Expanding VIAble Employment for Adults with Autism: A Systems Approach to Increase Nonprofit Sales

Examining the U.S Hiring Process and its Impact on the Ability of People with Intellectual Disabilities to Join the Workforce and Gain Financial Independence

A Thesis Prospectus
In STS 4500
Presented to
The Faculty of the
School of Engineering and Applied Science
University of Virginia
In Partial Fulfillment of the Requirements for the Degree
Bachelor of Science in Systems Engineering

By

Sophia Kikuchi

November 16, 2023

River Robins, Olivia Conner, Paul Pincombe, and Kate Kasko

ADVISORS

Joshua Earle, Department of Engineering and Society

Sara Riggs, Department of Engineering Systems and Information Engineering

Robert Riggs, Department of Engineering Systems and Information Engineering

Introduction

Historically, people with intellectual and developmental disabilities (IDD) have been secluded from society and viewed as unworthy to be granted basic human rights. Throughout the late 19th and early 20th centuries, people with IDD were institutionalized in inhumane institutions, faced physical abuse, lacked access to education and healthcare, and were even sterilized to prevent them from having children (Roth, Sarawgi, & Fodstad, 2019, p. 6). It was not until less than 100 years ago when the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990 were passed in the United States, protecting individuals with disabilities from being discriminated against based on their given disability (Murphy, 2021, p. 1).

Specifically, they were enacted to, "provide individuals with disabilities equal opportunities for participation in programs and activities and to prohibit discrimination based on their disability in all areas of public life: Title I: Employment; Title II: State and Local Government; Title III: Public Accommodations; Title IV: Telecommunications; and Title IV: Miscellaneous Provisions," (Murphy, 2021, p. 1). Despite these legislative movements, only 44% of adults with an intellectual disability aged 21-64 are in the labor force (employed or looking for a job), compared to the 83% of working-aged adults without disabilities in the labor force (Special Olympics, n.d.). Despite the fact that only 44% of adults with ID are actually employed, the ones who are employed experience great job stability where, "62% of adults with ID employed in a competitive setting have been at their current job for 3 years or more" (Special Olympics, n.d.).

My technical project aims to promote the employment of people with autism by increasing product sales and, consequently, profits through data analysis and web page redesign. Meanwhile, my STS project will shed light on the misaligned regulations and technical processes used to hire individuals into the workforce, shifting the focus of companies towards maximizing inclusivity rather than solely prioritizing prestige and immediate profits. Tackling this employment issue from two distinct angles: technical improvements to a company's sales approach and website as well as conducting literature based

research on the current hiring structure will allow for a collectively exhaustive solution, where each approach can provide insights into the other.

Technical Project

In the United States, nearly 99% of young adults have worked at some point between the ages of 21 to 25 years old; however, only 58% of young adults with autism have ever worked during their early 20s (Roux et al., 2015). Not only is this percentage significantly lower than the national average, it is also the lowest rate of employment across all disabilities (Roux et al., 2015). My project is centered around addressing this issue through a partnership with VIAble Ventures, a local microbusiness run by the VIA Centers for Neurodevelopment. VIAble Ventures is a for-profit subsidiary that sells cosmetic products like candles and bath salts, all of which are made by artisans with autism. The program acts not only as a way to provide a steady source of income for adults with neurological disorders, but also as a way to train them and give them the skills they need to enter the workforce.

My team has been tasked with helping the business meet its long-term goal of expanding employment opportunities to autistic adults in the local area by increasing online sales and revenue. Currently, VIAble Ventures is sustaining itself with profits from the local Charlottesville Farmers Markets that occur almost every Saturday during the fall. However, this sales method relies heavily on volunteer availability and seasonality. Therefore, this project is focusing on growing their online sales traffic via identifying sales trends and forecasting areas of improvement to the client. This will require a wide range of technical interventions, including looking at website analytics, analyzing historical sales data, developing a forecast based on past sales and seasonal demand, redesigning the website to improve usability, and devising creative ways to market VIAble Ventures' products.

This is a unique project in the sense that we will build on VIA's existing model to increase the number of autistic individuals they are able to employ, instead of designing and implementing a new employment program from scratch. By increasing sales in the current low months and simplifying user experience on the website, VIAble Ventures will be able to employ more people with autism to help them

gain employment skills and earn paychecks. Therefore, I would consider our work successful if online sales, especially in late winter / early spring, increase compared to last year.

STS Project Research Question

To supplement the insights provided by the technical portion of this research, I would like to investigate how the design of the general hiring process in the United States has impacted how people with intellectual and developmental disabilities join the workforce and therefore gain financial independence.

Employment is fundamental to the well-being of all individuals as it guarantees basic human desires such as financial stability, self-sufficiency, and personal fulfillment. However, people with intellectual disabilities have been denied access to this opportunity as they, "have been placed in "prevocational" programs and "disability-only" workshops where they are paid below minimum wage and have little expectation of moving into jobs where they work alongside people without disabilities" (American Association on Intellectual and Developmental Disabilities [AAIDD], 2017). Currently, algorithms and machine learning models are being used in the general hiring process, making all types of decisions, "from which resumes get selected for a first screen to who gets an on site interview…who sees which job advertisements; estimate the expected performance of an applicant; select which applicants to screen more heavily and with whom to match them; and forecast salary and other benefits necessary to ensure a successful offer," (Schumann et al., 2020, p. 1).

The growing use of these algorithms only amplifies the issues of bias, fairness, and legal compliance in the hiring process as companies are giving away a sense of ownership over the selection of candidates. Furthermore, these algorithms were designed by the privileged members of society and therefore inherently reflect their biases in favoring candidates who have similar background, education, and ethnicity to them. Therefore, these tactics are making it even harder for people with intellectual disabilities to gain employment as these types of assessments are not always accessible to those who may require alternative methods of assessment and there is no regulation requiring companies to hire people

3

like them. The companies employing these practices are not being questioned or pressured out of their current methods which is greatly impacting the motivation that would drive them to change these processes to be more inclusive. As a result, this is creating a cycle of discriminatory hiring that will not be broken unless people bring more attention to the topic and begin to support the companies who are trying to make a change for the better.

Social Groups

Up to this point, the paper has mentioned a large portion of the major people that play a role in the general hiring process in the United States for those who have intellectual disabilities. However, the groups that will be outlined in more detail include: employers, direct support professionals, advocate groups, and people with intellectual and developmental disabilities.

It remains clear that employers play a large role in the process as they are the ones carrying out the hiring process and utilizing the standardized methods to select future employees. They interact with the hiring system directly, thus enforcing its continued use for major corporations. There are many tiers to this social group, ranging from entry level recruiters to global executives. However, as changes are made to the general hiring process in the United States, this will in turn impact the day-to-day procedures of all companies. This will force people at the executive level to enforce these new principles for the whole company.

Although the direct perspectives of company executives and hiring managers will not be extracted during the technical portion of the project, we have the privilege to interact with another major social group involved with acclimating intellectually disabled individuals with autism to society. Direct support professionals for people with intellectual disabilities are the next major social group to consider in this situation. This social group serves as intermediaries and advocates for individuals with IDD and their integration in the workforce, "...enabling people with IDD to live in the community rather than institutional settings," (Desroches & Tyo, 2023, p. 1). As the people who help prepare individuals with disabilities to live on their own and interview for jobs, any changes to the general hiring process would

greatly impact their work. This role can take on many forms ranging from personal care leaders and occupational therapists to special education teachers. When debating on whether or not to split up this group based on their specified area of support and level of experience, it was decided that all support professionals will be kept in one group as they share a common perspective and goal in gaining equal employment for people with IDD. As mentioned in the technical portion of the project, we have the privilege of gaining a glimpse into this perspective via conversations with employees of the Virginia Institute of Autism.

Another group of people that is important to consider are the various advocate groups fighting against employers and pushing for equal opportunity for people with disabilities. There are countless groups such as The Arc, TASH, National Disability Rights Network (NDRN), etc. All of these groups have similar goals which is captured extremely well through the Arc's mission statement which reads, "Promoting and protecting the human rights of people with intellectual and developmental disabilities and actively supporting their full inclusion and participation in the community throughout their lifetimes," ("The Arc," n.d.). These groups work to fight stigmas and advance opportunities for people with intellectual disabilities in all aspects of life, including employment.

The final main social group that is relevant to this topic are the people with intellectual and developmental disabilities. This group directly interacts with the general hiring processes in the United States and therefore would be greatly impacted by any changes that would be made in the current methods. The design of the hiring process plays a pivotal role in determining whether or not legal protections, like the Americans with Disabilities Act, translate into meaningful employment and life changes for this group. Technically, the ADA claims that it, "...applies to all parts of employment, including how an employer selects, tests, or promotes employees. An employer who chooses to use a hiring technology must ensure that its use does not cause unlawful discrimination on the basis of disability," (U.S. Department of Justice Civil Rights Division, 2022). However, it is clear that this regulation has not changed the current methods being used as it does not hold any organization accountable who violates its rules. Therefore, strong enforcement or changes to the hiring process would

be extremely impactful for this social group and aid them in gaining a sense of self-dependency in all aspects of life.

STS Framework

This research will utilize the Disability Studies framework to structure and organize the analysis around. The principle of disabilities studies is centered around offering, " a sociopolitical analysis of disability, focusing on its social construction and shifting attention from biology to culture," (Howe et al., 2015, p. 2). The disability studies framework works to understand human variety and difference in social, cultural, and political spheres under the contention that disabilities are shaped by complex systems of interpretation and cultural contexts that exist within specific societies and cultures. This framework applies to the employment system here in the United States, that grants individuals the opportunity for personal development and to be financially independent. However, this particular paper has provided insight on the ethical concerns around the current hiring system in the United States and how it has been shaped without consideration for disabled individuals as a result of negative stigmas and a lack of representation in the decision making positions. It is clear that the discrimination neurodivergent people face in the hiring process is, "...produced as much by environmental and social factors as it is by bodily conditions," (Adams et al., 2015, p. 5). Therefore, in the context of employment, it is important to understand how discriminatory hiring practices, inaccessible workplaces, and stereotypes about disabilities can prevent individuals from accessing job opportunities and obtaining any level of independence. Moving forward, the disability studies framework will be used to shape more detailed arguments about the topics raised throughout this paper.

6

Key Texts

In the efforts to tackle this topic from both the technical and social perspective, there are some key texts that provide background information required to better understand and accomplish these tasks.

The first text that has proved to be very important to this STS topic is, "Keywords for Disability Studies" by Rachel Adams, Benjamin Reiss, and David Serlin. Not only does this text provide a strong foundation for understanding the main framework that will be used to organize this research, it also breaks down the topic of disabilities into a plethora of important subjects. The sections most prominent to this paper are sections 17: Dependency and 62: Work.

The next text is a study titled, "Employment outcomes for individuals with intellectual and developmental disabilities: A literature review," by Hussain A. Almalky. This paper reviews a variety of studies that touch on the employment outcomes including, "employment rate, setting, income, quality of life, and well-being," for adults with intellectual and developmental disabilities in the United States (Almalky, 2020, p. 1). This article makes the argument that the work of these individuals would enable them to contribute to the economy in a meaningful way; however, the settings they are employed in greatly impact their working hours and wages.

Moving forward, the book titled, "The Quantified Worker," by Ifeoma Ajunwa argues that, "the workforce science of today goes far beyond increasing efficiency and threatens to erase individual personhood," (Ajunwa, 2023, p. 4). Although it does not talk about such issues in the context of intellectual disability, it provides an extremely comprehensive summary of all methods being used and their potential impact which is key in understanding how they pertain to those with IDD. To supplement this source, an article written by the U.S. Department of Justice Civil Rights Division titled, "Algorithms, Artificial Intelligence, and Disability Discrimination in Hiring," explains the connection between such methods and how the American Disabilities Act theoretically takes them into account. These two texts in conjunction are pivotal in understanding what the current hiring process looks like and what legal regulations are in place to "combat" the use of AI.

Timeline

The research portion of the project will be divided into different phases including: literature review, information collection, analysis, and writing. Ideally I will investigate hiring records and statistics from various companies and career centers. Although the exact dates are not locked down yet, the process will follow this sequential order to ensure a robust and timely product. The technical project follows a more defined timeline as it is in collaboration with a group of four other peers. Our team has drafted a gantt chart outlining major milestones such as preliminary data exploration, client presentations, and drafts of updated web design. All of these timelines will be created to ensure that both elements of the project are completed prior to the final capstone deadline.

References

Ajunwa, I. (2023). The Quantified Worker: Law and Technology in the Modern Workplace. Cambridge:
Cambridge University Press. doi:10.1017/9781316888681

Almalky, H. A. (2020). Employment outcomes for individuals with intellectual and developmental
disabilities: A literature review. Children and Youth Services Review, [vol. 109], [page 1-10].
https://www.sciencedirect.com/science/article/pii/S0190740920307258?via%3Dihub

American Association on Intellectual and Developmental Disabilities (AAIDD). (2017.). Employment.
https://www.aaidd.org/news-policy/policy/position-statements/employment#:~:text=People%20w
ith%20IDD%20should%20have,be%20free%20from%20workplace%20discrimination

Desroches, M. L., & Tyo, M. (2023). Promoting Resilience in Direct Support Professionals of Adults
With Intellectual and Developmental Disabilities: A Qualitative Descriptive Study. Intellectual
and Developmental Disabilities (AAIDD), 61(3), 250–264.
https://doi.org/10.1352/1934-9556-61.3.250

Howe, Blake, and others, 'Introduction: Disability Studies in Music, Music in Disability Studies', in Blake
Howe, and others (eds), The Oxford Handbook of Music and Disability Studies (2015; online
edn, Oxford Academic, 2 June 2016),
https://doi-org.proxy1.library.virginia.edu/10.1093/oxfordhb/9780199331444.013.1, accessed 7
Oct. 2023.

Kelle L. Murphy (2021) Civil Rights Laws: Americans With Disabilities Act of 1990 and Section 504 of
the Rehabilitation Act of 1973, Journal of Physical Education, Recreation & Dance, 92:1, 57-59,
DOI: 10.1080/07303084.2021.1844555

Keywords for Disability Studies, edited by Rachel Adams, et al., New York University Press, 2015.
ProQuest Ebook Central, http://ebookcentral.proquest.com/lib/uva/detail.action?docID=3564341.
Created from uva on 2023-10-07 18:43:16.''

Roth, E.A., Sarawgi, S.N., Fodstad, J.C. (2019). History of Intellectual Disabilities. In: Matson, J.L. (eds)

    Handbook of Intellectual Disabilities. Autism and Child Psychopathology Series. Springer, Cham.

    https://doi.org/10.1007/978-3-030-20843-1_1

Roux, A. M., Shattuck, P. T., Rast, J. E., Rava, J. A., & Anderson, K. A. (2015). National Autism

    Indicators Report: Transition into Young Adulthood. Life Course Outcomes Research

    Program, A.J. Drexel Autism Institute, Drexel University.

Schumann, C., Foster, J. S., Mattei, N., & Dickerson, J. P. (2020, May 9–13). We Need Fairness and

    Explainability in Algorithmic Hiring. Blue Sky Ideas Track. Retrieved from

    https://par.nsf.gov/servlets/purl/10214110

Special Olympics. (n.d.). National Snapshot of Adults with Intellectual Disabilities in the Labor Force.

    https://www.specialolympics.org/our-work/research/national-snapshot-of-adults-with-intellectual-

    disabilities-in-the-labor-force#:~:text=Study%20Findings,are%20in%20the%20labor%20force.

The Arc. (n.d.). Homepage. The Arc. https://thearc.org/

U.S. Department of Justice Civil Rights Division. (2022, May 12). Algorithms, Artificial Intelligence, and

    Disability Discrimination in Hiring. ADA. https://www.ada.gov/resources/ai-guidance/