

**Building a Methodological Framework for Establishing a
Socio-Economic Business Case for Inclusion:
The Curb Cut Effect of Accessibility Accommodations as a
Confounding Variable and a Criterion Variable**

by
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Abstract

Establishing a business case for accessibility based on field research has not been attempted so far. This report presents the outcomes, and lessons learned, from an exploratory study on the topic. The most significant finding is that the invariable curb-cut advantage accruing to businesses from accessibility accommodations might prove to be a *confounding variable* in assessing the economic benefits arising exclusively from the disability market. However, this also implies that there is more benefit to businesses through accessibility accommodations than intended, thus establishing the curb-cut effect as a *criterion variable* in future research. Ethical and social benefits, which are not easily monetizable, are also found to be important outcomes.

An *Accessibility Benefits-to-Cost (ABC) matrix* is proposed as a business decision support tool for Small & Medium Enterprises (SMEs). A *Methodological Framework* is developed for future researchers to expand this new academic niche. The findings suggest overall that *shifting the focus of disability from personal impairments of clients to a mismatch between client needs and design of the business offerings*

might help make a good business case by positioning accessibility accommodation as an absolute strategy for business enhancement.

Dedication

To Sam and Jutta! And, Christine! It is impossible to register with mere words the depth of my profound gratitude to y'all!

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1 Introduction

I want to have some substantiated credible numbers to be able to show a positive benefit of integrating accessibility into business practices in the areas of: increased revenue, increased market share, increased customer loyalty and enhanced public image for the business. The other thing I'd like to know are the barriers to integrating access into business operations so we can find acceptable and realistic solutions.

Christine Karcza, Owner, Christine Karcza Consulting I can do this!

The above quote illustrates the resistance to inclusion that Christine Karcza, an eminent accessibility consultant, faced from her business clients. As an advocate of accessibility, I have myself directly experienced corporate disparagement of accessibility. During a Data Marketing Conference that I attended in Toronto in October 2014, I was at the same lunch table as a very senior executive in charge of technology at one of the largest online travel sellers in Canada. In conversation, he told me with some vehemence that he had no interest at all in accessibility. He said that he had “more lower hanging fruit,” for the next two years. Moreover, he asserted that he did not have a budget to make his web sites accessible, insisting that accessibility was a “big waste of time and resources!”

At the same conference, during one of the Q and A sessions, the president of a company that designs digital dashboards for a major municipality very derisively said he wasn't, "... familiar with accessibility." And, perhaps even more contemptuously, "Talk to my tech guy." I was stunned that accessibility was so foreign to him - the president of a company that does work for an organization obligated to comply with the provisions of the Accessibility for Ontarians with Disability Act (AODA), 2005¹.

I wondered whether the AODA's lack of enforcement mechanisms was the reason for the business community not embracing its provisions. Seventy per cent of private businesses with 20 employees or more, totaling to around 36,000 across Ontario, failed to comply with AODA's reporting requirement². Building a strong business case for adopting accessibility that evidenced a positive return on investment³ (ROI), I thought, would be like *carrots* in a world

¹ www.aoda.ca.

² Lawyer David Lepofsky of the AODA Alliance ascertained through a freedom of information request in November 2013. http://www.thestar.com/news/queenspark/2013/11/18/ontario_businesses_ignore_provincial_accessibility_law.html.

³ Return on Investment (ROI) is a measure of profitability associated with an investment, expressed as a percentage.

where legislations such as the AODA and the Human Rights Code⁴ (HRC) were *sticks*. Thus, I felt personally motivated to undertake a study on business case for accessibility to work further upon my theory of carrots and sticks.

1.1 Economic Power of the Disability Market

What the businesspersons in the previous scenarios ignored is that people with disabilities comprise a very large minority in Canada. For example, according to Statistics Canada's rather stringent interpretation, there are circa 3.8 million people with disabilities in Canada.⁵ Richard Donovan, CEO of Fifth Quadrant Analytics and proponent of the concept of Return on Disability⁶, estimates in his Global Economics of Disability annual report (2014) a total of 1.3 billion people with disabilities control \$8 trillion in annual disposable income worldwide.⁷

⁴ <http://www.ohrc.on.ca/en/ontario-human-rights-code>.

⁵ <http://issuu.com/mria-arim/docs/vue-dec-2014>.

⁶ <http://returnondisability.com>.

⁷ Donovan, Rich. "The global economics of disability." Return on Disability. <http://www.rod-group.com/sites/default/files/2014%20Annual%20Report%20-%20The%20Global%20Economics%20of%20Disability.pdf>.

This illustrates the spending potential of this demographic. However, accessibility constraints currently disable this group from participating fully in markets of goods and services. In an attempt to mitigate this situation, the AODA makes it mandatory for businesses to provide accessibility accommodations. Accommodation, here, means: "... reactive response, such as a change to a policy, procedure, task or activity in response to the needs of an individual with a disability to enable equal opportunity to participate⁸."

In 2010, the Inclusive Design Institute (then called the Adaptive Technology Resource Centre) worked with the Martin Prosperity Institute and the Institute for Competitiveness and Prosperity to examine the potential economic impact of the AODA - whether it was successful in achieving the equal access goals in Ontario. The report suggests that, at a macroeconomic

⁸ Roberts, Barbara. "A lifeline for disability accommodation planning: how models of disability and human rights principles inform accommodation and accessibility planning." (2013).

level, improved accessibility resulting from the AODA could make "... Ontario's economy more prosperous."⁹ Stated more fulsomely:

Our study indicates that increasing the level of educational attainment and employment of PwD could lead to significant improvements in Ontario's GDP. Over time, improved access to employment and education could reduce the likelihood of poverty for a large number of Ontarians and improve the income of everyone in the province by a small but significant amount. These changes could also shift Ontario's economy toward employing a more educated workforce, potentially attracting more businesses, further increasing employment and making Ontario's economy more prosperous.

Releasing Constraints report, 2010.

One of the drawbacks of the report, however, is that it focuses almost exclusively on the societal, macro level and does not address the interests of individual businesses. In other words, it shows aggregate and societal economic gains but not individual enterprise gains. It is the businesses ought to make accessibility accommodations to enable customers with disabilities to better

⁹ Kemper, Alison, Kevin Stolarick, James B. Milway, and Jutta Treviranus. *Releasing constraints: Projecting the economic impacts of increased accessibility in Ontario*. Martin Prosperity Institute, (2010) p. 55.

avail of goods and services. And there is a problem in motivating them to do that.

1.2 Lack of Awareness in Businesses

Ontario's outgoing Lieutenant Governor, David Onley said in his last major speech that there is an "airtight business case" for hiring people with disabilities¹⁰. However, I did not hear about one solid, airtight business case for businesses providing accessibility accommodations that resulted in increased revenue(s) even though I have been to several conferences, seminars, workshops and presentations on accessibility. And, we certainly know that accessibility is still very much an uphill battle.

During fall 2012, I worked as a paid intern with the TD Bank in their Diversity department. I was curious if a cost-benefit analysis for accessibility had been attempted: however, discovered there was none. So I began to cast

¹⁰ <http://blackburnnews.com/bri-ontario/2014/09/15/onley-champions-accessibility-as-term-ends>.

about for evidence that investment in accessibility accommodations would result in increased corporate revenue in the belief that such a statistic could support requests to upper management for increasing support for Diversity. I continued to work on the idea on my own, and joined the [Master of Design program in Inclusive Design \(MDID\)](#) at OCAD University¹¹ in September 2013 with a plan to conduct research on the above. I obtained funding from the [Social Sciences and Humanities Research Council, Canada \(SSHRC\)](#)¹² for my project.

1.3 The Inclusive Research Design Challenge

When I entered the MDID program, I was obsessed with doing a quantitative study of 100 businesses and coming up with statistically valid claims to support my strong hypothesis that accessibility accommodation strategies would enhance corporate micro-economic ROI. However, the

¹¹ <http://www.ocadu.ca/academics/graduate-studies/inclusive-design.htm>.

¹² www.sshrc-crsh.gc.ca.

program helped me realize the importance of inclusiveness in research and the value of outliers. As a result, I decided that the very first research exercise would have to be exploratory and qualitative to learn about the domain so that I could effectively design methods for further research by myself and other researchers. I undertook this study, therefore, as a research design exercise, keeping future researchers in mind as the group that would directly benefit from the outcomes.

1.4 Approach and Methods

My initial temptation was to adopt a positivist approach to this study in an attempt to get “some substantiated credible numbers” that would help accessibility consultants like Christine Karcza sell their ideas better to businesses. However, some months into the Masters program, I came to realize that an interpretivist approach is equally good, at least for initial exploration. I

learned that at least part of scientific knowledge is socially constructed through ongoing discourse among researchers¹³.

I stumbled upon a method for the study when I literally stumbled on a ramp stationed in front of a retail shop in The Junction area of Toronto. The ramp was the result of an initiative called the StopGap¹⁴ movement that provides colourful ramps as in Figures 1 and 2 to businesses.



Figure 1: StopGap single-step ramp.

¹³ Angen, Maureen Jane. "Evaluating interpretive inquiry: Reviewing the validity debate and opening the dialogue." *Qualitative health research* 10, no. 3 (2000): 378-395.

¹⁴ StopGap (<http://stopgapblog.blogspot.com>) is a Toronto NGO founded by Luke Anderson that is involved with the construction and design of wooden ramps that allow people with mobility issues to enter buildings with from one to several steps.



Figure 2: StopGap double-step ramp.

I took it upon myself to conduct an ethnographic exploration of the effects of stationing a StopGap ramp at the front entrance of retail shops with one or two steps, and examination, where possible, of the financial impact such action has on the business. I also did expert interviews with businesspersons and accessibility experts. The simplicity of this method, I believed, would give me the opportunity to focus more on the outcomes rather than on the process of carrying out a complex research protocol. There is no previous study that examined the retail business sector in Ontario from a microeconomic return on investment (ROI) perspective. It is this niche that my planned study attempted to explore in greater detail, and contribute to.

1.5 Objectives and Outcomes

As mentioned earlier, given the competitive nature of retail business environments, I initially thought that my microeconomic research goal would be to establish the competitive advantage of adopting accessibility as a part of corporate marketing strategy. Accordingly, I first planned to establish that robust AODA compliance would lead to increased financial turnover through the acquisition of new customers and increased visits of repeat customers and that the adoption of accessibility accommodation strategies by retail businesses would enhance corporate ROI. A detailed review of literature revealed, however, that there has been no research so far on the microeconomic benefits from accessibility accommodations to businesses. Therefore, I approached the project tentatively by planning an exploratory study to test my previous assumptions. My objectives for this study were:

- (i) To conceive and carry out an exploratory study on the economic effects of accessibility accommodations on small & medium businesses;

- (ii) Based on the lessons learned, to design a methodological framework for further research on generating a business case for accessibility.

The outcomes of this study, detailed in Section 3, surpassed my expectations. Not only did I get to understand the domain well enough to conceive over twenty further related research ideas, but also I was able to create a meaningful framework out of them to guide further research. The beginnings of a decision support tool for SMEs and some significant observations about variables and their effects are further useful outcomes that emerged from this study.

1.6 Report Outline

The next section of this report substantiates the significance of this study through an analysis of key concepts connected with the Economics of Inclusion including a discussion of the business case for accessibility. This is followed by a description of the Fieldwork and Outcomes in Section 3, outlining the research process and results. Section 4 discusses significant findings from the study and

provides a methodological framework to guide future researchers. Section 5 concludes the report, highlighting the contributions and limitations of the study.

2 Economics of Inclusion

This section provides a brief overview of the essential concepts surrounding the economics of inclusion: disability, accessibility, legislation, accommodation, macroeconomics, microeconomics, and business case. The purpose is not to provide an exhaustive literature review but to provide definitions and relevant details to put in context discussions that follow in Sections 3 and 4.

2.1 Disability and Accessibility

The International Classification of Functioning, Disability and Health (ICF)¹⁵ is a framework where disability is comprised of difficulty in one or more of the following three functional areas:

- Impairments (problems with functions of the body)

¹⁵ <http://www.who.int/classifications/icf/en>.

- Activity Limitations (difficulties doing daily activities or tasks such as walking)
- Participation Restrictions (problems with involvement due to things like discrimination or transportation).

The Report emphasizes that the disability experience is unique to each person and results from interaction between health conditions, personal factors and environmental factors.

The table below¹⁶ outlines the prevalent disabilities in Canada classified as per the ICF by type and their percentage share in the total:

<p style="text-align: center;">Table 1 Prevalence of disability by type, Canada, 2012 Table summary</p> <p style="text-align: center;">This table displays the results of prevalence of disability by type. The information is grouped by disability type (appearing as row headers), % (appearing as column headers).</p>	
Disability type	%
Pain	9.7
Flexibility	7.6
Mobility	7.2

¹⁶ Published by authority of the Minister responsible for Statistics Canada, © 2013 Minister of Industry, December 2013, Catalogue no. 89-654-X, Ottawa. <http://www.statcan.gc.ca/pub/89-654-x/89-654-x2013002-eng.htm>

Mental/psychological	3.9
Dexterity	3.5
Hearing	3.2
Seeing	2.7
Memory	2.3
Learning	2.3
Developmental	0.6
Unknown	0.3

The Inclusive Design Research Centre (IDRC)¹⁷ reframes disability within the design context as a “mismatch between the needs of the individual and the design of the product, system or service”. Accessibility is therefore the “ability of the design or system to match the requirements of the individual”. To determine whether something is accessible we need to know the user, the context and the goal.

Accessibility is defined in different ways. In the words of past lieutenant-governor David Onley: “Accessibility is more than the wheelchair curb cuts,

¹⁷ <http://idrc.ocadu.ca/index.php/resources/idrc-online/library-of-papers/443-whatisinclusivedesign>.

parking spots, automatic doors and the ubiquitous wheelchair symbol.

Accessibility is that which enables people to achieve their full potential.”¹⁸

Accessibility is ensured through provision of accommodations or arrangements aimed at mitigating the constraints resulting from disabilities. Providing necessary accommodations to customers with accessibility constraints is a way of complying with legislative mandates. The Accessibility Constraint Matrix for Businesses’ and Their Customer/Clients and Employees, given in Table 2, provides details about representative approaches to accommodate customers/clients and employees with disability-related constraints.

Constraints	Customers/clients	Employees
Pain	Comfortable chairs ¹⁹ Accessible washrooms ²⁰	Providing therapy ²¹

¹⁸ <http://globalnews.ca/news/1575934/david-onley-champions-accessibility-as-term-ends> (September 22, 2014).

¹⁹ Haynes, Scott, and Karen Williams. "Impact of seating posture on user comfort and typing performance for people with chronic low back pain." *International Journal of Industrial Ergonomics* 38, no. 1 (2008): 35-46.

²⁰ Ramage-Morin, Pamela L. "Chronic pain in Canadian seniors." *HEALTH REPORTS-STATISTICS CANADA* 19, no. 1 (2008): 37.

²¹ Vowles, Kevin E., and Lance M. McCracken. "Acceptance and values-based action in chronic pain: a study of treatment effectiveness and process." *Journal of consulting and clinical psychology* 76, no. 3 (2008): 397.

Mobility	Make customer space physically accessible with ramps, elevators ^{22,23,24}	making workplace facilities accessible; restructuring the work changing work locations.
Mental/ psychological	providing support services or qualified assistants ²⁵	modifying work schedules retraining or reassigning employees.
Dexterity	acquiring or modifying equipment, software or devices ²⁶	acquiring or modifying equipment, software or devices
Hearing	providing support services or qualified assistants ²⁷	providing support services or qualified assistants
Seeing	providing support services or qualified assistants ²⁸	providing support services or qualified assistants
Memory	providing support services or qualified assistants ²⁹	providing support services or qualified assistants
Learning	providing support services or qualified assistants ³⁰	providing support services or qualified assistants
Developmental	providing support services or qualified assistants ³¹	providing support services or qualified assistants

At some level, legislation becomes necessary to ensure that people with disabilities are provided with necessary accommodations. Some of those are presented next.

²² http://www.ohrc.on.ca/en/inclusive-design-and-duty-accommodate-fact-sheet#_edn2

²³ <http://novascotia.ca/psc/pdf/employeeCentre/diverseWorkforce/quickTips/accommodation.pdf>

²⁴ <http://on.cme-mec.ca/download.php?file=h6z1z1ea.pdf>

²⁵ Ibid

²⁶ Ibid

²⁷ Ibid

²⁸ Ibid

²⁹ Ibid

³⁰ Ibid

³¹ Ibid

2.2 Legislation and Accommodations

The Ontario Human Rights Code (HRC)³², 1962 and the Accessibility for Ontarians with Disabilities Act³³, 2005 are two legislative pillars supporting accessibility in the province. Of these, the HRC sets up the Ontario Human Rights System, while the AODA sets up standards to implement to achieve an accessible Ontario by the year 2025.

The HRC is comprised of the Ontario Human Rights Commission, the Ontario Human Rights Legal Support Centre, and the Ontario Human Rights Tribunal. The HRC is a provincial Law mandated to ensure equal rights and opportunities to all; to prevent discrimination & harassment; and to stress the duty to accommodate. Being a provincial law, the HRC is not applicable to Federal Government offices, banks, airlines, etc., which are covered by the Canadian Human Rights Act, 1977. Both HRC and AODA have the same

³² <http://www.ohrc.on.ca/en/ontario-human-rights-code>.

³³ http://www.mcsc.gov.on.ca/en/mcsc/programs/accessibility/understanding_accessibility/aoda.aspx.

definition of disability, including past, present and perceived conditions, visible and non-visible disabilities, both permanent and temporary.

The AODA has issued Customer Service Regulation (CSR) and the Integrated Accessibility Standards Regulation (IASR). The CSR stresses ensuring dignity, independence, integration & equal opportunity for all. The IASR includes four standards: Information & Communications; Employment; Transportation; and Design of Public Space. The AODA standards apply to all organizations, regardless of size or sector, with substantial monetary penalties imposed for non-compliance. Every organization is expected to mandatorily provide training to its employees on the CSR, IASR and the Human Rights Code.

With respect to accommodation as a public movement, the StopGap initiative of Luke Anderson is quite significant. Luke Anderson graduated from the University of Waterloo with an engineering degree in 2001. In 2002, after a biking accident in B.C. where he attempted to jump his bike over a huge 25-

foot gap, he broke his back in the ensuing accident.³⁴ In 2006 Anderson was hired to work at an engineering firm whose office building was inaccessible. To enter and exit his work place, a huge metal ramp had to be dragged out.³⁵ After five years of this, in 2011, Anderson conceived of the idea for portable ramps and founded StopGap.³⁶ Since then, these ramps have become very popular in Toronto. Figure 3 shows Anderson and some of his StopGap crew.

³⁴ <http://www.rickhansen.com/StopGap>.

³⁵ http://www.thestar.com/news/gta/2014/11/30/luke_andersons_quest_for_a_barrierfree_city.html.

³⁶ <http://www.newmobility.com/2014/03/luke-anderson-stopgap-ramps>.



Figure 3: Luke Anderson and his StopGap ramp crew.

In the Trailblazers' (UK) January 2014 publication, Short-changed: the Trailblazers' High Streets Report³⁷, one of the 100 young disabled people interviewed remarked, "I am often frustrated when one small step can stop me

³⁷ http://www.mdctrailblazers.org/assets/0000/9720/Trailblazers_highstreets_Shortchanged_WEB.pdf.

going into an establishment. A portable ramp doesn't cost much. If there is no access, I just go elsewhere as I don't think they deserve my hard earned-cash if they can't be bothered to invest in an accessible ramp or a piece of wood!"

A ramp, simple as it is, thus stands out as an immediate, tangible example of accessibility accommodation, thereby suggesting itself as the best case to adopt for this study.

2.3 Macro and Micro Economics of Inclusion

Macroeconomic means the big picture, whole economies, and world economics. Microeconomic analysis tends to focus on individual companies, and organizations. There is substantial macroeconomic information in support of the business case for accessibility; however, a lack of microeconomic. Here are some macroeconomic sources of information:

On his Fifth Quadrant Analytics website³⁸, Rich Donovan argues for the, “convergence of disability and corporate profitability.” Rich Donovan is one of the early progenitors of the business case for accessibility. He is a highly successful and influential Canadian accessibility activist previously headquartered in New York City on Wall Street and currently back in Toronto. His pioneering accessibility consulting company has numerous Fortune 500 and FP 100 companies on its roster. He writes, speaks and broadcasts extensively on the business case. Donovan also notes on his website that, consumers that care about the disability market are increasingly directing their loyalty, and their consumer spend, to companies that demonstrate action inclusive of people with disabilities—as employees and as customers.

In 2014, the following headline circulated through the Internet, ‘Gartner Says Companies Should Deploy Technologies to Address IT Accessibility.’ One of the authors of the report³⁹, a Mr. Johnson, wrote that: “By 2050, 30

³⁸ <http://returnondisability.com>.

³⁹<http://www.gartner.com/newsroom/id/2638315>.

percent of the population of 64 countries will be more than 60 years old, an age where a greater percentage of people have disabilities. As the numbers of people with disabilities increase, so does the market opportunity.”

The “Releasing Constraints: Projecting the Economic Impacts of Increased Accessibility in Ontario” report, written by Jutta Treviranus and a team from Rotman Business School, is brilliantly well thought out and written: “focused on the likely economic impact.”⁴⁰ The challenge of the study, as the title suggests, is that it is a projection and, as well, does not have current data. There is no direct evidence that accessibility augments corporate bottom lines. Nonetheless, the report is a great source of data and interpretation.

Analyzing the macroeconomic approach, it is assumed that many people are equivalent to revenue. This does not necessarily follow. With respect to Donovan and Gartner, for example, there is no evidence that market potential

⁴⁰ Kemper, Alison, Kevin Stolarick, James B. Milway, and Jutta Treviranus. *Releasing constraints: Projecting the economic impacts of increased accessibility in Ontario*. Martin Prosperity Institute, 2010.

size translates to revenues/profits and ultimately improved ROI especially for individual enterprises. Now for a look at the microeconomic scenario.

With his profound interest in the economics of markets concerning people with disabilities, Donovan has a microeconomic contribution. He publishes a Return on Disability Index that correlates stock market performance with the degree of corporate adherence to accessibility standards. In other words, if a company has good accessibility policies and adheres to them their stocks go up. Donovan has surveyed both Wall Street and the TSX.

Quoting from Donovan's website:

Fifth Quadrant Analytics' publishes a Return on Disability Index for the U.S. and Canadian markets. These equity indices recognize public companies that are outperforming in the disability market. Updated and published daily on the Bloomberg terminal, the indices give investors a simple way to identify Environmental, Social and corporate Governance (ESG) investments that have a higher probability of creating shareholder value over time. We have found that companies that perform well in disability are highly responsive to their customers, and thus outperform peers in revenue growth. Disability is an inspiration for lean process, breakthrough innovation and a new source of diverse talent –

driving productivity. Our research shows that companies that score well on RoD consistently grow shareholder value.

Donovan's index demonstrates relative movement of stock prices; however, not how particular companies benefit from accessibility. In other words, a correlation between the movements of stock prices for companies that score high on Donovan's accessibility rating system does not establish a causal relationship between accessibility and corporate profits. Simply put, correlation is not the same thing as causation. Just because it appears to be so doesn't mean that it is.

Diversity Inc. did a similar index until 2008 when the stock market crashed. Obviously all they were measuring was a general rise in the market and not the benefits of accessibility. When the numbers tanked, they gave up.

Notwithstanding this caveat, Donovan's Return on Disability Index might be used to help reinforce a business case; however, the thing to remember is that it is not entirely conclusive. Therefore, it could be used as an

indicator albeit as part of a persuasive evidence packet but without depending solely on it.

Another microeconomic source is the Legal & General, (L ‘n G), online case study written by Mike Davies. L ‘n G, a UK insurance company, created a new web design with accessibility as a prime requirement. Results, according to Davies: increased traffic by 40%, doubled conversion rates, and doubled online revenue.

Karl L. Groves, however, eviscerated the L ‘n G case study. “In my reading of the Legal & General case study, their situation was a full redesign with new features. The ROI comes from better SEO, [that is search engine optimization], and usability and in my opinion, using it as an accessibility case study is misleading.”

But, according to Caroline Fawcett of L&G, the accessibility revamp:

“[Paid] for itself in 5 months. The new site has almost doubled the number of visitors seeking quotes and buying Legal & General financial

products online. It has cut maintenance costs by two thirds and increased the amount of natural search traffic we get by half as much again.

Further, when the presentation was sent around to the W3C community for review Karl L. Groves, Director, Training, Deque Systems, noted that Davies' case study:

“... makes an implicit claim that accessibility improvements will net huge returns. I just don't think making such claims are realistic and may be harmful to the presentation's credibility.”

Continuing, Grove pronounces:

“In my opinion & experience, ROI comes from two places: Increase in revenue and decrease in costs. When we talk about increasing revenue and decreasing costs, we should be discussing *only* those things that can be directly attributed to accessible development either as a direct effect of accessibility or those things which occur as a secondary effect attributed to accessibility.”

I don't think the Legal & General example fits either of those. Therefore, while this report at first seemed to show great promise, upon further thought revealed itself to be less useful than initially hoped. The improved business results were a result of factors other than accessibility measures.

Notwithstanding Karl's quibbles, Legal & General does provide data that might be referenced in anyone's own business case but with the caveats that Karl mentioned. That is to say that the Legal & General information is equivocal.

In summary, there is no direct evidence that just because there might be many people with disabilities that that necessarily translates into money and improved ROIs. This is the problem this project is set out to examine from closer quarters. While macroeconomic data points a finger towards the possibility of profits from the market comprising people with disabilities, that is all this data does: indicate possible directions. There is a need for considering the microeconomic scenario for a business case.

2.4 A Business Case for Inclusion

There is a semantic distinction between business case in the “business” sense and business case for accessibility. In the business school world, the phrase, “business case,” usually refers to an analysis of a particular corporate entity whereas in the realm of accessibility, “business case,” covers a whole range of arguments that demonstrate accessibility being a good strategy for organizations to pursue.

The business case, at its core, is a cost benefit analysis of accessibility. If you spend x dollars on accessibility how much money will that earn or save for you on items such as employee retention, customer acquisition and customer loyalty? In other words, is there any evidence that accessibility programs augment corporate ROI? Keeping in mind that profits can be generated both by decreasing expenses and / or by increasing revenue the former means of generating profits is described by the recent Rethinking DisAbility in the

Private Sector – Report from the Panel on Labour Market Opportunities for
Persons with Disabilities⁴¹:

Walgreens' management analyzed a total of 31 distinct locations in three distribution centers, including the one in Anderson, South Carolina where 40 percent of employees have disabilities. In 18 locations, the difference in productivity rates was statistically insignificant; in three locations, employees without a disability were more productive; and in 10 locations, employees with a disability were more productive. Walgreens also cited lower turnover rates among its employees with disabilities.¹⁰

Tim Hortons franchisee Megleen Inc., which operates six stores in Toronto and includes people with disabilities in all aspects of the business, experiences employee turnover of 35 percent compared to the 75 percent industry average. In 2011, absenteeism of Megleen's 35 employees with disabilities (17 percent of the workforce) was zero.¹¹ In one particular case, the hiring of an employee with a disability led to a 20 percent productivity increase.

⁴¹ http://www.esdc.gc.ca/eng/disability/consultations/rethinking_disabilities.shtml.

At one remove, there are studies that deal with the economics of inclusion^{42, 43, 44}. There is, however, no study that explores empirically based models of corporate ROI with respect to accessibility and inclusion⁴⁵. Therefore, there is a need for this study to rely on concepts acquired from several fields such as Mathematical Economics, [applied econometrics]; Finance, [quantitative behavioral finance]; and Business and Economics, [disability marketing strategy].

Econometrics is concerned with the application of empirical economic data analysis using statistics and mathematics⁴⁶. Applied Econometrics provides tools and ideas that allow researchers to design studies that collect

⁴² Hervé Bernard , Anne Leymat, Thierry Kowalczyk, Ton de Klerk, Wanda Muñoz, Marie Cécile du Mesnil and Sylvain Bord. (2006). *Good practices for Economic Inclusion of People with Disabilities*. Handicap International. <http://www.handicap-international.org/uploads/media/goodpractices - GB - 2coul.pdf>. Downloaded on Nov 2, 2013.

⁴³ Goldstein, J. (2010). *A New Financial Access Frontier - People with Disabilities*. Downloaded from <http://centerforfinancialinclusionblog.files.wordpress.com/2011/05/a-new-financial-access-frontier-updated-april-2011-final.pdf> on Nov 2, 2013.

⁴⁴ Valenti, Michael A., and Olivier G. Giovannoni. "The Economics of Inclusion: Building an Argument for a Shared Society." *Lery Economics Institute of Bard College Working Paper 755* (2013).

⁴⁵ K. Silk, Rotman, personal communication, Thursday October 17, 2013.

⁴⁶ Samuelson, Paul A., Tjalling C. Koopmans, and J. RICHARD N. Stone. "Report of the evaluative committee for Econometrica." (1954): 141-146.

empirical data, and analyze said without creating an experiment that controls for all variables and biases. Linear regressions are frequently used.

Ideas regarding Quantitative Behavioral Finance, (QBF), contrast markedly with the efficient market hypothesis in that the latter posits that markets behave rationally insofar as the market actors are believed to be solely concerned with maximizing profits whereas QBF entertains the notion that markets behave irrationally. QBF is interested in empirically testing conventional economic wisdom^{47,48}.

Disability marketing strategy acknowledges the power of the disabled dollar and researches ways of profiting from these newly discovered customers. This approach to marketing understands the disabled consumer base as a new one with numerous opportunities to take advantage of⁴⁹.

⁴⁷ Caginalp, Gunduz, Kevin McCabe, and David Porter. "The foundations of experimental economics and applications to behavioral finance: the contributions of Nobel Laureate Vernon Smith." *The Journal of Behavioral Finance* 4, no. 1 (2003): 3-6.

⁴⁸ Smith, Vernon L., and Francesco Parisi. "The Law and Economics of Irrational Behavior: An Introduction." *George Mason Law & Economics Research Paper* 4, no. 16 (2005).

⁴⁹ Riley, Charles A. *Disability and business: Best practices and strategies for inclusion*. UPNE, 2006.

The World Wide Web Consortium, (W3C), has published a business case template ‘Financial Factors in Developing a Web Accessibility Business Case for Your Organization’ on their website⁵⁰. It, “... describes the social, technical, financial, and legal and policy factors relevant to developing a customized business case for Web accessibility for a specific organization.” It is a good template to use to establish categories, such as:

1. Increasing Website Use
2. Increasing potential use by more people
3. Expanding potential market share
4. Increasing usability
5. Increasing positive image
6. Direct Cost Savings
7. Decreasing cost of alternative format materials
8. Decreasing cost of translating

⁵⁰ <http://www.w3.org/WAI/bcase/fin>.

9. Decreasing personnel costs

10. Cost Considerations

We will return briefly to the quote by Christine Karcza, which, in a way, epitomizes the needs of an accessibility consultant from this research:

“I want to have some substantiated credible numbers to be able to show a positive benefit of integrating accessibility into business practices in the areas of: increased revenue, increased market share, increased customer loyalty and enhanced public image for the business. The other thing I’d like to know are the barriers to integrating access into business operations so we can find acceptable and realistic solutions.”

Christine Karcza, Owner, Christine Karcza Consulting I can do this!

Considering the fact that these are the professionals that “sell” the idea of making accessibility accommodations to businesses, it would be a good exercise to see the match between these requirements and the factors from W3C listed above. The four major requirements and the matching W3C categories are listed below:

1. Increased revenue: *(financial)*
 - a. Direct Cost Savings
 - b. Decreasing cost of alternative format materials
 - c. Decreasing cost of translating
 - d. Decreasing personnel costs

- e. Cost Considerations
- 2. Increased market share: (*financial*)
 - a. Expanding potential market share
- 3. Increased customer loyalty: (*social*)
 - a. Increasing Website Use
 - b. Increasing potential use by more people
- 4. Increased public image: (*social*)
 - a. Increasing usability
 - b. Increasing positive image

We can see here a mix of *financial* and *social* factors, as identified by W3C and an accessibility consultant independently. This study also discovered that these two factors play a part in the conceptualization of the benefits of accessibility by businesses. The next section describes the study and its outcomes.

3 Fieldwork and Outcomes

3.1 Ethical Research Design and Process

My research studied the impact of a ramp on retail businesses. I worked with small and medium businesses in a single Business Improvement Area (BIA) in Toronto that had one or two steps at their front entrance and required a ramp to make their premises accessible. One reason for choosing SMEs for the initial study was in the hope that very small businesses being more sensitive to fluctuations in revenue/customer base might, therefore, produce more easily observable results. Owners or managers of eleven businesses were recruited as participants. Informed consent was obtained using a letter and form as in [Appendix A](#).

I conducted ethnographic fieldwork using naturalistic observation in the retail outlets/shops of businesses that consented to participate in the study, taking due care to not disturb the dynamic of the shop situation being observed. More in the form of informal conversations, I conducted semi-

structured interviews with business owners and other stakeholders on the acquisition of new customers with mobility issues (wheelchairs users, mothers with strollers, etc.) as well as repeat visits of said customers, before and after the installation of a ramp, as a within-subject research design. In addition, I also attempted a between-subject study of comparable businesses with and without ramps. The intention was to gather pre- and post- financial data of relevance to research the influence of ramps on revenue. I spoke with ten retail customers – both persons with a disability and without – for whom the ramp enabled access to the shop, after obtaining their informed consent using forms as in Appendix A. Protocol as described in [Appendix B](#) was used for the interviews.

I interviewed ten experts from varied domains such as accessibility consulting, real estate management, academia and social entrepreneurship to gather their views on the topic. The interviews were conducted at various points in the study, interspersed with the ethnography.

This study included as participants persons using a wheelchair - a population not frequently included in research - to explore their shopping

habits and to find out how they feel about the presence / absence of built arrangements to facilitate their independent negotiation of shops in the city, and specifically if the mushrooming StopGap ramps are making a difference to their shopping convenience. Their phenomenological experiences were elicited in the context of shops that provide a ramp compared to those that do not.

The broad research design thus includes data collection through ethnographic fieldwork and semi-structured interviews with business owners, customers and other stakeholders as well as subject matter experts. All qualitative data in the form of observational diary notes and interview transcripts were analyzed using content analysis techniques⁵¹. There was not enough quantitative data to warrant statistical analysis.

⁵¹ Creswell, John W. *Qualitative inquiry and research design: Choosing among five approaches*. Sage, 2012.

3.2 What the Data Spoke

3.2.1 *The Curb-cut Effect*

It has been proven repeatedly that the benefits of inclusive design reach beyond the intended users, like the curb cuts⁵² on sidewalks that were designed for wheelchair users being also used by persons on bicycles and parents with baby strollers⁵³. The study did not provide adequate financial information to complete a systematic cost-benefit analysis around installing ramps to accommodate customers using wheelchairs. However, there was ample evidence to show the possibility of enhanced revenue through customers other than those on wheelchairs that used the ramp, such as parents with strollers, rollerbladers, skareboarders, persons with push carts, and such.

- “Making sure you get every possible customer you can.” (SME01)

⁵² <http://www.accessiblesociety.org/topics/technology/electcurbcut.htm>.

⁵³ www.idrc.ocadu.ca.

- “Stroller people plus or minus 25% of business” (SME03)
- “The only people who use it [Ramp] are people with baby strollers. Some men, mostly women.” (SME03)
- “Lots of strollers. Mostly for strollers.” “At lunch time, you’re going to get 30%” [with strollers].[With canes?] 5%”. (SME07)
- “People bring in wheeled baskets for their laundry” [The step into the building] “wasn’t huge, but they had to yank the cart up. Now they don’t.” “People seem to like doing laundry there” (SME10)
- “I use it for deliveries” (SME03)
- “Kids on scooters love using the ramp for their scooters.” (SME08)
- “Skate boarders and people biking” “Other games with little kids - like street furniture. [Ramps] have many uses” (SME01)

- “Dads can now bring in kids in their wagons” “Something you might not have predicted.” (SME06)

3.2.2 *Ethical Branding*

Social value plays a role in the sustainability of economic advantages generated by businesses through investments in accessibility. The main story here is about branding.

- “The neighborhood is concerned with social justice” (SME02)
- Common perceived benefit of StopGap was: “fitting in with the neighbourhood.” (SME04)
- "We're part of the community. We support 17 schools for fund raising. The expectation was for us to get involved. They [customers] would think it really odd if we didn't have one [ramp]." (SME11)
- “Everyone was thankful when they put the ramps in. All the business; it’s just a show.” (SME03)

Some remarks reflected the notion that StopGap might be part of a branding exercise by the BIA. Several of StopGap retailers got involved with StopGap out of a desire to cooperate with the BIA.

- "Me saying yes made me feel part of the team." (SME04).
- "The people feel that supporting local business is part of accessibility." (SME06)
- "At Cherry Bomb [79 Roncesvalles a café where Cassandra worked] a lot of missed opportunity" [because they did not have a ramp]. [Not having a ramp] "comes off as an asshole thing to do" "They don't really care." "Ramp sets tone for accessibility for place." (SME07)

3.2.3 *Perceived Social value*

For many, the ramp was not about money.

- : "... because I have handicapped issues myself." (SME01)
- "This was a matter of human rights." (SME04)

- “The beauty of StopGap should not be measured by sales“ (SME07)
- “The idea of money did not enter my head.” (SME06)
- “It is the law to be wheelchair accessible” (SME10)

3.3 Requirements for Designing Further Research

My study shows that not all of the costs and benefits associated with accessibility accommodations (installing ramps) are quantifiable. Rather, some are difficult to quantify. Upon close observation of the SMEs and their customers, I found the following points to be worth noting in designing future research:

1. There is, invariably, a need for well-planned quantitative studies because the consultants and large businesses are still on the lookout for “substantive, credible, numbers.”
2. Social effects of adopting accessibility require a deeper, multi-disciplinary study.

3. There is a need for developing tools for businesses for Cost-Benefit Analysis, assessment of Social Return on Investment and calculation of Return on Investment in this area.

The next section discusses some of the outcomes in greater detail and offers three tools to businesses / future researchers.

4 Designing a Methodological Framework

Several study outcomes were presented in the previous section. Of them, two, namely, the curb-cut effect and ethical branding, are discussed further in this section with regard to their implications for future research. Thereafter, building on the outcomes, three deliverables are offered:

1. A decision support tool for SMEs in the form of Accessibility Benefits-to-Cost (ABC) matrix that includes both economic and social factors,
2. A list of twenty one possible future research ideas, and
3. A methodological framework for positioning any research in this domain within a grid of relevant parameters.

4.1 The Curb-cut Effect of Return on Accessibility Investment (RoAI)

One big observation during the study was that accommodations arranged to help persons with disabilities was invariably also used by others who have similar constraints for reasons other than personal impairments. While this concept of “curb-cut effect” is fairly popular in the field of Inclusive Design and related areas, its effect on computation of return on accessibility

investments (RoAI) involving persons with disabilities has not been discussed so far. The point pertinent to design of future research is that it might be rather difficult, or even impossible, to separate out the change in revenue occurring solely on account of customers with disabilities because there might as well be several others, constrained so far by factors other than disability, that might be using the new enhancement for the first time. The curb-cut effect might, therefore, have to be reckoned as a confounding variable⁵⁴ while designing experimental research.

At the same time, however, since more access might only lead to more business, the curb-cut effect would, at best, only result in enhanced revenue. For that reason, therefore, it would have to be included in research as a criterion variable⁵⁵ in non-experimental studies.

⁵⁴ A confounding variable is one that obscures the effect of another variable.

http://www.indiana.edu/~educy520/sec5982/week_2/variable_types.pdf

⁵⁵ A criterion variable denotes a presumed effect in a non-experimental study (comparable with a dependent variable in an experimental study.)

http://www.indiana.edu/~educy520/sec5982/week_2/variable_types.pdf

4.2 Ethical branding and Social Return on Accessibility Investment (SRoAI)

In conventional brand models, the value of brand equity is defined and measured by its economic performance in financial terms. Brand value, however, needs to be assessed by both financial and ethical measures. An ethical brand enhances the firm's reputation; such a reputation reinforces the brand in turn. Several remarks by participant businesses indicated that they viewed accessibility accommodations (ramps in this case) as something that added to their ethical branding and resulting social value.

Social return on investment (SRoI) and ethical branding, thus, emerge as important areas for future research. The inclusion of social value of embracing accessibility as a component of business cases and other business value computations becomes important. In this context, an attempt is made in section 4.3 to design a matrix that businesses could use to compute benefit-to-cost of investments in accessibility.

4.3 An Accessibility Benefits-to-Cost (ABC) Matrix

In my study with SMEs regarding costs and benefits of installing ramps, the ultimate focus was on discovering how to calculate financial return on investment for accessibility accommodations. But the results showed that financial returns are not easily quantifiable or measurable and at the same time there are significant social impacts. This prompted me to develop an Accessibility Benefits-to-Cost (ABC) matrix as in Figure 4 by expanding upon the integrated cost-benefit model of Ziller and Phibbs⁵⁶ by revising it to customers with and without disabilities and introducing neighbourhood/society as a third factor. This ABC matrix is intended to serve as a Decision Support Tool (DST) for SMEs in making accessibility investment decisions. This tool needs further research to be refined.

⁵⁶ Ziller, Alison, and Peter Phibbs. "Integrating social impacts into cost-benefit analysis: a participative method: case study: the NSW area assistance scheme." *Impact Assessment and Project Appraisal* 21, no. 2 (2003): 141-146.

	Non-financial benefits	Financial benefits	Non-financial costs	Financial costs
Costs and benefits to customers with disabilities				
Costs and benefits to all customers				
Costs and benefits to neighbourhood / society				

Figure 4: Accessibility Benefits-to-Cost (ABC) matrix

This matrix gives social impacts equal standing with other impact variables and unquantified data equal standing with quantified data. The matrix itself does not indicate where relative importance should lie. There is nothing to say that one cell in the matrix is more important than any other and no formula is applied in comparing them. However, there is also no such thing in this matrix as an intangible.

What this matrix achieves is to place nonfinancial costs and benefits, the ones that cannot be quantified easily, on par with financial costs and benefits (the ones we can, or could if necessary, quantify). Many, but not all, social costs and benefits go into the non-financial columns and many, but not all, economic costs and benefits go in the financial columns. The matrix requires people to think about what happens to customers with disabilities as well as to all customers and to society as a whole.

SMEs can fill this matrix individually. This matrix could be taken to a number of SMEs for filling it up by soliciting their knowledge and views about the issues. The matrix allows competing views to be presented side-by-side. The matrix is a neutral receptacle. As the cells of the matrix are completed, the relative weight of costs and benefits would become apparent.

4.4 Suggested Methods for Further Research

Based on the requirements that stemmed from this study, several research ideas have been put together, as listed below, for future researchers to carry out for enhancing the field:

1. Compare revenues of similar businesses with and without a ramp/door button or other accessibility equipment.
2. Study the economic effect of implementation of the AODA Customer Service Regulation (CSR) course - in-person and online
3. Compare profits of big accessibility embracers with profits of non big embracers to test the effect of degree of enthusiasm on the ROI.
4. Survey disabled customers after accessibility accommodation to gauge customer loyalty and resulting customer retention.
5. Analyze cost factors of frequency of employee turnover to study effect of disability on employee retention.
6. Survey comptrollers of companies to analyze whether corporate accessibility programmes make money by saving money.
7. Analyze businesses that profit from consulting on accessibility regarding software, or furniture makers, or accessibility device maker.
8. Compare performance of different business sectors: Financial, Retail, Restaurants, and such.

9. Compare books of businesses pre- and post- accessibility accommodation.
10. Examine the use of accessibility accommodations as a social branding strategy for Business Improvement Areas (BIAs) to enhance overall business revenue for the BIA.
11. Study the effect of ramps on Ethical Consumerism Branding through spot interviews of circa 500 passersby on their take on the ramps using one to three short questions.
12. Conduct comparative research between countries by studying the impact of ramps on retail businesses in London (U.K.) and Dublin (Ireland) with that in Toronto (Canada).
13. Examine whether a media-centric awareness-raising effort about the benefits of accessibility generates socio-economic value for all the stakeholders.
14. Examine the effect of an online and offline campaign by those who benefit directly from greater accessibility in informing one another and retail business associations about the costs and benefits of greater accessibility for businesses.
15. Design and develop a user-populated app with accessibility scores for businesses.

16. Build economic and business models to gain an understanding of the benefits of addressing the consumer needs of individuals who are currently at the margins of standard markets.
17. Analyze market trends that have an impact on consumers with disabilities.
18. Design a Decision Support Tool (DST) for Small Medium Enterprises (SME) to assist with AODA Implementation.
19. Conduct research on public policy development around AODA Implementation.
20. Examine public policy developments pertaining to people with disabilities in Canada that influence compliance of businesses with social justice and human rights legislations.
21. Conduct A/B Testing comparing hypothetical sales on two identical websites selling identical widgets, one of which is accessible and the other is not.

4.5 A Methodological Framework

Research studies visualized based on the requirements indicated by this study fall within a two-dimensional grid governed by two continuums – Financial \leftrightarrow Social and Experimental \leftrightarrow Nonexperimental. The first continuum defines the research focus and the second continuum defines the

method. Within this grid, as illustrated in Figure 5, any type of research in this area could be positioned to get a sense of the polarity with respect to focus and method. This should provide some guidance to the researcher designing the study about the optimal design that could be adopted for the study.

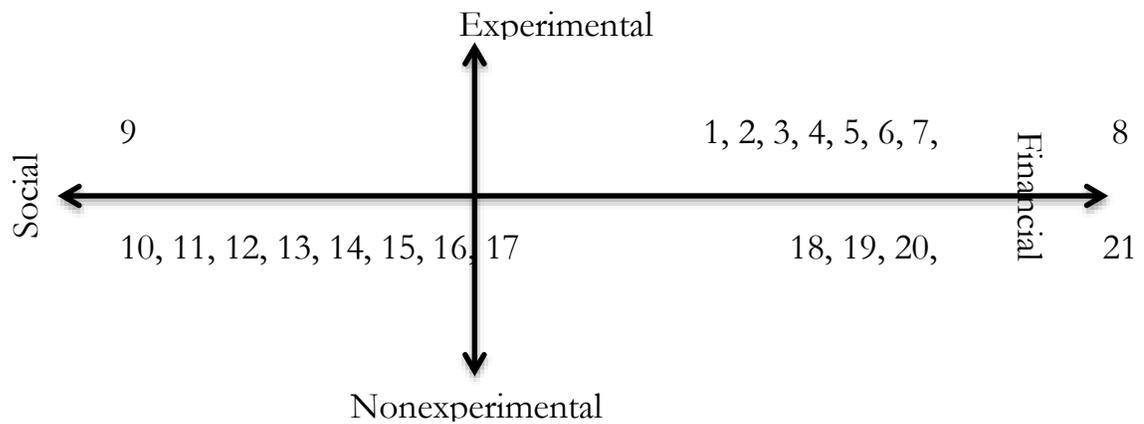


Figure 5: Methodological Framework

Based on the above Methodological Framework, The research ideas previously suggested in section 4.4 are positioned within this framework based on the polarity of their method and research focus along the two axes.

Experimental/Financial:

1. Compare revenues of similar businesses with and without a ramp/door button or other accessibility equipment.
2. Study the economic effect of implementation of the AODA Customer Service Regulation (CSR) course - in-person and online
3. Compare profits of big accessibility embracers with profits of non big embracers to test the effect of degree of enthusiasm on the ROI.
4. Compare books of businesses pre- and post- accessibility accommodation.
5. Conduct A/B Testing comparing hypothetical sales on two identical websites selling identical widgets, one of which is accessible and the other is not.
6. Examine the effect of an online and offline campaign by those who benefit directly from greater accessibility in informing one another and retail business associations about the costs and benefits of greater accessibility for businesses.

7. Design and develop a user-populated app with accessibility scores for businesses.
8. Analyze market trends that have an impact on consumers with disabilities.

Experimental/Social

9. Study the effect of ramps on Ethical Consumerism Branding through spot interviews of circa 500 passersby on their take on the ramps using one to three short questions.

Nonexperimental/Financial

10. Analyze cost factors of frequency of employee turnover to study effect of disability on employee retention.
11. Survey comptrollers of companies to analyze whether corporate accessibility programmes make money by saving money.
12. Analyze businesses that profit from consulting on accessibility regarding software, or furniture makers, or accessibility device maker.
13. Compare performance of different business sectors: Financial, Retail, Restaurants, and such.
14. Conduct comparative research between countries by studying the impact of ramps on retail businesses in London (U.K.) and Dublin (Ireland) with that in Toronto (Canada).

15. Design a Decision Support Tool (DST) for Small Medium Enterprises (SME) to assist with AODA Implementation.
16. Examine whether a media-centric awareness-raising effort about the benefits of accessibility generates socio-economic value for all the stakeholders.
17. Build economic and business models to gain an understanding of the benefits of addressing the consumer needs of individuals who are currently at the margins of standard markets.

Nonexperimental/Social:

18. Survey disabled customers after accessibility accommodation to gauge customer loyalty and resulting customer retention.
19. Examine the use of accessibility accommodations as a social branding strategy for Business Improvement Areas (BIAs) to enhance overall business revenue for the BIA.
20. Examine public policy developments pertaining to people with disabilities in Canada that influence compliance of businesses with social justice and human rights legislations.
21. Conduct research on public policy development around AODA Implementation.

The framework, as such, lends itself to further refinement through research. This study, thus primarily focused on research design aimed at future researchers in the field. A fairly exhaustive bibliography was collected during the study and is appended to this report for reference by future researchers.

5 Conclusion

5.1 Contributions

The results of my project will be of greater use to researchers than to accessibility consultants, although I more often meet people from the latter group, who are eager to acquire data that would convince their clients to embark upon accessibility projects. The demand, clearly, is for microeconomic data, said being more down-to-earth, and therefore more convincing to the business-minded than macroeconomic data. My study has shown that there is a social angle to the benefits of accessibility to businesses, leading to a socio-economic business case for accessibility. This is, indeed, powerful new ammunition to advance the accessibility cause in Canada, incidentally motivating businesses in Ontario to comply with the Government's AODA initiatives.

The field of Inclusive Design defines disability as a mismatch between the needs of a user and the design of a product, system or service. Likewise, there

is a need for businesses to shift their concept of disability from personal impairments of clients to a mismatch between clients' needs and design of their business offerings. This positions accessibility accommodation as an absolute strategy for business enhancement and helps make a good business case.

5.2 Limitations

This study was primarily limited by time, given the fixed schedule associated with the major research project for the Masters course, which this study formed a part of. It was also limited by my impromptu choice of the ramp as the way to go. While that seemed like an attractive, doable choice, I later discovered that it is not one of the mandates under the AODA, although it is still valid considering the requirements of the Human Rights Code. Nonetheless, the purpose of exploring future design options for field research aimed at strengthening the business case for accessibility was, in my view, still served well.

6 Bibliography

Accessibility for Ontarians with Disabilities Act, 2005. http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_05a11_e.htm

Al-Debei, Mutaz M., and David Avison. "Developing a unified framework of the business model concept." *European Journal of Information Systems* 19, no. 3 (2010): 359-376.

Angen, Maureen Jane. "Evaluating interpretive inquiry: Reviewing the validity debate and opening the dialogue." *Qualitative health research* 10, no. 3 (2000): 378-395.

Australian Human Rights Commission.

<http://www.humanrights.gov.au/publications/human-rights-21-benchmark-landmark-human-rights-cases>

Ayotte, Dana, Joanna Vass, Jess Mitchell, and Jutta Treviranus. "Personalizing Interfaces Using an Inclusive Design Approach." In *Universal Access in Human-Computer Interaction. Design and Development Methods for Universal Access*, pp. 191-202. Springer International Publishing, 2014.

Ballantyne, David, and Richard J. Varey. "Creating value-in-use through marketing interaction: the exchange logic of relating, communicating and knowing." *Marketing theory* 6, no. 3 (2006): 335-348.

Barclays. Barclays launches Return on Disability ETNs.

http://www.un.org/disabilities/documents/09_10_Barclays_Return_on_Disability_ETNs_Launch_Press_Release.pdf product market regulation, and innovation." (2002).

Bathelt, Harald, Anders Malmberg, and Peter Maskell. "Clusters and knowledge: local buzz, global pipelines and the process of knowledge creation." *Progress in human geography* 28, no. 1 (2004): 31-56.

Beaverland Camp [-www.beaverland.on.ca/site/](http://www.beaverland.on.ca/site/)

Bowen, David E., and Cheri Ostroff. "Understanding HRM–firm performance linkages: The role of the “strength” of the HRM system." *Academy of management review* 29, no. 2 (2004): 203-221.

Brewer, Judy, George Kerscher, Jutta Treviranus, and Cynthia Waddell. "Accessibility and universal design: advantages and impact for business, government and developers." In *Computer Networks and ISDN Systems*, vol. 30, no. 1-7, pp. 759-760. Elsevier Science Publishers BV, 1998.

Brewer, Shelley, Dwayne Van Eerd, Benjamin C. Amick III III, Emma Irvin, Kent M. Daum, Fred Gerr, J. Steven Moore, Kim Cullen, and David Rempel. "Workplace interventions to prevent musculoskeletal and visual symptoms and disorders among computer users: a systematic review." *Journal of occupational rehabilitation* 16, no. 3 (2006): 317-350.

Burnett, John J., and Heather Bender Baker. "Assessing the travel-related behaviors of the mobility-disabled consumer." *Journal of Travel Research* 40, no. 1 (2001): 4-11.

Campbell, Donald T. "Blind variation and selective retentions in creative thought as in other knowledge processes." *Psychological review* 67, no. 6 (1960): 380.

Caswell, Tom, and Jutta Treviranus. "Creating Accessible OER." In *OCWC Global 2011: Celebrating 10 years of OpenCourseWare*. 2011.

Cheetham, Anastasia, Dana Ayotte, Jonathan Hung, Joanna Vass, Colin Clark, Jess Mitchell, and Jutta Treviranus. "Accessible Metadata Generation." In

Universal Access in Human-Computer Interaction. Universal Access to Information and Knowledge, pp. 101-110. Springer International Publishing, 2014.

Cleaver, Megan, B. Christine Green, and Thomas E. Muller. "Using consumer behavior research to understand the baby boomer tourist." *Journal of Hospitality & Tourism Research* 24, no. 2 (2000): 274-287.

Clement, Andrew, and Karen Louise Smith. "Consensus Submission." (2010).

Cooper, Martyn, Jutta Treviranus, and Andy Heath. "Meeting the diversity of needs and preferences-A look at the IMS AccessForAll specifications' role in meeting the accessibility agenda efficiently." In *Accessible Design in the Digital World Conference*. 2005.

Creswell, John W. *Qualitative inquiry and research design: Choosing among five approaches*. Sage, 2012.

Darcy, Simon. "Marginalised participation: Physical disability, high support needs and tourism." *Journal of Hospitality and Tourism Management* 9 (2002): 61-72.

Daruwalla, Pheroza, and Simon Darcy. "Personal and societal attitudes to disability." *Annals of Tourism Research* 32, no. 3 (2005): 549-570.

DePaul Industries. Return on Disability: The Bottom Line.
<http://depaulindustries.com/blog/2012/10/31/return-on-disability-the-bottom-line/>

Dini, Paolo, and Alexandros Kioupkiolis. "Community currencies as laboratories of institutional learning: emergence of governance through the mediation of social value." (2014): 1-20. Downloaded from <http://eprints.lse.ac.uk/59307> on September 4, 2014.

Dong, Hua, Simeon Keates, P. John Clarkson, and Julia Cassim. "Implementing inclusive design: the discrepancy between theory and practice." In *Universal Access Theoretical Perspectives, Practice, and Experience*, pp. 106-117. Springer Berlin Heidelberg, 2003.

Dong, Hua, Simeon Keates, and P. John Clarkson. "Inclusive design in industry: barriers, drivers and the business case." In *User-Centered Interaction Paradigms for Universal Access in the Information Society*, pp. 305-319. Springer Berlin Heidelberg, 2004.

Donovan, Rich. "The global economics of disability." Return on Disability. Retrieved February 11 (2015).

Eichhorn, Victoria, Graham Miller, Eleni Michopoulou, and Dimitrios Buhalis. "Enabling disabled tourists? Accessibility tourism information schemes." *Annals of Tourism Research* (2007).

Ettiquette. Return on Disability (RoD) – Can investors make money off of disability?. <http://www.ethiquette.ca/en/return-on-disability-rod-can-investors-make-money-off-of-disability>.

European Network for accessible tourism:
<http://www.accessibletourism.org/?i=enat.en.news>

Fiat releases details of first ever crowdsourced car. -
<http://www.wired.co.uk/news/archive/2010-08/18/flat-mio>

Fels, Deborah I., Laurel A. Williams, Graham Smith, Jutta Treviranus, and Roy Eagleson. "Creating an Interactive Supply Student." In *Proc. Symposium on Industrial Engineering and Management*, pp. 86-90. 1998.

Fels, Deborah I., Laurel A. Williams, Graham Smith, Jutta Treviranus, and Roy Eagleson. "Developing a video-mediated communication system for hospitalized children." *Telemedicine Journal* 5, no. 2 (1999): 193-208.

Florida, Richard, and Gary Gates. "Technology and tolerance: The importance of diversity to high-technology growth." *Research in Urban Policy* 9, no. 1 (2003): 199-219.

Freden, K., K. Martin, G. Birch, and M. Wafer. "Rethinking DisAbility in the Private Sector." *Panel on Labour Market Opportunities for Persons with Disabilities* (2013): 28.

Freedman, Vicki A., Linda G. Martin, and Robert F. Schoeni. "Recent trends in disability and functioning among older adults in the United States: a systematic review." *Jama* 288, no. 24 (2002): 3137-3146.

Friesen, Norm, and Anthony Roberts. *CanCore Guidelines for the "Access for All" Digital Resource Description Metadata Elements*. Retrieved 2008-10-15 from <http://www.cancore.ca/guidelines/drd> Archived 2008-10-15 by WebCite® at <http://www.webcitation.org/5bZjjBbJg>, 2006.

Gay, Greg, Laurie Harrison, Richards Richards, and Jutta Treviranus. "The Courseware Accessibility Study 1999." (1999).

Goodman, J., H. Dong, P. M. Langdon, and P. J. Clarkson. "Factors involved in industry's response to inclusive design." In *Designing accessible technology*, pp. 31-39. Springer London, 2006.

Grönroos, Christian. "Value co-creation in service logic: A critical analysis." *Marketing Theory* 11, no. 3 (2011): 279-301.

Grönroos, Christian. "Service logic revisited: who creates value? And who co-creates?." *European Business Review* 20, no. 4 (2008): 298-314.

Grönroos, Christian. *Service management and marketing: customer management in service competition*. John Wiley & Sons, 2007.

Grönroos, Christian. "From marketing mix to relationship marketing: towards a paradigm shift in marketing." *Management decision* 32, no. 2 (1994): 4-20.

Grönroos, Christian. "A service quality model and its marketing implications." *European Journal of marketing* 18, no. 4 (1984): 36-44.

Grönroos, Christian, and Annika Ravald. "Service as business logic: implications for value creation and marketing." *Journal of Service Management* 22, no. 1 (2011): 5-22.

<http://www.stockhouse.com/news/press-releases/2014/09/10/barclays-launches-return-on-disability-etns>

GSP, LSE, WIL (2014, September 14). Barclays launches Return on Disability ETNs. Stock House. Retrieved from <http://www.stockhouse.com/news/press-releases/2014/09/10/barclays-launches-return-on-disability-etns>.

Hankivsky, Olena. *Cost estimates of dropping out of high school in Canada*. Ottawa: Canadian Council on Learning, 2008.

Harper, Simon, and Yeliz Yesilada. *Web accessibility: a foundation for research*. Springer Science & Business Media, 2008.

Harrison, Laurie, and Jutta Treviranus. "Accessible E-Learning-Demystifying IMS Specifications." In *World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education*, vol. 2003, no. 1, pp. 2000-2003. 2003.

Heath, Andy, Liddy Nevile, and Jutta Treviranus. "Individualized Adaptability and Accessibility in E-learning, Education and Training Part 2: AccessForAll Personal Needs and Preferences Statement." (2005).

Hendricks, D. J., Linda C. Batiste, Anne Hirsh, Helen Schartz, and Peter Blanck. "Cost and effectiveness of accommodations in the workplace: Preliminary results of a nationwide study." *Disability Studies Quarterly* 25, no. 4 (2005).

Hernandez, Brigida, Katherine McDonald, Nicole Lepera, Monna Shahna, T. Arthur Wang, and Joel M. Levy. "Moving beyond misperceptions: The provision of workplace accommodations." *Journal of social work in disability & rehabilitation* 8, no. 3-4 (2009): 189-204.

Hoffman, L. Richard, and Norman RF Maier. "Quality and acceptance of problem solutions by members of homogeneous and heterogeneous groups." *The Journal of Abnormal and Social Psychology* 62, no. 2 (1961): 401.

Holland-Bloorview Kids Rehabilitation Hospital. An insider wakes Wall Street the disability market. <http://bloom-parentingkidswithdisabilities.blogspot.ca/2013/01/an-insider-wakes-wall-street-to.html>.

Huh, Chang, and A. J. Singh. "Families travelling with a disabled member: Analysing the potential of an emerging niche market segment." *Tourism and Hospitality Research* 7, no. 3-4 (2007): 212-229.

Lizuka, Junichi. "Introduction to Guidelines for Older Persons and Persons with Disabilities(Japan Industrial Standard X 8341) and Fujitsu's Approach to Standardization." *Fujitsu scientific and technical journal* 41, no. 1 (2005): 38-46.

International association for universal design: <http://www.iaud.net/global/>

International council of societies of industrial design: www.icsid.org/

International Council on Active Aging: www.icaa.cc/

Institute for competitiveness and prosperity:
<http://www.competeprosper.ca/index.php/clusters/data/>

Irwin, Marilyn M., and Jennifer D. Gerke. "Web-Based information and prospective students with disabilities: A study of liberal arts colleges." *Educouse Quarterly* 27, no. 4 (2004): 51-60.

Jacobs, J. The economy of cities.
<http://ipac.ocad.on.ca/ipac20/ipac.jsp?uri=full=3100001~!49103~!0&ipp=1000>

Jackl, Alex, Andy Heath, Martyn Cooper, Anastasia Cheetham, Madeleine Rothberg, Anthony Roberts, Liddy Nevile, Eric Hansen, Jutta Treviranus, and David Weinkauf. "IMS AccessFor All Meta-data Overview." (2004).

Jagger, Carol, Antony J. Arthur, Nicola A. Spiers, and Michael Clarke. "Patterns of onset of disability in activities of daily living with age." *Journal of the American Geriatrics Society* 49, no. 4 (2001): 404-409.

Jafari, Ali, ed. *Handbook of Research on ePortfolios*. IGI Global, 2006.

Jongbloed, Lyn. "Disability Policy in Canada An Overview." *Journal of Disability Policy Studies* 13, no. 4 (2003): 203-209.

Kang, Min, Harumi Kashiwagi, Jutta Treviranus, and Makoto Kaburagi. "Synthetic speech in foreign language learning: an evaluation by learners." *International Journal of Speech Technology* 11, no. 2 (2008): 97-106.

Kelley, Harold H., and John W. Thibaut. "Experimental studies of group problem solving and process." *Handbook of social psychology* 2 (1954): 735-785.

Kent, Allen, and James G. Williams, eds. *Encyclopedia of Microcomputers: Volume 19-Truth Maintenance Systems to Visual Display Quality*. CRC Press, 1996.

Knickman, James R., and Emily K. Snell. "The 2030 problem: caring for aging baby boomers." *Health services research* 37, no. 4 (2002): 849-884.

Kurtz, Isaac, and Jutta Treviranus. "Simplified computer access system." U.S. Patent 5,608,395, issued March 4, 1997.

Lach, J. (1999). Disability ≠ liability. *American Demographics*, 2(2), 21-22.

Lane M (2014, September 14). Barclays launches Return on Disability ETNs.

UN.org. Retrieved from

http://www.un.org/disabilities/documents/09_10_Barclays_Return_on_Disability_ETNs_Launch_Press_Release.pdf

Laslett, Peter. "The emergence of the third age." *Ageing and society* 7, no. 02 (1987): 133-160.

Laurie, Nathan. *The cost of poverty: An analysis of the economic cost of poverty in Ontario*. Ontario Association of Food Banks, 2008.

Lazar, Jonathan. "Public Policy and the Global Public Inclusive Infrastructure Project." *Distinguished Speakers Program*: 62.

Lee, Kevin Kaalip. *Urban poverty in Canada: A statistical profile*. Ottawa: Canadian Council on Social Development, 2000

Lewis, Clayton, and Jutta Treviranus. "Public policy and the global public inclusive infrastructure project." *interactions* 20, no. 5 (2013): 62-66.

Light, J., D. Beukelman, and Joe Reichle. "Communicative competence for individuals

who use AAC: From research to effective practice." (2003).

Ligrone, A., J. Oppelt, A. Calderoni, and J. Treviranus. "The fastest way to the bottom: straighthole drilling device-drilling concept, design considerations, and field experience." In *EUROPEC: European petroleum conference*, pp. 115-126. 1996.

Littlejohn, Allison, ed. *Reusing online resources: a sustainable approach to e-learning*. Psychology Press, 2003.

Lord, John, and Peggy Hutchison. *Pathways to inclusion: Building a new story with people and communities*. Captus Press, 2007.

Macdonald, Alastair S. "Universal design in Japanese technological industries." In *Designing accessible technology*, pp. 13-19. Springer London, 2006.

Macdonald, Alastair S. "The inclusive challenge: a multidisciplinary educational approach." In *Designing Accessible Technology*, pp. 3-12. Springer London, 2006.

Maglio, Paul P., and Jim Spohrer. "Fundamentals of service science." *Journal of the Academy of Marketing Science* 36, no. 1 (2008): 18-20.

Martin, Roger L., and Richard L. Florida. "Ontario in the creative age." (2009).

Merz, Michael A., Yi He, and Stephen L. Vargo. "The evolving brand logic: a service-dominant logic perspective." *Journal of the Academy of Marketing Science* 37, no. 3 (2009): 328-344.

Nantais, Tom, F. Shein, and J. Treviranus. "A predictive selection technique for single-digit typing with a visual keyboard." *Rehabilitation Engineering, IEEE Transactions on* 2, no. 3 (1994): 130-136.

Nevile, Liddy, and Jutta Treviranus. "Interoperability for individual learner centred accessibility for Web-based educational systems." *Educational Technology & Society* 9, no. 4 (2006): 215-227.

Neville, Liddy, Martyn Cooper, Andy Heath, Madeleine Rothbergeine, and Jutta Treviranus. "Learner-centred accessibility for interoperable web-based educational systems." (2005).

Nevile, Liddy, Sophie Lissonnet, Vera Roberts, and Jutta Treviranus. "Rich experiences for all participants." In *Museums and the Web 2004: Proceedings*. 2004.

Newell, Alan F., and Peter Gregor. "Design for older and disabled people—where do we go from here?." *Universal Access in the Information Society* 2, no. 1 (2002): 3-7.

Norton, Mark, and Jutta Treviranus. "IMS learner information package accessibility for LIP best practice and implementation guide." *Retrieved March 1* (2003): 2007.

Okada, Alexandra, ed. *Collaborative Learning 2.0: Open Educational Resources: Open Educational Resources*. IGI Global, 2012.

Olson, Don A., and Frank DeRuyter. *Clinician's guide to assistive technology*. Mosby Inc, 2001.

Ontario Human Rights Commission - <http://ohrc.on.ca/en/ontario-human-rights-code>

Osterwalder, Alexander. "The business model ontology: A proposition in a design science approach." (2004).

Ottaviano, Gianmarco IP, and Giovanni Peri. "The economic value of cultural diversity: evidence from US cities." *Journal of Economic Geography* 6, no. 1 (2006): 9-44.

Page, Scott E. *The difference: How the power of diversity creates better groups, firms, schools, and societies*. Princeton University Press, 2008.

Pairitz, C. Barclays launched a ETN yesterday based on socially responsible investing. Seeking Alpha. Retrieved from <http://seekingalpha.com/news/1980465-barclays-launched-a-etn-yesterday-based-on-socially-responsible-investing>

Participation and activity limitation survey (PALS) 2006.
<http://www.statcan.gc.ca/pub/89-628-x/89-628-x2007002-eng.htm>

Pawlowski, J. M., R. McGreal, T. Hoel, and J. Treviranus. "Open Educational Resources and Practices for Educational Cross-Border Collaboration: Outcomes and Recommendations." In *UNESCO Workshop at the World Summit on the Information Society, Geneva*. 2012.

Peissner, Matthias, Gregg C. Vanderheiden, Jutta Treviranus, and Gianna Tsakou. "Prosperity4All—Setting the Stage for a Paradigm Shift in eInclusion." In *Universal Access in Human-Computer Interaction. Design for All and Accessibility Practice*, pp. 443-452. Springer International Publishing, 2014.

Petty, Linda, Jutta Treviranus, and P. Weiss. *Outcome measures in vision technology: An application of the Canadian Occupational Performance Measure*. Adaptive Technology Resource Centre, University of Toronto, Canada, 1998.

Petty, Linda S., Laurie McArthur, and Jutta Treviranus. "Clinical report: use of the Canadian Occupational Performance Measure in vision technology." *Canadian Journal of Occupational Therapy* 72, no. 5 (2005): 309-312.

Petty, Linda S., Jutta Treviranus, Irene Lee, and Alexander Minevich. "Study on severity of vision loss and client satisfaction and performance." In *Proceedings of the RESNA 2001 Annual Conference: The AT Odyssey Continues, June 22-26, 2001, John Ascuaga's Nugget Hotel, Reno, Nevada*, p. 242. RESNA Press, 2001.

Pennington-Gray, Lori, and Deborah L. Kerstetter. "Examining travel preferences of older Canadian adults over time." *Journal of Hospitality & Leisure Marketing* 8, no. 3-4 (2001): 131-145.

Perry, Sharon, and Simon Ball. "Commentary by Sharon Perry and Simon Ball on Littlejohn, A.(2003) Reusing Online Resources, Chapter 10: Developing and Reusing Accessible Content and Applications, by Jutta Treviranus and Judy Brewer." *Journal of Interactive Media in Education* 2003, no. 1 (2004): Art-13.

Pletsch, Carolyn. "An Interview with David Onley: On Leadership, Inclusivity, and Re-conceptualization." *Disability Studies Quarterly* 32, no. 3 (2012).

Porter, Lake, and J. Trevinarus. "Haptic applications to virtual worlds." *University of Toronto's Adaptive Technology Resource Centre* (2002).

Porter, Michael E. "Michael Porter on competition." *Antitrust Bull.* 44 (1999): 841.

Porter, Michael E. "Location, competition, and economic development: Local clusters in a global economy." *Economic development quarterly* 14, no. 1 (2000): 15-34.

Rietschlin, John, and Andrew MacKenzie. "Variation in disability rates in Statistics Canada national surveys: Building policy on a slippery foundation." In *Statistics Canada International Symposium Series—Proceedings: Symposium 2004: Innovative methods for surveying*. 2004.

Ridpath, Chris, Jutta Treviranus, and Patrice L. Tamar Weiss. "Testing The Readability Of Web Page Colors."

Riley, Charles A. *Disability and business: Best practices and strategies for inclusion*. UPNE, 2006.

Robitaille, S. Companies Don't, but Should, See the Return on Disability.
<http://www.thinkbeyondthelabel.com/Blog/post/Companies-Dont-but-Should-See-the-Return-on-Disability.aspx>

Roumeliotis, I. Driverless cars, talking ATMs: Disabilities are transforming big business. CBC News. <http://www.cbc.ca/news/business/driverless-cars-talking-atms-disabilities-are-transforming-big-business-1.2764814>

Samuelson, Paul A., Tjalling C. Koopmans, and J. RICHARD N. Stone. "Report of the evaluative committee for Econometrica." (1954): 141-146.

Schickore, Jutta. "Through thousands of errors we reach the truth'—but how? On the epistemic roles of error in scientific practice." *Studies in History and Philosophy of Science Part A* 36, no. 3 (2005): 539-556.

Schulich School of Business. Schulich grad Rich Donovan featured on the cover of latest issue of YorkU magazine.
<http://media.schulich.yorku.ca/featured/schulich-grad-rich-donovan-covers-yorku-magazine/>

Schwerdtfeger, Richard, Gregg C. Vanderheiden, Jutta Treviranus, Colin Clark, Jess Mitchell, Lisa Petrides, Lisa McLaughlin et al. "PGA: Preferences for Global Access." In *Universal Access in Human-Computer Interaction. Design for All and Accessibility Practice*, pp. 325-336. Springer International Publishing, 2014.

Serflek, Christopher, Jutta Treviranus, and V. R. M. L. Browsers. "VRML: Shouldn't Virtual Ramps be Easier to Build."

Shafer, Scott M., H. Jeff Smith, and Jane C. Linder. "The power of business models." *Business horizons* 48, no. 3 (2005): 199-207.

Shafir, Uri, Masha Etkind, and Jutta Treviranus. "eLearning Tools for ePortfolios." *Handbook of research on ePortfolios*. Idea Group (2006).

Sheill, Alan, and Jenny Zhang. "The external costs of poverty: A conservative assessment." *Centre for Health and Policy Studies, University of Calgary*. June 3 (2004): 21st.

Shein, Fraser, Nicholas Brownlow, Jutta Treviranus, and Penny Parnes. "Climbing out of the rut: The future of interface technology." In *Proceedings of the Visions Conference: Augmentative and Alternative Communication in the Next Decade*, University of Delaware/ Alfred I. duPont Institute, Wilmington, DE. 1990.

Shein, Fraser, Nicholas Brownlow, Jutta Treviranus, and Penny Parnes. "Climbing out of the rut: The future of interface technology." In *Proceedings of the Visions Conference: Augmentative and Alternative Communication in the Next Decade*, University of Delaware/ Alfred I. duPont Institute, Wilmington, DE. 1990.

Shein, G. Fraser, Jutta Treviranus, Nicholas D. Brownlow, Morris Milner, and Penny Parnes. "An overview of human-computer interaction techniques for people with physical disabilities." *International Journal of Industrial Ergonomics* 9, no. 2 (1992): 171-181.

Sims, Dave. "Multimedia camp empowers disabled kids." *Computer Graphics and Applications, IEEE* 14, no. 1 (1994): 13-14.

Smith, Graham Thomas, Deborah Ingrid Fels, and Jutta Treviranus. "Teleconferencing robot with swiveling video monitor." U.S. Patent 7,123,285, issued October 17, 2006.

Smith, Graham Thomas, Deborah Ingrid Fels, Jutta Treviranus, and Simranjit VS Singh. "Cabinet with monitor." U.S. Patent D430,867, issued September 12, 2000.

- Simon, Herbert A. *The sciences of the artificial*. Vol. 136. MIT press, 1996.
- Smith, Ralph W. "Leisure of disable tourists: barriers to participation." *Annals of Tourism Research* 14, no. 3 (1987): 376-389.
- Smith, Vernon L., and Francesco Parisi. "The Law and Economics of Irrational Behavior: An Introduction." *George Mason Law & Economics Research Paper* 4, no. 16 (2005).
- Sunstein, Cass R. *Infotopia: How many minds produce knowledge*. Oxford University Press, 2006.
- Tankock, M.. Profit Ability. York U Magazine.
http://cpa.info.yorku.ca/files/2011/12/YorkU_February_2011.pdf
- Tapscott, Don, and Anthony D. Williams. *Wikinomics: How mass collaboration changes everything*. Penguin, 2008.
- Television, Canadian Learning, Michael Boyce, Sara Diamond, Deborah Fels, Elle Gadsby, Rob Harvie, Wendy Porch et al. "Canadian Network for Inclusive Cultural Exchange (CNICE)."
- Television, Canadian Learning, Michael Boyce, Sara Diamond, Deborah Fels, Elle Gadsby, Rob Harvie, Wendy Porch et al. "1. Online Enhanced Captioning."
- Television, Canadian Learning, Michael Boyce, Sara Diamond, Deborah Fels, Elle Gadsby, Rob Harvie, Wendy Porch et al. "Online Video Description."
- Thiessen, Peter, and Jutta Treviranus. "Live regions as a solution for Web 2.0 accessibility." *Journal of Access Services* 7, no. 1 (2010): 15-32.
- Trailblazers report. *Short-changed - The Trailblazers' High streets report*. (2014)

Downloaded from
http://www.mdctrailblazers.org/assets/0000/9720/Trailblazers_highstreets_Shortchanged_WEB.pdf on August 15, 2014.

Treviranus, Jutta. "Techniques for Authoring Tool Accessibility." 1999.

Treviranus, Jutta. "List of Checkpoints for Authoring Tool Accessibility Guidelines 1.0." 2000.

Treviranus, Jutta. "Quartering, Halving, Gesturing: Computer Access Using Imprecise Pointing" in Proceedings of the RESNA International Conference (1992)." 374.

Treviranus, Jutta, and Judy Brewer. "Developing and reusing accessible content and applications." *Reusing online resources: A sustainable approach to e-learning*. 119-128. 2003.

Treviranus, Jutta. "Authoring tools." In *Web Accessibility*, pp. 127-138. Springer London. 2008.

Treviranus, Jutta. "Adding haptics and sound to spatial curriculum." In *Systems, Man, and* Treviranus, Jutta, and Rosemary Tannock. "A scanning computer access system for children with severe physical disabilities." *American Journal of Occupational Therapy* 41, no. 11 (1987): 733-738.

Treviranus, Jutta. "Authoring Tools-Web Accessibility: A Foundation for Research, 2008– Springer, ISSN: 1571-5035."

Treviranus, Jutta. "E-Learning that Adapts to the Learner." In *World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education*, vol. 2002, no. 1, pp. 2303-2306. 2002.

Treviranus, Jutta. "Quartering, Halving, Gesturing: Computer Access Using Imprecise Pointing." In *Proceedings of the RESNA International Conference*, vol. 92, pp. 374-376. 1992.

Treviranus, Jutta. "Leveraging the Web as a Platform for Economic Inclusion." *Behavioral sciences & the law* 32, no. 1 (2014): 94-103.

Treviranus, Jutta. "Making yourself at home—Portable personal access preferences." In *Computers Helping People with Special Needs*, pp. 643-648. Springer Berlin Heidelberg, 2002.

Treviranus, Jutta. "Mastering alternative computer access: The role of understanding, trust, and automaticity." *Assistive Technology* 6, no. 1 (1994): 26-41.

Treviranus, Jutta. "The Value of Imperfection: the Wabi-Sabi Principle in Aesthetics and Learning." *2010 Proceedings. Barcelona: UOC, OU, BYU.* [Accessed: dd/mm/yy]. < <http://hdl.handle.net/10609/4869> (2010).

Treviranus, Jutta. "Virtual reality technologies and people with disabilities." *Presence-Teleoperators and Virtual Environments* 3, no. 3 (1994): 201-207.

Treviranus, Jutta. "You say tomato, I say tomato, let's not call the whole thing off: the challenge of user experience design in distributed learning environments." *On the Horizon* 17, no. 3 (2009): 208-217.

Treviranus, Jutta, Colin Clark, Jess Mitchell, and Gregg C. Vanderheiden. "Prosperity4All—Designing a Multi-Stakeholder Network for Economic Inclusion." In *Universal Access in Human-Computer Interaction. Design for All and Accessibility Practice*, pp. 453-461. Springer International Publishing, 2014.

Treviranus, Jutta, C. McCathieNevile, I. Jacobs, and J. Richards. "Authoring Tool Accessibility Guidelines 1.0—W3C Recommendation, fev/2000."

Treviranus, Jutta, Charles McCathieNevile, Ian Jacobs, and Jan Richards. "Authoring tool accessibility guidelines 1.0. W3C, 2000."

Treviranus, Jutta, Ch McCathieNevile, I. Jacobs, and J. Richards. "Authoring Tool Accessibility Guidelines 1.0. W3C Recommendation 3 (February 2000)." *World Wide Web Consortium Web Site*. < <http://www.w3.org/TR/2000/REC-ATAG10-20000203> > (Accessed: March 12, 2000) (2000). *Cybernetics, 2000 IEEE International Conference on*, vol. 1, pp. 588-592. IEEE, 2000.

Treviranus, Jutta, Kevin Stolarick, Mark Denstedt, Catherine Fichten, and Jennison Ascunson. "Leveraging Inclusion and Diversity as Canada's Digital Advantage." *Social Sciences and Humanities Research Council, Knowledge Synthesis on the Digital Economy* (2010).

Treviranus, Jutta, Jan Richards, Ian Jacobs, and Charles McCathieNevile. "Authoring Tool Accessibility Guidelines." *The latest working draft of these guidelines for designing accessible authoring tools is available at www.w3.org/TR/WD-WAI-AUTOOLS* (1999).

Treviranus, Jutta, Jan Richards, Ian Jacobs, and Charles McCathieNevile. "Techniques for Authoring Tool Accessibility Guidelines 1.0." *World Wide Web Consortium Note, NOTE-ATAG10-TECHS-20000203* (2000).

Treviranus, Jutta, Jess Mitchell, Colin Clark, and Vera Roberts. "An Introduction to the FLOE Project." In *Universal Access in Human-Computer Interaction. Universal Access to Information and Knowledge*, pp. 454-465. Springer International Publishing, 2014.

Treviranus, Jutta, Liddy Nevile, and Andy Heath. "Individualized Adaptability and Accessibility in E-learning, Education and Training Part 3: AccessForAll Digital Resource Description." (2005).

Treviranus, Jutta, and Norman Coombs. "Bridging the Digital Divide in Higher Education." For full text: <http://www.educause.edu/conference/e2000/proceedings.html>. For full text: <http://www.educause.edu/asp/doclib/abstract.asp?ID=EDU0028.html>, 2000.

Treviranus, Jutta, and Tamar Weiss. "Electronic books for readers with disabilities: universal accessibility." In *CHI Workshop*, vol. 5, pp. 15-20. 1999.

Treviranus, Jutta, and Vera Roberts. "Meeting the Learning Needs of all Learners Through IT." In *International Handbook of Information Technology in Primary and Secondary Education*, pp. 789-801. Springer US, 2008.

Treviranus, Jutta, Vera Roberts, J. Light, D. Beukelman, and J. Reichle. "Supporting competent motor control of AAC systems." *Communicative competence for individuals who use AAC: From research to effective practice* (2003): 199-240.

Triandis, Harry C. *Individualism & collectivism*. Westview Press, 1995.

Triandis, Harry C., Eleanor R. Hall, and Robert B. Ewen. "Member heterogeneity and dyadic creativity." *Human relations* (1965).

Valenti, Michael A., and Olivier G. Giovannoni. "The Economics of Inclusion: Building an Argument for a Shared Society." *Levy Economics Institute of Bard College Working Paper 755* (2013).

Vanderheiden, Gregg, and Jutta Treviranus. "Creating a global public inclusive infrastructure." In *Universal access in human-computer interaction. design for all and inclusion*, pp. 517-526. Springer Berlin Heidelberg, 2011.

Vanderheiden, Gregg C., Jutta Treviranus, and Amrish Chourasia. "The global public inclusive infrastructure (GPII)." In *Proceedings of the 15th international acm sigaccess conference on computers and accessibility*, p. 70. ACM, 2013.

Vanderheiden, Gregg C., Jutta Treviranus, Jose A. Martinez Usero, Evangelos Bekiaris, Maria Gemou, and Amrish O. Chourasia. "Auto-Personalization: Theory, practice and cross-platform implementation." In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, vol. 56, no. 1, pp. 926-930. SAGE Publications, 2012.

Vanderheiden, Gregg C., Jutta Treviranus, Maria Gemou, Evangelos Bekiaris, Kasper Markus, Colin Clark, and Antranig Basman. "The evolving global public inclusive infrastructure (GPII)." In *Universal access in human-computer interaction. Design methods, tools, and interaction techniques for eInclusion*, pp. 107-116. Springer Berlin Heidelberg, 2013.

Vargo, Stephen L., and Robert F. Lusch. "Evolving to a new dominant logic for marketing." *Journal of marketing* 68, no. 1 (2004): 1-17.

Voogt, Joke, and Gerald Knezek, eds. *International handbook of information technology in primary and secondary education*. Vol. 20. Springer Science & Business Media, 2008.

Weinkauff, David, Liddy Nevile, Anthony Roberts, Madeleine Rothberg, Jutta Treviranus, Anastasia Cheetham, Martyn Cooper, Andy Heath, and Alex Jackl. "IMS AccessFor All Meta-data-Information Model." (2004).

Weiss, Patrice L. Tamar,Carolynn P. Whiteley, Jutta Treviranus, and Deborah I. Fels. "PEBBLES: a personal technology for meeting educational, social and emotional needs of hospitalised children." *Personal and Ubiquitous Computing* 5, no. 3 (2001): 157-168.

Weiss, Tamar, Deborah Fels, and Jutta Treviranus. "Telework and video-mediated communication: importance of real-time, interactive communication for workers with disabilities." *C:\ Documents and Settings\ BIIBF\ Local Settings\ Temp\ Rar \$ EX40* 16 (1998).

Wilder, Rayette. "Bridging the digital divide in higher education." *Library Hi Tech News* 18, no. 2 (2001).

Wilkinson, Richard, Kate Pickett, and Molly Scott Cato. "The spirit level. Why more equal societies almost always do better." (2009): 50-61.

Williams, Laurel, Deborah Fels, Jutta Treviranus, Graham Smith, David Spargo, and Roy Eagleson. "Control of a remote communication system by children." *International journal of industrial ergonomics* 22, no. 4 (1998): 275-283.
Fels, Deborah I., Patrice Weiss, Jutta Treviranus, and Graham Smith. "Videoconferencing in the Classroom: Children's Attitudes." *Proc. CybErg 1999* (1999).

Williams, Laurel A., Deborah I. Fels, Graham Smith, Jutta Treviranus, and Roy Eagleson. "Using PEBBLES to facilitate remote communication and learning." In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, vol. 41, no. 1, pp. 320-324. SAGE Publications, 1997.

Yau, Matthew Kwai-sang, Bob McKercher, and Tanya L. Packer. "Traveling with a disability: More than an access issue." *Annals of Tourism Research* 31, no. 4 (2004): 946-960.

Zott, Christoph, Raphael Amit, and Lorenzo Massa. "The business model: recent developments and future research." *Journal of management* 37, no. 4 (2011): 1019-1042.

