_es&c=ineseccion_c&cid=12599 25530071&p=%5c&pagename=productosyservicios%2fpyslayout&pa ram1=pysdetalle&param3=1259924822888).

Jiménez-Blanco y Carrillo de Albornoz, Antonio. 2019. Big data. Desafíos también para el Derecho. *Revista de administración pública*, 210, 483-487.

Lombardo, Emanuela. 2003. El *mainstreaming*: la aplicación de la transversalidad en la Unión Europea. *Aequalitas: revista jurídica de igualdad de oportunidades entre mujeres y hombres*, 13, 6-11.

Martín Fernández, Juan/Martínez Cantos, José Luis. 2009. Las brechas digitales de género en cifras: descripción de la e-inclusión en España. In Castaño Collado, Cecilia (coord.), *La brecha digital de género: amantes y distantes*, Madrid, Universidad Complutense de Madrid, 13-52.

Martínez Torres, María del Rocío/Toral Marín, Sergio Luis/Barrero García, Federico José/Serrano Ochoa, María de los Ángeles. 2010. El análisis de las políticas de igualdad en la Administración Pública. In Vázquez Bermúdez, Isabel (coord.), *Investigaciones multidisciplinares en género: II Congreso universitario nacional "investigación y género"*, Sevilla, Universidad de Sevilla, 693-706.

Mateos Sillero, Sergio/Gómez Hernández, Carlos. 2019. *Libro blanco de las mujeres en el ámbito tecnológico*. Secretaría de Estado para el avance digital (Ministerio de Economía y Empresa).

Ministerio de Industria, Turismo y Comercio. 2007. *Guía TIC - Igualdad para las Administraciones Públicas, instituciones y organismos de igualdad*.

Ministerio de Trabajo y Asuntos Sociales. 2020. *IV Plan de igualdad de oportunidades entre mujeres y hombres 2003 – 2006*.

Nisa Ávila, Javier Antonio. 2021. Algoritmos de posicionamiento en la creación de contenidos: análisis jurídico de la discriminación por algoritmos. In Valero Pastor, José María (coord.), *Plataformas, consumo mediático y nuevas realidades digitales: hacia una perspectiva integradora*, Madrid, Dykinson, 962-981.

Pérez Macías Martín, Noemí/Medina Molina, Cayetano. 2019. Brecha digital de género en entornos digitales. In Alonso García, Nieves/López Jiménez, José Manuel/Conde Colmenero, Pilar (coords.), *Los retos de la igualdad en un escenario de transformación digital*, Madrid,

Dykinson, 189-210.

Primo, Neil. 2003. *L'égalité des sexesdans la société de l'information*, UNESCO.

Rey Ares, Lucía/Rodeiro Pazos, David/Fernández López, Sara/Zapata Huamaní, Guillermo. 2018. La 4ª revolución industrial: industria 4.0. In García Novoa, César/Santiago Iglesias, Diana (dirs.), *4ª Revolución industrial: impacto de la automatización y la Inteligencia Artificial en la sociedad y la economía digital*, Cizur Menor, Aranzadi Thomson Reuters, 203-218.

Sáinz Ibáñez, Milagros/González, Ana. 2008. La segunda brecha digital: educación e investigación. In Castaño Collado, Cecilia (coord.), *La segunda brecha digital*, Madrid, Cátedra, 221-266.

Sample, Irian. 2015. Toys aimed at girls 'steering women away from science careers. *The guardian*.

Sánchez Almendros, María Dolores. 2015. De la sociedad de la información a la sociedad del conocimiento. *Utopía y praxis latinoamericana: revista internacional de filosofía iberoamericana y teoría social*, 69, 125-130.

Sánchez Vadillo, Naira/Ortega Esteban, Octavio/Vall-Llovera, Montserrat. 2012. Romper la brecha digital de género. Factores implicados en la opción por una carrera tecnológica. *Athenea digital: revista de pensamiento e investigación social*, 3, 115-128.

South Summit 2021. 2021. *Mapa del emprendimiento*.

West, Michael/Kraut, Rudolph/Han Ei, Christian. 2019. *I'd blush if i could: closing gender divides in digital skills through education*, Nueva York, UNESCO.