Accessibility and social inclusion: an empirical investigation on the adoption of World Wide Web Consortium guidelines on corporate websites

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Abstract

Frame of the research: *The research focuses on the web accessibility practices of corporate websites. These practices are part of corporate sustainability actions.*

Purpose of the paper: *To assess compliance with the principles of the social inclusion of disabled users, the study investigates the adoption of accessibility requirements on the sustainable firms' corporate websites.*

Methodology: *A content analysis was conducted to identify the application of the World Wide Web Consortium (W3C) guidelines to the websites of 311 firms classified in the Dow Jones Sustainability World Index 2018. Data were collected from July to December 2019.*

Findings: *Results show that most corporate websites are poorly compliant with the accessibility guidelines, although some sectoral and geographic differences emerge. The study shows that compliance with W3C standards is associated with both the belonging to different business activities and the geographical origin of companies.*

Research limits: *The adoption of the content analysis method implies the typical limits associated with the subjective evaluation of researchers. The sample of firms examined may be expanded in future investigations, in compliance with the equitable distribution of companies regarding sectors and geographical areas.*

Practical implications: *Results allow managers and consultants of corporate digital communications to evaluate and improve corporate performance relating to accessibility practices on websites. Access to digital content and services is an indispensable requirement for implementing sustainability actions, capable of increasing social legitimacy and corporate reputation and developing disabled users' engagement.*

Originality of the paper*: The study constitutes a first step in a line of research not yet investigated. The paper contributes to the debate on online accessibility for disabled users, providing the first empirical evidence on international guideline adoption by sustainable firms.*

Key words: accessibility; inclusion; sustainability; W3C; corporate website

1. Introduction

Accessibility to digital content and tools on the web, aimed at avoiding any form of discrimination resulting from a disability and ensuring the social inclusion of all audiences (Nielsen, 2000; Adam and Kreps, 2009; Coleman *et al.*, 2016), represents a topic strongly anchored to corporate

sustainability (Ball *et al.*, 2005; Gould *et al.*, 2020). In fact, to achieve sustainable development and obtain social legitimacy (Fernando and Lawrence, 2014; Luo *et al.*, 2015), firms must promote a corporate culture based on social inclusion to favor the complete integration of disabled people in business dynamics. By adopting socially responsible behavior, the company can gain trust and establish stable relations with stakeholders, improving its reputational capital (Fombrun and van Riel, 2004).

To promote the social inclusion of individuals with disabilities, companies have to ensure accessibility to digital content on their corporate websites (Sanil and Ramakrishnan, 2015). The website represents the main digital communication tool through which firms convey corporate information (values, commitment, activities, performance) and facilitate stakeholder engagement (Friedman and Miles, 2006; Viglia *et al.*, 2018). The corporate website contributes to the development of disabled users' participation and allows for a positive interaction with the digital environment (Anderberg and Jönsson, 2005; Baroni and Lazzari, 2013).

To be accessible, a website needs to adapt to the international technical standards set by the Web Content Accessibility Guidelines (WCAG) issued by the World Wide Web Consortium (W3C; an international organization created with the aim of developing standards for the web) Web Accessibility Initiative (the section that deals with spreading accessibility culture on the web). Adoption of these criteria allows websites to provide services and share information that can be used by all users, thanks to the assistive technologies that allow alternative content and customized configurations.

Despite the growing interest in social inclusion principles and the increasingly current national and international debate on web accessibility regulations (De Andrés *et al.*, 2010; Adelopo *et al.*, 2012; Coleman *et al.*, 2016), most online organizations in the private sector still fail to comply with accessibility standards (Leitner *et al.*, 2016). Indeed, although awareness of accessibility issues is critical to meet disabled users' needs, there appears to be a lack of understanding about reasons for applying specific accessibility elements and knowledge of how firms should implement them effectively (Brophy and Craven, 2007; Kuzma *et al.*, 2007). Moreover, empirical surveys aimed at investigating compliance with accessibility requirements on websites of sustainable firms are still limited in both the academic and the business communities. This paper intends to fill this gap through an exploratory study investigating the presence of W3C standards on the websites of 311 firms classified in the Dow Jones Sustainability Word Index (DJSWI) 2018, a global index that identifies the main sustainable companies present worldwide. These firms are located in different geographical areas and conduct different business activities.

In line with the purpose of the research, the paper is organized as follows. The conceptual background will deal with web accessibility regulations, social inclusion, and the link with corporate sustainability, as well as the W3C standards. Next, the paper will describe the methods and empirical survey. Subsequently, the discussion of the exploratory study results will provide insights for business digital communication managers and consultants.

2. Conceptual background

2.1 The right to accessibility for disabled people: between inclusion and sustainability

The inclusion of disability is part of corporate sustainability practices (Quaddus and Siddique, 2011; Gould *et al.*, 2020). A firm can be defined as sustainable if it respects principles of corporate social responsibility (CSR) and ensures the right balance between economic performance, environmental protection and social progress: the "3Ps"-profit, planet, and people (Savitz and Weber, 2006). In particular, the people dimension concerns a firm's ability to respect the expectations of its stakeholders and embraces issues relating to various areas of social sustainability, including respect for human rights and opportunities and non-discrimination principles. Indeed, the company needs to obtain legitimacy by people also belonging to the most disadvantaged categories, who increasingly demand the right to be informed about corporate actions (Greenwood, 2007; Luo *et al.*, 2015; Gambetti *et al.*, 2017).

In this respect, referring to the principles of independence, equality and participation, the United Nations Convention on the Rights of Persons with Disabilities considers as unconditional the right to accessibility, which expresses "the extent to which products, systems, services, environments and facilities can be used by people from a population with the widest range of characteristics and capabilities to achieve specified goals in a specified context of use" (Persson *et al.*, 2015, p. 524).

Accessibility can be considered the "zero level" of democratic guarantee (Silvestri and Ducci, 2004; Coleman *et al.*, 2016). Information and communication technologies (ICTs) play an important role, since they represent a relevant support tool for accessibility and social inclusion if designed according to the requirements of fair use (Adelopo *et al.*, 2012). The goal of the web accessibility standards is to help make the web more accessible for people with disabilities (Ellcessor, 2010). Accessibility opens doors to information for users with difficulties. It supports the independence of disabled individuals, helping them to participate in day-to-day activities like online shopping, entertainment and reading news. In this respect, accessibility guidelines devolve a more inclusive cultural and political sphere online.

In particular, access to ICTs for people with disabilities must be based on the web eQuality standards, adopted to ensure compatible use of web content for people with sensory (blind and deaf), motor skill (handicaps in the use of hands), and cognitive disabilities (Maretti, 2003). Each disability category presents problems of varying complexity that require specific digital solutions to allow access to corporate information.

ICTs promote "inclusive" and "participatory" processes of stakeholder engagement that can significantly contribute to improving the sustainability of corporate decisions (Friedman and Miles, 2006; Viglia *et al.*, 2018). A truly sustainable organization inevitably tends to dialogue with all stakeholders, without any discrimination, to involve them in company dynamics (Porter and Kramer, 2011; Golinelli and Volpe, 2012; Vollero

et al., 2019). The development of a sustainable relationship between the firm and its audiences, based on the principle of social inclusion, appears connatural to the concept of corporate sustainability (Mathur *et al.*, 2008; Prado-Lorenzo *et al.*, 2009). In fact, the correct and effective management of accessible content on the web has an impact on a company's long-term strategy (Lindahl, 2006) and is a part of CSR practices (Martínez *et al.*, 2014).

However, if information technologies are designed without considering the accessibility needs of people with disabilities, they can be configured as tools of social exclusion (Goggin and Newell, 2003; Seymour, 2004). Therefore, the issue of access to ICT is framed in the context of the right to information and communication (Zaccaria and Valastro, 1998) and the broader question of the digital divide, which highlights and denounces the inequalities deriving from the impossibility of access to digital content (Sartori, 2006; Bentivegna, 2009; Van Dijk, 2020).

From this awareness derive international and national regulations on accessibility, intended to ensure equality of access to information and usability of digital content for all users, avoiding marginalization factors (Baroni and Lazzari, 2013). In many countries, websites and mobile applications must comply with web accessibility standards required by various regulations (such as EN 301 549 in Europe, the ADA and Section 508 in the United States of America, and the AODA in Canada), following the international WCAG of the W3C. Regulations related to the accessibility of information content involved public organizations, in a first phase (Di Giorgi and Bargellini, 2006). Several studies show that few government websites in Europe and the US are fully compliant with WCAG standards (Kuzma *et al.*, 2009; Martínez *et al.*, 2014). There are also significant gaps in accessibility in social networks (Lee *et al.*, 2014).

In some provinces of Canada, accessibility standards apply to both public and private entities, e.g. AODA. In Europe, the possibility of expanding the set of organizations obliged to comply with the accessibility requirements was encouraged by Directive (EU) 2016/2102. This directive, while constituting a discipline on the accessibility of public organizations' websites and mobile applications, allows Member States to extend its application to private organizations in sectors, such as health, childcare, social inclusion and social security, transport services and electricity, gas, heat energy, water, electronic communications, and postal services. An advance in this direction was made by Directive (EU) 2019/882, which establishes economic operators' compliance with specific accessibility requirements for websites for products and services (relating to transport, e-commerce, media and the financial sector) provided to consumers starting from June 2025. From that time, no inaccessible product or service can be placed on the European market.

In the context of national laws, there has been a process of transposition and implementation of these regulations. In Italy, Law 4/2004 (Stanca Law) represents an important milestone in affirming the right to accessibility in terms of the inclusion of disadvantaged users, guaranteeing a minimum level of accessibility to public administration websites, and in the publication of specific guidelines based on the WCAG. The launch in 2020

of a substantial reform of the law partially anticipated the transposition of EU Directive 2019/882, which included large companies in the private sector among the recipients of the legislation. Article 29 of the Simplification Decree (Legislative Decree 76/2020 converted with amendments by Law 120/2020) provides for the extension of accessibility obligations defined by the Stanca Law to private subjects with a specific average turnover (over five hundred million euros in the last three years of activity) that offer services to the public through websites or mobile applications.

2.2 Accessibility on corporate websites: W3C standards

Among the tools most used by firms, a particularly important role is assumed by the website, which allows a direct and immediate explanation of a company's value statements and activities (Castelo Branco *et al.*, 2014; Sanil and Ramakrishnan, 2015; Siano *et al.*, 2016). The website also offers organizations greater flexibility in managing corporate content, with the possibility of continual updates (Williams and Pei, 1999).

To ensure effective online communication with users with skill deficits, website ergonomics is an important issue (Mich *et al.*, 2003; Chevalier and Kicka, 2006). It involves the creation of an easy-to-use interface and supports an adequate use of content. The first requirement to allow the development of an inclusive digital process is web accessibility, that is, the ability of information technology systems to provide services and information that can be used by all users, without discrimination (Nielsen, 2000). The accessibility of a website requires that it be designed to ensure it can be consulted by individuals with physical or sensory disabilities. In principle, for many disabled people, information in electronic format is more accessible than in traditional paper form, thanks to the new assistive technologies that allow the translation of content in different perceptual modalities through customized configurations (Silvestri and Ducci, 2004).

First, creating an accessible website means adapting to technical standards for web accessibility. The primary reference is the WCAG. These directives are designed to allow universal website accessibility, regardless of the type of hardware or software used, the network infrastructure, language, culture, geographical location, and degree of disability (Picci, 2002; Polillo, 2006).

The adoption of W3C guidelines is intrinsically linked to compliance with the principles of web eQuality (Blanck, 2014), which become essential prerequisites for promoting participation and social inclusion. From this point of view, an accessible website constitutes a multimedia environment aimed at guaranteeing e-participation, that is, the removal of IT barriers to ensure information content, methods of interaction, navigation procedures, and services are fully usable by any user. The W3C considers accessibility a theme that, while starting from the needs expressed by disabled people, extends beyond this user category to the universal principles of social equity (Baroni and Lazzari, 2013).

Specifically, the W3C guidelines are based on four principles, which constitute the "pillars of web accessibility" (W3C, 2018): the content must be perceivable (it cannot be invisible to all senses of the user), operable

(the components and the navigation of the interface cannot involve an interaction that the user cannot implement), understandable (the operations to be performed must be understandable by the user), and robust (the content must remain accessible from a wide variety of assistive technologies). The guidelines propose standards to web content developers and establish accessibility criteria for each element on a webpage, such as text, background, color, images, and tables (Silvestri and Ducci, 2004). In this regard, Spellman *et al.* (2021) describe the main recommendations in detail, advising web developers that they should:

- provide equivalent alternatives to audio and visual content;
- not rely on color alone;
- create tables that transform gracefully;
- ensure that the user can monitor changes in content over time;
- ensure direct accessibility of the user interfaces;
- provide information for contextualization and orientation on the webpage;
- provide clear navigation mechanisms;
- ensure that the documents are clear and simple.

All objects on the webpage must be visible through assistive technologies for disabled people and provide alternative access. In this regard, the W3C outlines the criteria for equivalent web content, that is, the acceptable substitute that fulfills the same function as the original content at the time of presentation. The ability to use alternative content removes dependence on any cognitive mechanism for understanding. A classic example is alternative text associated with images: describing the content of an image allows access to visual information (Lazzari, 2012). The text equivalent can be presented to the user as a voice synthesis, braille, and text displayed on the screen. Each of these three mechanisms uses one of the five senses—hearing for voice synthesis, touch for braille, and sight for text displayed on the screen—making the information accessible to users with sensory disabilities. The W3C also sets criteria for non-text equivalents, such as icons and pre-recorded speech, which can make documents accessible to people with difficulties accessing written text, including individuals with cognitive disabilities and learning difficulties. A sound description is an example of a non-text equivalent of visual information.

The design of an accessible website allows organizations a substantial increase in potentially reachable users, facilitating the development of long-term relationships with people with skill deficits. Further, compliance with W3C standards is a fundamental requirement to demonstrate firm's commitment to ensuring inclusive communication with its audiences. Thus, compliance with international guidelines testifies to the sustainable conduct of firms and represents a recommendation for evaluating and potentially improving corporate website quality and online services that influence corporate reputation (Joan, 2003). An accessible website is easier to browse for all users and will have many satisfied visitors. Consequently, corporate reputation improves because of the social care for people with disabilities (Krunic, Ruzic-Dimitrijevic, 2007). In fact, companies that engage in CSR activities as part of their public relations strategy are perceived to be socially motivated and develop a stronger positive reputation (Aksak *et al.*, 2016).

Failing to take reasonable measures to provide access to web resources for people with disabilities may undermine the reputation of firms, especially those with traditions of social responsibility (Kelly *et al.*, 2009).

To date, few studies have been conducted verifying the degree of adoption of W3C guidelines on the websites of sustainable firms (Martínez *et al.*, 2014). Therefore, the first research question of this study is:

RQ1: To what extent are W3C guidelines adopted by sustainable firms?

Further, the literature does not empirically investigate the existence of a relationship between compliance with international accessibility standards and the sector and/or geographical belonging of companies. In this regard, for example, some studies show that companies in controversial sectors, that are firms involved with emerging environmental, social, or/and ethical issues, are more active in communicating sustainability on corporate websites (Kilian and Hennings, 2014; Vollero *et al.*, 2019). Instead, in terms of geographical location, it could be assumed that European organizations are more attentive to CSR disclosure (Godfrey and Hatch, 2007; Jackson and Apostolakou, 2010). Therefore, the second and third research questions are:

RQ2: Is there a link between the adoption of W3C standards and firm sector?

RQ3: Is there a link between the adoption of W3C standards and the geographical belonging of firms?

3. Research design

The exploratory study aimed at investigating compliance with accessibility requirements by corporate websites of sustainable companies. The sample included the websites of all firms (311) classified in the DJSWI 2018, a global index that identifies the main sustainable companies worldwide. The DJSWI annually reviews about 2500 companies listed in the Dow Jones Global Total Stock Market Index, from which it selects the best performing in terms of sustainability, based on economic, environmental, and social criteria. Specifically, the index includes 10% of all rated companies, which equates to approximately 300 firms. The index is internationally recognized for its transparency and informational objectivity and is widely used in CSR studies (Cheung, 2011; López *et al.*, 2007). Therefore, the DJSWI provides an appropriate empirical context for investigating the accessibility practices of highly sustainable organizations.

The examined organizations are located in different geographical areas (Europe, North and South America, Asia, Africa, and Oceania) and engage in different business activities. The companies have been grouped considering the Global Industry Classification Standard (GICS), a criterion introduced by MSCI in collaboration with Standard & Poor's Corporation (S&P) and accepted worldwide for the sectoral classification of companies to ensure greater comparability in international research.

In detail, business activities are distinguished, according to their core business, into the following sectors:

- energy;
- materials;
- industrials;
- consumer discretionary (companies more sensitive to economic cycles);
- consumer staples (companies less sensitive to economic cycles);
- health care (pharmaceutical and biotechnology);
- financial;
- information technology (hardware, software, and semiconductor);
- telecommunications services;
- utilities (public goods such as gas, electricity, and water);
- real estate.

As specified, the units of analysis are the corporate websites, as they represent the main communication channel through which organizations inform the public about their commitments and activities. Further, corporate websites should facilitate stakeholder engagement processes, even with users with skill deficits, supporting access to corporate information and favoring public participation in organizational practices (Moreno and Capriotti, 2009; Illia *et al.*, 2017; Siano and Conte, 2018).

To analyze the accessibility requirements of the websites of sustainable organizations, content analysis was conducted (Braun and Clarke, 2006; Smith, 2017), aimed at identifying compliance with W3C guidelines. Each item was treated as a dichotomous variable presenting two alternative values: presence or absence of specific reference to adoption of the W3C accessibility criteria. The preference for dichotomous variables is justified by the fact that they are easier to operationalize than the variables detectable with scaling techniques. The simplification associated with the treatment of dummies, if on the one hand it may seem a weakness in the measurement, on the other hand it has the not negligible advantage of allowing easier detection, reducing the subjectivity and ambiguity inherent in this type of activity.

Further, to limit subjective interpretations, detection of the specific items was carried out by two independent coders, reaching an intercoder reliability of 0.82, which can be considered satisfactory (Krippendorff, 2012). Data collection from corporate websites was performed from July to December 2019.

4. Results

To analyze compliance with W3C guidelines, the study verified the presence or absence of specific indications of the international standards within the corporate websites of firms in the sample examined (RQ1). Table 1 highlights that only 21.5% of websites comply with the accessibility criteria defined by the W3C. The survey finds that most firms (78.5%) have not yet adopted the accessibility standards on their website.

Tab.1: Presence of the W3C requirements on the corporate websites of the analyzed sample

	Frequency	%
W3C compliance	244	78.5
W3C non-compliance	67	21.5
Total	311	100.0

Source: our elaboration

The study investigated compliance with the W3C criteria among the various business activities of firms through content analysis to verify possible trends in the adoption of accessibility standards by the different sectors (RQ2). The comparison of the percentages of adoption of these criteria highlights different scenarios according to the business activities (table 2).

Tab. 2: Compliance with the W3C requirements by business activities

Business Activity	N.		W3C		Total
			Absence not adoption)	Presence (adoption)	
Consumer Discretionary	43	count %	33 76.7%	10 23.3%	43 100.0%
Financials	55	count %	43 78.2%	12 21.8%	55 100.0%
Industrials	48	count %	44 91.7%	4 8.3%	48 100.0%
Energy	22	count %	17 77.3%	5 22.7%	22 100.0%
Consumer Staples	19	count %	15 78.9%	4 21.1%	19 100.0%
Information Technology	30	count %	21 70.0%	9 30.0%	30 100.0%
Health Care	25	count %	21 84.0%	4 16.0%	25 100.0%
Materials	27	count %	2.3 85.2%	4 14.8%	27 100.0%
Real Estate	18	count %	15 83.3%	3 16.7%	18 100.0%
Telecommunications Services	9	count %	6 66.7%	3 33.3%	9 100.0%
Utilities	15	count %	6 40.0%	9 60.0%	15 100.0%
Total	311	count %	244 78.5%	67 21.5%	311 100.0%

Source: our elaboration

The websites of utilities companies show greater compliance with the W3C requirements than those of other sectors. In fact, 60.0% of websites have a clear reference to compliance with the accessibility standards; this percentage is far higher than the average percentage of W3C standards adoption across all sectors (21.5%). Firms in telecommunications services

(33.3%) and IT (30.0%) reach a good level of accessibility. On the contrary, the study shows poor adoption of the W3C standards by websites of industrial companies (8.3%). Materials (14.8%), health care (16.0%), and real estate (16.7%) sectors also reach moderate adoption percentages, below the sectoral average percentage.

Pearson's chi-square test, reported in table 3, highlighted that the relationship between the two variables (business activity and W3C adoption) is significant (p-value < 0.05).

Tab.3: Pearson chi-square test

Pearson chi-square test	
Chi- Square	21.619
df	10
P- value	.017

Source: our elaboration

Finally, the survey investigated the relationship between the degree of adoption of W3C requirements and the geographical origin of the companies belonging to the sample (RQ3) (table 4). The differences between continents, when compared with the average percentage (21.5%), shows that European firms are more attentive to international standards in terms of website accessibility (30.8%). In contrast, company websites in South America are less compliant with the standards (7.7%).

Tab.4: Compliance with the W3C requirements by geographical areas

Continents	N.		W3C		Total
			Absence not adoption)	Presence (adoption)	
Africa	5	count %	4 80.0%	1 20.0%	5 100.0%
Asia	58	count %	52 89.7%	6 10.3%	58 100.0%
Europe	156	count %	108 69.2%	48 30.8%	156 100.0%
North America	60	count %	53 88.3%	7 11.7%	60 100.0%
Oceania	13	count %	15 78.9%	4 21.1%	19 100.0%
South America	19	count %	12 92.3%	1 7.7%	13 100.0%
TOTAL	311	count %	244 78.5%	67 21.5%	311 100.0%

Source: our elaboration

Tab. 5: Pearson chi-square test

Pearson chi-square test	
Chi- Square	17.107
df	5
P- value	.004

Source: our elaboration

Pearson's chi-square test (table 5) confirms that the relationship between the two variables (geographical origin and W3C adoption) is significant (p-value < 0.05).

5. Discussion

The purpose of the exploratory study was to highlight current trends relating to the adoption of accessibility requirements on websites of sustainable firms classified by the DJSWI. Findings show that most corporate websites do not comply with W3C standards and consequently do not respect accessibility guidelines. The limited fulfillment of W3C requirements in website design underlines that firms devote little attention to adopting universal principles of social inclusion, which is closely related to corporate sustainability (Gould *et al.*, 2020). Thus, the study highlights that firms' commitment to sustainability actions does not guarantee an adequate level of adoption of the W3C guidelines. This result is in line with the study by Martínez *et al.* (2014), which showed a contrary influence effect between commitment to CSR and adoption of accessibility standards: the companies engaged in CSR had less accessible websites. This could be justified considering that accessibility requirements are still little known in the business environment and are not on the agenda of stakeholder requests (De Andrés *et al.*, 2010). Therefore, firms are still not very sensitive about guaranteeing users with disabilities the right to access information and adequate involvement in business practices. Considering this, the corporate website is configured as a tool that amplifies the digital divide, as it does not allow web equality between users in the process of accessing, displaying, processing, and interpreting corporate information (Van Dijk, 2020).

Findings also show an association between the adoption of accessibility standards and firm sector. In particular, the study highlights that the utilities sector is more committed to respecting international guidelines. This means that this sector, regardless of the current regulations, is the first to have begun implementing practices on websites aimed at achieving an inclusive digital process. This trend could derive from the peculiarities of this sector, which provides public utility goods and services (such as gas, electricity, water), which generally occurs under the direct or indirect control of the state. Therefore, the core business of these companies is oriented to meet community needs and avoid social discrimination. In fact, utilities are pushed, from a strategic point of view, to create solid

relationships with all citizens and to develop the sustainability policies that are a distinctive feature of this sector (Arena *et al.*, 2019).

This trend may also be partly since the utilities is one of the sectors labeled as "controversial" by the CSR literature (Kilian and Hennings, 2014): given the potential negative impact of industrial processes, companies operating in these sectors could be induced to engage more in sustainability initiatives to gain public legitimacy. Strengthening web accessibility, guaranteeing access to disadvantaged social groups, could be part of practices aimed at ensuring social sustainability.

In the comparison between business activities, it is also interesting to note greater attention to W3C criteria compliance by companies in the telecommunications services and IT sectors. Obviously, these sectors have more skills in the field of digital technology and are, consequently, more likely to integrate online accessibility criteria into their websites. Otherwise, the industrial sector, which comprises companies operating in capital goods, appears to be less attentive to W3C standards compliance. This is explained by the business-to-business nature of this business activity, aimed at developing relationships to sell production processes components into the supply chain. Thus, such companies may have little interest in creating digital dynamics based on dialogue with final consumers (Jarvinen *et al.*, 2012) and in designing an inclusive website for users with disabilities. However, it is likely that recent trends toward the creation of increasingly sustainable supply chains (Seuring and Müller, 2008) may favor better alignment with disabled users' needs.

It is also interesting to note a negative trend for health care firms, which should be, because of the social relevance of the products marketed, more sensitive and attentive to issues relating to the inclusion of disabled people and to CSR and stakeholder engagement processes (Saviano *et al.*, 2018).

In addition, the research identifies an association between W3C compliance and the geographic belonging of firms analyzed in the empirical research. Findings show that European companies are more active in adopting accessibility guidelines than those of other continents. European organizations have historically been the first to adhere to corporate sustainability standards; consequently, the greater number of such companies in the DJSWI index demonstrates a more significant adherence to the principles of CSR established at international level. Indeed, it is assumed that CSR is largely a Western cultural phenomenon, as most of the CSR reporting norms and standards have been developed and institutionalized in Europe (Godfrey and Hatch, 2007; Kadyan, 2017). It is therefore conceivable that the factors justifying this trend are the presence of a corporate culture more sensitive to CSR values, the active regulatory environment on these issues, and the incentive to emulate corporate best practices. These peculiarities appear to be less present in South America, which is characterized by a lower sensitivity toward problems of social inclusion and limited opportunities for firm-level debate and discussion on sustainability issues (Dobers and Halme, 2009).

6. Implications, limitations, and future research

This research broadens the studies on inclusion practices in digital contexts (Ball *et al.*, 2005). In particular, it contributes to the debate on online accessibility for disabled users, identifying measurement elements in the context of websites (W3C requirements) and providing empirical evidence on international guidelines adoption by sustainable firms. Further, compared with previous studies, the paper investigates a large sample of companies, classified in the DJSWI, adopting the content analysis technique, which has been used widely to examine social responsibility disclosure on corporate websites (Smith, 2017).

The study also presents interesting insights from a managerial point of view. Results allow marketing and business management professionals, as well as digital communication managers and consultants, to evaluate and improve corporate performance relating to accessibility practices on websites. In fact, the critical issues that have emerged must be a stimulus for companies to engage more actively in establishing processes of democracy and participation in digital environments. The access to web services and information tools on corporate websites is today an indispensable requirement for implementing social inclusion actions, which are essential to the development of a strategic orientation aimed at respecting sustainability and stakeholder engagement principles. In this regard, the involvement of disabled people in content and actions on the corporate website allows the firm to expand its stakeholder groups. In fact, an inclusive view implies a significant increase in the number of stakeholders, since an accessible design makes the website available to a wider audience (Krunic and Ruzic-Dimitrijevic, 2007).

The adoption of a "stakeholder inclusive" approach, in particular a "disable person inclusive" perspective, supports companies in sustainability communication, increasing social legitimacy (Fernando and Lawrence, 2014; Luo *et al.*, 2015). Accessibility certification positively influences users' perception of corporate CSR, so companies would be wise to invest in the adoption of international requirements (Katerattanaku *et al.*, 2018). To this end, it is essential that firms make a financial commitment to employing web designers or an IT staff educated in accessibility, as well as consulting firms focused on this issue (Loiacono and Djamasbi, 2013). This reduces the risk for firms of suffering damage to their image due to discrimination and digital divide actions (Van Dijk, 2020). Guidelines also help firms ensure their websites are less subject to complaints concerning accessibility (Babi and Kopp, 2020). Further, from a managerial point of view, ensuring a "design for all" perspective (Klironomos *et al.*, 2006; Persson *et al.*, 2015) is advantageous to companies not only in terms of image and reputation (Fombrun and van Riel, 2004) but also economics, as an increase in potential customers can improve market share and profit, enhancing corporate competitiveness (Flak and Pyszka, 2011).

In our opinion, the real crux of this issue remains the belief by the ownership and the management of for-profit organizations to make a decisive "qualitative leap" in the direction of greater social inclusion. It is necessary to understand whether firms deal with accessibility only

to emulate competitors or to follow current trends that often translate into greenwashing practices, or differently for the convinced strategic orientation of the top management and the firms' members at all levels, aware that reputational capital, and corporate success, increasingly depends on consistent cultural and value changes. In this regard, it would be useful to develop future studies aimed at bringing out the aforementioned changes, making use of control indicators to detect scientifically the presence of evidences showing that the qualitative leap is occurring.

This study has some limitations that could be addressed in future research. First, the content analysis method implies the typical limits associated with the subjective evaluation of researchers (Beattie *et al.*, 2004). Further, the sample of companies examined in the pilot study requires future development to broaden the investigation, paying attention to the fair distribution of firms in business activities and geographical areas. Future studies could also extend the empirical investigation to companies outside the DJSWI, thus to organizations that are not leaders in sustainability, as it would be interesting to compare the percentages of adoption between organizations classified as sustainable companies and organizations not on any sustainability index.

In addition, the research could be enriched by including other potential factors that influence adherence to web accessibility requirements, such as firm dimension (large/small firms), time on the market (established/start-up firms), or more firm-specific characteristics. The effect of new regulations in Europe on web accessibility and, in general, on the consolidation in Europe of a corporate culture based on social inclusion could also represent an interesting line of research.

Finally, this research does not claim to be exhaustive, as it focuses on limited factors, namely, the presence or absence of adoption of the W3C requirements by websites. Therefore, future research might investigate a broader set of elements related to social inclusion dynamics to extend the analysis to other digital tools, including corporate social media.

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