



# Adults and Elders and their use of ICTs. Media Competence of Digital Immigrants

Adultos y mayores frente a las TIC. La competencia mediática de los inmigrantes digitales

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## ABSTRACT

The undisputed presence of Information and Communication Technologies (ICTs) in our lives has led to the development of new forms of social, interactive and critical relationships. This study aims to compare the level of media competencies, in relation to six established categories, of two population groups: adults (aged 18-55) and elders (aged over 55). The sample was composed of 714 people from the eight provinces making up the Spanish region of Andalusia. The study conducted was based on the selection and comparison of results of specific items drawn from two separate questionnaires, directed to both population groups. The data were statistically processed in accordance with the distribution of the sample proportions. The objective was to identify and contrast the degree of digital literacy of these two groups, in terms of their use, productivity and interaction with technological tools. The results highlight the needs and demands of both groups in terms of technology, critical reading and audio-visual production. It is notable that adults aged 18 to 30 have a higher level of expertise in the interaction and language dimensions, while those aged 30 and above perform better in critical and participative dimensions offered by such media, such as reflection, analysis and creation. In the over-55 group, there is a direct correlation between income bracket and level of media skills, the latter significantly diminishing with age.

## RESUMEN

La presencia indiscutible de las tecnologías de la información y la comunicación en nuestras vidas supone el desarrollo de nuevas formas de relaciones sociales, participativas y críticas. Este estudio tiene como objetivo comparar el nivel de competencia mediática, respecto a seis dimensiones establecidas, para dos grupos poblacionales, adultos (18-55 años) y mayores (+55 años). La muestra total asciende a 714 individuos de las ocho provincias de la Comunidad Autónoma de Andalucía (España). Se basa en la selección y comparación de resultados de determinados ítems de dos cuestionarios independientes, dirigidos a ambas poblaciones. Los datos han sido sometidos a tratamiento estadístico, según la distribución de proporciones muestrales, para identificar y contrastar el uso, producción e interacción de las herramientas tecnológicas en ambos colectivos. Los resultados destacan las necesidades y demandas de ambos grupos en tecnología, lectura crítica y producción audiovisual. Se advierte además que los adultos con rango de edad entre 18-30 años presentan mejor nivel de competencia mediática en habilidades técnicas relacionadas con el uso instrumental, interacción y lenguaje, mientras que a partir de los 30 aumentan las destrezas en dimensiones críticas y participativas, como reflexión, análisis y creación. En los mayores de 55, existe una relación directa entre el nivel de ingresos de competencia mediática; esta última disminuye significativamente con la edad.

## KEYWORDS | PALABRAS CLAVE

Media skills, digital/media literacy, ICT, adults, elders, active ageing, social inclusion.

Competencia mediática, alfabetización digital, TIC, adultos, mayores, envejecimiento activo, inclusión social.

### 1. Introduction and state of the art

Information and communication technologies (ICTs) are part of society and of our everyday life. It is difficult to find anyone today without a presence on social media or who does not have a mobile device, read the news, access television series through a computer, or who does not notify a possible late arrival at a meeting through instant messaging programs or applications. There is no doubt that technology is present in everyday life: "its implementation has had repercussions in society in general, and in communication in particular" (Almansa & Castillo, 2014: 24).

Thanks to ICTs unalterable, solid and traditional information has given way to constantly-changing information. In the words of Area and Pessoa (2012: 14), to "a flux of production of unstable information and knowledge, in permanent change, in constant transformation, as a counterweight to the cultural production developed – mainly in the 19th and 20th centuries- where stability and inalterability of the physical, material and solid was a priority".

This permanent change in the flow of information is precisely one of the main difficulties encountered by digital literacy. "Not even interactivity or the technological possibilities provided to the current audiences are enough for the development of a society of knowledge" (Orozco, Navarro, & García, 2012: 74). Media literacy is essential to enable the population to acquire digital competencies.

According to the report "The Information Society in Spain", "more than half of the Spanish population use the Internet on a daily basis" (Fundación Telefónica, 2014: 36); if we relate the data on Spain with the rest of the European Union (EU), "70% of the Spanish households have access to the Internet, and of these, almost all connect through broadband, which implies a quality of connection that is medium-high compared to the rest of the EU" (Fundación España Digital, 2014). In the case of Andalusia, where the present study took place, "more than 1.8 million Andalusian households have access to the Internet, resulting in an Internet connection rate of 66.5%" (Fundación Telefónica, 2014: 78). However, the concern is irrefutable: "previous data have allowed us to conclude that the degree of competency in audio-visual communication is extremely low in Andalusia, with important shortcomings in the ability to interpret audio-visual messages in a critical and rational way" (Aguaded & Cruz, 2014: 71).

Being immersed in a digitalized society does not mean that the population, especially adults and elders, possesses this competency (Cruz & Acosta, 2010;

Rosique, 2009; Aguaded, Tirado & Hernando, 2014; Ramírez, 2010; Gómez & Durá, 2011; Renés, 2010). The question of how ICTs are being used requires investigation give that the "mere consumption of media does not guarantee critical ability" (Contreras, Marfil, & Ortega, 2014: 138).

"Age continues to determine differences in access, which are greater when the segment studied is younger" (Fundación Telefónica, 2014: 36). Hence one can speak of a digital divide in the case of non-digital natives or digital immigrants (Prensky, 2001). Although these concepts have been questioned, given that there are young people who have not acquired digital competency skills, whereas supposed immigrants do have them, a differentiation can be drawn at present between a passive consumer and an active "producer and prosumer" user (Jenkins, 2014; Belshaw, 2014).

According to Santibáñez, Renés and Ramírez (2012), adults –particularly elders– are more vulnerable to the media. They are not digital natives but digital immigrants who do not know the inner-workings of audio-visual media, thus becoming passive consumers: "in the digital era that we are crossing, they become functional illiterates who lack technological and communicative competencies" (Rodríguez & Barrera, 2014: 58). According to Area (2002: 57), this is the case of adults, for whom "this phenomenon is generating a new type of illiteracy that consists in the inability to access culture that is driven by the new technologies".

However, ICTs also have a positive side, since "media competencies can become tools for improving social life" (Contreras & al., 2014: 130). The fact that "an elder citizen enjoys a good state of health means that besides being physically healthy, he or she has to be in a good emotional and psychological state as well". In this regard, Pavón and Casanova (2008) and Vilaplana (2013) note that activity using such media can contribute, in general, to driving creativity, practising composition and writing, as well as improving social aspects, memory and mind. Bru and López (2014) and Macías-González and Manresa (2013) add also that, for elders, the Internet is a source of opportunities in four broad categories: information, communication, transaction and administrative, leisure and entertainment. Thus, in a connected world, media literacy will necessarily be digital and multimodal, while literacy has to be understood in its full extent, not limited to the simple use of computers.

The present study, funded by the Andalusian government, has as its main objective the comparison of the level of media competency of two population groups: adults (18-55 years of age) and elders (+55

years old). The adults were distributed in different age segments, as follows: “ages 18-30, 31-45 and 46-55” (Aguaded & al., 2014: 7). The total sample comprised 714 individuals from the eight provinces making up the region of Andalusia. The study focused mainly on comparing the frequency of media consumption, production of content on the web, and the interactivity of the two above-mentioned groups. It was based on the six basic dimensions of media competency established by Ferrés and Piscitelli (2012: 75-82): “languages, technology, production and dissemination, reception and interaction, ideology and values and aesthetics, all of which are considered in terms of both content analysis and expression”.

## 1.2. Objectives

The present study seeks to compare the level of development of media competency of the population groups studied, according to the following specific objectives:

- Determine and compare the level of media competency of adults (18-55) and elders (+55) in Andalusia.
- Identify, analyse and compare the scope of the socio-demographic variables' restrictions on the levels of media competency attained by the two groups.
- Verify, if appropriate, the existence of a digital divide among the population with the aim of defining possible courses of actions for the media integration of the aforementioned groups in society.

## 2. Materials and methods

### 2.1. Sample

The sample presented was drawn from more extensive heterogeneous research and the sampling plan established took into account basic collectives and social groups comprising the structure of the information society: gender, age, social status and economic status. In order to take into account the population structure, the indicators were stratified so that each Andalusian province had: a) an equal number of questionnaires; b) proportionality with regard to gender; c) for the adult group, proportionality and diversity with respect to level of education, employment status and profession; d) for the elder group, proportionality with respect to participation or non-participation in a University Program for Adults (UPA).

### 2.1.1. Restrictions according to age group

a) Adult group: composed of 714 individuals, of whom 62.3% were women and 37.7% men. This sample was stratified into the following age groups:

- Group 1a: composed of 313 subjects aged 18 to 30
- Group 1b: composed of 252 subjects aged 31 to 45.
- Group 1c: composed of 149 subjects aged 46-55.

b) Elder group: a sample of 478 individuals older than 55, of whom 60.5% were women and 39.5% men. The most numerous age range of this group corresponded to individuals aged between 55 and 60, who comprised 31.7% of the selected sample (152 subjects). The lowest populated age group was the

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+80 years-old group, with 10 subjects (2.1% of the total sample).

### 2.1.2. Geographical area: study limited to the eight provinces of Andalusia

The sampling was based on Simple Random Sampling (SRS). In this scheme it is possible to guarantee a sampling error as a function of the sample size, the sample error being understood as the error associated with the difference between the proportions obtained in the sample and the real, existing population proportions.

The following formula allows us to obtain the sample size “n”, assuming an infinite population as a function of the pre-set error, “e” and the proportions “p” and “q”. By setting the confidence value to 99% ( $Z=2.58$ ), “p” and “q” in their most unfavourable values “ $p=q=0.5$ ”, and the sample size “ $n=714$ ” subjects, the error of the measurements is below 5%.

## 2.2. Tools

The study is based on the selection and compari-

son of the results of specific items from two independent questionnaires, addressed to the adult and elder populations of Andalusia. The questionnaires

were validated within the context of their respective research (Aguaded & al., 2014; Tirado, Hernando, García-Ruiz, Santibáñez, & Marín-Gutiérrez, 2012).

The first 11 items in both questionnaires were of a socio-demographic nature (age, gender, level of education, etc.), while the remainder were related to the different dimensions of media competency. The questionnaire directed to the elders was composed of a total of 28 items and that used for the adults consisted of 36 items. The heterogeneity of both questionnaires was due to their design, which took into account their suitability for the groups which they were intended for. In any case, the reliability of the study and the comparisons between the two population groups were not affected as they focused on a sample of 6 items that coincided in both questionnaires and which were significant with respect to the dimensions of media competency and their influence on the studied groups.

The stability of the scale comprised by the selected items was established through the Cronbach's Alpha reliability co-efficient, which gave acceptable values of .773 and .788 for the sample of adults and elders, respectively. Due to the Likert and categorical nature of the items, the inferential analysis was based on the study of the proportions and their comparisons among strata using the Chi-square test together with the Contingency Coefficient, which were used to establish the degree of dependency among the variables deemed of interest.

### 3. Analysis and results

The analysis aimed to detect the degree to which the results of both studies were significantly different. To that end, the items that more clearly showed a digital discrimination in the use of the media were chosen.

The 6 items chosen for the study were sufficiently discriminatory to distinguish the maximum number of dimensions in the questions used.

It should be recalled that the aim of the study was not to detect differences among the specific age segments, but to dichotomize the different details related to the media competency dimensions with respect to a cut-

Comparison Populations with	Chi-square	Significance	Contingency Coefficient	Significance
Participation in Internet forums (Fig.1)	279.7	.000	.436	.000
Participation in chats or Skype (Fig.2)	314.4	.000	.457	.000
Shopping on the Internet (Fig.3)	215.5	.000	.392	.000
Use of electronic banking (Fig.4)	70.8	.000	.237	.000
Degree of confidence on the Web (Fig.5)	193.3	.000	.374	.000

off point that is naturally established by the two questionnaires. Although different, the questionnaires have sufficient common features for comparison. It is also important to bear in mind that there is no research on this subject with previously-defined levels. Therefore, the adult group was defined according to the criteria established by Aguaded & al., (2014), with the experiments by Bru and López (2014), while Pavón and Casanova (2008) were used as the reference for the elders.

#### 3.1. The use of technologies by adults and elders. Multimedia language

According to Ferrés and Piscitelli (2012), the analysis of the language dimension seeks to study the ability of a person to interact with the media in a significant manner, in order to improve his/her competency in multimedia communication.

The item chosen for comparison and contrasting in both questionnaires was "Indicate if you have performed any of these activities: participate in Wikipedia, create a blog, upload files to YouTube, participate in an Internet forum, in a chat (Skype...) or on Facebook" with the options (1= Frequently), (2= At some point) and (3= Never).

As shown in Figure 1 and its associated table, for the option "Participate in an Internet forum", response 3 (Never) predominated in the elder group, while response 2 (At some point) predominated among adults. These results show a reluctance to voice opinions in forums or leave comments on blogs, which could indicate the prevalence of Web 1.0, which is essentially based on information-gathering. In addition, Table 1 shows that the Chi-square hypothesis contrast is significant to 95% confidence, indicating dependency among the variables defining the sub-groups adults and elders and participation in Internet forums. The correlation score obtained through the Contingency Coefficient was .436 (significant).

As for participation in a chat or on Skype, option 1 (Frequently) increased in both groups, with the adults standing out clearly. The Skype tool appears to enjoy great popularity and its use has been increasing in the

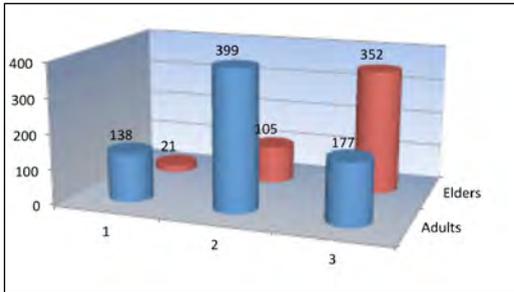


Figure 1. Participation in Internet forums.

professional sector. Elders are also keen users, an indication of their progressive inclusion in the technological world.

Additionally, table 1 shows that the Chi-square hypothesis contrast is significant to 95% confidence, indicating dependency among the variables that define the sub-groups adults and elders and participation in a chat or on Skype. The correlation score obtained through the Contingency Coefficient was 0.457 (significant).

### 3.2. Technology dimension

The technology dimension entails the development of three abilities: "Ability to correctly use communication tools in a multimedia and multimodal environment. Ability to adapt technological tools to the communication objectives sought. Ability to create and manipulate images and sounds being conscious to how representations of reality are constructed" (Ferrés & Piscitelli, 2012: 79).

The item chosen for its comparison was "In the case that the Internet is used, what do you use it for?: Reading a digital newspaper, shopping, electronic banking, downloading of films, e-books and downloading of music", using a Likert scale comprising five options (1=Daily); (2=Sometime during the week); (3=Sometime during the month); (4=Once in a while); (5=Never).

The distribution of the responses shows clearly that Internet shopping is beginning to become an acti-

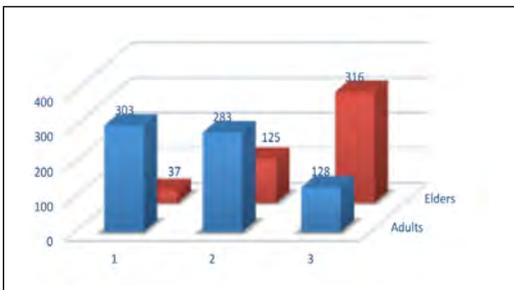


Figure 2. Participation in chats or Skype.

vity that needs to be taken into account in these populations. Figure 3 shows that option 4 (Once in a while) stands out in the adult group. This is also true for the over-55 group, although to a lesser degree. The Chi-square test was also significant at 95%, as shown in Table 1. The degree of dependency between both items was measured through the Contingency Coefficient, which - although low - was found to be significant ( $C=0.392$ ).

Regarding electronic banking, although the banking sector is pushing clients at present to carry out their transactions on Internet and using automated teller machines, the distribution of the answers shows that some reluctance persists (Figure 4) since option 5 (Never) stands out as the distribution mode in both the adult and elder groups.

Table 1 shows that the Chi-square test was significant to 95%. The degree of dependency between the items was measured using the Contingency Coefficient and proved significant ( $C=0.237$ ).

The results relating to download content merit special attention as they are particularly relevant when a stratification by age is performed. This stratification

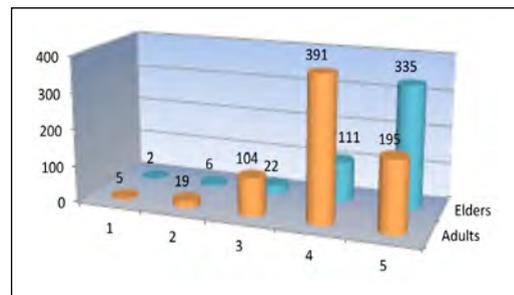


Figure 3. Shopping on the Internet.

was more precise than the simple adult-elder dichotomization and was especially true for the age-group sub-populations [18-30], [31-45] and [46-55].

As expected, the 18-30 year old segment was clearly distinguished from the others, with a higher frequency of movie downloads, music material and electronic books.

More specifically, 65.4% of downloads by this segment were related to the aforementioned content, compared to 23.8% and 14.7% of said content in segments [31-45] and [46-55], respectively.

### 3.3. Indicators of the Production and Programing dimension

This dimension is characterized by the human ability to select significant messages, internalize them and

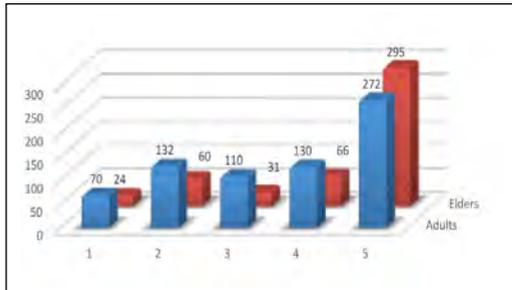


Figure 4. Use of electronic banking.

transform them in order to produce new meanings, share and disseminate information. The item selected as being representative of this dimension, together with the response options, was “Before entering personal data (credit card, e-mail, phones, etc.) on the Internet, when shopping, downloading a program, or registering for an electronic service, for online banking: 1. I let myself be carried away by the professional aspect of the site; 2. I trust my personal instinct; 3. I seek comments and opinions from friends or acquaintances; 4. I would not trust any sites; 5. No opinion”.

The percentage analysis of said question showed that distrust prevailed in adults and elders when entering their personal data, with percentages of 29.9% for adults and 45% for elders (Figure 5).

The Chi-square test was found to be significant to 95%, as shown in Table 1, and the degree of dependency between both items was measured through the Contingency Coefficient, which was found to be significant ( $C=0.374$ ).

This same item, analysed as a function of the adult age segments, showed that the 31-45 age group was the sub-population that was most convinced by the professional look of the site visited (7.9%), while 18.9% of the adults from the first age segment [18-30] preferred to seek out comments from friends or acquaintances. Surprisingly, 15.7% stated they did not trust any site, a response that was not expected for this age segment.

As for the results concerning electronic commerce, elders showed - proportionally by age - greater distrust when entering personal data (credit card number, phone numbers, etc.) on the Internet while shopping, etc.

### 3.4. Indicators of the Reception and Interaction Dimension

This media competency dimension refers to the active stance on interaction with screens, and is thought of as an opportunity to construct a more fulfilling citizenship, as well as the knowledge of the legal possibilities of registering complaints.

In the more critical and participative dimensions of communication media, education level was found to be particularly relevant when consideration was given to the stratification by age range of the adults [18-30], [31-45] and [46-55]. The contrasting of the item “Have you used the Internet to communicate with government authorities? (1=Yes, in the past year); (2=Yes, in the last three months); (3=No, never)” showed that the level of education positively influenced communication with and complaining to governmental institutions (20.2% of adults with a university degree had used the Internet in the past year). The Chi-square contrast was found to be positive with a Contingency Coefficient of  $C=0.275$ .

As for employment status, the results indicated that the unemployed made most use of Internet to communicate with public authorities. The results from the elder group are especially interesting: in this group, those who had recently used the Internet to communicate with the authorities held a university degree.

The Chi-square contrast (34.3%) defined the relationship between using Internet to register a complaint/communicate with the authorities and the level of education as being significant. Staying “in touch”, keeping feeling young and alert etc reflect a struggle against a general fear: social death, “social apartheid”.

### 3.5. Indicators of the Ideology and Values Dimension

This dimension is related to the ability to harness the new communication tools to transmit values and to

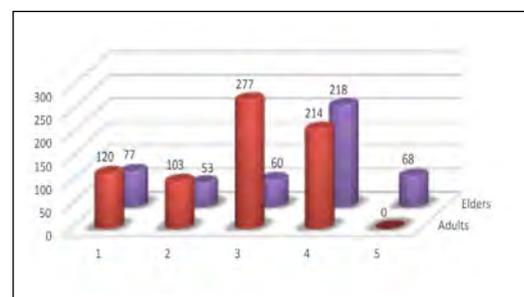


Figure 5. Degree of confidence in the Web.

contribute to the improvement of one’s surroundings, through social and cultural engagement.

The results of the contrast of the item: “Do you use any type of media (email, blog, etc.) to send messages or to validate actions that could contribute to the improvement of the social environment where you live? (1=Yes, often); (2=Yes, sometimes); (3=No)” showed that option 1 (Yes, often) was prominent for

adults from the first two age segments with the following percentages: [18-30] (12.6%), [31-45] (11.6%). For its part, option 2 (Yes, sometimes) obtained the following percentages: [18-30] (18.4%), [31-45] (13.1%). These options decreased significantly among adults from the third age segment [46-55], reaching percentages of 4% and 6.9%, respectively, with option 3 (No) standing out.

This result could indicate that digital citizenship does not come solely from knowing how to use the media, but also knowing the latter's value for contributing to the improvement of one's social surroundings. In this regard, adults below 46 seemed most aware of the need to use this technology to transmit values and to actively collaborate in the improvement of society.

In the elder group, responses 1 (Yes, often) and 2 (Yes, sometimes) increased with level of education: 9.4% of those with a university degree chose the first option, and 11% of those with a university degree chose the second.

### 3.6. Indicators of the Aesthetic Dimension

The aesthetic dimension relating to media competencies, with indicators such as awareness in recognizing a media production, appeared not to differentiate between the sub-populations analysed.

More specifically, the analysis of item "When deciding on a media type, do you take into account what it communicates, or when choosing, do you give value to formal and aesthetic aspects?" did not produce sufficiently clear differences to be considered statistically significant.

## 4. Discussion and conclusions

The general aim of this research was to compare the level of media competency between the adult population of Andalusia (aged 18-55) and the over-55 population, taking into account the six dimensions established by Ferrés and Priscitelli (2012). The results show that the adult population aged 18-30 evidenced superior knowledge regarding the use of social networks and the array of resources and applications available on the web and mobile devices. This subset of the population had the highest levels of competency in the "interaction" and "language" dimensions therefore.

However, it should also be noted that this group was not competent when defining media literacy as a skill or concept that transcends strictly technical and interactive dimensions to be defined under critical and ethical dimensions. Adults above 30 were more able and developed more possibilities in terms of the production and programming dimension of media compe-

tency that communication media offer (reflection, analysis, creation), even though broadly-speaking this population sub-group had lower levels of media competency.

As for those aged 55 or more, in agreement with Agudo, Fombona and Pascual (2013), the results of the study showed that fewer tended to use ICTs compared to the rest of the population.

Likewise, Nimrod (2016) –who conducted a study based on a European poll of 1,039 Internet users above 60– also found that elders were more keen to use traditional communication media than new social communication media and also preferred synchronous communication over asynchronous communication.

Concerning the relationship between socio-demographic variables and the levels of media competency of the population groups studied, the analysis showed the influence of schooling and education on the levels of media competency acquired. A direct relationship between elders' level of education and their community engagement is seen. Similarly, the ability to harness ICTs to transmit values and for social and cultural engagement was also directly related to the level of education in the elders' group. We agree with Cruz, Román and Pavón (2015) that UPAs which are dependent on Universities should, with prior agreement, develop the media competencies of elder students and thus help palliate the socio-economic differences in access to ICTs and multimedia communication that have come to light in the present study.

Among those older than 55, media competency in its more critical and participative dimensions significantly decreased with age. There was a direct relationship between income bracket and level of media competency. The most popular activity was searching for information on the web and communication with other individuals. Respondents were less secure with respect to operations related to shopping or electronic services, although a keen interest in and level of use of computer applications such as email or Facebook was shown by this group. Along the same lines, recent studies (Vošner, Bobek, Kokol, & Krečič, 2016) have shown that age, gender and education are significant and have a direct or indirect effect on the use of social networks online by older active users of the Internet.

The present research also addressed the so-called digital divide, with the aim of defining possible lines of action to guide the different population groups according to their needs. The study has found that the presence of a digital divide was significant among the people of Andalusia. Considerable differences were found when employment, salary and the education

status of Andalusian citizens were related with the level of literacy required to perform activities using communication media. In agreement with these results, the study by Öngün and Güder (2016) reveals that older adults from two different social strata showed different degrees of loneliness with a significant relationship between the ways of using technological media.

Lastly, a systematic and detailed review of the subject at international level, with regard to the use of communication technology by adults and elders (in the most technological dimension, which was significant among both population groups, as well as the dimensions of language, ideology and values, production and reception processes), has helped highlight the need for the population of Andalusia to harness information technologies as a medium that could propitiate both the instrumental use (technical abilities) and social use (critical reflection and social responsibility abilities) of such media. This would allow adults and elders to take advantage of communication technology for social integration and for opportunities to develop their skills.

### Support and acknowledgements

This research was conducted as part of the regional government of Andalusia's Excellence Project "Audio-visual competency of the Andalusian population. Strategies for media literacy in the digital leisure society" (SEJ-5823-2010).

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