The Problem of Digital Disability in E-Municipality: A Study on Metropolitan Municipalities

E-Belediyecilikte Dijital Engellilik Sorunu: Türkiye Büyükşehir Belediyeleri Üzerine Bir İnceleme

Hasan TUTAR* Fatma AKAR**

ABSTRACT

The distinctive feature of the digital society is that it can practically use information and communication technologies in many areas of life, and the digital literacy rate is relatively high. The fact that most of the bureaucratic processes in e-government and e-municipality are transferred to virtual environments increases the importance of such topics as digital literacy and digital disability. One of the basic skills of the digital society is the relatively high rate of digital literacy and the increased ability of the members to use information and communication technologies. For this reason, the absence of digital disabilities and the design of web tools for individuals with disabilities are significant in digital accessibility. Suppose web tools are not designed for people with disabilities. In that case, it is inevitable that a new form of disability, which is unique to the digital society and called "digital disability," will emerge. The primary purpose of this research is to examine the web pages of Metropolitan Municipalities in Turkey according to digital disability criteria. For this purpose, the web pages of 30 Metropolitan Municipalities were analyzed in terms of digital accessibility, digital disability, and access performance. Within the framework of the research problem, sampling was determined according to the sampling method. Descriptive statistics and content analysis methods were used to analyze the data collected from the sample. The research findings show that the web pages of Metropolitan Municipalities have some inadequacies in digital accessibility and performance indicators.

Keywords: E-Government, E-Municipality, Digital Accessibility, Digital Barrier, Digital Literacy.

ÖZ

Dijital toplumun ayırıcı yanı, bilgi ve iletişim teknolojilerini yaşamın birçok alanında fonksiyonel şeklide kullanabilmesi ve dijital okuryazarlık oranının görece yüksek olmasıdır. E-devlet ve e-belediyecilik alanlarında bürokratik işlemlerin çoğunun sanal ortamlara taşınması, dijital okuryazarlık ve dijital engellilik gibi konuların önemini artırmaktadır. Dijital toplumun temel becerilerinden biri dijital okuryazarlık oranının görece yüksek olması ve toplum bireylerinin bilgi ve iletişim teknolojilerini kullanma becerilerinin yüksek olmasıdır. Bu nedenle dijital engellilik durumunun olmaması, web araçlarının dijital engelli bireylere göre tasarlanması, dijital erişilebilirlik bakımından büyük önem taşımaktadır. Web araçlarının engelli bireylere göre tasarlanmaması durumunda, dijital topluma has ve adına "dijital engellilik" denilen yeni bir engellilik biçiminin ortaya çıkması kaçınılmaz olmaktadır. Bu araştırmanın temel amacı Türkiye'de Büyük Şehir Belediyelerinin web sayfalarının dijital engellilik ölçütlerine göre incelenmesidir. Bu amaçla 30 Büyükşehir Belediyesinin web sayfaları dijital erişilebilirlik, dijital engellilik ve erişim performansları açısından analiz edilmiştir. Araştırmanın problemi çerçevesinde örneklem amaçlı örnekleme yöntemine göre belirlenmiştir. Örneklemden toplanan verilerin analizinde betimse istatistik ve içerik analizi yöntemlerinden yararlanılmıştır. Araştırmada bulguları Büyükşehir Belediyeleri web sayfalarının hem dijital erişilebilirlik hem de performans göstergeleri itibariye bazı yetersizliklere sahip olduğunu göstermektedir.

Anahtar Kelimeler: E- Devlet, E- Belediyecilik, Dijital Erişilebilirlik, Dijital Engel, Dijital Okuryazarlık.

The Problem of Digital Disability in E-Municipality:
A Study on the Metropolitan Municipalities of Turkey ■ Hasan TUTAR • Fatma AKAR

31

Introduction

Developments in information and communication technologies are changing the understanding and practices of public administration, as in every field. Especially after the 1990s, information and communication technologies (ICT) and internet technology have significantly changed the understanding of public and private institutions' organization and service production. Today, institutions with the infrastructure suitable for the requirements of the digital society perform essential functions such as reducing production costs and increasing the quality of service by carrying their services to the virtual environment to meet the citizens' expectations and demands. E-government and e-municipal services provided by Internet technology are practical tools for reaching the target audience. The speed, accessibility, and interactive nature of internet technology make the communication of institutions with their target groups more efficient. Thanks to e-government and e-municipality applications, citizens can participate in the administration and deliver the necessary services. In this process, e-municipality can be used functionally to provide services to local government citizens and facilitate the citizens' works related to the municipality (Ünlü, 2016; Atmaca & Yılmaz, 2019). Citizens can pay all bills and taxes with e- municipal applications and give feedback on municipal activities. At the same time, e-municipality increases the quality of service in local governments and can reduce service costs.

What needs to be emphasized here, which is the subject of this study, is whether people with disabilities can benefit from digital services, that is, the phenomenon of "digital disability." According to official sources, there are 2,511,950 disabled individuals in Turkey as of 2022 (https://www.engelli.com, 2022). Various studies have been carried out to make the physical conditions suitable for disabled individuals in our country as well as all over the world for disabled individuals to participate in business and social life (Genç & Çat, 2013; Çaha, 2016; Çağlar, 2012; Arslan & Atıntaş, 2014; Arslan et al., 2014). In a process where everything is transferred to the digital environment besides the physical conditions, not taking measures for the digital accessibility of disabled individuals causes the problem of digital disability. To eliminate the problem mentioned above, web tools must be designed according to disabled individuals so that disabled individuals can access these services in e-government and e-municipal services.

The way to adapt to the digital society is to have the skills required by this society. According to the Partnership for 21st Century Skills (2009), one of the basic skills of the digital community is to be digitally literate and, at the same time, be able to use information and communication technologies. In the absence of this, "digital disability" becomes inevitable. Digital literacy is understanding and using the information in multiple digital formats. The indicator of an individual's digital literacy indicator is the ability to adapt to digital technologies (Mohammadyari & Singh, 2015). Digital literacy is a versatile and multi-dimensional literacy rate that includes all the digital environment's technological, social, and cognitive skills. In addition to the practical use of information and communication technologies, it is also the ability to produce digital content. The inability to create digital content in digital societies is another digital disability. Some factors prevent people from being digitally literate. These factors are the digital literacy barriers of the individual, briefly "digital disability" (Eshet, Alkali, & Amichai, Hamburger, 2004; Hew & Brush, 2007). Digital disability results from a lack of knowledge and ability to use information technology. Regulation of the physical environment eliminates physical disability. Web accessibility can allow access for people with digital disabilities. Web accessibility can offer people with disabilities unprecedented opportunities to lead a more active and social life.

Conceptual Framework

Digital Transformation and E-Municipality

Due to recent developments in information and communication technologies, the opportunity for information sharing and communication

The Problem of Digital Disability in E-Municipality:
A Study on the Metropolitan Municipalities of Turkey ■ Hasan TUTAR ■ Fatma AKAR

32

between people and institutions is increasing unprecedentedly. While the Internet provides rapid circulation of information, it also enables people from different geographies and cultures to communicate with each other. The Internet, which has penetrated all areas of social life, has become an essential tool for public institutions and the private sector to communicate with citizens and customers. Since the Internet is a technology that allows interaction in local governments, it also provides an opportunity to see the satisfaction with the quality of the services offered. The said opportunity is also essential in enabling citizens to participate in the administration and strengthening local democracy (Yeşil, 2010). With the development of communication technologies and the spread of democratic culture in societies, the classical state understanding has left its place to two-way communication, transparency, effective political participation, the rule of law, and the knowledge of account management. This change, which occurred in the understanding of central government, naturally started to be implemented by local governments.

Municipalities are the first to come to mind regarding local government. They are public legal entities responsible for responding to the needs of the people at the local level and have administrative and financial freedom. Municipalities are the closest public institutions to the public. The increase in the population living within the municipality's boundaries causes some difficulties in communication with the public (Tejedo-Romero et al., 2022; Pektaş, 2011). The possibility of the Internet providing services independent of time and place causes a tendency towards e-municipality in local governments. E-municipality offers the opportunity to deliver municipal services in an electronic environment and to interact with local people, public institutions, and stakeholders in the private sector through information and communication technologies.

Municipalities use communication technologies to provide quality service to their citizens and to see whether the public approves of their services.

For this purpose, municipalities' most crucial communication tool is the Internet. With the e-municipality application created by internet technology, local governments have gained the opportunity to implement a more effective, transparent, accountable, and participatory management approach (Kaypak et al., 2017; Gürler Hazman, 2005). While e-municipality application allows municipalities to reach many citizens, it also provides speed and convenience in municipal services and allows individuals to easily access information about municipal services.

E-municipality is the local form of e-Government and e-government, e-municipality is not only a cost-reducing service for public institutions but also a necessity for a professional, transparent, auditable, participatory, and effective public administration. In addition, the e-municipality application ensures that the service costs in the municipalities decrease, the services are accelerated, and the citizens' access to the services is high quality and effective. Again, thanks to information and communication technologies and the Internet, many transactions can be performed quickly and easily at low cost (Mecek, 2018; Karakaya & Gaytancıoğlu, 2017). For this reason, municipalities need to expand digital applications in the face of a rapidly increasing population.

The Internet's widespread use in service delivery has created a unique and new organizational model and way of doing business. In this virtual or digital bureaucracy application, services can be provided effectively at any time, wherever desired. This situation can provide employers and employees time, energy, and savings (Karabulut, 2015; Henden & Henden, 2005). In the traditional bureaucratic practice before the Internet, the management is hierarchical from top to bottom. Thanks to e-government and e-municipality practices, hierarchical structure and rigid organizational forms are eliminated, expanding the possibility of citizen participation in government and digital democracy. E-government and e-municipality practices are essential for citizens' access to public institutions, involvement in the country and local

The Problem of Digital Disability in E-Municipality:
A Study on the Metropolitan Municipalities of Turkey ▪ Hasan TUTAR • Fatma AKAR

33

government, and transparency and accountability in state affairs (Henden & Henden, 2005; Ho, 2002; Gürler Hzman, 2005). When e-government and e-municipality applications that provide digital accessibility are considered in terms of disabled individuals, the importance of the subject increases even more.

Accessibility is essential to people's education, health, social life, Internet, etc., especially for disadvantaged individuals. The level of access to the services it needs, such as disabled individuals, constitutes a disadvantaged group compared to healthy individuals in accessing the physical and digital services offered by public institutions (Moon, 2002). The fact that the applications for the disabled are not included in the corporate websites or are insufficient, especially in accessing the services over the Internet, causes digital disability. It is a constitutional obligation for public institutions to treat their citizens equally and provide equal services without discrimination. It is a constitutional requirement that public institutions' websites be accessible and usable for all citizens. However, websites must comply with accessibility standards. Accessibility of websites will contribute to making the lives of disabled users easier by using the services provided by the public. In general, when the e-municipality practices of municipalities are viewed from their corporate websites, corporate promotion, obtaining documents for official applications, parliamentary decisions, publication of strategic plans and reports, an announcement of tenders, white desk, e-documentation, e-request, and e-complaint form, message to the president, invoice and tax payment, and online license and license services such as delivery. It should be known that there is a long work to be done in increasing these services and the functionality of web tools.

Digital Disability and e-Municipality
The World Health Organization defines disability as a complex phenomenon that reflects the interaction between the characteristics of a person's body and the society in which he lives (Tsatsou, 2021). A disability is a physical or mental condition that limits a person's movements, senses, or activities. Disability has three primary dimensions; (1) deterioration in the person's body structure or mental function (limb loss, vision loss, or memory loss), (2) activity restrictions such as difficulty in seeing, hearing, walking, or problem-solving, and (3) lack of work, participation in social activities, health and protective services restrictions on participation in normal daily activities, such as When all these dimensions are evaluated, more than one billion people globally, about 15 percent of the world's population, are disabled, and 80 percent of them live in developing countries (Houtenville et al., 2021). Individuals in this ratio may experience different disabilities, including vision, hearing, speech, mobility, cognitive, and psychosocial. In all these forms of disability, a new disability group called digital disability has been included in digital societies, and the disability problem has become multi-dimensional.

Digital disability as a new form of disability is a multi-dimensional, complex inequality unique to this age. It has introduced a new form of disability called "digital disability," which conceptualizes inequalities in accessing information technology as a manifestation of disability and is derived from the digital divide. Research on digital disability makes people with and without digital technology the subject of research (Hawkins et al., 2005; Kaye, 2000; Dobransky & Hargittai, 2006). With the increasing prevalence of internet access, concerns about inequality in access are about disparities in internet access by different social groups. Digital disability deals with differences in economic and social status nationally. Digital disability exists between people with disabilities and non-disabled people who do not show homogeneous characteristics as well as demographic, cultural, and geographical characteristics (Dobransky & Hargittai, 2006; Glumbić et al., 2022). Other digital disability has multiple dimensions, such as accessibility and uses in both national and international contexts bring with it.

The Problem of Digital Disability in E-Municipality:
A Study on the Metropolitan Municipalities of Turkey ▪ Hasan TUTAR ● Fatma AKAR

34

Digital disability can be in the form of first or second-degree disability. First-degree disability is the disability that arises from the adaptation problem of digital technology in the institutional structure. Second-degree disability is a personal disability that results from wrong and inadequate beliefs and attitudes about digital technology. The person's digital disability can cause second-degree disability, attitude, educational, cognitive, technical, and physical barriers (Eshet-Alkali & Amichai-Hamburger, 2004; Hargittai, 2005; Rodríguez-de-Dios, Igartua, et al., 2016). In addition, not adopting digital technologies and applications, not being aware of events, prejudice, inability to follow technology developments, lack of vision, the problem of adaptation to digital technology, fear of innovation, and lack of curiosity are among the other causes of digital disability. While technology for communication has become a core function of most people's lives, it is increasingly difficult to distinguish between the digital world and the natural world (Helsper, 2008; Ritchie & Blanck, 2003). Therefore, the digital divide is becoming an increasingly important social issue, reflecting the imperatives and opportunities associated with human rights, equality, identity, language, social participation, civic participation, and the digital world. Digital disability, which arises due to some disadvantages in learning and communicating in the digital world, leads to the emergence of a new disadvantaged group.

Overcoming the obstacles faced by people with disabilities depends on their efficient use of the online world. Someone with significant physical disabilities can study online without leaving home. The visually impaired person can gain access by downloading documents and converting text to speech. Someone with a physical disability can make friends from home. However, some digitally disabled people do not have the opportunity to be online due to poverty, lack of social support, or other reasons (Chadwick et al., 2013; Hoppestad, 2013; Chadwick & Wesson, 2016). The exclusion of people with disabilities from the online world is a significant cause of digital disability. Disabled people are classified as socially isolated in digital terms. The deep social exclusion experienced by many disabled people emerges from limited educational opportunities, such as active use of information and communication technologies, low income, unemployment, and health problems (Dobransky & Hargittai, 2006; Helsper, 2008). In the U.K., for example, 31% of adults with digital disabilities represent more than half of all people who have never used the Internet (Palmer et al., 2012).

It is estimated that 20-30% of people with mental disabilities will also be physically disabled, and 10-33% will be sensory disabled. Clinical definitions of disability remain deficit focused. However, this point of view is that disability is a term used to label a particular group of people in society in recent years (Goggin & Newell, 2003). Since the 1980s, there has been a movement towards acceptance, tolerance, and inclusion, with significant efforts occurring mainly globally to remove the social barriers experienced by people with disabilities. Newer thinking about disability suggests that identifying deficiencies should be integral to the support people need to overcome these challenges (Hatton & Emerson, 1995; Schalock et al., 2010). This view of support is based on a more interactive model perspective of disability.

The social model of disability argues that environmental barriers, not individual disabilities, cause disability. This approach is the limitations that a disability faces due to a person's impairments. Technological developments and the continued growth potential of the digital world help people with disabilities to better integrate into society and experience the many benefits of full citizenship (Pacheco et al., 2021; Foley & Ferri, 2012). Internet use can provide opportunities to access information and participate in social interactions that can be difficult offline by reducing or removing barriers for people with disabilities to participate in such activities (Hoppestad, 2013; Vanden Abeele et al. (2012) suggest that the dependence on some people with disabilities on others (mobilization, information, social interaction) could potentially be transferred to the Internet. Internet access

The Problem of Digital Disability in E-Municipality:
A Study on the Metropolitan Municipalities of Turkey ■ Hasan TUTAR ● Fatma AKAR

35

has broad instruments for learning and educational opportunities, access to employment, entertainment, self-expression, social, political, economic, and cultural networking, engagement, and inclusion. In the process of interacting with the online world, disabled individuals have the freedom to disclose or not disclose their disabled identities whenever they want (Thoreau, 2006;

heterogeneous characteristics of the disabled.

Online technologies can offer people with disabilities different ways to overcome the boundaries of the offline world. A large amount of online information allows people with disabilities to educate themselves. For those with walking and mobility impairments, the ability to bank

Table 1 Barriers to Participation by Disability and Related ICT Solutions

Disability Category.	Barriers to social, economic, and community participation.	Examples of accessible technology solutions.
Visual disability (complete blindness or low vision)	· Reading (textbooks, guidelines) and writing printed materials (legal documents) · Access to visual information in written or audio-visual media (text scrolling warnings and information on television).	· Text-to-speech interpretation and speech/audio output · Braille displays · Screen and text magnification ·Voice recognition · Electronic voice signage · GPS-supported navigation · Optical character or image recognition · Change screen brightness, color contrast
Hearing impairment (complete or partial hearing loss)	· Hearing lessons, warnings, and other auditory information in person or through audio media such as radio or television. · Communicate with educators, colleagues, peers, clients, responders, caregivers, government personnel, and others.	· Indoor and outdoor subtitles, subtitles for videos, T.V. programming · SMS, text messaging · Text Phone or Telecommunication Device for the Deaf that allows text messaging over the telephone line · Use of vibration/written warnings instead of audible warnings
Speech disorders	· Communicate with educators, colleagues, peers, clients, response teams, caregivers, government personnel, and others.	· Text messaging via text message · Synthesized audio output, a text-to-speech conversion function · Use of virtual picture board and communication solutions
Physical Disability (loss of control over mobility, dexterity, and certain bodily functions).	· Entering, navigating, and using buildings, classrooms, and other physical spaces · Using writing tools such as pen, keyboard, and mouse.	· Voice recognition systems · Adapted virtual keyboard and mouse · Game bars · Use of gaze and gestures to control devices · Remote and online access to work, education, and other services
Cognitive disability (memory, thinking, problem-solving, visual and math, reading, understanding language, and the ability to pay attention or follow instructions).	· Difficulty understanding, remembering, or following instructions · Difficulty in understanding textual information · Speech disorders or limitations in hand grip and movements · Difficulty communicating or expressing thoughts and ideas	· Text-to-speech conversion · Touch screen devices · Mobile apps and online resources that mimic Augmentative and Alternative Communication devices · Tools that help with organization and memory, such as online calendars, notes · Navigation made easy with GPS · Use of multimedia such as video and graphics to help understand
Psychosocial Disability	· Difficulty understanding, remembering, or following instructions · React following information or instructions and not be able to make appropriate decisions Difficulty communicating or expressing thoughts and ideas	· Use of online communication, documentation, and study tools to help with flexible scheduling · Tools to help with organization and memory, such as online calendars, note-taking, alerts

Resource: Raja, 2016

Dobransky & Hargittai, 2016). While people with different disabilities may participate in a particular online activity for other purposes and ways, new connections can also be made online. Table 1 points out possible solutions to the problems of ICT use and negative experiences according to disability types, with a holistic perspective, considering the

or shop online can help them overcome some of the limitations of their disability. On-demand video streaming offers people with disabilities the ability to watch content in different, more accessible ways (for example, with subtitles, audio descriptions, in short segments, at modified speeds), giving people with disabilities flexibility

not found in traditional broadcast media. Social isolation, which can accompany many disabilities, can be improved through disability-focused chat rooms, list servers, discussion groups, blogs, or online communities in the virtual world (Dobransky & Hargittai, 2016).

Integrating disabled people into social life was limited only by spatial accessibility before internet technology. Digitalization, which emerged because of technological developments, has changed the scope of accessibility and has revealed the concept of digital accessibility. In a study conducted to demonstrate the difficulties experienced by disabled individuals in using smartphones and the Internet, 91.8% of disabled individuals stated that they could not use the Internet due to technical inadequacies and 30.6% due to individual health problems. Again, 76.3% of the participants said they could not participate in social life because they could not use the Internet, 46.4% said that there should be an audio-visual guide to facilitate Internet use, 46% said that there should be visual and auditory warnings, and 45.1% said that stated that there should be more accessible web pages (Kınalı et al., 2017). According to official sources, there are 2,511,950 disabled individuals in Turkey as of 2022. However, according to unofficial sources, this rate is 9 million (https://www.engelli.com, 2022). In a country where the number of disabled citizens is so high, both e-government and e-municipal services must be accessible to these disadvantaged individuals.

Material and Method

Research Design

The research problem is tried to be solved by analyzing the content collected with attitude scales and not based on a database with "descriptive analysis" and "content analysis" (Miles & Huberman, 1994; Malhotra, 2004; Silverman, 2001). This non-recognition research examines the web pages of Metropolitan Municipalities regarding accessibility. The municipalities' websites were analyzed using "descriptive statistics" and "content analysis" in the research. Descriptive research expresses the current state of the object or phenomenon in the research focus. A descriptive study aims to portray an organization, individual, group, situation, or sensation (Tutar & Erdem, 2022; Gay & Diehl, 1992; Adams et al., 2007; Hartley, 2008). It is called descriptive statistics when it presents summary values and graphs for a dataset by describing the statistics history and current state. Since it is based on quantitative data analysis in the descriptive statistical method, Tables such as frequency distribution table and classification table were used to support formal analysis. This method is aimed to increase the explanatory power of use by reducing the volume of the data (Özsoy, 2010; Gürsakal et al., 2019; Spiegel & Stephens, 2013).

The descriptive statistical technique helps the researcher to organize and interpret the numbers that appear in the measurement of the variables in the data collected by the data collection techniques. Its analysis includes the analysis of written, oral, and all kinds of visual materials that give information about the investigated phenomenon or events. Content analysis, on the other hand, is the quantitative and qualitative analysis of all kinds of data, which is the visuality of a document, picture, photograph, logo, banner, emblem, or web page, which is the second source. In cases where direct observation and interview are not possible, the research question is answered by analyzing the written and visual materials and materials related to the research problem in terms of their content (Creswell, 2003; Forster, 1994; Burkett, 1990; Corbetta, 2003). In the analysis process, all kinds of verifiable, transferable, and credible data related to the research problem are included, and the research question is answered. The important thing here is that the second data is produced independently of the researcher, is "non-reactive," and has the quality of documents (Geray, 2006; Hodder, 2002; Bengtsson, 2016).

Sampling and Sampling

This study has examined whether the websites of 30 Metropolitan Municipalities in Turkey have

The Problem of Digital Disability in E-Municipality:
A Study on the Metropolitan Municipalities of Turkey ■ Hasan TUTAR ■ Fatma AKAR

37

features that will facilitate the access of the disabled to municipal services and their potential to create digital disabilities. The reason for choosing metropolitan municipalities in the research is to ensure that the sample is homogeneous or similar in terms of being a metropolitan city. A homogeneous sample was preferred because it is suitable for conducting in-depth studies with a homogeneous sample (Tutar & Erdem, 2022). For this purpose, the websites of 30 metropolitan municipalities were examined regarding performance levels that may cause digital disability and whether they take physical disability into account.

Data Collection and Analysis

The research data were collected from the web pages of 30 metropolitan municipalities between 30 October and 15 November 2022. In the data collection, the mentioned municipalities' web pages were examined in terms of both digital disability and physical-cognitive disability. The web pages of the mentioned municipalities were used to collect the data. The contents were presented manually in tables and graphs in the data analysis. In addition, software that can make active visual analyzes was used to analyze the data.

Results

It has been understood that eight of the 30 municipalities (İzmir, Eskisehir, Diyarbakir Trabzon, Tekirdağ, Mardin, Kocaeli, and Bursa) examined within the scope of this research allow disabled access on their web pages and have tools to assist the physically disabled in their web applications. It has been determined that six of these eight metropolitan municipalities (Trabzon, Tekirdağ, Mardin, Kocaeli, Bursa, Eskisehir) provide e-municipality through the e-government application, and İzmir and Diyarbakir Metropolitan Municipalities allow disabled access with special applications on their websites. It has been determined that İzmir and Diyarbakir Metropolitan Municipalities have practices for individuals with visual and hearing disabilities. It has been observed

that Diyarbakır Metropolitan Municipality has a specially prepared website for the visually impaired. As in the Izmir Metropolitan Municipality, it has been concluded that it is only for visually impaired individuals and should be developed. They use the municipalities' websites to reach their citizens, learn their requests and complaints, introduce the cat, and provide services. However, it is essential that municipalities' websites are handled within the framework of digital disability and that disabled citizens do not encounter a new form of disability. The table shows the disabled accessibility of 30 Metropolitan Municipality websites in Turkey.

Table 2 Disabled Accessibility Practices of Metropolitan Municipalities
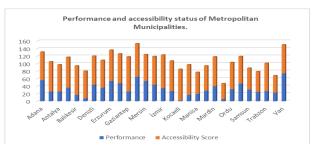
Metropolitan Municipalities	Disabled access	Metropolitan Municipalities	Disabled access
Adana	Absent	Kayseri	Absent
Ankara	Absent	Kocaeli	There is
Antalya	Absent	Konya	Absent
Aydın	Absent	Malatya	Absent
Balıkesir	Absent	Manisa	Absent
Bursa	There is	K. Maraş	Absent
Denizli	Absent	Mardin	There is
Diyarbakır	Absent	Muğla	Absent
Erzurum	Absent	Ordu	Absent
Eskişehir	There is	Sakarya	Absent
Gaziantep	Absent	Samsun	Absent
Hatay	Absent	Tekirdağ	There is
Mersin	Absent	Trabzon	There is
İstanbul	Absent	Şanlıurfa	Absent
İzmir	There is	Van	Absent

It is seen that only eight of the municipalities (İzmir, Eskisehir, Diyarbakir Trabzon, Tekirdağ, Mardin, Kocaeli, and Bursa) have an application for disabled accessibility. However, Bursa, Eskisehir, Kocaeli, Mardin, Trabzon, and Tekirdağ Metropolitan Municipalities, which are among these municipalities, provide this service via e-government, not their website. Only İzmir and Diyarbakir Metropolitan Municipalities allow disabled access through the applications they have created on their websites.

The Problem of Digital Disability in E-Municipality:
A Study on the Metropolitan Municipalities of Turkey ■ Hasan TUTAR ● Fatma AKAR

38

Table 3 General Performance Status of The Websites of Metropolitan Municipalities

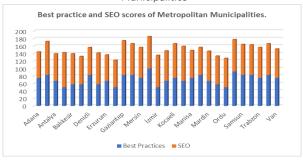| Municipalities	Performance	Accessibility	Best Practices	SEO
Adana	56	75	75	69
Ankara	26	79	83	89
Antalya	26	71	67	72
Aydın	36	81	50	92
Balıkesir	17	77	58	81
Bursa	8	72	58	74
Denizli	44	76	83	73
Diyarbakır	36	73	58	83
Erzurum	54	82	67	69
Eskişehir	48	78	50	72
Gaziantep	26	92	83	91
Hatay	65	88	83	83
Mersin	54	70	75	81
İstanbul	44	75	100	85
İzmir	35	88	50	85
Kayseri	27	80	67	80
Kocaeli	2	83	75	91
Konya	-	-	-	-
Malatya	17	80	67	92
Manisa	20	57	75	73
K. Maraş	28	66	83	73
Mardin	40	78	67	79
Muğla	6	41	58	75
Ordu	32	71	50	77
Sakarya	47	72	92	85
Samsun	31	57	83	81
Tekirdağ	25	54	83	80
Trabzon	27	74	75	81
Şanlıurfa	23	45	83	83
Van	74	76	75	77

Figure 1 Performance and Accessibility Status of Metropolitan Municipalities

The General Performance Status of Metropolitan Municipality Websites refers to evaluating how well a municipality's website works and meets the needs of its users. The rating includes factors such as the speed and reliability of the website, the quality of the content and information provided, the ease of navigation and use, and the level of engagement and engagement with the community. A high overall performance status indicates that the website is effectively and efficiently meeting the needs of its users, while a low-performance status indicates that improvements are required to improve the functionality and usability of the website. A well-designed and functional website makes accessing information about local government services, programs, and initiatives easy for citizens. Accordingly, the general performance status of the sample is Hatay (65) in terms of Performance, Gaziantep (91) in terms of Accessibility, Istanbul (100) in terms of Best Practices, and Malatya and Aydın (92) in terms of SEO.

Figure 2 Best Practice and SEO Scores of Metropolitan Municipalities

When the table is examined, it is seen that the lowest (2) is the Kocaeli Metropolitan Municipality web page, and the highest (74) is Van Metropolitan Municipality in terms of performance criteria. Regarding accessibility criteria, it was determined that Gaziantep Metropolitan Municipality had the highest (92) and Muğla Metropolitan Municipality had the lowest (41). Regarding best practices criteria, the highest (100) in Istanbul Metropolitan Municipality and the lowest (50) in Ordu and Eskişehir Metropolitan Municipality. Regarding SEO criteria, Aydın and Malatya Metropolitan Municipalities have the highest (92) and the lowest (69) Abana Metropolitan Municipality. Here are the metric scores; 0 to 49, Bad; 50 – 89, Needs improvement. 90 – 100 is considered Good. Sites are expected to be in the (90-100) range to ensure a good user experience. Any value below this means digital disability originating from institutions. Here, the general performance status of the websites of the Metropolitan Municipalities means the following:

The Problem of Digital Disability in E-Municipality:
A Study on the Metropolitan Municipalities of Turkey ▪ Hasan TUTAR ▪ Fatma AKAR

39

Performance score: It is the weighted average of the metric scores. Higher weighted metrics have a more significant impact on the overall performance score. Weights are chosen to provide a balanced representation of the user's perception of performance. Performance metrics (reported in milliseconds) turn each raw metric value into a metric score between 0 and 100 by looking at where the value falls in the Lighthouse scoring distribution. The score distribution is a log-normal distribution derived from performance measures of actual website performance data in the HTTP archive (Heriăko et al., 2021).

Accessibility score: Generally, a site's accessibility indicates that the site's content and functionality are available to everyone. Accessibility means the absence of a disability caused by the site. Accessibility means a design where the "typical" user can easily access and interact with web content. Although accessibility is evaluated for users with physical disabilities, it refers to an interface that cannot be accessed for any reason. This content is not available in your region" message is a type of accessibility, i.e., digital barrier. Can users perceive content according to best practice Web Content Accessibility Guidelines (WCAG) 2.0.? This criterion is expressed as the perceptibility criterion. The operability criterion is the user-friendly and navigable quality of the web pages: The comprehensible bar is the design of the contents according to the understanding level of the users. The sufficiency criterion is the level of content consumed by various user agents (Caldwell et al., 2008).

Best practices: Optimizing the quality of the user experience is critical to the long-term success of any site on the web. Web Vitals is about a website's suitability for improvement. It evaluates the website in terms of three aspects of user experience (loading, interaction, and visual stability). It measures web pages in terms of these metrics (Soong et al., 2018):

First Login Delay (FID): Measures engagement and is measured by pages having an FID of 100 milliseconds or less to ensure a good user experience.

Cumulative Layout Shift (CLS): Measures visual stability, and pages must have a CLS of 0.1 to ensure a good user experience.

SEO: (Search Engine Optimization) means improving or optimizing search engines. These techniques, also known as Google ranking criteria, determine the ranking of websites on Google. An important criterion enables a website to rise from search engines. The Google search engine SEO criteria ensure that the relevant website rank at the top of the searches made in its field. Thanks to SEO criteria, it is aimed to rank higher in major search engines such as Google. SEO criteria are the criteria that are determined through the algorithms of search engines and that take the websites to the next level. Another important point regarding SEO criteria is the criteria that should be applied based on hosting. Accordingly, the hosting must be in Turkey. On-site SEO criteria should also be used, considering specific rules (Berman & Katona, 2013, 647). The keyword should be in the title of each page and should also be in the meta description. Pages should be created for each keyword to rank higher in search engines. The ratio of the keywords used in the text is essential for SEO criteria. Accordingly, keywords should be at least 3% of the text. In addition, a keyword must be included in the first sentence of the text. Another criterion for taking place in search engines is to give names compatible with SEO standards to each image to be added to the site.

1. Metropolitan Municipalities Providing Disabled Access Services via E-Government

It has been determined that the websites of Bursa, Eskisehir, Kocaeli, Mardin, Trabzon, and Tekirdağ Metropolitan Municipalities do not have an application for disabled individuals and that these municipalities use the e-government application so that the disabled can use the website. When the e-municipality button is clicked on the websites of these municipalities, a new page opens, and there is an e-government button on this page. When

The Problem of Digital Disability in E-Municipality:
A Study on the Metropolitan Municipalities of Turkey ■ Hasan TUTAR • Fatma AKAR

40

the e-government button is clicked, it has been determined that there are separate applications for visual and hard-of-hearing individuals. When the sub-headings of "text-only view," "more specific focus," and "keyboard shortcuts" are clicked under the "Accessibility" heading for the visually impaired, it has been seen that there is a unique software for the visually impaired to read and use the page comfortably. When the "disabled call center" application for the deaf and hard of hearing is clicked, it can connect live to experts who know sign language.

2. Metropolitan Municipalities Providing Disabled Access Service on Their Website

It has been determined that Izmir and Diyarbakir Municipalities, out of the 30 Metropolitan Municipalities examined, provide disabled access services through the applications they have prepared on their websites. There is a human-themed and hand-themed icon on the Izmir Metropolitan Municipality website. When the human-themed icon is clicked, a menu with "text size," "text spacing," "line height," "font," "cursor," "contrast," "screen reading," and "animation" applications opens at the top of the page. When these applications are clicked on, it is understood that those other than "screen reading" are prepared for individuals with low vision to use the web page. These applications are arranged according to the people's visual impairment level. With these applications, disabled people can increase the line spacing to read the texts on the web page, and the space between the texts can be increased by increasing the text size. Easier reading can be achieved by adjusting the font, and the place to be read becomes more evident with the cursor application. Thanks to the text's contrast application, the text's color, brightness level, and images on the web page can be adjusted. People with low or moderate visual impairment can use the applications in this menu to read the texts on the web page and have the chance to benefit from the services offered by the municipality. When the screen reading application is clicked, it is understood that it serves individuals with no sense of sight. Izmir Metropolitan Municipality provides

services for individuals with hearing impairment with barrier-free access. When the icon with the hand contact in the upper left corner of the municipality's web page is clicked, a person who translates in sign language appears under barrier-free access. The disabled person reads the text or word the cursor indicates in sign language.

When Diyarbakir Metropolitan Municipality's website is examined within the scope of disabled accessibility, it serves disabled individuals with an application prepared by the municipality on its website. When the icon representing the visually impaired individuals, located in front of the social media account icons in the upper right corner of the municipality's website, is clicked, the visually impaired website opens. This web page has a dark black background and white text. There is no visual element on the page. At the top of the page, there is "Home," "Corporate," "News," "Get Information," "Contact," and "Announcements" buttons. It has been determined that no information exists when "Corporate" is clicked from these buttons. However, when other controls are connected, it is seen that information about the municipality is included. This information does not contain any visual elements and consists of text only. In addition, it is seen that the background of the text is black. As a result of the examinations, it is understood that the disabled web page, which is thought to be prepared in good faith by the Diyarbakir Metropolitan Municipality, mostly appeals to individuals with color blindness and low vision and individuals with 100 percent visual impairment, cannot benefit from this page. As a result, the visually impaired web page prepared by Diyarbakir Metropolitan Municipality needs to be developed.

Discussion and Conclusion

Digital literacy is understanding and using the information in multiple digital formats. Digital literacy is a versatile and multi-dimensional literacy rate that includes the digital environment's technological, social, and cognitive skills. The way to adapt to the digital society is to have the skills required by this society. Digital disability is due to

The Problem of Digital Disability in E-Municipality:
A Study on the Metropolitan Municipalities of Turkey ■ Hasan TUTAR • Fatma AKAR

41

a lack of knowledge and ability to use information technology. Web accessibility can provide people with disabilities unprecedented opportunities to lead more active and social lives. In addition, not adopting digital technologies and applications, not being aware of events, prejudice, inability to follow technology developments, lack of vision, the problem of adaptation to digital technology, fear of innovation, and lack of curiosity are among the other causes of digital disability. Digital skills are partly related to managing technology and different skills related to content and activities. Informationally disadvantaged individuals are victims of the digital divide and must be content with relatively low-quality information (Helsper, 2008; Fountain, 2001; Landsbergen & Wolken, 2001). The division in different areas of life, such as social and economic opportunities, income, and quality of life, causes a new disadvantaged group to emerge in the digital age. The deep social exclusion experienced by many people with disabilities appears as a combination of limited educational opportunities such as active use of ICT, low income, unemployment, health problems, and low income.

"Access to the physical, social, economic, and cultural environment, health and education services, information and communication; The article "will accept the importance of people with disabilities in ensuring full enjoyment of all human rights and fundamental freedoms" is aimed at ensuring that people with disabilities have access to the opportunities and services that all other healthy people have (https://inhak.adalet.gov.tr). In today's information age, where all kinds of information and services are transferred to the internet environment, accessibility has changed its meaning and left its place in digital accessibility. Digital accessibility means a lot more for people with disabilities than it does for healthy individuals. When digital accessibility is evaluated conceptually, it is concluded that it is possible to produce solutions for individuals with different characteristics and abilities who can use technological tools. While the contents on the Internet are sometimes accessible through the web page, they are occasionally accessible with hardware or special software (Altınay, 2021). For example, accessibility services such as screen readers are essential for visually impaired individuals in terms of digital accessibility, and magnifying glasses and contrast are necessary for individuals with low vision.

The findings obtained in this study, which examines the accessibility of the websites of metropolitan municipalities for disabled individuals, show that the websites of most of the cities are not designed for disabled individuals. Of the 30 urban municipalities that constitute the research sample, only İzmir and Diyarbakır Metropolitan Municipalities include special applications for the disabled on their web pages. It is understood that there is a lack of awareness and sensitivity in this regard. The efforts of the metropolitan municipalities of Trabzon, Tekirdağ, Mardin, Kocaeli, Bursa, and Eskişehir to serve the disabled with the e-government service, not the applications they create on their websites, can be considered as an essential step in this regard. However, these services offered by the e-government are only for individuals with low vision and hearing impairment.

This study is designed to examine the rhetoric and reality of e-government at the municipal level. This study will also contribute to adopting e-government among municipalities. In this study, e-government has been adopted by many municipal administrations. Still, it is at an early stage, and necessary studies should be done on the expected results (cost savings, downsizing, etc.) from e-government. To adopt more e-Municipalism applications, the problem of lack of financial, technical, and personnel capacities, which is among the causes of digital disability, should be overcome. The study made suggestions regarding the obstacles in front of the e-municipality and their solutions. The accessibility performance analysis in the research shows that the municipalities' websites are relatively low

The Problem of Digital Disability in E-Municipality:
A Study on the Metropolitan Municipalities of Turkey ■ Hasan TUTAR • Fatma AKAR

42

and that significant improvements should be made in terms of accessibility and elimination of digital disability. To increase digital accessibility in e-government applications, metropolitan municipalities should design their websites for disabled access or increase accessibility by connecting via e-government applications. In this case, e-government applications must be cleared the access barrier for everyone. For this, the benefactors should have more technical personnel and financial resources.

References

Abeele, M. V., De Cock, R., & Roe, K. (2012). Blind faith in the web? Internet use and empowerment among visually and hearing impaired adults: A qualitative study of benefits and barriers. *Communications-The European Journal of Communication Research*, *37*(2), 129-151.https://doi.org/10.1515/commun-2012-0007

Adams, J., Khan, H. T., Raeside, R., & White, D (2007). *Research methods for graduate business and social science students.* India: Sage. https://doi.org/10.4135/9788132108498

Arslan, H., & Altıntaş, G. (2014). Engellilerin çalışma yaşamına katılımını arttırarak toplumla kaynaşmalarını sağlamayı hedefleyen bir model önerisi. *Çankırı Karatekin Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *5*(2), 165-186.

Arslan, Y., Şahin, H. M., Gülnar, U., & Şahbudak, M. (2014). Görme engellilerin toplumsal hayatta yaşadıkları zorluklar: Batman merkez örneği. *Batman Üniversitesi Yaşam Bilimleri Dergisi*, *4*(2), 1-14.

Atmaca, Y and Yılmaz, V (2019). Digitalized Local Management and Participatory Municipalism: Çankırı Municipality Case, Viliyan Krystev, Recep Efe, Emin Atasoy (Eds.), *Theory and Practice in Social Sciences* (pp. 403-417). Sofia: St. Kliment Ohridski University Press.

Bengtsson, M. (2016). How to plan and perform a qualitative study using content analysis. *NursingPlus Open*, 2, 8-14; https://doi.org/10.1016/j.npls.2016.01.001

Berman, R., & Katona, Z. (2013). The role of search engine optimization in search marketing. *Marketing Science,* 32(4), 644-651. https://doi.org/10.1287/mksc.2013.0783

Burkett, G.L (1990). Classifying basic research designs. *Family Medicine*, 22(2), 145 https://doi.org/10.3109/07853899009147259

Caldwell, B., Cooper, M., Reid, L. G., Vanderheiden, G., Chisholm, W., Slatin, J., & White, J. (2008). *Web content accessibility guidelines* (WCAG) 2.0. WWW Consortium (W3C), 290, 1-34.

Chadwick, D., & Wesson, C. (2016). Digital inclusion and disability. *In applied cyberpsychology* (pp. 1-23). Palgrave Macmillan, London. https://doi.org/10.1057/9781137517036_1

Chadwick, D., Wesson, C. J., & Fullwood, C. (2013). Internet access by people with intellectual disabilities: Inequalities and opportunities. *Future Internet,* 5, 376-397. https://doi.org/10.3390/fi5030376

Corbetta, P. (2003). *Social research; theory, methods, and techniques.* London: Sage Publications. P.285 https://doi.org/10.4135/9781849209922

Creswell, J. W. (2003). *Qualitative, quantitative, and mixed method approaches* (2. bs.). Lincoln: Sage Publications.

Çağlar, S. (2012). Engellilerin erişebilirlik hakkı ve Türkiye'de erişebilirlikleri. *Ankara Üniversitesi Hukuk Fakültesi Dergisi,* 61(2), 541-598. https://doi.org/10.1501/Hukfak_0000001666

Çaha, Havva (2016). Engellilerin toplumsal hayata katılmasına yönelik politikalar: Türkiye, ABD ve Japonya örnekleri. *İnsan ve Toplum,* 5(10), 123-150. https://doi.org/10.12658/human.society.5.10.M0122

The Problem of Digital Disability in E-Municipality:
A Study on the Metropolitan Municipalities of Turkey ■ Hasan TUTAR • Fatma AKAR

43

Dobransky, K., & Hargittai, E. (2006). The disability divides in internet access and use. Information, *Communication and Society,* 9(3), 313-334 https://doi.org/10.1080/1369118600751298

Engelli ve Yaşlı İstatistik Bülteni, https://www.engelli.com. (2022). Retrieved on 10 20, 2022 from https:///www.engelli.com/engelli-kisi-sayisi/.

Eshet-Alkali, Y. & Amichai-Hamburger, Y (2004). Experiments in Digital Literacy. *CyberPsychology & Behavior,* 7(4), 421-429 https://doi.org/10.1089/cpb.2004.7.421

Foley, A., & Ferri. B. A. (2012). Technology for people, not disabilities: Ensuring access and inclusion. *Journal of Research in Special Educational Needs*, 12(4), 192-200. https://doi.org/10.1111/j.1471-3802.2011.01230.x

Forster, N. (1994). The Analysis of Company Documentation. C. Cassell and G. Symon (Eds.) *Qualitative Methods in Organizational Research: A Practical Guide.* London: Sage Publications.

Fountain, J (2001. *Building the virtual state: information technology and institutional change*. Washington DC: Brookings Institution

Gay, L. R., & Diehl, P. L (1992). Research Methods for Business and Management. Singapore: *Maxwell Macmillan International.*

Genç, Y, & Çat, G (2013). Engellilerin istihdamı ve sosyal içerme ilişkisi. *Akademik İncelemeler Dergisi*, 8(1), 363-394.

Geray, H. (2006). *Toplumsal Araştırmalarda Nicel ve Nitel Yöntemlere Giriş.* Ankara: Siyasal Kitabevi.

Glumbić, N., Đorđević, M., & Brojčin, B. (2022). Digital Participation and Disability Digital

Divide. In Digital Inclusion of Individuals with Autism Spectrum Disorder. *Cham: Springer International Publishing.* https://doi.org/10.1007/978-3-031-12037-4

Goggin, G., & Newell, C. (2003). Digital disability: The social construction of disability in new media. *Lanham*: Rowman & Littlefield

Gürsakal, N., Oğuzlar, A., & Gürsakal, S (2019). *Betimsel İstatistik.* Bursa: Dora Yayıncılık.

Hartley, J. (2008). *Academic writing and publishing: A practical handbook*. London: Routledge. https://doi.org/10.4324/9780203927984

Hatton, C., & Emerson, E. (1995). Staff in services for people with learning disabilities: An overview of current issues. *Mental Handicap Research,* 8(4), 215-219 https://doi.org/10.1111/j.1468-3148.1995.tb00158.x

Hawkins, S., Allen, D., & Jenkins, R. (2005). The use of physical interventions with people with intellectual disabilities and challenging behavior-the experiences of service users and staff members. *Journal of Applied Research in Intellectual Disabilities*, 18(1), 19-34. https://doi.org/10.1111/j.1468-3148.2004.00207.x

Hazman, G. G (2005). Afyonkarahisar Belediyesinde e-Belediye Uygulamaları ve Yerel Farkındalık. *Afyon Kocatepe Üniversitesi* İ.İ.B.F Dergisi, 8(2), 65-84.

Helsper, E (2008). *Digital inclusion: An analysis of social disadvantage and the information society. Department for communities and local government*, London: Communities and Local Government Publications

Henden, B., & Henden, R (2005). Yerel Yönetimlerin Hizmet Sunumlarındaki Değişim ve e-Belediyecilik. *Elektronik Sosyal Bilimler Dergisi,* 4(14), 48-66.

The Problem of Digital Disability in E-Municipality:
A Study on the Metropolitan Municipalities of Turkey ■ Hasan TUTAR • Fatma AKAR

44

Heriäko, T., Čučko, Š., Šumak, B., & Brdnik, S. (2021). Web Performance Tuning of WordPress-Based Websites Through Automatic Image Optimization. *In Central European Conference on Information and Intelligent Systems* (pp. 343-350).

Hew, K. F., & Brush, T. (2007). Integrating Technology into K-12 Teaching and Learning: Current Knowledge Gaps and Recommendations for Future Research. *Educational Technology Research and Development*, *55*(3), 223-252 https://doi.org/10.1007/s11423-006-9022-5

Ho, A.K (2002). Reinventing Local Government and The E-Government Initiative. *Public Administration Review, 62*(4), 434-444. https://doi.org/10.1111/0033-3352.00197

Hodder, I (2002). *The Interpretation of documents and material culture*. In D. Weinberg (Eds.). *Qualitative Research Methods* (pp. 266-279). Oxford: Blackwell Publications.

Hoppestad, B. S. (2013). Current perspective regarding adults with intellectual and developmental disabilities accessing computer technology. *Disability and Rehabilitation: Assistive Technology*, 8(3), 190-194. https://doi.org/10.3109/17483107.2012.723239

Houtenville, A., Shreya, P., & Rafal, M. (2021). *Annual report on people with disabilities in America, 2021*. Institute on Disability, University of New Hampshire.

Karabulut, B. (2015). Bilgi toplumu çağinda dijital yerliler, göçmenler ve melezler. *Pamukkkale Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, (21), 11-23.

Karakaya, O., & Gaytancıoğlu, K. (2017). 6360 sayılı kanunla kurulan büyükşehirlerde dijitalleşme çabaları: tekirdağ büyükşehir belediyesi Örneği. *Süleyman Demirel Üniversitesi İktisadi ve İdari bilimler Fakültesi Dergisi,* 22(Kayfor 15 Ö.S.), 1491-1504.

Kaye, H. S. (2000). *Computer and Internet use among people with disabilities* (Vol. 13). U.S. Department of Education, National Institute on Disability and Rehabilitation Research.

Kaypak, Ş., Yılmaz, V., & Bimay, M. (2017). Dijital Çağda Yerel Yönetimler. *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi,* 22(KAYFOR 15 Özel Sayısı), 1798-1813.

Kınalı, G., Bilen, Ö., Doğanay, F., & Abakay, O. (2017). Engelli bireylerde dijital erişebilirlik. *Tıp Teknolojileri Kongresi* Trabzon. 1-3.

Landsbergen, Jr., David, and George Wolken, Jr (2001). Realizing the promise: Government information systems and the fourth generation of information technology. *Public Administration Review 61*(2), 206-220 https://doi.org/10.1111/0033-3352.00023

Malhotra, N. K. (2004). *Marketing research an applied orientation,* 4. Edition, Pearson Prentice Hall, New Jersey

Mecek, M (2018). *E-Belediyecilik, halkla ilişkiler, bilgi edinme, şeffaflik vb. unsurlar açisindan belediye web sayfalarinin kullanilmasi ve etkinlik analizi: Bolvadin belediyesi örneği*. M. M. Güler, & C. Kayahan (Eds.,) Bolvadin Araştırmaları I (pp. 2307-2350). İstanbul: Eğitim Yayınevi.

Miles, B. M., and Huberman, A. M. (1994). *Qualitaüve data analysis: An expanded sourcebook*. (2nd ed.). Thousand Oaks, California: Sage Publications.

Mohammadyari, S., & Singh, H (2015). Understanding the effect of e-learning on individual performance: The role of digital literacy. *Computers & Education,* 82, 11-25. https://doi.org/10.1016/j.compedu.2014.10.025

Moon, M. J (2002). The Evolution of e-government among municipalities: Rhetoric or reality? *Public Administration Review, 62*(4), 424-433. https://doi.org/10.1111/0033-3352.00196

The Problem of Digital Disability in E-Municipality:
A Study on the Metropolitan Municipalities of Turkey ■ Hasan TUTAR • Fatma AKAR

45

Özsoy, O. (2010). *İktisatçılar ve işletmeciler için istatistik: Excel uygulamalı.* Ankara: Siyasal Kitabevi.

Palmer, S. B., Wehmeyer, M. L., Davies, D. K., & Stock, S. E. (2012). Family members report the technology use of family members with intellectual and developmental disabilities. *Journal of Intellectual Disability Research,* 56(4), 402-414. https://doi.org/10.1111/j.1365-2788.2011.01489.x

Partnership for 21st Century Skills (2009). Framework for 21st-century learning. Retrieved on 11. 12. 2022 from http://www.p21.org/our-work/p21-framework,

Pacheco, E., Yoong, P., & Lips, M. (2021). Transition issues in higher education and digital technologies: the experiences of students with disabilities in New Zealand. *Disability & Society,* 36(2), 179-201. https://doi.org/10.1080/09687599.2020.1735305

Pektaş, E. (2011). Belediye Hizmetlerinde Bilgi-İletişim Teknolojilerinin Kullanımı ve E-Belediye Uygulamalarındaki Son Gelişmeler: Bir Literatür Taraması. *Sosyal Bilimler Dergisi,* 13(1), 65-88.

Raja, D. S (2016). Digital Dividends, bridging the disability divide through digital technologies. World Development Report. Retrieved on 11. 12, 2022 from https://thedocs.worldbank.org/en/doc/123481461249337484-0050022016/original

Ritchie, H., & Blanck, P. (2003). The promise of the Internet for disability: a study of online services and web site accessibility at Centers for Independent Living. *Behavioral Sciences & The Law*, 21(1), 5-26. https://doi.org/10.1002/bsl.520

Rodríguez-de-Dios, I., Igartua, J. J., & González-Vázquez, A (2016). Development and validation of a digital literacy scale for teenagers. *In Proceedings of the Fourth International Conference on Technological Ecosystems for Enhancing Multiculturality* (pp. 1067-1072). ACM. https://doi.org/10.1145/3012430.3012648

Schalock, R. L., Borthwick-Duffy, S. A., Bradley, M., et al. (2010). *Intellectual disability: definition, classification, and systems of supports* (11th ed). Washington: American Association on Intellectual and Developmental Disabilities

Silverman, D. (2001). *Interpreüng qualitative data: Methods for analyzing talk, text, and interaction.* London: SAGE Publication.

Soong, K., Fu, X., & Zhou, Y. (2018, October). Optimizing new user experience in online services. In 2018 IEEE *5th International Conference on Data Science and Advanced Analytics* (DSAA) (pp. 442-449). IEEE. https://doi.org/10.1109/DSAA.2018.00057

Spiegel, M. R., & Stephens, L. J. (2013). *İstatistik* (S. Çelebi, Trans.). İstanbul: Nobel Akademik Yayıncılık.

Tejedo-Romero, F., Araujo, J., Tejada, A., & Ramirez, Y. (2022). E-government Mechanism to Enhance The Participation of Citizens and Society: *Exploratory Analysis Through The Dimension of Municipalities. Technology in society*, 70, 1-22. https://doi.org/10.1016/j.techsoc.2022.101978

Thoreau, E. (2006). Ouch!: An examination of the self-representation of disabled people on the Internet. *Journal of Computer-Mediated Communication,* 11(2), 328-341. https://doi.org/10.1111/j.1083-6101.2006.00021.x

Tsatsou, P. (2021). Is digital inclusion fighting disability stigma? Opportunities, barriers, and recommendations. *Disability & Society,* 36(5), 702-729. https://doi.org/10.1080/09687599.2020.1749563

Tutar, H., & Erdem, A. T. (2022). *Örnekleriyle Bilimsel Araştırma Yöntemleri ve SPSS Uygulamaları.* Ankara: Seçkin Yayıncılık.

The Problem of Digital Disability in E-Municipality:
A Study on the Metropolitan Municipalities of Turkey ▪ Hasan TUTAR • Fatma AKAR

46

Ünlü, U (2016). Sosyal Belediyecilik Anlayışının E-Belediyecilik Uygulamalarına Entegre Edilmesi, *Sayıştay Dergisi,* 102, 63-89.

Yazar Bilgileri

Author details

* (Sorumlu Yazar Corresponding Author) Prof. Dr., Bolu Abant İzzet Baysal Üniversitesi İletişim Fakültesi, hasantutar@ibu.edu.tr, Orcid: 0000-0001-8383-1464

** Dr. Öğr. Gör., Bolu Abant İzzet Baysal Üniversitesi İletişim Fakültesi, fatmaakar@ibu.edu.tr, Orcid: 0000-0001-6451-2281