What is the value of using a non-accessible service for users with disabilities?

Nayara Sardella[1], Manuela Quaresma[1]
nayara.sardella@aluno.puc-rio.br, mquaresma@puc-rio.br
[1]Pontifícia Universidade Católica do Rio de Janeiro, Brazil

Abstract

The subject of accessibility has been gaining prominence and space in the academic literature in recent years, with the advance of technology. However, there is still little discussion about the challenges designers face in applying accessibility to digital interfaces in a dynamic environment, such as the job market, and the impact this has on the accessibility of the interface and the service provided. This paper aims to bring a discussion and reflection about how the process of applying accessibility in interfaces happens inside organizations and how designers deal with the subject – raising questions regarding the value in use of the service delivered to users with disabilities. For this, a literature review was carried out, in which it was possible to identify that most digital interfaces are still not accessible for the final customer with disabilities, making the value of use questionable.

Keywords: web accessibility; service design; Service Dominant Logic; co-creation.

Introduction

Accessibility has been gaining more and more prominence due to technological advancement and in the increase of the amount and variety of devices (Richards et al., 2012; Hanson & Richards, 2013). The Web Accessibility Initiative (WAI) defines web accessibility as all technology designed and developed with the aim of including people with any kind of disability, so they can access it. However, despite the topic gaining prominence in recent years, most websites remain not fully accessible (Schmutz et al., 2016; Kleynhans & Fourie, 2014). There are several factors that lead to a non-accessible interface, among them is the difficulty of contacting users with disabilities to participate in the design process and a number that is representative of this diversity (Sears & Hanson, 2012).

Applying accessibility in Service Design, allows persons with disabilities audience to have access to the service that is being provided, thus generating a good experience and use value. Otherwise, if there is no accessibility, there is no use value, because without access to the service, there is no experience. Having in mind a business vision, applying accessibility is thinking in the long term, since the services that are already accessible will have an advantage over their competitors, since the world's population is getting older and older, increasing the risk of more people acquiring some kind of disability.

This distancing of designers in relation to users with disabilities during the design process of an interface makes it difficult to have a vision centered on the public once a holistic view, centered on the human with an approach of co-creation are characteristics of service design (Meroni & Sangiorgi, 2011; Holmild & Evenson, 2008). These characteristics help in the generation of ideas and innovation of the service delivered, since they focus on the process of interaction between the service (mostly interfaces) and the customer (Secomandi & Snelders, 2011). This approach has been driven Service Design to incorporate the Service Dominant Logic, in which the customer's interaction with the service will transform the value proposition into use value, i.e., the customer becomes the co-creator of value of that service (Costa, N. et al., 2017; Lush & Vargo, 2014).

Another critical point that leads an interface to have a low level of accessibility, or even no accessibility at all, is the designers' lack of knowledge regarding the topic (Oikonomou et al., 2010; Lawrence & Bellard, 2017.; Crabb et al., 2019; Tigwell, 2021). Many designers even do not know how to define what accessibility is because it is a very broad term (Cherise et al., 2022).

That said, Service Design faces a great challenge when it comes to persons with disabilities, because there is a wide variety of disabilities, which makes its parameterization and understanding difficult for designers, besides this audience being difficult to recruit. If Service Design is an interactive process (Holmild & Evenson, 2008), that is, collaborative, its greatest challenge is the recruitment for cocreation processes, as well as the qualification of designers with respect to this theme. As will be addressed in the next section, designers have chosen to replace this audience and the recruitment step with automated tools in most cases (Keates & Looms, 2014; Kamikubo, 2018), making it questionable whether the process being carried out can still be called service design, since this audience is not part of the process, besides the use value being questionable, since it was not a collaborative process.

The aim of this paper is to discuss whether there is use value in digital interfaces for people with disabilities since many professionals do not recognize the importance of

accessibility in the digital environment or do not have the necessary skills for the application, besides feeling difficulty in approaching these users. Therefore, a bibliographic review was carried out, to understand how interface design occurs within organizations and how designers act within this process to apply accessibility to platforms. The theories from the field of Accessibility and the Dominant Service Logic are addressed to support the proposed discussion.

First, we cover the contextualization of the scenario in which designers, who work in applying the accessibility of interfaces in the organizational environment, find themselves, how they see accessibility and how they apply it, also relating these points to the lack of accessibility in most platforms. Second, we discuss the service use value these interfaces provide to final users with disabilities.

How designers are working with accessibility in digital interfaces

For professionals applying accessibility, many reports that they are unsure about applying accessibility guidelines (Crabb et al., 2019) because, even though there are guides such as WCAG (accessibility guidelines and standards, these guides do not have precise terminologies (David, 2014). This difficulty in comprehending results in a flawed application of accessibility. Moreover, many do not even know the impact of applied accessibility guidelines on people with disabilities (Crabb et al., 2019).

Also, designers feel a certain barrier by organizations when trying to apply accessibility, as shown by the results of the interviews in the article of Cherise et al. 2022, given that companies do not want to spend resources such as time, money, nor change brand design guidelines (Farrelly, 2011). That said, many designers are looking for ways to streamline and cheapen the design process, thus, resorting to existing tools and plugins that simulate a disability.

There is a diversity of disability (visual impairment) simulation tools that help the designer in the process of applying accessibility to the platforms. These simulations are widely used with the intention of educating and generating interest in designers regarding the importance of thinking about accessibility during interface development, as well as serving as a guide for the application of accessibility guidelines in platforms (Goodman-Deane, 2007; Barney, 2012; Tigwell, 2021), since these simulations reveal the possible accessibility issues of the interface layout, allowing designers to understand the problematic scenarios that users with disabilities face when using the service (Tigwell, 2021; Keates & Looms, 2014; Kamikubo, 2018).

However, it is worth noting that, in most cases, simulations are used to validate the accessibility of an already-developed interface and not as an auxiliary tool during the interface development process (Pearson, E., 2011). Better saying, designers will often only think about accessibility in the last instances of the process and not as a constituent and significant part of the design process.

Although these tools bring certain benefits to designers, especially for professionals who work in a more dynamic environment such as organizations, according to some studies, simulation tools are inefficient and bring ethical problems (Tigwell, 2021). Moreover, they can also develop misconceptions regarding users' experiences when using an interface and misidentification of the disability being simulated (Bennett & Rosner, 2019; Nario-Redmond et al., 2017; Keates & Looms, 2014).

These problems get even worse when using only simulations during the process of accessibility application. This way, designers leave aside the user has lived experience and replace it with tools that do not have a wide variety of disabilities to simulate. Besides, designers unconsciously tend to assimilate users into their own identities, according to Costanza-Chock (2020). Another point is that designers do not understand these adverse effects that can occur when using only the simulations as to replace users, causing stereotypes and misunderstandings during the design process (Tigwell, 2021).

What is the value in use?

As stated in the previous section, despite having certain benefits, simulations also have many drawbacks, which are further aggravated when used as the only means of contact with accessibility issues. For providing erroneous information regarding the problems faced by users with disabilities, they do not provide the necessary knowledge to understand and apply accessibility to interfaces (Tigwell, 2021). With this, it is necessary to balance the use of simulations with user participation during the design process (Kamikubo, 2018).

Since it is not possible to stop using simulations because they are cheaper and easier to include in the interface design process, it is necessary that they at least be used in conjunction with user participation. In this way, whatever misunderstanding or lack of understanding of a deficiency that designers may have during simulations can be clarified directly in the stage of the process in which co-creation with users occurs.

Furthermore, the results found in situational impairments created to simulate disability do not bring the same findings as direct contact with users (Sears &

Hanson, 2012; Crabb et al., 2019), further emphasizing the need to include these users in the design process as experts of their own experiences.

When dealing with service, we can state that an interface is like a bridge that connects the service to the customer (Morelli & Götzen, 2016). Therefore, the interface design process should follow a collaborative approach since the service it offers is relational (Morelli et al., 2017). That is, the participation of users with disabilities in the design process of creating this service should be mandatory since the service has a co-creation characteristic and a human-centered vision. However, as Tigwell (2021) reports in his research, designers do not use a co-creation approach but rather replace users with disabilities with tools and plugins that will create situational disabilities, eliminating, in most cases, the participation of these users.

In building a service, experience is extremely important, even more important than a product, and a company without experience does not survive for long (Morelli et al., 2017). With this, Service Design has incorporated the Service Dominant Logic, in which the focus is on use value. In this pillar of Service Design, the end customer will always be the co-creators of value (Lush & Vargo, 2014; Morelli et al., 2017), providing a customer-oriented view in which services are the value propositions that customers encompass within their activities and experiences (Riel et al., 2013), transforming that value into use value.

Considering that Service Dominant Logic seeks to deliver use value as something experiential and individual that is co-created, and not as something that is inserted into a product, for example. In that case, it is necessary to raise a question: how can we affirm that an interface has use value if designers are using disability simulation tools as a substitute for users while designing the interface and moving further and further away from the final customer?

If an interface is a service that should offer value to the user, the design process of an accessible interface should be done collaboratively with the disabled users so that it is possible to add value. In the literature, it is stated that many interfaces are not accessible (Schmutz et al., 2016; Kleynhans & Fourie, 2014), which leads to the belief that there is no value in use for this public. After all, an interface that is not accessible is an interface that does not allow access to the service that is delivered.

Final considerations

Despite the designers' attempts to facilitate access to disabilities by substituting disabled users for the simulations this only makes it more challenging to understand

the disabilities and identify the problems faced by these users in the interfaces. This difficulty occurs because the simulations have limitations concerning the results delivered due to the small variety of disabilities to emulate. Another point is that each user interacts in their own way with the interfaces, even if they have the same type of disability, bringing rich and varied data, something that a simulation cannot deliver.

This article does not intend to describe the correct method that designers should follow to apply accessibility during an interface design process but rather to argue that it is not possible to just use disability simulations. It is necessary to have cocreation steps with users. Also, the article is limited to a theoretical point of view in respect of the labor market, evidencing the application of accessibility in interfaces, which rarely includes collaborative steps with users with disabilities. Whatever the reason behind this decision to exclude the co-creation stage, it is clear from the literature that this decision results in interfaces with little or no accessibility. This process hinders or even prevents, access to the service for the end customer with disabilities.

It should be kept in mind that the design process of a digital platform, in most cases, is not co-created, despite the Service Dominant Logic having this characteristic. We can state that this leads to a lack of user involvement during the design process, i.e., there is no user participation in the design process to determine user requirements. With the interface already ready, since it does not have accessibility, users cannot access the provided service. Questions were raised regarding the value in use for this public. This is a relevant issue, especially for Public Services, which should provide services for all, regardless of the individual's social and intellectual background, and physical ability; after all, it is argued that everyone has the right to access the services provided.

Acknowledgements

This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brasil (CAPES) – Finance Code 001.

References

John, T. R., Montague, K., & Vicki, L. H. (2012). Web Accessibility as a Side Effect. In Proceedings of the 14th International ACM SIGACCESS Conference on

Computers and Accessibility (ASSETS '12). ACM, New York, NY, USA, 79–86. https://doi.org/10.1145/2384916. 2384931

Vicki, L. H., & John, T. R. (2013). Progress on Website Accessibility? ACM Trans. Web 7, 1, Article 2. https://doi.org/10.1145/2435215.2435217

Schmutz, S, Sonderegger, A., & Sauer, J. (2016). Implementing recommendations from web accessibility guidelines: would they also provide benefits to nondisabled users. Hum Factors, 58(4), 611-629. https://doi.org/10.1177/0018720816640962

Kleynhans, S. A., & Fourie, I. (2014). Ensuring accessibility of electronic information resources for visually impaired people. Library Hi Tech, 32(2), 368-379. https://doi.org/10.1108/LHT-11-2013-0148

Meroni, A., & Sangiorgi, D. (2011). Design for services. London. 1st Ed.

Morelli, N. (2002). Designing product/service systems: A methodological exploration. Design Issues, 18(3).

Holmlid, S., & Evenson, S. (2008). Bringing service design to service sciences, management and engineering. In Service Science, Management and Engineering e Education for the 21st Century, 341-345.

Secomandi, F., & Snelders, D. (2011). The object of service design. Design Issues, 27(3), 20-34.

Lush, R. F., & Vargo, S. L. (2014). Service-dominant Logic: Premises, perspectives and possibilities. New York: Cambridge University Press.

Microsoft. (2016). Inclusive design. https://www.microsoft.com/design/ inclusive/. Accessed: 2022-4-9.

Newell, F., Gregor, P., Morgan, M., Pullin, G., & Macaulay, C. (2011). User-sensitive inclusive design. Universal Access in the Information Society, 10(3), 235–243.

Sears, A., & Vicki, L. H. (2012). Representing Users in Accessibility Research. ACM Trans. Access. Comput. 4, 2, Article 7. https://doi.org/10.1145/2141943.2141945

Oikonomou, T., Votis, K., Tzovaras, D., & Korn, P. (2010). Designing and developing accessible java swing applications. In International Conference on Computers for Handicapped Persons, Springer, 186–188.

Lawrence, M., & Bellard, M. (2017). Teach Access. In Proceedings of the 2017 ACM SIGCSE Technical Symposium on Computer Science Education - SIGCSE'17. ACM Press, New York, New York, USA. https://doi.org/10.1145/3017680.3022392

Crabb, M., Heron, M., Jones, R., Armstrong, M., Reid, H., & Wilson, A. (2019). Developing Accessible Ser- vices: Understanding Current Knowledge and Areas for Future Sup- port. In CHI Conference on Human Factors in Computing Systems Pro- ceedings (CHI 2019), May 4–9, 2019, Glasgow, Scotland UK. ACM, New York, NY, USA. Retrieved from https://dl.acm.org/doi/10.1145/3290605.3300446

Tigwell, G. W. (2021). Nuanced Perspectives Toward Disability Simulations from Digital Designers, Blind, Low Vision, and Color Blind People. In CHI Conference on Human Factors in Computing Systems (CHI '21), May 8–13, 2021, Yokohama, Japan. ACM, New York, NY, USA. Retrieved from https://dl.acm.org/doi/10.1145/3411764.3445620

Swallow, D., Power, C., Petrie, H., Bramwell-Dicks, A., Buykx, L., Velasco, C. A., Parr, A., & Connor, J. O. (2014). Speaking the Language of Web Developers: Evaluation of a Web Accessibility Information Resource (Web AIR). In International Conference on Computers for Handicapped Persons. Springer, 348–355.

W3C. Web Content Accessibility Guidelines 2.0 approved as an ISO/IEC International Standard. https://www.w3.org/2012/07/wcag2pas-pr.html. Accessed: 2022-8-9.

Farrelly, G. (2011). Practitioner Barriers to Diffusion and Implementation of Web Accessibility. Technology and Disability, 223–232. https: //doi.org/10.3233/TAD-2011- 0329

Joyner, S. C., Riegelhuth A., Garrity K., Kim Y., & Kim N. W. (2022). Visualization Accessibility in the Wild: Challenges Faced by Visualization Designers. In CHI Conference on Human Factors in Computing Systems (CHI '22), April 29-May

5, 2022, New Orleans, LA, USA. ACM, New York, NY, USA. ACM, New York, NY, USA. Retrieved from https://dl.acm.org/doi/10.1145/3491102.3517630

Barney, K. W. (2012). Disability Simulations: Using the Social Model of Disability to Update an Experiential Educational Practice. SCHOLE: A Journal of Leisure Studies and Recreation Education. https://doi.org/10.1080/1937156X.2012.11949361

Goodman-Deane, J., Langdon, P. M., Clarkson, P. J., Caldwell, N., & Sarhan, A. M. (2007). Equipping Designers by Simulating the Efects of Visual and Hearing Impairments. In Proceedings of the 9th International ACM SIGACCESS Conference on Computers and Accessibility (Tempe, Arizona, USA) (Assets'07). Association for Computing Machinery, New York, NY, USA, 241–242. Retrieved from https://dl.acm.org/doi/10.1145/1296843.1296892

Keates, S., & Looms, P. O. (2014). The role of simulation in designing for universal access. In International Conference on Universal Access in Human-Computer Interaction, Springer, 54–63.

Kamikubo, R., Higuchi, K., Yonetani R., Koike H., & Sato Y. (2018). Exploring the Role of Tunnel Vision Simulation in the Design Cycle of Accessible Interfaces. Lyon, France, W4A '18.

Pearson, E., Bailey, C., & Green, S. (2011). A tool to support the web accessibility evaluation process for novices. In Proceedings of the 16th annual joint conference on Innovation and technology in computer science education - ITiCSE '11. ACM Press, New York, New York, USA. Retrieved from https://dl.acm.org/doi/10.1145/1999747.1999758

Bennett, C. L., Rosner, D. K. (2019). The Promise of Empathy: Design, Disability, and Knowing the "Other". In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (Glasgow, Scotland UK) (CHI '19). Association for Computing Machinery, New York, NY, USA, Article 298. Retrieved from https://dl.acm.org/doi/10.1145/3290605.3300528

Nario-Redmond, M. R., Gospodinov D., & Cobb A. (2017). Crip for a day: The unintended negative consequences of disability simulations. Rehabilitation psychology, 62(3), 324–333. https://doi.org/10.1037/rep0000127

Costanza-Chock, S. (2020). Design justice: Community-led practices to build the words we need. Cambridge, MA: The MIT Press.

Van Riel, A., Calabretta, G., Driessen, P. H., Hillebrand, B., Humphreys, A., Krafft, M., et al. (2013). Consumer perceptions of service constellations: Implications for service innovation. Journal of Service Management, 24(3), 314-329.

Costa N., Patrício L., Morelli, N., & Magee, C. L. (2018). Bringing Service Design to manufacturing companies: Integrating PSS and Service Design approaches. Design Studies, 112-145.

Morelli, N., & Götzen, A. (2016). Service Dominant Logic. Changing perspective, revising the toolbox, ServDes.

WAI. Introduction to Web Accessibility. https://www.w3.org/WAI/fundamentals/accessibility-intro/#what. Accessed: 2022-4-9.