

## DETERMINING COSTS AND BENEFITS OF WEBSITE ACCESSIBILITY IN IRELAND: RESULTS FROM AN EMPIRICAL APPROACH

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*Abstract:* This study explores the market potential for the ICT sector to expand its reach when websites are accessible to people with disabilities. Twelve Dublin-based organisations were surveyed and interviewed over four months to analyse organisations' benefits in having accessible websites and to explore returns of investment. The questionnaire used in this study was treated as a litmus test to see the status of web accessibility implementation in Ireland. Although the respondents were unable to answer the hard-hitting questions illuminating the ratio of costs vs. benefits, the results from the questionnaire illustrate how these organisations incorporate accessibility into their websites and gauge the tangible and non-tangible benefits of implementing web accessibility. The study supplies suggestions of the areas that need to be brought to light when putting into practice web accessible solutions.

*Keywords:* Web Accessibility, Cost Benefit Analysis, Case Study, Ireland

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### Introduction

Despite the advancements of technology and public policy and the efforts of many advocates, ensuring accessibility for people with disabilities is often not a priority for organisations that provide ICT goods and services. When the World Wide Web Conference launched the Web Accessibility Initiative (WAI) in 1997, founder Tim Berners-Lee stated that worldwide, there are more than 750 million people with disabilities (Paciello, 2000).

The United Nations estimates that there are one billion people in the world living with a disability (UN, 2011) and in Ireland, 10-20% of the adult population has some form of disability (NDA, 2002). The Irish National Disability Authority estimates that 85% of people with disabilities acquire their disability during their working life (NDA, 2012). Seeing as the world is becoming more dependent on technology for everyday tasks; it is inherent that people who use the web should have the same amount of access as everyone else, regardless of individual capabilities and functions. Businesses who do not consider accessibility in their ICT goods and services are currently excluding a large part of the market, and are missing a big opportunity for tapping into new ventures.

By examining the benefits that organisations have already introduced accessibility in their web sites, this study aims to build the business case for accessibility and further promote the spirit that accessibility is not just good corporate social responsibility but it is also beneficial for the organisations' bottom line. eAccessibility is a concept which ensures that all people of all levels of ability have the same access to information on the internet as everybody else. This includes people with disabilities and elderly people with reduced functional capabilities (Technosite, Tech4i2, et al. 2012).

This study asks the following questions:

- What are the main accessibility and usability issues in eAccessibility?
- What are the existing good practice models?
- Where are the benefits, savings or expenditures of firms investing in accessible websites?

Complying with legislation and corporate social responsibility are important issues when dealing with ensuring eAccessibility, however excluding people with disabilities also excludes a large share of the market where organisations are missing out in potential profits. Developers who create inaccessible websites involuntarily exclude millions of users from their potential audience. A Forrester Research survey commissioned by Microsoft shows that 57 per cent of adult users of Windows in the United States

benefit from its accessibility features from simple zooming to text-to-speech functions (Microsoft, 2012).

## **Related Work**

With the aim to quantify the costs and benefits of web accessibility in Ireland, the following studies were found as exemplary background documents with similarities and differences within the scope of the present study.

### **Technosite, ONCE Foundation**

Technosite, ONCE Foundation led a study for the European Commission, along with Tech4i2 (UK), AbilityNet (UK), and Norwegian Social Research (Norway) in cooperation with the Blanck Group (USA) in 2011 called "Study on Economic Assessment for Improving eAccessibility Services and Products". This report is the most relevant report when creating the state of the art for the methodology due to the fact that the current study will essentially emulate and expand from. This study explored the cost benefit analysis of eAccessibility goods and services, and interviewed organisations to gather raw data, same as the current study. Most relevantly, this report has developed its own Business Case Tool which helps an organisation problem-solve over the issue of investing in web accessibility and 24 in-depth case studies from organisations throughout the EU that have already implemented web accessibility (Technosite, Tech412, et al. 2012).

### **Kanchi**

Kanchi is a private organisation that uses business and media leadership to create an inclusive world for people with disabilities (Kanchi, 2013). Kanchi published a study "The Business Case for Disability" (2011) where they had seven case studies around the four themes of what they consider to be the business case for disability. Unfortunately, their case studies were mostly tied around the issue of employment and thus outside the scope of the present research on ICT accessibility. Their findings and methodology are useful for the guidance of the current study.

The Kanchi study emphasizes that the business case for disability is centered around return on investment (ROI). All businesses have an ROI when they attempt to measure the financial return against the capital spent by the business. Access to markets, reputation management, and retention of staff are the key factors that increase the return on investment when investing on accessibility (Kanchi, 2011).

### **G3ICT**

The advocacy wing of the UN Global Alliance for ICT, called G3ICT, commissioned a white paper in 2012 titled “Web Accessibility for Better Business Results” which highlights the benefits of adhering to eAccessibility for a business, and includes two case studies on accessible eBanking in Australia and a case on accessible content management systems.

Although their methodology is not spelled out in their report, interviewing methods must have been used for their 2 case studies in order to extract quotes and qualitative data regarding eAccessibility. Like the previous Kanchi report studied, G3ICT concludes that accessibility is important for expanding markets, ensuring customer loyalty, and promoting a strong brand image (G3ICT, 2012). Expanding markets is the most important parallel of this report to the study in this paper, and will be analysed for benchmarking and reference use.

### **W3C**

The Web Accessibility Initiative of the World Wide Web Commission (W3C) has created a white paper in 2005 and updated recently in 2012 called “Developing a Web Accessibility Business Case for Your Organization: Overview”. The difference between this paper and the studies currently examined so far is the fact that the W3C paper is a guide for businesses to specifically infuse accessibility into their eStrategies. Their study is divided into four parts: Social, technical, financial and legal/policy factors as to why a business should invest in eAccessibility. It gives perspective as to why different businesses may want to emphasize accessibility for different

reasons, whether it be in the private or public sector, a non-profit organization, a school, etc.

The W3C report is different from the Kanchi, and G3ICT reports because it specifies ongoing costs regarding website maintenance, direct cost savings, decreasing costs, and more information that is spelled out similarly to the Technosite report. This is key to building a business case and for this reason, the results from the W3C study will be very beneficial for this study.

## **Methodology**

This study applies new empirical evidence to the theories behind business case methodology. The study used some of the pre-selected organisations provided by Kanchi, based in Dublin, and their previous collaboration with these organisations in the past. Due to this influence, most have experience to disability and accessibility related themes. With this help, and the dissemination of the questionnaire through online sources such as Survey Monkey, LinkedIn, Twitter, the Kanchi Network blog, etc., 12 participants responded to the study enquiry.

### **Central research questions**

The themes behind the questionnaire are similar to that of the Technosite's questionnaire, in that they illuminate the costs and benefits obtained by the organisation investing in eAccessibility.

The first section of the questionnaire is general background information of the organisation such as their location, their sector, and information about the person answering the questionnaire. The second section is specifically on the development of their website, such as how much it cost to create it to begin with, whom their target audience is, who created the website, etc. The third section highlights the accessibility of their website and involves questions such as if it was created in an accessible manner from the beginning or not, to what extent it is accessible, how the testing and certification of the accessibility is assessed, and specific questions on the cost of the accessibility of the site (especially if it was introduced after the

launch of the website). The final section of the questionnaire involves the benefits seen from using accessibility on the website; such as if there were more sales, views, efficiency gains from interactions, etc. generated from the accessibility compliance.

### **Explanations related to sampling**

According to Curtis et. al. (2000), samples are designed to make possible analytic generalisations (applied to wider theory on the basis of how selected cases with general constructs), but not statistical generalizations (applied to wider populations on the basis of representative statistical samples). Curtis argues that qualitative sampling can provide the opportunity to select and examine observations of generic processes (2000). The implications are that theory will drive the selection of these cases, and also that the careful examination of the cases may lead to elaboration or reformulation of theory. As Judith Okley explains, qualitative data analysis can refer to research using only a small sample of interviews, whether structured or unstructured (Bryman and Burgess, 1994).

The Kanchi network provided a list of organisations' contact information in order to ease the process of business sampling. Through assistance given via Kanchi, 40 companies were contacted, resulting in 8 interviews. Alternative methods were used to include more companies in the sample, as mentioned in previously, using LinkedIn, etc. These methods resulted in 4 more interviews. Therefore, the results presented in this report correspond to 12 interviews, total.

### **Methods of data collection**

When the organisation was selected by the researcher, it was invited to participate in answering the questionnaire by an email introducing the interviewer, detailing the purpose of the questionnaire, and having a sample questionnaire included in the email to provide insight to the extent of the questionnaire. Structured interviews, whether face to face or over the telephone, lasted in duration between 30 minutes to an hour long.

## **Limitations**

No matter how much preparation is put into a study, intentions and results always differ. From the beginning of the study, the number of participants to take part in the survey was originally imagined to be at least 20. However after investigating and contacting organisations for 4 months, the scope of the study had to be altered to 12 respondents. Reasons behind the lack of response can be examined can be seen as the following.

Firstly, the population of Ireland as of July 2013 is 4.8 million (CIA, 2013). The amount of eAccessibility practices is limited from the beginning by selecting a population of a small sized country.

Inviting public sector organisations into the study was also short-sighted. The reason to include them was to obtain a wider scope of organisations across different sectors. However, upon interviewing public sector organisations, the majority could not provide concrete data regarding the costs and benefits they experienced when making their websites accessible. If the website had to be accessible from the beginning for legislative purposes, the costs endured were not examined due to the mandatory nature of enforcing accessibility.

Another limitation includes the reflection of the low levels of policy and technology accessibility in Ireland as expressed through the Measuring eAccessibility in Europe (MeAC 2011) reports (Technosite, Tech412, et al., 2012). More information on this is found in the conclusion.

## **Results**

The purpose of this field research was to examine the costs and benefits linked to eAccessibility. The sample size is a result of the lack of response attained throughout the course of the study; therefore the study has no statistical significance but offers a significant approach to understand the business case. In this context of sample size, quantitative and qualitative analysis of the data obtained has been performed.

Five out of the twelve responding organisations are in the ICT sector, while one is a sporting goods vendor, one is in the financial and insurance sector, one is an administrative service provider, one is a public administration (government) organisation, one is from the agriculture sector, one is a consulting organisation and one handles matters of human resources. Three of these twelve interviewed organisations are multinational. One of the responding organisations comes from the public sector, while the remaining eleven were from the private sector.

When examining the level of accessibility knowledge that the respondent knew before starting his/her current job, and how much he/she knows currently, 8 responded that they knew very little of accessibility beforehand, and only one responded that they still know very little of accessibility. Out of the 11 who responded how important it is having an accessible website for their organisation, 9 respondents found it very important and important that their website be accessible. Nine of 11 respondents had web teams that were knowledgeable of web accessibility. Six out of 11 stated that web accessibility was an important hiring factor in order to be included in the web team; however that leaves 5 stating it is not.

The majority, 7 out of 12, of the responding organisations have between one and 499 pages in their website. Three respondents stated that the initial development of their website cost between EUR 1,000 and EUR 10,000 while another three respondents stated that the initial cost of the website was from EUR 10,000 to EUR 40,000. A majority of respondents, 6 out of 9, update their websites in-house. Four respondents said they have a partnership between their web team and a third party consulting team, and one responded that they fully outsource their website updating to a third party consulting team.

When asked to respond to the significant factors in website development in terms of high, medium, low and no priority, the majority of respondents replied with high and medium across the board of web development elements. The cost of external consultants was not deemed a high significance where two thirds of respondents responding low to none in significance. The cost of training personnel was also ranked low and "none"



as the majority of the respondents had autonomy in their own website development either developing totally in-house or through a partnership with another organisation and their own in-house team. Web accessibility audit cost was not a high priority for any organisation, the majority saying medium, low and no importance.

The next part of the questionnaire aims to see how the websites are developed, in order to capture a snapshot of the situation the organisations experience before implementing website accessibility. As the results show, most websites discussed in the study are large and information-based that have been in existence for an average of 4 years and have rather large audiences. The costs in developing the website were incurred by their own staff and in partnership with an outside organisation, where these outside organisations did not mention web accessibility. The need for accessibility was seen from within the organisation and deemed important.

The third part of the questionnaire illuminates how the websites incorporate accessibility, and extrapolates a before and after assessment of accessibility implementation from the second part of the questionnaire. As the results from this section show, the respondents are unaware of how the levels of internationally certified accessibility standards are adhered, showing that there is no understanding of the role of how international organisations ensure web accessibility. Throughout each of the interviews, it is evident that the majority of the respondents did not know the level of accessibility of their website, how to monitor changes in accessibility requirements and standards, and have not participated in the certification of their websites to accessible standards.

Out of 11 responses, the overwhelming majority, 8, said their website does not accommodate for disabilities other than visual impairment. Of these 11 organisations, only 2 use subtitles for their videos on their website. Out of 7 responses, only 2 who used a third party to help develop their website actually raised the issue of accessibility.

## Discussion

Overall the surveys and interviews conducted have shown some interesting points to take into consideration about the website accessibility situation in Ireland. Regarding the breakdown of organisations, it is important to note that public sector organisation websites in Ireland are mandated by law that they must be accessible to at least “Level Double-A Conformance to Web Content Accessibility Guidelines 1.0”, as described in the Disability Act of 2005 (NDA, 2005). This also means that private organisations, although not obliged by the law, seem very active on implementing accessibility in their websites. One of the outcomes of the survey is to identify the reasons why organisations choose to adhere to accessibility guidelines (and benefits of doing so) but if the organisation is legally obliged to be accessible, their responses to questions later on in the survey are quite limited, since they were mandated from the very beginning to be accessible.

During the current job position, many respondents learned about accessibility of websites during their employment which is a good sign of accessibility adherence. Although outside the scope of the questionnaire, some respondents did learn about accessibility through involvement within the Kanchi network, but some also learned from outside sources and learning modules.

Although only 11 respondents, 9 did say it was important to have an accessible website for their organisation. This suggests accessibility is overwhelmingly deemed important in the Irish market.

It is important to see the reasoning why the state of web accessibility is at the rate it is. Hiring staff knowledgeable of web accessibility is important to analyse because if people who know about accessibility are then replaced in the organisation by people who then do not understand the importance of accessibility, then the website in itself would then decrease in the accessibility level.

The majority of the purposes of the websites are to provide textual information to the public and the second most popular use of the site is to

provide an interactive interface with the public. From these findings there are three factors to point out:

- Websites that provide textual information to the public are deemed important to be accessible to an extent where people with disabilities can access information as every other individual.
- The lack of data representing transactional websites that involve eCommerce is an alarming factor that should be rectified. The rise of eCommerce accessibility is a field that requires more research.
- Textual based websites may be considered “easier” to render accessible, as the most difficult part of making an accessible website is the transactional part of it, followed by the interactive part (incorporating multimedia).

The majority of respondents update their websites in-house. This shows that the web teams in the organisation have more influence in what they wanted, as opposed to having externalities enforced by another private organization. Having the autonomy to develop their own website also indicates how the website can be perceived by its audience.

Seeing from the results of this study, organisations still need to understand the full scope of what achieving accessibility actually entails. However, out of 10 responses, only 3 have not incorporated plain or easy to read English in their website while the remaining 7 have, which is a promising sign.

It is important to understand what is not important to respondents in order for civil society to emphasise what other benefits can be achieved through web accessibility. Stakeholders in civil society can choose to expand their portfolio of perceived benefits of web accessibility and include what turns out to be not-so important to organisations, or they can conversely emphasize on what respondents already see as benefits, and do more studies on these benefits. From this study it is apparent that the top 3 benefits include more visitors, enhanced usability and attaining an improved social responsibility. The bottom three benefits include cost savings, efficiency gains and website retention. Understanding the reasoning behind these

results can illustrate where web developers are currently and where they potentially can be when it comes to their perception of web accessibility.

## Conclusions

With the following results in mind, it is important to see what these conclusions hold and also to see how they compare to the MeAC 2011 scores for Ireland to see if there are correlations. Although two years have passed since the results of the MeAC 2011 study, all websites interviewed were in existence in 2011 and fall under the scope of the study.

When looking at the results from the MeAC study in 2011, Ireland scored lower than the EU average for website technology indicators for accessibility, both for public-sector and general web content technology status and that Ireland falls below the EU average for all policy indicators. This information coincides with what the study has shown that there is still much for Ireland to do when it comes to the level of accessibility for its websites.

Overall, the results of this study show the following:

- Accessibility is known in private sector organisations, and deemed important but not enforced.
- Accessibility is a topic that is currently being learnt in the respondent's jobs.
- More than half the respondents said that their web team consisted of people who knew about web accessibility.
- The main purposes of the websites examined are indeed informational.
- Many incorporate plain and easy-to-read English, however do not incorporate the use of subtitles for videos, do not know the level of web accessibility (WCAG rating), and mostly see accessibility as an issue for people with visual impairment as opposed to other types of disabilities.
- None of respondents are able to quantify the costs and benefits attained when implementing accessibility of their websites.

Pinpointing costs to accessibility was a difficult task for the few who could quantify the actual costs of the websites.

- MeAC scores for Ireland give a bigger picture of the overall situation of accessibility in Ireland, and coincide with the results of this study.

One recommendation to improve the situation of web accessibility is to include more awareness of the benefits of certifying the website (a demonstration of corporate social responsibility, joining a network of other certified websites, etc.) Staying up to date with the updates of website accessibility levels is important to stay consistent with the latest technology updates that occur all the time. Self-monitoring and self-training can be solutions to resolve this issue.

Seeing these results, the following suggestions can be made:

- Pinpointing the exact issues is necessary, but from what this study shows, a bigger emphasis on accessibility training and awareness is necessary due to the lack of knowledge shown from the results of this study. Some of these issue include:
  - Accessibility beyond the visual realm: subtitled videos, easy to read English, the use of diagrams and other further measures in website accessibility need to be expanded.
  - Expanding accessibility awareness is essential. More people need to know about its potential benefits for business. Voluntary certification and celebrating the “champions” of web accessibility is necessary for awareness, and hence, should be emphasised.
- Understanding the costs the organisations put into accessibility, and monitoring their benefits experienced are key factors missing from this study.
- Belonging to a network as unique as Kanchi also helps organisations raise awareness regarding the importance of accessibility and also informs the public on disability-related matters.

This study concludes that in order to further examine the costs related to website accessibility, web accessibility must be taken into consideration from the very beginning of creating a web project, whether based in the public or private sector. The different elements adding to costs of enduring web accessibility need to be studied further and while there is room for monitoring web accessibility awareness campaigns and training, it will be interesting to see what further analysis can bring in the future.

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