

# Accessibility of e-Government Websites in Italy: The User Experience of People with Disabilities

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**Abstract:** Public Administration services must be accessible for anyone, including people with disabilities who interact via assistive technology. In 2016, the European Union published Directive 2016/2102 with the aim of making such services more accessible to any citizen, regardless of its abilities. This paper investigates the accessibility of e-Government services in Italy from the point of view of people with disabilities: seventy-six users participated in an online survey, and the collected answers have been further refined through semi-structured interviews. Results have been compared with a previous study, showing that the number of services has increased but no substantial improvement in terms of accessibility has been recorded. Simplified interaction and increased efficiency are still lacking, even if global user satisfaction seems to have slightly improved.


## 1 INTRODUCTION


E-Government is the use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees (Silcock, 2001). Thanks to the Internet and ICT, e-Government services have been spreading out worldwide, allowing citizens to access data and information or perform online services 24 hours a day in an efficient and cost-effective way, saving time and reducing burden of the Public Administration (PA) offices. More delivering e-Government services, more transparency is reached, reducing corruption, especially in developing countries (Alam et al., 2023).


According to the EU Strategy for the rights of persons with disabilities 2021-2030 (EU, 2021), to guarantee an equal access e-Government services must be accessible to all, including people with disabilities. Applying accessibility (to guarantee access to all) and usability (to make the interaction


easy and satisfactory) guidelines from early design improves service effectiveness and efficiency, thus increasing also user satisfaction. Although public administrations gained an increased awareness on usability and accessibility, also due to legal obligations, some issues can still obstacle e-Government services access by everyone despite numerous guidelines have been available in the literature for many years. Automatic tools can be applied for testing web pages and services for machine-detectable accessibility and usability issues; however, according to W3C Web Accessibility Initiative (WAI), they cannot catch severe accessibility problems, so knowledgeable human evaluation is also required (W3C, 2022). Directly involving and understanding the point of view of people with disabilities can shed a light on interaction issues of e-Government services.

This study investigates accessibility of PA electronic services as perceived by people with disabilities. An online questionnaire with 18 items

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has been filled in by 76 citizens with disabilities. Semi-structured interviews were performed with a small set of participants to understand the encountered problems more in depth. Results have been discussed compared with previous studies.

The paper is organized as follows: Section 2 introduces the related work, Section 3 presents the study methodology, the results of the questionnaire and insights from the semi-structured interviews. In Section 4 a discussion with a comparison with previous studies is presented. Conclusion and future work are described in Section 5.

## 2 RELATED WORK

Technology may play a crucial role in promoting the participation and inclusion of people with disabilities in society (Ferri and Favalli, 2018). Accessibility of websites and services is important for everyone, but it is crucial for people with disabilities, since their interaction may require more time and cognitive effort and may encounter more obstacles (Yesilada & Harper, 2019). If not designed with accessibility in mind, the Internet may increase the marginalization of people with disability in society (Jaeger, 2022). Different kind of barriers due to competences and skills, geographic position and resources, income, education and special needs, create the so called “digital divide” and without urgent countermeasures, in the future this gap could even increase (Seljan et al., 2020). Several countries have published laws to favor and guarantee equal rights for all to access digital resources, web sites and services. In 2016, the European Union published the Directive (EU) 2016/2102 on the accessibility of the websites and mobile applications of public sector bodies. Such requirements are mostly based on accessibility web standards defined by the World Wide Web Consortium (W3C), the Web Content Accessibility Guidelines (WCAG), that evolved for over 25 years to better incorporate usability into accessibility guidelines (W3C, 2023).

E-Government accessibility is a widely investigated topics, due to the importance to ensure equal opportunities for all citizens. Attention to accessibility seems also bound to the transparency of the public administrations. Alcaraz-Quiles et al. investigated relations between transparency, accessibility and usability of Spanish Regional Government websites, showing that the transparency of analyzed websites is inversely related to accessibility since without visibility retrieving

information can require a considerable time (Alcaraz-Quiles et al., 2018).

The assessment of the degree of accessibility of e-Government services has been a subject of investigations all over the world. Galvez and Youngblood (2016) analysed more than one hundred national and local e-government website sites in Rhode, using a combination of code inspection, heuristic evaluation, and automated analysis. Results suggest that best-practice templates may be helpful in improving usability, accessibility, and mobile readiness, while it is critical for designers to receive training and for governments to monitor Web sites compliance with standards.

Kous et al. (2021) performed an accessibility evaluation (compliance with Standard EN 301549) of 189 Slovenian municipalities’ websites using an automatic tool (Achecker). The results of the statistical analysis showed that the website home pages in 2018 (after the adoption of European Standard EN 301 549) have significantly improved compared to 2017.

Paul (2022) presented the evaluation of the accessibility of Indian e-government websites using a sample of 65 websites of various ministries based on the WCAG 2.1 standard, founding the majority of e-government websites do not meet Level A conformance with WCAG 2.1.

Al-Sakran and Alsudairi (2021) investigated how well the Saudi mobile e-government websites comply with usability standards and accessibility guidelines recommended in the WCAG. Websites assessments were conducted using manual evaluation and complemented by different automated analysis tools. The findings revealed usability and accessibility problems that affect the performance of government websites. Several recommendations for improving the usability and accessibility of websites in Saudi Arabia were also suggested.

Agrawal et al. (2022) investigated the usability, accessibility, and mobile readiness of Indian government websites. The analysis covered 164 government websites delivering e-services. The evaluation of websites compliance with the WCAG 2.0 was done on various quality parameters using automatic online tools. The results indicate that many websites had low usability, most of the website does not follow WCAG 2.0 guidelines, while none was usable and fully accessible on mobile devices.

Siquiera et al. (2022) investigated whether public prosecutors' websites are following web accessibility guidelines. The authors evaluated the websites of each of the 27 states of Brazil using the WCAG 2.0.

Results indicated that the websites violated between 16 and 33 different success criteria out of 61 criteria.

Very recently, Lynn et al. (2023) examined the web accessibility of local authority websites in the Republic of Ireland specifically referring the Web Accessibility Directive, Results confirmed that most local government websites examined present significant accessibility issues.

Similar studies were performed also in Italy. Barricelli et al (2018) exploited automatic tools for assessing the degree of accessibility of PA web sites in Italy, showing that on more than 8000 websites of the Italian municipalities only the 1% was fully conform to the Italian legislation that required PA to implement a subset of the WCAG guidelines. This issue was confirmed by several successive studies. Buzzi et al. (2019) presented a study that sheds light on Italian public administration (PA) accessibility via an online survey answered by 68 people with disabilities from Tuscany, accessing PA services in Italy. Results from the sample highlighted the need to improve service accessibility and usability, and the request for increasing their number and set of functions. Furthermore, Valtolina and Fratus (2022) investigated accessibility issues of local government websites in Italy proposing an evaluation strategy via two validators (AChecker and VaMolà) and analysing 7,713 homepages against WCAG 2.0 and Italian Law recommendations. Results confirmed a low degree of web accessibility of municipal websites

However, most studies exploited only automated analysis tools (validators). A recent systematic literature review on automated tool utilization in web accessibility research from 2002 to 2021 showed an increasing trend in its use year by year (Macakoglu and Peker, 2022). Considering the limits of automatic evaluation of web accessibility (due to their inability to check all aspects of accessibility automatically), our study investigates the current degree of accessibility of Italian PA services by the point of view of users with disabilities, who can highlight actual problems via an online survey further deepened through semi-structured interviews.

### 3 THE STUDY

#### 3.1 Methodology

This study investigates the accessibility of digital services provided by PAs for people with disabilities in Italy. At this aim, the study exploits two tools for gathering participants' feedback: an online survey and semi-structured interviews.

The online survey was administered via Google Forms, which supporting screen readers and keyboard shortcuts offers a good degree of accessibility for screen reading users (Leporini et al., 2018). The questionnaire focuses on interaction aspects: authentication, effectiveness in successfully completing the service, ease to use of the interface, overall user satisfaction.

To recruit potential end-users, an invitation letter was defined, describing the study aim and the process. The main Italian organizations of people with disabilities (visual, motor, hearing, intellectual) were contacted first by phone, and next via email asking them to distribute the invitation letter (with the questionnaire link) to their associates. This assures the authors not having any direct contact with participants.

The purpose of the semi-structured interviews was to better understand the accessibility problems encountered in interacting with government websites. The interviews are designed to reveal the participants' personal narratives, leaving them free to express their opinions, considerations, and suggestions, that could not emerge in closed questions.

Participants were recruited via e-mail or phone by the associations for people with disabilities. Then, the contacts of users available for further information were provided by the associations to the authors. Interviews were conducted via a video conferencing tool (Google Meet) or by phone (preferred by visual impaired users) by two of the authors: one conducted the interview and the other one annotated answers, comments and observations. After each interview, both authors immediately checked and integrated the annotated answers.

#### 3.2 Questionnaire

The questionnaire, in Italian language, is composed of eighteen questions organized in 3 sections. The first section is composed of six questions to characterize the sample, their use of the Internet and their experience with most-used e-Government services. Section 2 includes eight questions to investigate the participants' usability experience when interacting with e-Government services: access, effectiveness, ease to use, user satisfaction, support, errors and customization. Last Section 3 proposes four questions concerning authentication and citizen rights.

The questionnaire's content and language were assessed by two accessibility experts and checked by a totally blind person who verified its accessibility via screen reader. The list of questions is presented in the

Appendix. Last, the heading of the questionnaire describes:

- Who performed the study
- The research purpose: to understand the level of accessibility and any issues encountered by users with disabilities when interacting with Public Administration websites
- The target users: persons with legal age ( $\geq 18$ ) and at least one type of disability
- Information about data treatment (no personal data collected, no transfer to third parties).

### 3.3 Participants

A total of 76 participants filled out the questionnaire: 50 males and 26 females. Participants are aged between 18 and more than 70 years: 2 (2,6%) participants in the 18-29 range, 8 (10,5%) in the 30-39 range, 20 (26,3%) in the 40-49 range, 30 (39,5%) aged 50-59, 8 (10,5%) aged 60-69, and 8 (10,5%) participants were 70 or older.

All participants indicated their gender: 2/3 are males (50 out of 76) and 1/3 are female (25 out of 76).

Regarding the type of disability, most of participants, are visually impaired (65 out of 76), followed by people with motor disability (8 out of 76) and three people having a mild cognitive impairment. Last, two hearing impaired people who communicate through the Italian sign language (signists) and one with a behavioral disability complete the sample. It was allowed to provide more than one answer in order to correctly identify also multiple disabilities.

The sample composition suffers from an imbalance in the representation of disability types, with 81,25% of respondents being individuals with visual disabilities. However, it should be taken into consideration that several studies have shown that users with visual impairment, and more specifically blind users, encounter greater difficulties than users with other disabilities when interacting with websites. Visually-impaired users searching the Web content took an average of 2,5 times longer than sighted users (Craven and Brophy, 2003). An efficiency gap was also confirmed by Ivory et al. (2004): when blind people executed a search task, they took twice as long as sighted users to explore search results and three times as long to explore the corresponding web pages. Petrie et al. in 2004 performed an accessibility test of one hundred websites with users with visual, motor and perceptual disabilities. Results showed a mean task success rate of 76% which fall to 53% considering only the totally blind (the lowest score of all categories). Besides, regarding user satisfaction, blind users confirmed the lowest score of all the user

categories (Petrie et al., 2004). Overall, blind users interacting on the Web lose, on average, 30.4% of time due to frustrating situations, such as page layout causing confusing screen reader feedback, conflict between screen reader and application, poorly designed/unlabeled forms, no alternative text for pictures, misleading links, inaccessible PDFs, and screen reader crashes (Lazar et al., 2007). For these reasons, we believe this study’s sample can offer interesting insights on the accessibility of PA services, including a high percentage of visually impaired users, who experience the greatest difficulties in web navigation.

The distribution of participants by their occupation/job depicts that more than half of participants (~54%) are employees of a PA (Italian law requires PAs to recruit a percentage of people with disabilities). Twenty-three participants (30,2%) are retired, two participants are students (2,6%), five participants (6,6%) are practitioners and five unemployed people complete the sample.

Concerning the frequency of Internet use, most (68 out of 76) participants use the Internet daily, three weekly and two sometimes (Figure 1). Three participants declared they use the Internet rarely. Two of them are 70+ aged and one 50+.

In most cases, the Internet is an opportunity for people with disabilities: accessible PA online services can be performed autonomously, without the need for an accompanying person, greatly empowering personal autonomy. Autonomy is one of the most important conditions for people with disability and therefore it is very important to progressively increase the portfolio of available services: investigating the main reasons why users who could access such services avoid using them could provide interesting information helping to understand if there are barriers or problems that can be solved.

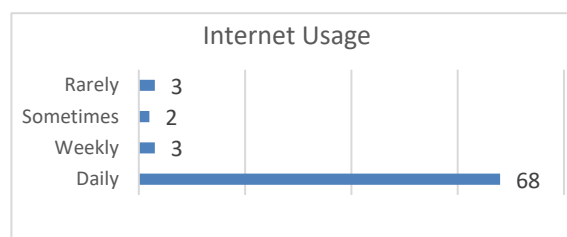


Figure 1: Sample characterization: Participants’ Internet use (Q5).

The users interact with several services of both local and central public administrations (Figure 2). Most frequently accessed services are job or pension, Health, Local Administrations and taxation.

### 3.4 Results

Results are organized by analysing the answers to sections 2 and 3 of the questionnaire.

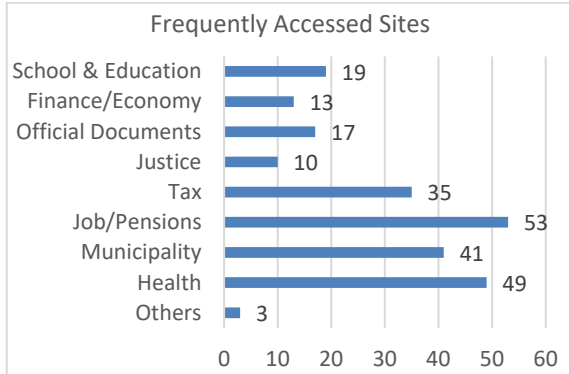


Figure 2: Frequently accessed PA services (Q6).

#### 3.4.1 Accessibility and Usability

Section 2 contains eight questions related to participants' usability experience when interacting with e-Government services. Answers to question Q7: "Have you had problems accessing the PA's online services?" offer indications on the access issues. It is remarkable that 89% of the sample reported access problems ('Sometimes' for 46 out of 76 users, and 'Often' for 22). Only 11% of the users (8 out of 76) never had an access problem (Fig. 3).

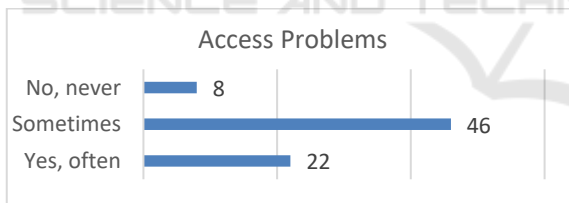


Figure 3: Frequency of problems reported/encountered by participants when accessing e-Government services (Q7).

Regarding the effectiveness of interaction with PA services (Q8), more than half participants reported they were able to complete the requested services always (6 users, 8%) or often (37 users, 49,3%), while 27 users (36%) only sometimes and 3 never, as shown in Figure 4.

Considering how frequently the interaction with e-Government services was easy (Q9), most participant were positive: 4 users (5,3%) found it always simple and 37 users (48,7%) found it simple in most cases, but it is relevant also the percentage of participants that found it difficult in most cases (32,9%, 25 users) or very difficult in all cases (13,2%,

10 users), as shown in Figure 5.

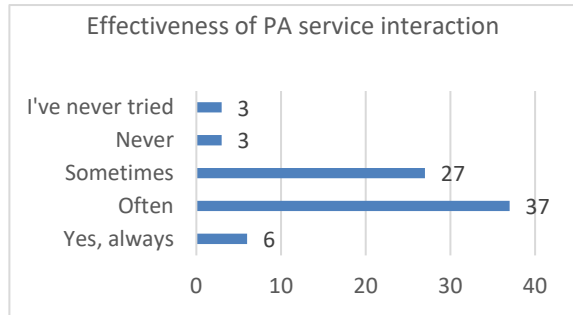


Figure 4: Effectiveness of PA service interaction (Q8).

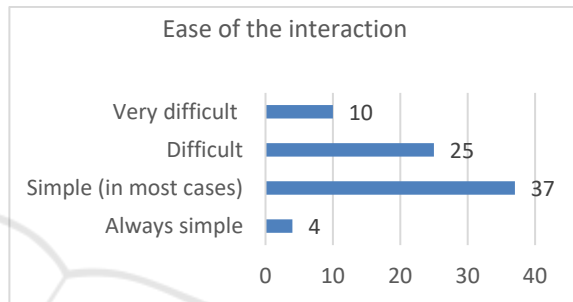


Figure 5: Ease of the Interaction with PA services (Q9).

User satisfaction reported a consistent number of participants (the majority) with a neutral position (27 users, 35,5%), as shown in Figure 6. Positive rating is 30,3% (satisfied, 23 users) and 7,9% (very satisfied, 6 users), while negative rating is 15,8% unsatisfied (12 users) and 10,5 very unsatisfied (8 users).

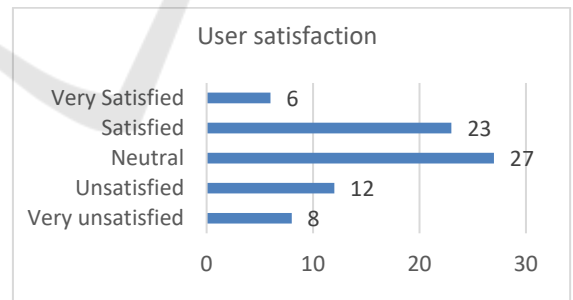


Figure 6: User satisfaction about the Interaction with PA service (Q10).

Three additional questions concern three usability aspects: presence and clarity of documentation and support, information, errors and recovery, and possibility of customization. For evaluating the PA website documentation and support (documentation and manuals, pop-up messages, etc.) a 5-item Likert scale (1 = *Totally dissatisfied*, to 5 = *Truly satisfied*) has been administered.

Most users, 31 out 76, (i.e. 40,8%) chose the neutral option (*neither satisfied nor dissatisfied*), while the percentage of satisfied (22,4% *satisfied* and 7,9 *very satisfied*) is only slightly higher than the one of dissatisfied (19,7% *somewhat dissatisfied* and 9,2% *totally dissatisfied*), as shown in Figure 7.

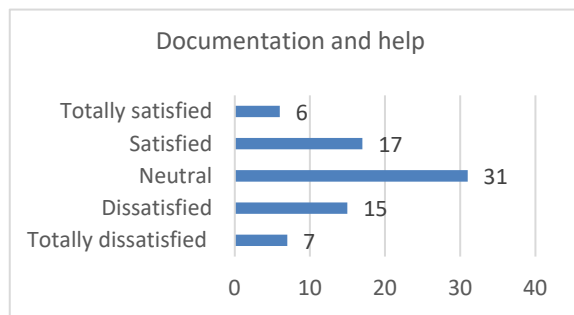


Figure 7: User satisfaction about documentation and help (Q11).

Another question was about errors: if you made mistakes, were you able to fix them easily (and were the error messages clear and helpful)? Most of users (40%) were able to correct the errors, but *with difficulties*, 12% were *unable to correct* them, while 16% corrected the errors *with ease* (Figure 8).

Next question was: “If you made an error, were you able to manage it and move forward?” and it aims to understand if the management of errors is provided through clear messages and interaction mechanisms. Most users (40%, 30 users) reported that in case of errors they could hardly correct them, reaching half of the sample if we also consider the ones who said they could not correct errors (12%, 9 users). The neutral option (I don’t know, 17,3%, 13 users), “I made mistakes, but I could easily correct them” (16%, 12 users) and “I don’t made mistakes” (14,7%, 11 users) complete the answers.

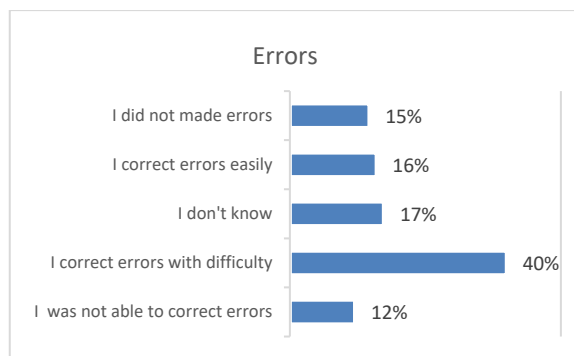


Figure 8: Errors visibility and easy of recovery (Q12).

Finally, concerning the ability to customize or adapt the interface to the user's needs (Q13), one-fifth

of the sample (20,3%) was *unable* to adapt the interface to their needs, 12,2 % were *able* in general, while 31,1% only *sometimes*. One-fifth of the participants (20,3%) did not try to modify the interface (Figure 9).

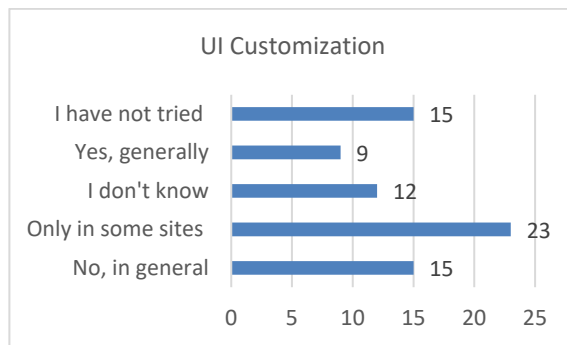


Figure 9: Usability: interface customization (Q13).

About aspects to be improved urgently (Q14), most of the users (45 out 76, i.e. 59,2%) suggested to make the UIs easier to use and simplify the interaction, while others suggested to add new online services (25%) and shortening the service response time (5,3%) as shown in Figure 10. Some skilled users also suggested more specific improvements, e.g., better structuring of the content, use of logical templates to make it easier to find what you are looking for, addition of instant chat for immediate assistance, subtitling and possibly translation in the sign language of videos.

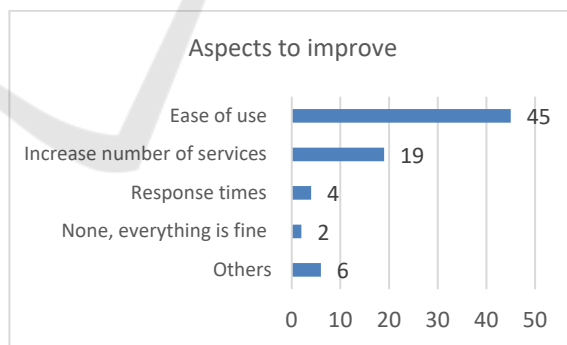


Figure 10: Aspect to Improve. Q14.

### 3.4.2 Authentication & Citizen Rights

Section 3 of the questionnaire contains four questions concerning authentication & citizen rights. The first question (Q15) is about authentication via SPID (Public Digital Identity System). Overall, 63 participants (82,9%) use SPID for accessing PA services, 4 users (5,3%) have the authentication credentials but do not use them, 6 users (7,9%) know

about the credentials but never requested them, and only 3 users (3,9%) still do not know anything about the SPID credentials.

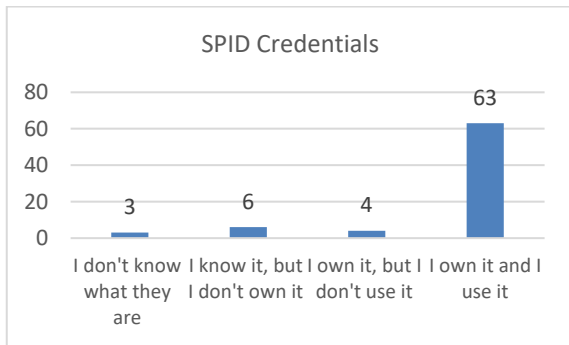


Figure 11: Authentication: SPID credentials.

The other three questions regard citizen rights. Almost all participants (72, 95%) know their right to easily access all PA services (Q16).

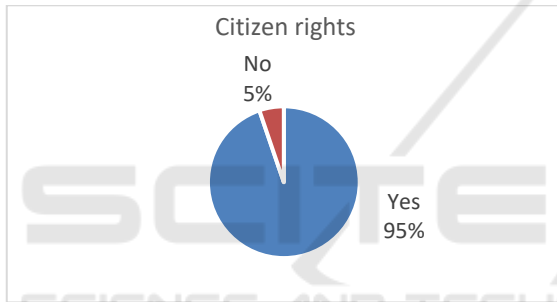


Figure 12: Knowledge of citizen rights.

Q17 investigates the awareness of users on the possibility of reporting accessibility problems to AgID (Agency for digital Italy), the authority in charge of monitoring and fuelling the digitalization of the Italian PAs (Q17). Most of the participants (48,7%) are aware of this possibility but did not report any accessibility issues while 42,1% was not aware, and only 9,2% sent some reports (Figure 13).

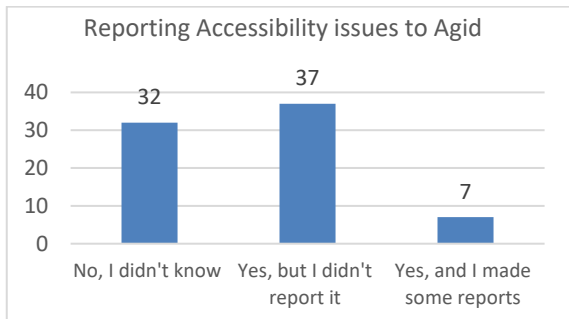


Figure 13: Reporting Accessibility feedback to AgID (Q17).

Q18 was about the knowledge of the role of the Public Advocate (Ombudsman) for the Digital Rights and the possibility to provide feedback for contributing to improve PA services. Most participants (47 out of 76, 61,8%) are interested in contributing, while 19 users (25%) do not consider themselves able to do it, one has no time, and 9 are not interested (11,8%).

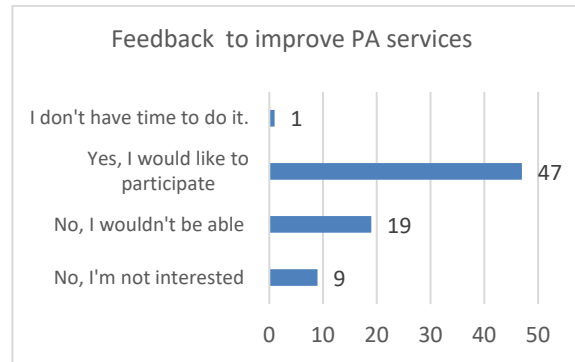


Figure 14: Reporting Accessibility feedback to the Public Advocate (Q18).

### 3.5 The Semi-Structured Interviews

The interviews started with four questions about Difficulties, Effectiveness, Efficiency, Satisfaction of use and Improvements:

1. What obstacles have you encountered in accessing PA Web sites?
2. Were you able to do what you wanted, or did you need help?
3. Was the interaction challenging, did it require effort and/or a lot of time?
4. Were you satisfied or what would you like to improve?

The sample consisted of 8 users: 3 visually impaired (2 blind and one visually impaired that navigates via screen reader), 2 motor impaired, and 3 old persons with mild cognitive and motor impairment. Tab. 1 summarizes the key findings from the interviews.

A common obstacle encountered in accessing PA websites among all the users interviewed is the difficulty in finding what they are looking for, due to the lack of clarity in the contents and the complex structure of the websites.

A totally blind user, who uses PA services daily, reported two major problems: the presence of advertisements on the sites that interfere with blind users' listening to the content, and the difficulty in using downloaded documents, as they are not

Table 1: Key findings from the interviews.

Issues	Affected tasks
Lack of clarity in the contents	Exploring, searching
Complex structure of the websites	Exploring, searching
Audio of the commercial advertisements overlaps the reading of the screen reader	Listening the vocal synthesizer
Documents created as an image (unreadable and unstructured)	Reading a document
Request to change the password frequently	Access to website areas with authentication
Tight and insufficient time for strong authentication	Access to website areas with authentication

readable by the screen reader being not in text format (e.g., PDF documents containing scans of paper documents).

Most notably, many of the interviewed users reported difficulties in accessing PA sites due to the SPID authentication or the need to periodically change their passwords, as required by the current national security guidelines. In some cases, participants were even unable to complete the service. Such users often require the assistance of family members or friends to accomplish these tasks.

An experienced blind user declared that the SPID authentication was accessible for him only through a specific provider. Indeed, such provider grants the user with 1 minute and 30 seconds to enter and confirm (SPID uses a two-factor authentication) the user credentials, as opposed to the 30 seconds granted by other providers.

#### 4 DISCUSSION

To understand the accessibility of e-Government services as perceived by participants with disability, the proposed survey investigates the following aspects: a) Ability to access to the PA service; b) Effectiveness (to successfully complete the service); c) Ease of use and user interaction; d) Adaptability and help. The survey results have been also corroborated by semi-structured interviews, as presented in Section 3.5.

There are several previous studies investigating accessibility of PA services in Italy, mostly exploiting automatic tools for assessing the degree of accessibility of PA web sites. It is interesting to compare the results of the current survey with an

analogous one administered by the authors of this paper in late 2017 on a sample of 68 participants with disability (about 61% blind users, 20% motor disabilities, 9% auditory, less than 5% cognitive and behavioral) described in (Buzzi, 2019). Indeed, the two studies have a similar number of participants (68 vs. 76) and both recruited mainly blind and visually impaired (62% in the 2019 study and 85,5% in this study). To make the results comparable, this study only extends the number of questions of the original questionnaire to collect more data (adding Q11, Q12, and Q13) but keeps the original ones unchanged.

The previous study contains data collected in 2017, so in the following, we write “2017” to indicate the results of (Buzzi et al, 2019) and “2023” for the results of the current study.

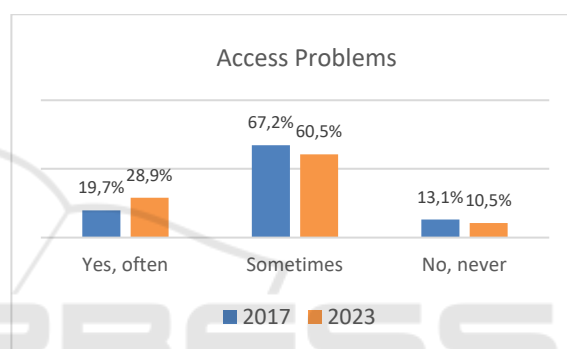


Figure 15: Frequency of problems encountered when accessing online PA services: 2017 vs. 2023.

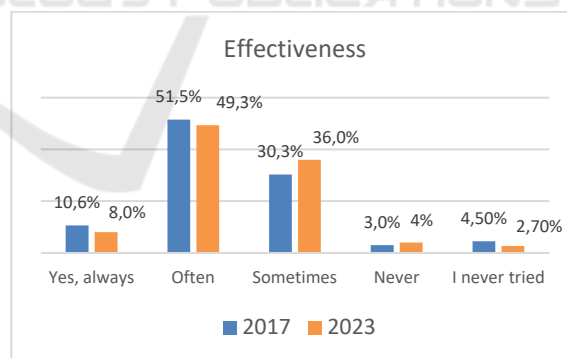


Figure 16: Effectiveness of online PA Services: 2017 vs. 2023.

A main aspect concerns the participants’ experience in accessing PA websites. Most users (89,4%) still are experiencing issues: 60,5% (vs 67,2% of 2017) of participants had problems sometimes and 28,9 % (vs 19,7% of 2017) often, as shown in Figure 15. The situation seems to have gotten worse: the number of people who never experienced problems has decreased by 2,6% (10,5 in



2023 vs 13,1 in 2017) and the total number of people experiencing some issues has increased (89,4% of the sample in 2023 vs 86,9% in 2017). This could be caused by the new requirement of strong authentication for accessing the PA services, introduced by the European eIDAS Regulation on electronic Identification, Authentication and trusts services<sup>1</sup>. Indeed, in Italy, access to PA services exploits digital identification through an Identity Service Provider (SPID) or via an Electronic Identity Card (CIE). As discovered in the interviews, strict temporal limits can obstacle the access by blind users interacting with such authentication mechanisms via a screen reader, as discussed in the following.

Also regarding effectiveness, i.e. the ability to complete a service, the situation seems slightly worse than in 2017: only 8% of the participants (in 2023), compared to 10,6% (in 2017), has always achieved their goal, while the majority, i.e., 49,3% (in 2023), compared 51,5% (in 2017), achieved it only often and 36% (in 2023) vs 30,3% (in 2017) only sometimes (Figure 16). The total number of participants experiencing effectiveness issues increased to 89,3% in 2023 vs 84,8% in 2017. However, we have to consider the narrow samples do not allow a generalization of such results.

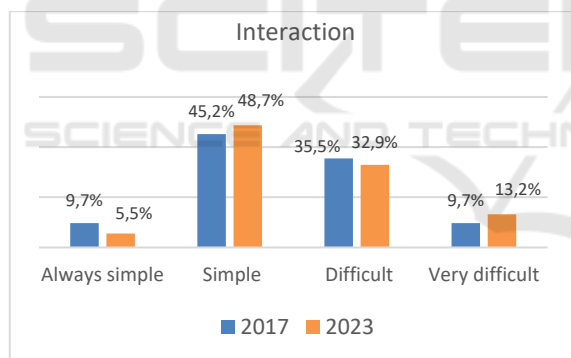


Figure 17: Ease of interaction in accessing online PA Services: 2017 vs. 2023.

A light worsening was highlighted also regarding the ease of use in the interaction with online PA websites (Figure 17). Participants who evaluated the interaction as simple decreased from 54,9% in 2017 (9,7% *always simple* + 45,2% *simple*) to 54,2% in 2023 (5,5% *always simple* + 48,7% *simple*). Furthermore, 46,1% of 2023 participants found the interaction *quite difficult* (32,9% *difficult* + 13,2% *very difficult*) compared to 45,2% in 2017 (35,5% *difficult* + 9,7% *very difficult*) of 2017.

<sup>1</sup> <https://digital-strategy.ec.europa.eu/en/policies/eidas-regulation>)

To measure the user satisfaction, we used a 5-item Likert scale (1 = Very unsatisfied to 5 = Very satisfied). Figure 18 shows that most participants were not completely satisfied, 30,3% (vs 26,5% in 2017) were satisfied and only 7,9% (vs 6,3% in 2017) very satisfied. However, since the percentage of unsatisfied increased to 26,3% in 2023 vs 22,9% in 2017 the overall improvement is very little. Very often, inexperienced people having problems accessing online services believe that it is their fault, being unable to correctly interact with the interface, while the cause could be a poor usability design.

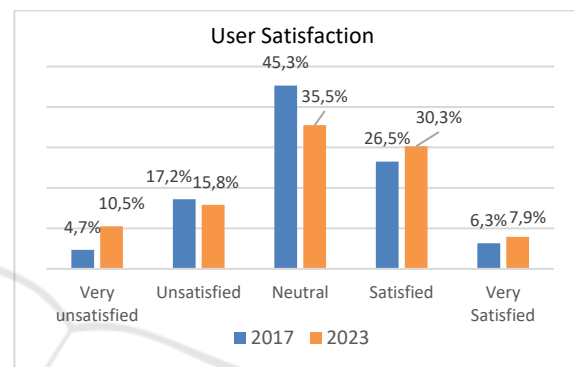


Figure 18: User satisfaction in accessing PA website: 2017 vs. 2023.

Overall, the collected users' feedback concerning the accessibility of PA websites, although on a small sample, seems to indicate a worsening, even if only slightly, compared to those of 2017, suggesting that, despite the regulation's intent, the problems seem not under resolution.

Concerning the Authentication & citizen rights session, with respect to the result of the 2017 questionnaire, the situation improved: 82,9% of participants use SPID for accessing PA services respect to only 5,9% in 2017, 5,3% have the authentication credentials but do not use them vs. 8,8% in 2017, 7,9% know about the credentials are but never requested them (vs 47,1 in 2017), and only 3,9% still do not know anything about the SPID credentials (vs 37,2 in 2017). Analogously, most of participants (96% vs 89,7% in 2017) know their right to easily access all PA services.

Concerning reports on accessibility issues of PA services to AGID, awareness increased a lot. Most of the participants (48,7%) are aware of this possibility but did not report any accessibility issues (vs 29,4% in 2017) while 42,1% were not aware in comparison to 61,8% in 2017. However, few users exploit this

possibility: only 9,2% in 2023 and 8,8 % in 2017.

Last, most of the participants would contribute by sending feedback to the Public Advocate: 61,8% vs 47,1% in 2017, while 25% do not consider themselves able to do it, respect 29,4% in 2017.

## 5 CONCLUSION

This study investigates the experience of people with disabilities when accessing PA websites in Italy. Results show that, although user awareness is significantly increased and more users with disability are able to benefit from PA digital services, user satisfaction is only very slightly increased over the last 6 years, effectiveness has slightly decreased, and interaction seems more difficult, e.g., due to the increased security and authentication constraints (as the multi-factor authentication mechanisms) introduced in the last years.

Furthermore, while the increasing number of services offered through the PA websites is generally a positive aspect for all users, often this implies complex user interfaces that, if not suitably structured, are more difficult to understand and navigate via screen readers. Clearly, both the current authentication processes and the user interfaces need further design simplification efforts to make users with disabilities able to successfully access the PA services, asking for urgent improvement of usability such as ease of use of the user interfaces that should be logically organized for easier navigation, offering more help and a simplified interaction (also for authentication purposes).

The path for a truly accessible PA is still in progress and needs considerable endeavour. New initiatives inside the National Recovery and Resilience Plan, which is part of the Next Generation EU program, can place crucial resources and accelerate this process in Europe, but it is important to involve users with disabilities in these efforts since their feedback must be at the heart of a truly inclusive design process.

As future work, we intend to expand our survey in two directions: a) involving a more significant and balanced sample of users, especially with regard to the types of disability; b) investigating why some people do not use the internet (or just very rarely) in order to understand if it is due to specific barriers (technological, cultural, accessibility, etc.), or personal issues (privacy concerns, lack of interest, etc.) or other causes such a psychological technology rejection.

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## APPENDIX

### Survey on the Accessibility of e-Government Websites in Italy

The purpose of this research conducted by the University of L’Aquila and CNR is to understand the level of accessibility and issues encountered by users with disabilities when interacting with Public Administration websites. The questionnaire is addressed to adults and it is completely anonymous. Data collected will be processed in aggregate form for only research purposes. They will not be transferred to third parties. Consent to data processing: I confirm that I have read and understood the above information and I understand that:

- a) my participation is voluntary, and I can withdraw at any time without giving any reason
- b) my data are anonymous and no identifying information will be made available to anyone.
  - I accept, I give my consent and I participate in the questionnaire
  - I do not accept (exit the questionnaire)

### Section 1: Sample Characterization

#### Q1 Gender:

- Male
- Female
- I don’t want to specify.

#### Q2 Age:

- 18-29
- 30-39
- 40-49
- 50-59
- 60-69
- ≥70

#### Q3 Occupation/Job:

- Student
- Employee
- Professional
- Unemployed
- Retired

#### Q4 Disability – multiple choice

- Visual
- Motor
- Hearing

Intellectual  
Behavioural

**Q5 Internet Usage** - How often do you use the internet?

Almost Never  
Sometimes  
Weekly  
Daily

**Q6 Which Online PA Services do you Access most Frequently?** - Multiple choice:

Health  
Municipality  
Job/Pension  
Tax  
Justice  
Official Documents  
Finance/Economy  
School & Education

### **Section 2: Interaction with e-Government services**

**Q7 Access Problems** – Have you ever had problems accessing the PA's online services?

Yes, often  
Yes, sometimes  
No, never

**Q8 Effectiveness of PA Service Interaction** - Were you able to get what you wanted and to complete the requested services?

Yes, always  
Often  
Sometimes  
Never  
I've never tried

**Q9 Ease of the Interaction**

Always simple  
Simple (in most cases)  
Difficult (It was quite difficult in most cases)  
Very difficult (No, it was difficult in all cases and sometimes I was unable to complete the service)

**Q10 User satisfaction**

Very unsatisfied  
Unsatisfied  
Neutral  
Satisfied  
Very Satisfied

**Q11 Documentation and Help** - Rate documentation and help (manuals, interface messages, contacts, etc.)

1 = Totally dissatisfied  
2 = Dissatisfied  
3 = Neutral  
4 = Satisfied  
5 = Totally satisfied

**Q12 Errors – Were you able to manage it and move forward if you made mistakes? (clear messages and interaction mechanisms)**

I made mistakes and could not correct them  
I made mistakes and could hardly correct them  
I don't know  
I made mistakes, but I could easily correct them  
I did not make mistakes

**Q13 User Interface Customization** - Could the interface be adapted to your needs? (e.g. increase font size, change contrast, increase line spacing)

No, in general  
Only in some sites  
I don't know  
Yes, generally  
I have not tried

**Q14 Aspects To Be Improved Urgently**

None, everything is fine  
Response times  
Ease of use  
Increase the number of online services to avoid face-to-face services  
Others

### **Section 3 -Authentication & Citizen Rights**

**Q15 Do you have SPID credentials?**

I don't know what they are  
I know what SPID is, but I don't own it  
I own it, but I don't use it  
I own it and I use it

**Q16 Did you know that every citizen has the right to easily access all PA services?**

YES  
NO

**Q17 Did you know that AgID (Agency for digital Italy) is the authority in charge of receiving reports on difficulties in accessing PA services?**

NO, I didn't know  
YES, but I didn't report it  
YES, and I made some reports

**Q18 Each Administration must identify a Digital Public Advocate.** Would you like to participate by sending them your personal suggestions?

No, I'm not interested  
No, I wouldn't be able  
Yes, I would like to participate  
I don't have time to do it.