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Auditing Web accessibility: The role of interest orga in promoting compliance through certification by G. Anthony Giannoumis

Abstract

Previous research on Web accessibility policy has focused on the application of anti-discrimination policies to the Web and has yet to explore fully, the mediators to policy implementation and compliance. Policy analyses and semi-structured interviews with 34 participants in the United Kingdom and United States demonstrate that interest organizations, including non-profit and for-profit organizations, support the implementation of anti-discrimination policies by providing audit and certification services. First, performance certification demonstrates the quality of a Web site, and interest organizations have developed certification initiatives based on international performance standards developed by the private sector. Second, professional certification demonstrates the quality of an individual's knowledge and experience, yet despite the absence of educational standards, interest organizations offer professional certification. Third, procedural certification demonstrates the quality of organizational processes, yet despite the development of a national procedural standard, interest organizations do not offer procedural certification. This paper concludes by offering recommendations for enhancing the use of certification to achieve Web accessibility and provides suggestions for future research.

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1. Introduction

National and international antidiscrimination laws obligate governments and businesses to ensure the accessibility of information and communication technology, including the Web (Blanck, 2014a; U.K. Equality and Human Rights Commission (EHRC), 2011; United Nations, 2006). Web accessibility refers to the design of Web content for use by disabled people.

Previous research on Web accessibility policies focused primarily on the legal aspects of applying anti-discrimination legislation to the Web (Blanck, 2008, 2014a, 2014b; Easton, 2012; Leblais, 2009; Lynch, 2004; Noble, 2002; Schaefer, 2003). First, previous research has focused on the application of antidiscrimination laws in the United Kingdom (U.K.) and the United States (U.S.) and second, previous research has focused on the

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realization of the rights enumerated in the United Nations (U.N.) Convention on the Rights of Persons with Disabilities (CRPD).

The application of antidiscrimination legislation to the Web involves implementing reasonable accommodation provisions (Easton, 2011). The CRPD provides a useful definition of reasonable accommodation, stating "reasonable accommodation means necessary and appropriate modification and adjustments ... to ensure to persons with disabilities the enjoyment ... of all human rights and fundamental freedoms" (United Nations, 2006).

Previous research has also begun to investigate the implementation of Web accessibility policies (Easton, 2011, 2013; Giannoumis, 2014a; Jaeger, 2008; Olalere and Lazar, 2011; Wentz, *et al.*, 2011; Yu, 2002). This research has typically focused on compliance related outcomes and barriers, and approaches to the use of standards. However, research in other areas of regulation demonstrates that certification acts as a mechanism of compliance (Bartley, 2011; Courville, 2003; Haufler, 2003; Vogel, 2008).

Web accessibility certification emerged in the U.K. and U.S. through interest organizations. Interest organizations refer to a range of civil society organizations involved in Web accessibility. Advocates, commercial testing enterprises and subject matter experts act as interest organizations in the U.S. and U.K. Thus, the U.K. and U.S. provide useful cases for examining certification as a mechanism of regulatory compliance.

Certification has emerged in the U.K. and U.S. as an unregulated service. Interest organizations offer performance certification based on international standards to demonstrate the accessibility of Web content. Interest organizations also offer professional certification to demonstrate the knowledge and experience of an individual; however, educational standards have yet to emerge. While procedural standards for Web accessibility exist, interest organizations have yet to pursue procedural certification.

This paper explores the role of interest organizations in promoting compliance through certification. We ask, "Under which conditions can voluntary certification initiatives support regulatory compliance?" We demonstrate that interest organizations offer audit services to assess and monitor compliance. These audit services involve certification initiatives that aim to promote accountability and transparency. Audit and certification supports accountability and transparency by assessing and providing demonstrable evidence of compliance efforts.



2. Regulatory governance through policy networks and voluntary compliance

Governments have used social regulations to encourage businesses to act socially responsible. Previous research has demonstrated a trend where governments try to regulate businesses by promoting cooperation between regulators and businesses and providing guidance (Levi-Faur, 2005). Cooperation aims to incentivize compliance by encouraging voluntary agreements and compromises (Potoski and Prakash, 2011). Thus, research demonstrates that approaches to regulation have changed from government rule-making and enforcement to voluntary cooperation (Töller, 2011).

Previous research differentiates voluntary approaches to regulation based on business performance or procedure. Performance regulations focus on outcomes, and businesses typically decide on how to achieve the outcomes (May, 2011). Alternatively, procedural regulations focus on processes, and businesses typically decide on how to design, evaluate and adjust processes (Gilad, 2010, 2011).

However, research demonstrates that regulation does not simply constitute unilateral action by the government (Levi-Faur, 2011, 2013). Instead, government agencies, businesses and interest organizations depend on one another to implement regulations effectively (Adam and Kriesi, 2007; Ayres and Braithwaite, 1992). Previous research refers to the participation of businesses and interest organizations in enforcing regulations as co-regulation (Levi-Faur, 2011).

In addition, previous research on regulatory enforcement demonstrates that customizing penalties can encourage compliance (Ayres and Braithwaite, 1992). Research on regulatory enforcement illustrates how a range of enforcement options provides a flexible basis for achieving compliance. By increasing the range of enforcement options, regulators can respond to situational demands and promote compliance.

Auditing can support regulation by assessing whether a business has complied with a law or policy. Thus, regulations provide a basis for audit activities. Previous research has adopted a variety of definitions of auditing as a practice, though auditing may refer broadly to assessments that verify whether a business has followed the law or policy (Power, 1997).

Auditing holds businesses accountable by encouraging businesses to openly provide information about socially responsible practices (Courville, 2003; Walker, 2014). However, auditing consists of more than “tests and evidence gathering” and includes “a system of values and goals” (Power, 1997). Thus, auditors act to “connect internal organizational arrangements to public ideals” (Power, 1997).

Research has demonstrated that, under certain conditions, a demand for auditing can emerge when governments do not take responsibility to provide support and guidance for regulations (Grabosky, 1995; Power, 1997). Research has also demonstrated that the lack of support and guidance can lead some organizations or individuals to establish a new profession (Svensson and Åström, 2013). Thus, auditors may act as independent professional advisors and report on activities that support regulatory objectives.

Auditing typically involves certification to publicly demonstrate compliance (Bartley, 2011). As Brunsson and Bengt (2000) describe, businesses obtain certification to “show that we are doing what we say we are”. Thus, certification publicly demonstrates compliance efforts.

Certification promotes accountability and transparency by providing evidence of compliance. Certification provides an incentive for businesses to comply with regulations by enhancing public relations and providing an opportunity for businesses and interest organizations to cooperate (Owen, *et al.*, 2000; Vogel, 2008).

For example, Vogel (2008) provides a review of previous research on private global business regulation. The author examined research on certification in labor practices, environmental quality, and human rights conditions. According to the author, “certification benefits firms that sell to consumers by improving their reputations”. Vogel further states, “negotiations among businesses ... national governments, NGOs, and/or trade unions ... typically incorporate global product and producer certifications.”

Standards typically provide an independent and objective basis for certification and thus, certification can promote the dissemination of standards (Courville, 2003; Haufler, 2003). Standards refer to “technical rules concerning either the design of key attributes or components of a product or crucial elements of processes of production, operation or technology use” (Werle, 2002).

For example, Courville (2003) examined certification initiatives for fair trade standards for consumer products and corporate social responsibility. According to the author, “certification systems have definitive standards, usually based on widely accepted sets of principles”.

Consequently, certification also indirectly contributes to compliance as the dissemination of standards can encourage businesses to comply with a standard whether or not the business also becomes certified (Hallström, 2004). Certification initiatives vary depending on whether certification applies to individuals or organizations.

For example, professional certification typically requires evidence of education or training and applies to an individual, while performance or procedural certification typically requires evidence of outcomes or processes, respectively, and applies to an organization (Bartley, 2011; Garoupa, 2011).

However, limited research exists examining the use of certification by interest organizations. While previous research has examined the use of auditing and certification to support the implementation of social regulations and achieving compliance, limited research exists examining the role of interest organizations and the conditions under which voluntary certification can support compliance.

This paper aims to extend previous research by first, examining the role of interest organizations as intermediaries between the interests of regulators and businesses and second, analyzing the use of voluntary certification initiatives to support compliance with Web accessibility policies. We argue that interest organizations act as intermediaries by using both adversarial and cooperative approaches to achieving compliance.

Interest organizations have used litigation and legal threats to coerce businesses to comply with antidiscrimination regulations and have used audit and certification to encourage businesses to comply voluntarily with Web accessibility policies. Thus, audit and certification initiatives provide a useful mechanism for compliance as certification extends enforcement options beyond adversarial enforcement.



3. Methodology, data and analysis

To examine how interest organizations have used certification to support compliance, I conducted a case study of the U.K. and U.S. Case studies provide useful evidence for elaborating governance models — in this

paper, the use of certification to support social regulations (Yin, 2013). This article uses the U.K. and U.S. to elaborate on the role of certification as a component of Web accessibility policy and as a mechanism for regulatory compliance.

Previous research demonstrates that case studies provide a useful approach for examining a current phenomenon in context, where investigators have limited to no control over events (Yin, 2013). The lack of control over events differentiates the use of case studies from experimental research. George and Bennett (2005) describe case studies as an "instance [case] of a class of events [phenomenon]".

Yin (2013) provides a more detailed description of case studies as empirical inquiries that "investigate a contemporary phenomenon in-depth and within its real-life context, especially when the boundaries between the phenomenon and context are not clearly evident". Thus, case studies provide a holistic examination of the meaningful characteristics of real-life events and provide a useful research design for understanding complex social phenomena (Yin, 2013).

Case studies provide detailed explanations of the processes that cause a particular phenomenon (Boix and Stokes, 2007; George and Bennett, 2005). By detailing causal processes, case studies can identify new variables and hypotheses (George and Bennett, 2005; Mitchell, 1983). The results of case studies allow investigators to expand and generalize theories (Boix and Stokes, 2007; George and Bennett, 2005; Mitchell, 1983; Yin, 2013). Thus, rather than generalizing statistically by "enumerating frequencies", case studies generalize to "theoretical propositions" (Yin, 2013).

Case studies aim to inform theory and models of policy implementation by evaluating theoretical assumptions and extending models of policy implementation by identifying new causal conditions and areas of exploration. Thus, this article aims to contribute recommendations on the use of certification initiatives to enhance Web accessibility.

I selected the U.K. and U.S. as similar cases since both governments have adopted comparable approaches to Web accessibility. Both cases have 1) approached Web accessibility through the application of antidiscrimination legislation; 2) supported the development of voluntary standards; and, 3) demonstrated that a lack of Web accessibility violates the rights of disabled people. In addition, interest organizations in the U.K. and U.S. act as commercial service providers and certify compliance with Web accessibility policies.

While a single case study of the U.K. could provide a useful analysis, the addition of the U.S. provides an opportunity to identify consistencies across the cases and enhance my ability to elaborate on the role of certification. Thus, as similar cases, the results from the U.K. can confirm similar outcomes in the U.S.

To understand the extent that interest organizations have used certification to support compliance, I conducted policy analyses and semi-structured interviews. Policy analyses provided useful data on the explicit norms, values and procedures involved in Web accessibility. I selected policy documents systematically based on search criteria including Web accessibility and related concepts such as ICT accessibility and usability.

As I located useful documents, I searched within the document for potentially useful references and developed the search criteria further. The document data collection aimed to include all documents with direct relevance to web accessibility supranationally (*e.g.*, documents from the European Union, United Nations and World Wide Web Consortium) and nationally from the U.K. and U.S. In sum, I analyzed 281 policy documents including 72 from the U.K., 65 from the U.S. and 144 from supranational sources.

The policy analysis focused on primary source policies including national and international laws and policies, regulations, standards, policy proposals, and government reports and communications. I located these policies via Web searches, through referrals and through organizational or governmental public Web sites.

However, many policies and Web sites referred to defunct Web content. Organizations often change content locations, remove or overwrite Web content resulting in unavailable content. I accessed defunct Web content through the Internet Archive (2013). The policy analyses provided a basis for conducting the semi-structured interviews.

Semi-structured interviews provide useful data on the perspectives of policy actors involved in Web accessibility. I conducted 34 interviews with policy actors representing public agencies, regulatory agencies, interest organizations, standards organizations, and businesses. I recruited participants with knowledge and expertise on Web accessibility.

The interviews covered a broad range of questions related to accessible information and communication technology and the relationships among policy actors. Interview questions also focused specifically on the role of standards and certification.

I used different forms of thematic analysis to examine data from the

policy documents, interview transcripts and field memos. I used "coding" to identify consistent themes across the different data sources (Weiss, 1994). Coding requires researchers to immerse themselves in the texts by reading, re-reading and identifying text segments that relate to specific concepts.

I also used content analysis to examine the competing interests between policy actors. Content analysis provides a range of techniques for analyzing text-based data, and acts as a particularly useful approach for examining the interests of different groups of policy actors expressed in formal and informal communications (Creswell, 2007).

The content analysis focused on the conflicts among policy actors, and I used the interests of policy actors to examine the historical and social context for policy actions and social problems. The content analysis provided a useful approach for examining the aims and strategies of different policy actors involved in Web accessibility and determining whether the interests of policy actors provided a basis for cooperation or conflict. I also used the content analysis to examine the legal, commercial and social interests of different policy actors.

4. Regulating Web accessibility in the U.K. and U.S.

Based on the coding and content analysis of the data, four themes emerged. First, Web accessibility policies in the U.K. and U.S. have adopted a regulatory approach to encouraging businesses to provide accessible ICT goods and services. Second, interest organizations in the U.K. and U.S. have supported the implementation of Web accessibility policies by acting as intermediaries. Third, interest organizations have introduced auditing as a means for certification. Fourth, barriers to certification have limited compliance. Sections 4 to 7 detail the results of the four themes.

Disability anti-discrimination regulations in the U.K. and U.S. attempted to encourage businesses to accommodate disabled people by adjusting business policies or practices. However, the application of anti-discrimination laws to the introduction of new technologies, such as the Web, prompted legal clarification. Anti-discrimination laws in the U.K. and U.S. do not require compliance with Web accessibility standards. Thus, the U.K. and U.S. governments have allowed discretion in how market actors achieve Web accessibility.

The U.K. and U.S. governments both established independent regulatory agencies to support the implementation of Web accessibility policies. U.K. regulators adopted voluntary guidelines and cooperative approaches to promoting Web accessibility and clarified the application of antidiscrimination law to the Web through mandatory regulations (U.K. Disability Rights Commission (DRC), 2002; U.K. Equality and Human Rights Commission (EHRC), 2011; Giannoumis, 2014a, 2014b). While Web accessibility regulations in the U.K. preserve the intent of the law, the requirements for compliance remain undefined.

U.S. regulators adopted a more adversarial and legalistic approach to promoting Web accessibility (Kagan, 2001). The U.S. Department of Justice has supported the application of anti-discrimination laws to the Web in judicial enforcement. For example, the Department of Justice has filed statements of interest in court cases on Web accessibility stating, "a business providing services solely over the Internet is subject to the ADA's prohibition on discrimination" (U.S. Department of Justice, 2012). Subsequent court cases have further clarified the application of anti-discrimination law to the Web (Blanck, 2014a). However, similar to the U.K., the prescriptive requirements of the law remain undefined.

Both the U.K. and U.S. advanced Web accessibility by establishing standards (BSI Group, 2010; World Wide Web Consortium, 1999b). The U.S. government supported the creation of an international standards organization, the World Wide Web Consortium (W3C) and contributed to the development of an international performance standard, the Web Content Accessibility Guidelines (WCAG) (Vanderheiden, *et al.*, 1997; World Wide Web Consortium, 1998, 1999a).

As a membership organization, the W3C established the Web Accessibility Initiative (WAI) to develop "strategies, guidelines, resources to make the Web accessible to people with disabilities" (Web Accessibility Initiative, 2012). The WAI aims to ensure "broad community input" and "encourage consensus" (Web Accessibility Initiative, 2008). The development of WCAG involved a broad range of policy actors including interest organizations and businesses. The WAI developed WCAG as an international performance standard.

Subsequently, the U.K. government contributed to the development of a national procedural standard, British Standard 8878:2010 (BS 8878) (BSI Group, 2006, 2010). U.K. regulators engaged the British Standards Institution (BSI) to develop "Publicly Available Specification (PAS) 78:2006 Guide to good practice in commissioning accessible Web sites" (BSI Group, 2006). PAS 78 formed the basis for BS 8878 as a national procedural standard. BSI has institutionalized the participation of interest

organizations and consensus procedures in standardization (BSI Group, 2011, 2012a, 2012b).

While both the W3C and BSI have produced standards for Web accessibility, organizational responsibility and procedures differ. The W3C acts as a private sector standards organization that produces international standards for the Web. External organizations including businesses, government agencies, and universities act as members of the W3C and collaborate with subject matter experts in standardization activities.

Alternatively, the BSI acts as the national standards body of the U.K. and represents the U.K. in European and international standardization activities. External members and subject matter experts commissioned by the BSI contribute to standardization in a wide array of areas including ICT, environmental management, occupational health and safety, information security and energy management.



5. Interest organizations as intermediaries

Regulating Web accessibility primarily involves the relationship between the government and businesses. Conflict emerged between businesses and regulators based on the perceived financial costs and lack of commercial benefits for Web accessibility. According to the director of a U.S. interest organization, "What companies want to see is, where's the money in it? Can you show me, if I do the right thing, I'm going to be rewarded?" (ID 10).

Businesses encountered incentives to ignore Web accessibility obligations or to adopt compliance symbolically. According to the same participant "they [businesses] want to make money and not do social service" (ID 10). A manager of a U.K. interest organization further stated:

I think they [businesses] borrow all the aspirational talk from us ... they love starting their presentation with Adobe believes or Microsoft believes, they love this stuff because it's very inspiring, but with commercial companies, you have to actually say, 'Microsoft has done', 'Adobe has done', now what they've done up until now ... is a lot of talk, a lot of marketing, a lot of reassurance. (ID 04)

Interest organizations acted as intermediaries between regulators and businesses to promote compliance. Interest organizations include a variety of actors engaged in promoting Web accessibility such as non-profit organizations, businesses, "business-like" non-profit organizations and business subsidiaries of non-profit organizations (Sanders and McClellan, 2014). Disabled people's organizations (DPO) also act as interest organizations led and operated by disabled people.

According to a specialist at a U.S. interest organization, interest organizations "guide" businesses and "address accessibility in the context of a [business]" (ID 05). The participant argued that interest organizations support the implementation of Web accessibility policies by cooperating with businesses.

Interest organizations have pursued litigation to enforce anti-discrimination regulations broadly and Web accessibility policies specifically (Royal National Institute of Blind People (RNIB), 2012). While litigation provides a useful basis for enforcing compliance, judicial enforcement can only promote accountability in individual cases.

To promote broader compliance, interest organizations have used threats of litigation to demonstrate the legal risks of noncompliance (Kagan, 2001; Royal National Institute of Blind People, 2012). According to a U.S. participant, "most changes, a lot of times, are done out of lawsuits or the threat of lawsuits ... it'd be great to get to a place where you don't have to threaten to sue somebody to get them to change" (6204 US). Thus, judicial enforcement produced conflict between interest organizations and businesses.

Reducing legal risk incentivizes accessibility compliance by protecting businesses against the legal costs of litigation and potential further costs of punitive compensation. Businesses have defended against legal enforcement by symbolically pursuing compliance.

A U.S. participant noted the following on the use of symbolic compliance to avoid litigation:

There's some great case studies of companies that screw up and that fix it well. ... and the company ... handled it beautifully, admitted the mistake, immediately responded, didn't try to cover up, and companies that don't do that ... they damage their reputation, so ... call it symbolic action. (0459 US)

The participant detailed "symbolic action" further stating, "you could really have done a nice job, you could even have said you'll work on it and it might take five years. It doesn't really cost you anything" (0459 US).

However, the use of litigation and legal threats emphasizes interest organization's knowledge and experience in Web accessibility. Consequently, an adversarial and legalistic approach to enforcement extends the role of interest organizations by recognizing interest organizations as authorities on Web accessibility.

To support the implementation and enforcement of Web accessibility policies, interest organizations in the U.K. and U.S. offer audit and certification services. Interest organizations offer semi-professional services for assessing compliance, and operate as independent advisors to verify compliance. As the U.K. and U.S. governments have not regulated accessibility certification, approaches to certification vary.



6. Auditing Web accessibility as the basis for certifying performance and profession

Interest organizations involve disabled people in auditing compliance. Web accessibility policies established a commercial opportunity for interest organizations to audit compliance, and interest organizations responded by offering audits as a commercial service. Interest organizations in the U.K. and U.S. involve the active participation and leadership of disabled people in auditing.

Involving disabled people enhances the validity and comprehensiveness of accessibility audits. The department head of a U.K. interest organization described the role of disabled people in auditing by reflecting, "We've got disabled people working with us in our auditing and user testing processes and stuff. So we're kind of a coalface organization" (ID 01). Interest organizations involve disabled people to support policy implementation and enhance the value of audit services.

Interest organizations in the U.K. and U.S. have integrated monitoring with auditing services. The director of a U.K. public agency describes, auditing involves "monitoring breaches across the industry" (ID 02). Interest organizations monitor Web sites to promote compliance. The managing director of a U.K. interest organization mentioned monitoring in practice:

they [the business] have to then have it [the Web site] reviewed and maintained ... the challenge, of course, with anything is ... the next day they could post something that ... violates it. We offer a service where we just regularly look at their sites and say, you know, "You just need to be aware of this." (ID 03)

Interest organizations provide audit services on a commercial basis. Auditing involves collaboration with businesses to assess compliance, identify and remediate noncompliant content, and lead and train personnel. A manager at a U.K. interest organization discussed the different procedures involved in commercial service auditing:

[we provide] Web audit services, where you can audit your Web site, tell you where they're spotting problems and things that would be barriers. And then ... train their staff ... inspire their staff, and ... actually help them do the hard coding. (ID 04)

The participant argued that auditing provides a range of opportunities to enhance compliance including assessing performance, educating and training individuals, and implementing procedures. Assessing performance attempts to identify and remediate noncompliant Web content. Education and training individuals embed accessibility competence within an organization, and implement procedures attempts to integrate accessibility into corporate practices.

6.1. Performance certification: Establishing accessible Web content

Interest organizations provide performance certification to support compliance with Web accessibility policies. Performance certification emerged in both the U.K. and U.S. as a component of auditing. While auditing includes assessing the accessibility of Web content, performance certification aims to demonstrate the accessibility of a business's Web content publicly.

Interest organizations, typically involved in assessing the accessibility of Web content, established several different performance certification initiatives. Thus, no centralized national or international performance certification exists.

Performance certification involves compliance with international performance standards. A specialist at a U.S. interest organization

reflected on the role of performance standards in certification by stating, "we certify to ... WCAG ... which is sort of the industry standard at the moment" (ID 05). Thus, performance standards provide a basis for remediating inaccessible Web content.

Performance certification involves interactive exchanges with businesses through manual and automated assessments. A specialist at a U.S. interest organization discussed the certification process:

we do an assessment of their site ... we'll report back to them and that report is both an automated and a manual report ... we have a tool that we use to do automated testing ... run through common scenarios ... then we feed that information back to the organization ... we go back and forth like that usually two or three times, and at that point, they should be ready for certification, that process takes anywhere from six months, eight months, nine months. (ID 05)

In conclusion, performance certification supports compliance by 1) assessing accessibility outcomes; 2) remediating inaccessible content; 3) supporting the adoption of performance standards; and, 4) publicly demonstrating the quality of a business's Web content.

6.2. Professional certification: Embedding accessibility competencies

Interest organizations provide professional certification to support compliance with Web accessibility policies. Professional certification emerged in both the U.K. and U.S. as a component of auditing. While auditing includes educating and training individuals, professional certification aims to demonstrate the competencies of the individual publicly. A specialist at a U.S. interest organization pointed out the benefits of professional certification by noting, "The easier it is for a company to spot, a bona fide accessibility expert, the easier it is for them to higher that expert" (ID 05).

Partnerships between interest organizations, professional associations and businesses established several different performance certification initiatives. The department head of a U.K. interest organization discussed a certification initiative by stating, "Basically, any employer, anyone who wants to know that their employees, anyone creating content, is able to appreciate the basics of accessibility, then they would take this online course" (ID 01).

A director at a U.S. interest organization observed on another certification initiative, remarked that "there is an initiative among large IT vendors especially Microsoft, IBM and others who are interested to promote the creation of an association of official organizations for accessibility professionals that have a certification program" (ID 07). Thus, no centralized national or international professional certification exists.

As educational standards for Web accessibility have yet to emerge, professional certification involves compliance with rules and norms established by certification partners. Professional certification provides a basis to support the professional development of the individual. The director of a U.K. public agency remarked on certification as professional development: "We have an eLearning module for Web developers, they can take an accredited course on how to make their Web sites more accessible" (ID 02). Thus, professional certification involves interactions with businesses through education and training.

In conclusion, professional certification supports compliance by 1) assessing an individual's competence; 2) educating and training an individual to create accessible Web content; 3) supporting the adoption of rules and norms of accessibility education; and, 4) publicly demonstrating the quality of an individual's knowledge and experience.

7. Barriers to achieving compliance through certification

Despite the introduction of certification initiatives in the U.K. and U.S., barriers to certification have limited compliance outcomes. The principal barriers to promoting performance and professional certification include the lack of regulatory guidance and lack of educational standards and opportunities.

7.1. Lack of regulatory guidance

A lack of regulatory guidance has limited the compliance outcomes for performance certification. The U.K. and U.S. governments have not intervened to mandate, incentivize or promote Web accessibility certification.

Nonetheless, interest organizations have used legal compliance to promote performance certification. A director from a U.S. interest organization noted certification as a form of legal compliance stating, "[mandatory] certification doesn't exist right now ... problem is, there are

so many companies who provide accessibility services and ... they have the guts to charge money for something that doesn't exist" (ID 10).

Since the U.K. and U.S. governments have not provided or endorsed a certification initiative, interest organizations offer multiple competing certifications. The sole proprietor of a U.K. interest organization described the negative impacts of competition in providing performance certification by stating, "what you're ending up with is all these varying quality third party organizations coming in, doing a bit of testing on a Web site and saying, 'yea you're compliant mate, you're fine'" (ID 08).

However, a U.K. participant reviewed the role of contractual agreements in managing claims of legal compliance and the varying quality of certification initiatives:

We already have processes in place for suppliers and manufacturers who make a false declaration ... if something says it's conforming to ... technical requirements and ... they don't meet those requirements, there are processes for dealing with that, those same processes can be used in accessibility, if a customer asks somebody to develop something ... and meet these accessibility requirements. The supplier develops it, declares it's built to conform to those requirements ... If they find ... it doesn't meet accessibility requirements ... it's a ... breach of contract, and that's business as usual. (2618 UK)

The participant argued that businesses typically contract interest organizations to develop accessible Web content and contractual obligations provide a useful mechanism for enforcing the quality of accessibility services. However, regulatory guidance could provide an additional means for promoting accountability of both businesses, through certification, and interest organizations, through quality assurance.

7.2. Lack of educational standards and opportunities

A lack of educational standards and opportunities has limited the compliance outcomes of professional certification. Nonetheless, interest organizations have introduced professional certification based on accessibility norms.

The lack of an educational standard has led to varying quality of training. A vice president from a U.S. interest organization remarked on the quality of professional certification initiatives:

This is what happens a lot in these 'quote', 'unquote', certification, licensure type deals, give us \$3,000 and we'll hand you a piece of paper, not take this class and really show you know how to do what you're doing ... nobody's monitoring that, you're not learning anything really. (ID 09)

Thus, an educational standard could provide a useful means to assess independently, the quality of professional certification initiatives.

A specialist at a US interest organization noted the lack of an educational standard and the quality of professional certification:

We're seeing some universities offering more accessibility courses, but there's not really a single place where you can go and just get a certification, and be confident that you're going to get somebody out of that system that's really going to understand what they're doing. (ID 05)

An educational standard could provide a basis for professional certification and promote opportunities for accessibility education. A director at a U.K. interest organization discussed accessibility in higher education stating, "awareness needs to be raised during professional education, in other words undergraduate courses for engineers, programmers, anybody that can foreseeably be involved in user interface or developing ... technology" (ID 06).

However, a coordinator from a U.S. public agency suggested that the lack of accessibility in education results from the lack of market demand. The participant stated "There'll be a demand for accessibility education when the marketplace demands accessibility, it's a little bit of the chicken and the egg" (ID 11). Thus, the lack of "marketplace demands" influences the dissemination of accessibility norms.

The lack of educational standards provides a barrier to assessing an individual's competence, and the lack of educational opportunities limits education and training for creating accessible Web content. Consequently, barriers to certification have limited opportunities to embed accessibility competencies within a business.



8. Developing Web accessibility procedural standards into an opportunity for certification

Interest organizations have yet to provide procedural certification to support compliance with Web accessibility policies. While procedural standards have emerged in the U.K., procedural certification has yet to emerge in either the U.K. or the U.S. However, interest organizations have implemented accessibility procedures as a part of auditing.

Procedural certification could involve compliance with a procedural standard, such as BS 8878 and provide an opportunity for interest organizations to interact with different departments of a business through the evaluation of management processes. Thus, a procedural standard could provide a basis for managing corporate accessibility efforts.

In conclusion, procedural certification could support compliance by 1) assessing a business's processes; 2) managing accessibility practices; 3) supporting the adoption of procedural standards or practices for implementing Web accessibility; and, 4) publicly demonstrating the quality of corporate accessibility practices.



9. Certification as a mechanism for achieving compliance

Voluntary certification initiatives can support compliance by establishing accessible content through performance certification, embedding accessibility competencies in a business through professional certification and integrating accessibility throughout a business through procedural certification. Though the U.K. and U.S. have adopted different approaches to regulating web accessibility, a legal obligation for Web accessibility has emerged.

This paper demonstrates that interest organizations in the U.K. and U.S. have used performance and professional certification to support compliance with Web accessibility obligations. Thus, the results from the U.K. confirm results in the U.S. and suggest that despite differing approaches to regulating Web accessibility, interest organizations have contributed to the development of voluntary certification initiatives. The results also suggest that the introduction of a procedural certification initiative could promote compliance by integrating accessibility processes throughout a business.

We applied new data on the implementation of Web accessibility policies to models of audit and certification and demonstrates the conditions where interest organizations can use certification to support compliance. The results confirm previous models of audit and certification by demonstrating the role of interest organizations in certifying compliance. Previous research has modeled policy actors involved in audit and certification as advisors that assess compliance and act independently from standardization processes (Brunsson and Jacobsson, 2000; Courville, 2003; Haufler, 2003; Power, 1997).

The results suggest that interest organizations act as advisors in assessing compliance. However, while organizationally, standardization and certification remain distinct, the responsibilities of interest organizations frequently obscure the role of standardizer and certifier.

In addition, the results suggest that audit and certification promote accountability and transparency. Previous research has modeled auditing as an approach to achieving accountability and transparency (Courville, 2003; Power, 1997). However, previous research has yet to differentiate audit and certification processes from outcomes related to accountability and transparency.

While this article confirms the use of audit and certification to promote accountability and transparency, the results also suggest that audit and certification relate differently to accountability and transparency. Interest organizations audit to assess compliance and promote accountability and certify to publicly demonstrate accountability and promote transparency. Thus, this paper argues that audit may relate more to achieving accountability, while certification may relate more to achieving transparency.

This paper also extended models of audit and certification. The results suggest that interest organizations have supported compliance through audit and professional certification. While previous research has demonstrated the relationship of social regulation and professionalization (Garoupa, 2011; Svensson and Åström, 2013), models of audit and certification have yet to incorporate professionalization as a mechanism of compliance.

The results suggest that interest organizations have used certification to promote Web accessibility as a professional competency. Interest organizations have used professional certification to embed accessibility competencies in a business. Thus, we argue that professional certification acts as a mechanism for supporting compliance.

In addition, the results imply that interest organizations can enforce

compliance by revoking certification. While previous research has theorized that expanding the range of enforcement options promotes compliance (Ayres and Braithwaite, 1992), models of audit and certification have yet to recognize the role of certification in expanding enforcement options.

We suggest that interest organizations can enforce voluntary commitments by businesses through a combination of litigation and voluntary audit and certification. Interest organizations use litigation and legal threats to enforce Web accessibility coercively and use audit and certification to enforce web accessibility cooperatively.

The results further suggest that an implicit agreement structures the relationship between interest organizations and businesses. Businesses agree to cooperate with interest organizations in attaining certification and avoiding potential litigation. By refusing or revoking certification, interest organizations can indicate potential violations of the law. Thus, we argue that certification supports voluntary approaches to regulation by integrating and expanding enforcement options.



10. Conclusion and recommendations

This article demonstrates that interest organizations have used performance and professional certification to support compliance. Interest organizations have used performance certification to establish accessible Web content. However, the experiences of interest organizations demonstrates that a lack of regulatory guidance limits the use of certification to support compliance.


Interest organizations have also used professional certification to embed accessibility competencies within an organization. However, the experiences of interest organizations demonstrates that the lack of formalized criteria for an individual's accessibility knowledge and experience limits the use of certification to support compliance.

Barriers to certification have contributed to the introduction of low quality certification initiatives. This paper recommends remediating the barriers to certification by establishing regulatory guidance and developing educational standards. Regulatory guidance may provide a useful basis for improving the quality of performance certification. An international organization, such as the International Association of Accessibility Professionals, could establish and clarify rules for performance certification.

In addition, developing educational standards may provide a useful basis for improving the quality of professional certification. As accreditation agencies typically operate nationally, we argue that interest organizations should support the development of national educational standards.

Finally, procedural standards may provide a useful basis for introducing procedural certification. While interest organizations have yet to introduce procedural certification, this article suggests procedural certification could enhance compliance by integrating accessibility processes throughout a business. Thus, we recommend that interest organizations support the development of an international procedural standard for Web accessibility and use that standard to introduce procedural certification initiatives.

In addition, the results provide a useful basis for future research. This article recommends that future research continue to examine the role of certification in enforcement. While the results suggest different mechanisms for achieving compliance through performance, professional or procedural certification, the relationship between certification and enforcement provides a useful area for further exploration.

In addition, interest organizations provide multiple certifications. Thus, disaggregating the effects of individual certification initiatives could provide another useful area for understanding the role of certification and compliance. 

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