



Is there communication? Access to information by persons with disabilities in Serbia

Dejan Masliković¹  Bojan M. Tomić² 

ABSTRACT

Persons with disabilities often face barriers that hinder their ability to access information effectively. This study presents results of a survey which was conducted in the second half of 2022, on the topic of the accessibility of information for persons with disabilities in Serbia, as well as their means of communication. A convenience sample of 111 individuals with physical and/or sensory disabilities, with basic digital literacy, aged 18 to 59, was surveyed through the mediation of associations of persons with disabilities. The findings reveal the usage patterns, preferences, and challenges faced by individuals with disabilities in accessing information. It has been found that the internet (99.10%), social networks (91.89%), and specialized platforms (79.28%) are prominent sources of information. Although specialized applications for communication and telephone communication are widely used, personal contact communication (96.40% very often or often) is still the prevalent method of communication. Public institutions and state authorities are perceived as inadequately adapted to the needs of individuals with disabilities. The findings underscore the need for continued efforts to improve accessibility infrastructure and implement inclusive design principles to bridge the information gap for individuals with disabilities in Serbia.

KEYWORDS

communication, ICT, persons with disabilities, state authorities, information inequalities

¹Centre for Sociological and Anthropological Research, Institute for Social Science, Belgrade, Serbia

²University of Belgrade, Institute for Multidisciplinary Research, Belgrade, Serbia

Correspondence:

Bojan M. Tomić, University of Belgrade, Institute for Multidisciplinary Research, 1 Kneza Višeslava, 11030 Belgrade, Serbia

Email:

bojantomic@imsi.rs

1 INTRODUCTION

Many initiatives and efforts for improving life quality of persons with disabilities are visible on international and local level (Masliković and Tomić 2015), but these individuals are still less educated and have low expectations regarding their educational advancement (Sylvester et al. 2014). All the vulnerable groups of society, which include the elderly, children, persons with disabilities, minorities, etc., are traditionally being neglected by government authorities, institutions, media and other members of society (Yang and Chen 2015). To improve the quality of their lives, the most important is to ensure the accessibility of information and improve their communicational means. Persons with disabilities, which are the most numerous imperiled social group, often report lack of accessible information (Center for Human Rights in Iran and Human Rights Watch 2018; Committee on the Rights of Persons with Disabilities 2014; Lawson 2017), and very often just a minor segment of an offered information is accessible to them. The means of conveying information (devices, media) and the formats in which the information is packed (design, electronic form) may also be a risk factor, namely, a barrier between the information sender and the recipient (Masliković, Tomić and Tomić 2023; Moser 2006; Watling 2011), even more so for this group.

For persons with disabilities, accessible information, and information and communication technologies (ICT) accessibility emerge as a concern in a wide variety of contexts in democratic societies; and those areas affecting social and economic development have deep implications for citizen participation and the exercise of human and political rights (Lord 2017). The information poverty

of these persons is influenced by their lack of the requisite skills, abilities and material means for the efficient access to information (Gibson and Martin III 2019; Britz 2004).

When considering communication with state authorities which is the first institutional mechanism for exercising the rights of persons with disabilities, the focus is on e-Government and m-Government¹ which are designed to improve the access to government information, services and expertise (Bicen and Shali, 2021; United Nations 2002). E-administration uses nontraditional e-services to enable the access to administrative information and transactions with state authorities in accordance with the requirement of 'access for all' (Pardo 2000). The aim of e-administration is that the digital divide shifts to differences in usage (van Deursen and van Dijk 2014). Ways of e-Services promotion among persons with disabilities are being tested (García-Crespo et al. 2012; Seale et al. 2015; Harwood 2014). Nevertheless, the system of e-administration is also creating a digital divide between the society and this vulnerable group.

While there is a considerable number of recent studies on the critical issue of the access to information and communication means for persons with disabilities (PWD) in the international literature (Miller 2024; Chien and Wu 2024; Koob et al. 2022; CIPESA 2021), in recent years in Serbia the topic has been insufficiently explored. Several domestic authors have been intensively exploring digital skills, competences and literacy

¹ Electronic Government is a digital improvement of governmental organization's performances, meant to provide an innovative flow of information. Mobile Government is an innovation made for saving time and efforts, operated via mobile telephones.

among persons with disabilities in Serbia in the context of their self-employment and remote work competencies (Simovic et al. 2024; Lazić et al. 2023; Lazić and Vukmirović 2023; Lazić et al. 2022; Lazić, Vukmirović and Banović 2022), as well as of the gender gap (Lazić et al. 2023).

The level of digital technologies' usage by PWD was investigated, as well as their inclusive capacity and the capacity for improving the quality of life of persons with disabilities (Masliković 2016; Masliković and Krstić 2018). The relationship between PWD and the media in Serbia has been investigated so far when it comes to reporting and mentioning PWD in the media (Bašić 2014; Mirić 2015; Ružičić-Novković 2014; Trajković 2020). Access to information has been researched in the context of familiarity with state regulations (Kadijevich, Masliković and Tomić 2022; Kadijevich, Masliković and Tomić 2020).

Implications of researching the relationship that persons with disabilities have with digital environment, can be significant in terms of identifying problems and providing guidelines to policy-makers and practitioners which can influence overcoming of the digital divide that these persons encounter (Kadijevic, Maslikovic and Tomić 2022; van Kraayenoord 2010). The study of the digital competence of persons with disabilities in Serbia and inclusion in the work involving online platforms (DigCompOSI) has shown that digital e-competencies are significant for the inclusion of PWD in social flows, especially education and professional affirmation (Lazić, Vukmirović and Banović 2022).

Taking into account the gap in the existing local literature on the attitudes of PWD about the accessibility of media and literature on their communication, as well as the rapid development of ICT

in recent years, and the development of distance learning, this study aims to investigate information accessibility for persons with disabilities in Serbia, as well as their communication.

2 RESEARCH METHODOLOGY AND RESULTS

The aim of the survey was to collect valid data directly from persons with disabilities with basic digital literacy, that would be used to:

- Provide insight into the accessibility of information from the point of view of PWD;
- Provide insight into PWD's communication mechanisms, from their point of view.

The survey was conducted in the second half of 2022 on the territory of the Republic of Serbia, through the mediation of associations of persons with disabilities with members distributed across Serbia. The initial request was to have the questionnaires completed personally by persons with disabilities, without any help from the assistants, family members, or medical staff. This oriented our study towards the persons with disabilities who were nevertheless able to complete the questionnaire on their own. Accordingly, our findings have been restricted to the persons with disabilities with basic digital literacy. This survey used a convenience sample comprising 111 persons with physical and/or sensory disability aged from 18 to 59 (average 39.62 years). The study describes characteristics and trends in the collected set of data. It uses descriptive analysis to unveil some of the critical spots and give some valuable hints which should be studied further. Details about the sample are given in Table 1.

Table 1 Sample structure by gender, disability type and age

Gender	male	42.34%
	female	57.66%
Disability type	acquired disabilities	53.15%
	congenital disabilities	46.85%
Age	18-19	0.90%
	20-29	18.92%
	30-39	35.14%
	40-49	23.42%
	50-59	21.62%

2.1 PROFESSIONAL RECOGNITION

The following data show the professional competency of the respondents resulting from education or additional training. Only about one third of the respondents (35.14%) have been professionally trained in the course of regular education, 17.12% through online courses, platforms and through the internet, 14.41% through other courses, 6.31%, through projects, 9.01% through professional rehabilitation, whereas 18.02% are not professionally competent. About one third is unemployed (33.33%), one third doesn't work in their profession (36.94%), while one third works in their profession (29.73%).

2.2 SERVICE SUPPORT AND AIDS

The service support in communication is used by only 12.61% of the interviewees, whereas 87.39% state that they are not using this service. The service support includes all the services provided to persons with disabilities in order to improve the quality of life, in this case the quality of received information and its understanding. The service support consists of gesture translators, induction loops,²

² Induction loops are equipment installed in public areas that increase the receipt of sound in the

audio guides, video and visual devices for conveying information, personal assistants, etc. About a third (36.04%) answered that they had communication aids for the purposes of communication, while the rest answered negatively.

They have listed:

- hearing aid (7.21%),
- tablets (5.41%),
- speech-to-text (6.31%),
- Tobi Communicator – an assistive technology device (0.90%),
- other (0.90% each).

2.3 COMMUNICATION

To the question of how often they communicated (communicated or exchanged information) verbally in the form of personal contact, the largest number answered very often or often (96.40%), which in the digital era is a result that requires further analysis and interpretation. The assumption is that the reason for the very frequent need for personal contact should not be sought in the lack of digital literacy and the inability to use ICT. The reason could be that personal contact is important for persons with disabilities in terms of belonging to the

hearing apparatus and thereby enable better understanding and reception of information.

community (Akyurek and Bumin 2017). Development of communicational skills requires having the relations, which means to interact and connect with people (Akyurek and Bumin 2017).

Among other methods of communication, telephone is used often and very often by 91.89%. Also, 63.06% often and very often communicate through specialized applications,³ while 53.15% use e-mail. Communication in writing, or printed material is ranked the lowest. Only 9.91% use it very often or often.

2.4 COMMUNICATION WITHIN THE PERSONS WITH DISABILITIES' COMMUNITY

It was determined, regarding the type of communication, that dominant was the exchange of information with persons who have the same disability (63.06%) and with the society to which the persons belonged (52.25%).

The exchange of information is the most frequent type of communication with other persons with disabilities regarding all the topics they have been asked about: socializing (6.31% of respondents answer very often and 26.13% often), resolving life issues (5.41% answer very often and 35.14% often), launching initiatives with the state authorities on improving the status of persons with disabilities (6.31% answer very often and 24.32% often), medical treatment (2.70% answer very often and 19.82% often), and work (5.41% answer very often and 18.02% often).

³ Specialized applications are those developed specially for PWD (the sign language applications for example). The telephones also have the customized options, by which a user can adjust contrast, brightness or font size, and have the option of voice commands.

2.5 BROADCASTING OF SPECIAL PWD PROGRAM

Public services in Serbia are obliged to broadcast programs intended for persons with disabilities in an understandable and acceptable format. The public media service fulfills its legal obligation to a certain extent. It is evident in the information program, which is covered at certain times by an interpreter for sign language and is therefore intended for deaf and hard-of-hearing persons. Also, a film program with descriptions intended for blind and partially sighted persons is broadcast once a week in an inadequate time slot.

Accessibility, especially the use and networking of various advanced technologies, becomes a priority, not only as a consequence of complying with current world regulations, but also as a way to reach a wider audience and contribute to the implementation of equal opportunities for all and global e-inclusion.

The survey showed that persons with disabilities are divided regarding the broadcasting of special programs only for persons with disabilities. In this survey 41.44% considered it discriminatory to broadcast special programs for them, while 58.56% of respondents stated the opposite. The results might suggest that this finding is a consequence of many years of society's attitude towards persons with disabilities, which treated such individuals as a medical problem that needed to be isolated. Only after establishing adequate communication with persons with disabilities, these individuals will gain self-confidence and see themselves as equal members of the society that expect the same treatment and status in the society with all the adapted contents and implementations of solutions of

universal design (Nedović et al. 2012). Anyway, our result might just indicate that those that have no obstacles in watching television find that the others are discriminated by having special programs broadcasted for them.

2.6 SOURCES OF INFORMATION

When it comes to sources of information, persons with disabilities very often or often use:

- internet (99.10%),
- social networks (91.89%),
- specialized platforms and applications (79.28%).

When it comes to the use of the internet, none of the participants answered never or rarely. There is no doubt that PWD have embraced modern technology as a way to communicate with society, as information and communication technology has the capacity to improve their quality of life (Kadijevic, Odovic and Maslikovic 2016).

Unlike ICT, other, mostly conventional ways of receiving information, are less popular:

- daily print (40.54% very often or often),
- weekly print (33.33% very often or often),
- e-administration portal (27.03% very often or often),
- periodicals (24.32% very often or often),
- magazines for persons with disabilities (24.32% very often or often), or
- radio program (8.11% very often or often).

Out of the previously listed six sources of information, the sources that are rated as highly or fully adapted with

the biggest prevalence are: the internet (94.59%), social networks (89.19%) and specialized platforms and applications (81.98%). Watching television is discussed separately in the next section.

The position of the internet is high on both lists. Information and communication technologies have shown excellent adaptability and great possibilities in creating inclusive solutions (Hersh 2020; Josjö 2012; Zinnbauer 2007). The introduction of the term *universal access* that defines the access to the information-communication technology equal for all is significant. The term *universal access* has several meanings. Some interpret it as a politically correct term pertaining to the introduction of 'special characteristics' for 'special users' in the product design. The other and proper interpretation pertains to the manner in which such access is treated by the designers: universal design as the broadest possible solution for the greatest number of users (Persson et al. 2015; Stephanidis and Savidis 2001). If not designed accessible and inclusive, the internet and information and communication technologies can increase marginalization and widen the differences between persons with disabilities and those without disabilities (Raja 2016).

2.7 TELEVISION CONTENTS

Often or very often watched are:

- foreign series (85.59%),
- movies (78.38%),
- service information (63.96%),
- music programs (60.36%),
- news (45.95%).

Programs adapted to persons with disabilities are rarely followed (8.11% often or very often). Only a small number

of the respondents often or very often follow programs in the fields of culture and science (18.02%). Domestic series, despite the great expansion in production and daily screening and reruns, are often or very often followed by a small number of the respondents (17.12%).

2.8 STATE AUTHORITIES AND COMMUNICATION

Answering the question 'What is your personal communication with the state authorities?' 59.46% of the interviewees claimed that there was none or that it was poor. Finally, when it comes to the question 'To what extent and in which areas have the public institutions/state authorities adapted the accessibility of information to the standards and needs of persons with disabilities?', the answers 'not adapted' or 'insufficiently adapted' dominated, and specifically for the following areas:

- information on mobility and physical adaptability within the institutions (97.30%);
- public transportation (90.09%);
- information on mobility and physical adaptability in public areas (88.29%);
- information on the business hours and competencies (53.15%).

Out of all the participants, 74.77% are familiar with the legal solutions that regulate the area of the right to information. None of those believe that the state completely (0.00%) fulfils, and only a few believe that the state almost completely (1.80%) fulfills its legal obligations regarding the right to information of persons with disabilities.

3 DISCUSSION

The finding that only about one third of the interviewees have been professionally trained in the course of regular education, once more confirms a fact that education is not sufficiently adapted to the needs of persons with disabilities in Serbia. Nevertheless, it is encouraging that about a third of respondents received professional training through online courses, platforms and the internet, or through other courses and projects, because it indicates that they have used the opportunities of informal education. The confirmed use of the online trainings is especially encouraging because they have a great potential, although for a limited range of disabilities. In order to use the opportunities of informal education, it is necessary that a person is informed about them. It is one more reason to work on the accessibility of information.

About one third answered that they had a communication aid, of which only one in three used an aid other than tablet, phone, or an application for these devices. These are encouraging results as they indicate that the majority of respondents can satisfy their needs using a phone or tablet. The ICT development has reached the level where ICT devices with adequate applications can replace and be even more useful than some aids previously seen as irreplaceable. Preferred devices in accessing the internet are no longer personal laptops, but rather mobile devices, which is especially remarkable when it comes to elderly persons with disabilities (Yang and Lee 2022).

Given that the majority of respondents very often communicate verbally in the form of personal contact, and that our research is restricted to the PWD

with basic digital literacy, as well as a satisfying frequency of communication by telephone, through specialized applications, by e-mail and through specialized platforms, it can be concluded that the reason for the need for personal contact should not be sought in the inability to use ICT. The findings might underscore the significance of personal contact in communication, revealing a noteworthy reliance on direct interaction despite the prevalence of digital platforms. This trend suggests that digital literacy might not be the sole determinant for communication choices among individuals with disabilities.

Based on the survey data, the internet, together with social networks, and TV programs are the most used means of obtaining information. At the same time, the simplest and most economical way of providing accessible information is adapting the internet content because it also extends the options for communication and interaction, as well as the education, and employment of persons with disabilities (Radosav and Ćatić 2012). While this study shows that the internet, social networks, and specialized platforms serve as essential sources of information, conventional methods like newspapers and radio programs are seen as underutilized. This accentuates the importance of creating customized approaches for information dissemination, meeting in that way the needs of persons with disabilities.

The findings indicate that there is a perceived inadequacy among public institutions and state authorities in accommodating the accessibility needs of persons with disabilities. The lack of adaptation within institutions, public transportation, and physical spaces reflects the need for systemic changes to ensure inclusivity.

4 CONCLUSION AND RECOMMENDATIONS

By delving into the state of the art of information accessibility for persons with disabilities in the Republic of Serbia, and their communication, this study offers valuable insights into their information shearing and receiving patterns, communication preferences, challenges, and perceptions of accessibility. Our findings reveal that the prominent sources of information for persons with disabilities are the internet (99.10% very often or often), social networks (91.89% very often or often) and specialized platforms (79.28% very often or often), all of which are of digital nature. That is in accordance with our finding that most of the participants consider the internet (94.59%), social networks (89.19%) and specialized platforms and applications (81.98%) highly or fully adopted sources of information. While they have digital preferences in accessing information, we have found a significant modality in their manner of communication – it turned out that personal contact (96.40% very often or often) is the prevalent pattern of communication. Their communicational preferences might underscore the significance of reliance on direct interaction despite today's prevalence of digital platforms, or they could be an indicator to some other obstacles in digital communication. However, digital literacy could not be the sole determinant for their communication choices.

Most of the participants with a communication aid satisfy their needs for communication by using a tablet or phone with an appropriate application. That makes satisfying their need much easier and cheaper, while it also suggests that achieving PWD's digital literacy is a priority. In addition to access to ICT,

certain skills are needed to use them. Inclusive education and access to the acquisition of knowledge and skills for the use of ICT will prevent the digital divide and exclusion from society.

Public institutions and state authorities are perceived by the participants as inadequately adapted, as more than a half of them have none or poor personal communication with the state authorities. Only about one third of the respondents communicate very often or often with other persons with disabilities in the way of exchanging information, with the aim of launching initiatives with the state authorities on improvement of the status of persons with disabilities. This indicates the need for further research that would establish the level of understanding of the needs of persons with disabilities by state authorities, as well as the level of understanding norms adopted by the state in order to regulate the position of persons with disabilities. The fact that 74.77% of participants are familiar with the legal solutions that regulate the area of the right to information in this community shows that the digitization process made it possible to make information of vital importance available. The majority of people who are familiar with these solutions (55.86%), believe that the state only partially

fulfills its legal obligations regarding the right to information of persons with disabilities. Although normative framework for the protection of the right to equality of persons with disabilities has been significantly improved in recent years, a lot of effort still has to be invested to ensure their factual equality and accessibility. Basic digital literacy must be achieved in order to access communication applications on ICT devices. Public institutions and state authorities should respect the laws when it comes to adaptation to PWD's needs. This includes work on the removal of all barriers that make it difficult to access public facilities and areas, public transportation, and especially information and communication, as well as the availability of public services.

In light of our findings, it is important for policy creators to create a multifaceted approach to improving the communication and access to information of persons with disabilities, which should combine educational initiatives, technology integration, and policy improvement. For decision makers, the presented results can be good guidelines for determining the course of action, as well as for identifying the technologies useful in enabling persons with disabilities to receive information that are accessible and understandable.

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Data Availability Statement

Data are available from the authors upon request.

Ethical Statement

The participants were informed that the survey was voluntary, that it would be anonymized, and that it would be used for scientific and practical purpose.

Coauthor Contributions

Dejan Masliković: Conceptualization, Methodology, Investigation, Formal Analysis, Writing – Original Draft, Writing – Review & Editing. **Bojan M. Tomić:** Conceptualization, Methodology, Investigation, Formal Analysis, Writing – Original Draft, Writing – Review & Editing.

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Da li komunikacija postoji? Pristup informacijama u Srbiji za osobe sa invaliditetom

PROŠIRENI SAŽETAK

Uspostavljanje komunikacije predstavlja tranziciju iz individualnog ka kolektivnom, što je važan korak u procesu formiranja uređenog društva. Postizanje zadovoljavajućeg nivoa komunikacije za sve članove društva je imperativ u 21. veku. Poznato je da osobe sa invaliditetom otežano ostvaruju komunikaciju sa okolinom, i da se često suočavaju sa preprekama koje ih sprečavaju da efikasno pristupe informacijama. U tom smislu obaveza svake države je da obezbedi zakonsku regulativu za omogućavanje pristupačnosti informacija. U Republici Srbiji postoji zakonski i tehnološki okvir kojim se reguliše pristupačnost. Ova studija predstavlja rezultate istraživanja o dostupnosti informacija osobama sa invaliditetom u Srbiji, i o obrascima njihove komunikacije. Na osnovu istraživanja koje je izvršeno posredstvom udruženja osoba sa invaliditetom na uzorku od 111 osoba sa fizičkim i/ili senzornim invaliditetom starosti od 18 do 59 godina dat je uvid u obrasce komunikacije i obrasce pristupa informacijama, prioritete koje ove osobe imaju u pogledu komunikacije i pristupa informacijama, i izazove sa kojima se suočavaju. Predstavljani su rezultati istraživanja o dostupnosti sredstava informisanja, i o mogućnostima da osobe sa invaliditetom poboljšaju svoju situaciju u pogledu pristupa informacijama. Utvrđeno je da su internet (99,10%), društvene mreže (91,89%) i specijalizovane platforme (79,28%) prominentni izvori informacija. Iako su specijalizovane aplikacije za komunikaciju i telefonska komunikacija u širokoj upotrebi, lični kontakt (96,40% je odgovorilo sa vrlo često i često) je i dalje preovlađujući način komunikacije. Javne institucije i državni organi se percipiraju kao neadekvatno prilagođeni potrebama osoba sa invaliditetom. Ovi rezultati naglašavaju potrebu za sprovođenjem kontinuiranih napora sa ciljem poboljšanja infrastrukture u Srbiji u cilju obezbeđivanja pristupačnosti, i potrebu za primenom principa inkluzivnog dizajna kako bi se premostio jaz između osoba sa invaliditetom i osoba koje nemaju invaliditet, u pogledu pristupa informacijama.

KLJUČNE REČI

komunikacija, IKT, osobe sa invaliditetom, državni organi, informaciona nejednakost