Accelerating Disability Inclusion in Workplaces Through Technology

Report from the NSF Convergence Accelerator Workshop held May 2021

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1 Goals

Current workplaces and the tools used therein are known to pose many accessibility challenges to persons with disabilities (PWDs). Such challenges can reduce productivity, and in many cases, even prevent PWDs from fully participating in the workforce. Additional challenges exist in terms of the nature of work itself and inadequate enablers within environments, organizations, and society. Solving these challenges requires a convergent approach across not just disciplines, but also the diverse set of stakeholders that are involved. The immediate goal for the proposed workshop was to bring together an inter-disciplinary team of researchers, industry leaders, educators, nonprofits and other stakeholders to envision what current and emerging technologies can be accelerated to begin making an impact in 3-5 years. The medium term goal for the workshop was to set up pathways for teams to address PWD challenges in an accelerated fashion. Given that the PWD population has still not been able to resolve the many challenges they face in the workplace since the Rehabilitation Act of 1973, and more broadly, the 1990 Americans with Disabilities Act (ADA), the outcomes of this workshop cannot come soon enough.

2 Context

There are more than one billion PWDs in the world who constitute a source of talent for employment towards the development and offering of products and services [1]. Yet, the labor market participation rate of PWDs is significantly lower than persons without disabilities. This underrepresentation is not often reflected in official statistics as many PWDs are not even officially registered as unemployed. Data from eight regions across the world shows that only 36% of PWDs of working age are employed whereas this figure is 60% for those without disabilities [2]. This report further shows that PWDs are more likely to be in a vulnerable employment situation and paid less (14% less in the U.S.), with women with disabilities often in a worse position than their male counterparts. The challenges faced by the disabled population in contributing equally in our society has implications not only to our economies, but also human rights, equality, equity, and diversity.

The statistics for the U.S. alone are not encouraging either. According to the Centers for Disease Control (CDC) [3] 61 million adults in the United States (about 26% of 1 in 4 people) live with some kind of disability. Within this population, 13.7% of adults have a disability in mobility (e.g., walking, climbing stairs), 10.8% in cognition (e.g., concentrating, making decisions and remembering), 6.8% in independent living (e.g., doing errands alone), 5.9% in hearing (e.g., deafness or
serious difficulty hearing), 4.6% in vision (e.g., blindness or serious difficulty seeing), and 3.7% in self care (e.g., difficulty in dressing or bathing). Only 29% of working age Americans (aged 16 to 64) with disabilities are employed vs. 75% of Americans without disabilities. The unemployment rate for persons with disabilities is 2 times more than that of those without disabilities.

Currently, there are many obstacles to the inclusion of PWDs to the workforce. These can be categorized into the following:

- **Lack of an enabling environment:** The obstacles that can be potentially placed in this category comprises accessibility barriers in transportation, built environments, products and services. It can also include inadequate or improper unemployment benefit programs, disability support services, affirmative action or quotas, vocational training and rehabilitation programs.

- **Employers:** The obstacles that can be placed in this category comprises the general lack of awareness or confidence by employers to hire and retain PWDs or provide professional development, and adequate workplace accommodations. It can also include inaccessible work premises and work tools, including Information and Communication Technologies (ICT).

- **Workforce development organizations:** The obstacles placed in this category primarily revolve around the lack of attention by trade unions, employer and professional associations, and local workforce development organizations to the needs of PWDs who are already employed or are seeking to enter the workforce.

- **Society:** This category comprises the obstacles posed by stigma and stereotypes surrounding PWDs and their capabilities, and the increased exposure to harassment and violence.

In spite of the many challenges facing PWDs in work scenarios, there are many encouraging developments in terms of policies and practices. The advantages of disability inclusion are being recognized by both the public and private sectors and are being touted as the business case for disability inclusion. These cases consider PWDs in the two following roles:

- **PWDs as employees:** It has been shown that disability inclusion has a positive impact on business performance. PWDs have traditionally developed valuable skills and traits such as problem-solving, agility, forethought, innovative thinking and perseverance, and a willingness to experiment in order to adapt to the world around them. [4]. Studies show that PWDs make workplaces more inclusive and stigma-free environments that are better for everyone [4]. Additionally, companies employing PWDs are above average in terms of profitability and value creation [5]. Moreover, the turnover rate among employees identifying as a PWD was 48% less than for persons without disabilities, and general staff turnover rate can be reduced by up to 30% by including PWDs in the workforce [6]. Employing PWDs can also bring improved reputations to employers [7] and possibly negative impacts to the reputation of those who do not [8].

- **PWDs as consumers:** In an increasingly complex and diverse world, innovative products, services, and environments that are accessible to all are not just desirable, but they also offer a competitive advantage. Apart from the ability to reach one billion PWDs, their friends, family, and the general aging population presents additional opportunities to provide products and services [9].
An opportune time
Since the beginning of the century, due to the increasing cooperation and interconnection between people and technology, there has been a transformation in not only the means of production, but also the supply and demand of products and services. Sometimes called the Fourth Industrial Revolution, this transformation represents a series of significant shifts in the way economic, political, and social value is being created, exchanged, and distributed. A major reason for these shifts are new technologies, namely artificial intelligence, digitalization and blockchains enabled by high-speed communication networks. These technological developments will also shape the future of work. The technological revolution, which comprises areas such as, but not limited to, artificial intelligence, digitalization, automation, robotics, biometrics and big data is already causing major changes to the labor markets. These developments will continue to shape the jobs of tomorrow and will require very different skillsets than those that exist today. The future of work will also be impacted by cultural changes. The consequences of the ongoing technological transformation are unclear, but without proper attention, issues such as the rise in inequality will increasingly impact disadvantaged populations that include PWDs. It was essential at this time to identify the challenges and opportunities provided by this transformation and prepare for a more inclusive society. With adequate attention, preparation, and tools, PWDs can help shape the technological transformation and have a larger presence in the workforce of tomorrow.

Need for a Convergence Accelerator Approach
The proposed workshop theme required various disability perspectives, various rehabilitative and recuperative approaches, various organizations that serve the needs of PWDs or provide opportunities, and various disciplines that need to integratively solve a part or the whole challenge, to come together. Thus, the need for convergence is clear. Disability inclusion in workplaces through technology is also clearly an use-inspired research area. The assistive technologies and tools that can be created in an accelerated fashion can make an immediate impact on a population that desperately needs such interventions to be part of the workforce for the greater benefit of society. The technology exists, the knowledge of what needs to be done exists; what was needed was a concerted effort to bring diverse stakeholders together to create a research agenda that, if pursued by various teams with adequate funding, can lead to real solutions that can be put to use immediately.

2.1 Intellectual Merits
This project is different from prior work in that it is forward-looking (pre-emptive as opposed to reactionary) in creating a research agenda encompassing various emerging and expected developments in technology, human factors, and social and behavioral sciences. In addition, by taking a comprehensive and universal design view, it plans to consider all the major disabilities (e.g., vision, hearing, cognitive and intellectual, physical and mobility) and combinations of these in some instances. Of particular interest is focusing on specific assistive technologies that need to be accelerated for enabling the integration of PWDs in emerging workforces and the associated education and training initiatives that will be required. The project brought together a diverse cohort (including many individuals who identify as PWDs) covering various perspectives of the challenge, while leaving sufficient room to expand collaborations beyond this workshop as an impactful research agenda is developed. The cohort attending this workshop spanned researchers and thought-leaders from academia and industry, nonprofits serving PWDs, employers of PWDs, workforce training
institutions, and national disability inclusion advocates.

2.2 Broader Impacts

Generally, the outcomes of this project will be useful to all disability inclusion initiatives, not limited to just technology-related initiatives. Although the focus of this project is on work, workplace, and workers, much of the tools eventually created can also impact independent living and community participation of PWDs. Often, assistive technologies and accessibility tools designed for PWDs become mainstream technologies offering benefits to everyone. Due to the involvement of various stakeholders, such as nonprofits and industry members, it is expected that the convergence technology designed or developed starting from ideas conceptualized through the workshop will be *directly transferable and applicable to the service of PWDs*. Given the national reach of some of the stakeholders, the knowledge acquired about designing disability inclusion tools and policies will be disseminated easily to many affiliates. Finally, this project can have an impact preparing a future workforce that better appreciates the challenges facing PWDs, and encourage them towards choosing careers that can help solve some of these challenges. Additionally, disability inclusion in workplaces starts with educating and training PWDs to enter the workforce and is thus an integral part of the workshop’s discussions.

3 Discussion Themes: Technology, Workers, and Work

With a near to medium-term goal to design technological pathways for solving various participation barriers for PWDs in emerging workplaces, this workshop (through a series of discussions and activities) assembled a cohort of stakeholders and envisioned what disability inclusion will look like for employment of PWDs, and created a relevant research and educational/training agenda. Some of the research questions that were discussed are as follows:

3.1 Relevant Research Questions

**Emerging Technology**
Based on the nature of current and emerging work, what technologies will PWDs need to be able to participate in the workforce? What roles will AI, digitalization, biometrics, robotics, automation, and big data play in the design of enabling tools? What new challenges are likely to arise with the introduction of more technology into the workplace and how should accessibility issues be addressed? How can we ensure that, in addition to access to new technologies, there are opportunities to train on them to gain confidence and skills for use in workplaces? How can we encourage universal design principles to be adopted in the early stages of the technological revolution? How should we keep security and privacy in mind as it relates to PWDs as these future technological tools are designed?

**Emerging Workers**
What will the workforce look like in the near, intermediate and long-term? What percentage of the workforce will PWDs be? How will PWDs participate in the workforce? Will smart and connected home technologies allow PWDs to work from home (solving their work commute challenges) as effectively as they can from an office environment? What will work look like for the older adult
population who desire encore careers but develop one or more disabilities? Will future transportation, e.g., autonomous cars, improve mobility for PWDs and enable them to participate in a broader range of employment options? What will education and training efforts to better integrate PWDs better into the workforce of tomorrow look like? How will PWDs compete with non-disabled workers given that there may be differences in productivity rates?

**Emerging Work**

What will be the nature of work with increasing automation? How will society change due to the better integration of PWDs into the workforce of tomorrow? How will we measure overall benefits from integration of PWDs in society? How will employers locate and hire PWDs? How will the technological tools created to enable PWDs in the workforce be funded?

### 3.2 Related Work

Assistive technology (AT), which is used to increase, maintain, or improve the functional capabilities of people with disabilities, is playing a substantial role in creating a more diverse and inclusive workplace. Wide-ranging technology is used to support essential job functions, including communication and organization, and often enables employees with disabilities to work independently (e.g.,[10, 11]). Assistive technology accommodations within the workplace vary based on the needs of each person and the job requirements.

Accessible technology includes any mainstream technology that has been designed with the needs of various users in mind and generally incorporates assistive technology solutions. Mainstream computing platforms already integrate a lot of accessibility features such as Windows Narrator and Magnifier, Apple’s Voice Over, Switch Control, and Live Listen, and Google’s ChromeVox screen reader and adjustable magnification/contrast aid, and keyboard guide. Many web platforms such as YouTube provide automatic captioning and tools to improve captioning.

Significant innovations within the world of artificial intelligence (AI) are improving workplace experiences for employees with disabilities. Apps such as Microsoft’s Seeing AI [12] describe people, text, and objects aloud for people with low vision. Proloquo2Go [13] is a customizable Augmentative and Alternative Communication (AAC) app that allows people without speech to easily communicate using symbols. The IntelliGaze[14] is a communication system that enables people with physical disabilities and dexterity needs to operate their computers using eye control.

With devices such as Amazon Echo and Google Home, and built-in personal software like Apple’s Siri, Samsung’s Bixby, Microsoft Cortana, Google Assistant and Amazon Alexa, tools within the workplace are more accessible. Voice assistants incorporate voice response that simulates conversations and integration with various applications and platforms to create an interactive virtual identity. Software allows everything from making calls, to scheduling appointments, to turning on or adjusting electric devices (i.e. a thermostat or light bulb), and much more.

While these emerging technologies have made life and work easier for PWDs, in many instances, they are introduced piecemeal by each manufacturer/vendor to just make their products accessible; in some cases accessibility is just by accident [15]. **More can be achieved by taking a holistic view needs of PWDs across disabilities by considering both research and educational/training needs.**

In terms of broader efforts, there has been a National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR) project led by Georgia Tech to comprehensively
develop technology for workplace inclusion [16]. It’s emphasis is more on workplace accommodations rather than technology-enabled research. Microsoft is funding a program called AI for Accessibility [17] that includes disability inclusion tools as one of its focus areas, but is looking at the issue from the narrow lens of AI-based technology without consideration of other dimensions of the challenge. SourceAmerica has come out with a series of position papers [18, 19, 20] on disability inclusion in the future, including within workplaces. However, these position papers do not consider the challenges in sufficient depth to point out specific research and technical challenges for the scientific community.

4 Workshop Format, Themes, and Attendee Profile

The workshop was planned as an engaging avenue to identify potential themes and outcomes that, if accelerated, can make a significant immediate impact on the workforce participation of PWDs.

4.1 Format

The workshop was held over three half-day sessions (May 20, 25, and 28 of 2021). Gaps between sessions allowed attendees a break and provided them time to process the activities from a session and attend the subsequent session with a greater purpose and motivation. The gaps also allowed facilitators and organizers the time to fine tune possible activities for a subsequent session based on what was discussed during a prior session. Attendees that missed a session due to some reason, had the opportunity to go over recordings or read transcripts of prior sessions and re-join activities and contribute towards workshop goals.

Figure 1: Workshop Format

The actual workshop’s live sessions were preceded by 5-15 minute videos by various thought leaders posted on the KIStorm event platform. These thought leaders presented broad perspectives of the challenge and their opinion on which disability inclusion areas related to employment are
ripe for acceleration. Thought leaders were chosen to represent the following categories: industry, academic research institutions, large employer of disabled individuals, a disabled individual, and rehabilitation providing organization. The thought leaders for this workshop were (in no particular order): Andrew Begel from Microsoft, Ted Conway from the Florida Institute of Technology (Ted identifies as mobility impaired individual), Sheryl Burgstahler representing DO-IT from the University of Washington, Mike May from GoodMaps (Mike identifies as a blind individual), Kat Steele from AccessEngineering at the University of Washington, Sheri Byrne Haber from VMWare, and Raymond Grott, Director of the RET Project at the San Francisco State University.

Day 1 began with introductions of the organizing team followed by setting out the motivations and agenda for the workshop. Discussion on this day centered around identifying barriers for disability inclusion in the workplace. Two breakouts (self-selected based on potential barrier themes of interest) were conducted with report-outs to keep all informed about the discussions from each group. At the end of Day 1, every attendee had an idea of the broad theme of the workshop, goals from the workshop, and what the community perceived to be the barriers. Every attendee was given additional time after the day to add more barriers that they could think of. The workshop organizers then took these barriers and categorized them into different themes for discussion of potential solutions to barriers on Day 2.

Day 2 began by summarizing the barriers identified by participants on Day 1 and introducing participants to the overarching themes that these barriers fell under. Additional breakouts were conducted for each barrier theme to identify potential solutions. The first breakout did not limit potential solutions, but the second breakout asked participants to narrow down potential solutions into those that are ripe for acceleration and need to be solved by a convergent approach. At the end of the day, six themes were identified with a list of potential outcomes of interest.

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<th>Non-Profits/NGOs/Centers</th>
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<td>National Disability Institute</td>
<td>National Science Foundation (NSF)</td>
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<td>University of Washington</td>
<td>Google</td>
<td>Envision Research Institute</td>
<td>National Institutes of Health (NIH)</td>
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<td>Gallaudet University</td>
<td>VMware</td>
<td>DO-IT (Disabilities, Opportunities, Internetworking, and Technology)</td>
<td>National Institute on Disability, Independent Living, and Rehabilitative Research (NIDILRR)</td>
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<td>GoodMaps</td>
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<td>The Partnership on Employment &amp; Accessible Technology (PEAT)</td>
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Figure 2: Workshop participant organizations

Day 3, the final day of the workshop, had the objective of synthesizing all the discussions and ideas into a summarized format for everyone to comment on and ensure that none of the major
consensus ideas are missed. All six of the major themes were discussed again and re-organized to reduce overlaps while providing a good list of sample outcomes for the community to strive for. Participants helped answer five workshop outcomes-themed questions that were to be submitted to NSF as a initial summary report from the workshop. Post-workshop, the organizers reduced the number of themes to three broad areas as listed in the following section.

A summary of the workshop format is illustrated in Figure 1.

![Figure 1: Workshop Format](image)

25% of the participants identified as having a disability (18/73)

![Figure 3: Demographic Summary](image)

4.2 Attendees

Workshop attendees spanned the entire spectrum of stakeholder groups. Major stakeholders included people with disabilities, academia, industry, government/non-government organizations, research centers and non-profit agencies. Individual entrepreneurs known to work at an accelerator pace on related areas were also invited, serving as potential role models for future solicitation competitions. The list of participating organizations is presented in Figure 2 and the demographic summary of individuals shown in Figure 3.

5 Workshop Outcomes

Workshop outcomes can be summarized as responses to specific questions connecting the convergence accelerator solicitation with each workshop.

5.1 How is the translational research use-inspired? Why is it needed?

The overarching theme of disability inclusion in workplaces through technology is clearly a use-inspired translational research area. This theme is borne out of years of challenges faced by people with disabilities (PWDs) in finding employment and progressing in their careers. Statistics indicate that 61 million adults in the United States (about 26% or 1 in 4 people) live with some kind of
disability as defined by the Americans with Disabilities Act of 1990. However, 71% of working age Americans (aged 16 to 64) with disabilities are unemployed vs. 25% of Americans without disabilities, and these numbers have not changed for several generations.

In addition, US employers are not and have not been able to adequately tap into the human capital available in persons with disabilities. PWDs as a population are generally not considered in Diversity, Equity, and Inclusion efforts. Moreover, even if these employers wanted to hire PWDs, they typically do not have the knowledge and/or means to reach out, recruit, retain and mentor PWDs. By increasing the employment of PWDs, US employers could significantly increase and improve their human capital. Furthermore, striving for higher employment rates for PWDs is fiscally prudent as each employed person will contribute to tax revenue while not needing government support.

Although significant increases have been observed in the STEM participation of many underrepresented groups, major disparities in related educational attainment and employment patterns remain for PWDs. To effect positive change, a comprehensive and systematic scientific approach is needed to improve awareness and understand the processes that led to this inequity experienced by PWDs. Thus, there is a pressing need for the broader scientific community to work with relevant stakeholders to address the challenge of disability inclusion in the workforce.

5.2 What are the convergent themes and why are they not only convergent but ready for acceleration?

The three convergent themes are:

- **Theme A: Design and Innovation of Assistive Technologies & Access** Design of new technologically-based accessibility tools to make foundational employment activities more accessible.

- **Theme B: Hiring and Workplace Accommodations & Policy/Economics** Development of new social and economic-based initiatives directed toward making employment, hiring and workplaces more accessible and more welcoming to people with disabilities.

- **Theme C: Training, Workforce Development, and K-16 Education** Design of new technologically-based accessibility accommodations to make K-16 education more accessible to students with disabilities and design of improved re-training tools and methods.

These themes necessitate the convergence of multiple stakeholders. The assistive technologies and tools that can be created in an accelerated fashion can make an immediate impact on a population that has historically lacked such interventions to be part of the workforce for the greater benefit of society. As technology continues to evolve, a concerted effort by teams of diverse stakeholders is needed to together propose solutions addressing challenges within identified themes. Given the many benefits (see later in this section) of disability inclusion in the workplace and the fact that this population has been working towards solutions (but still away) for decades, an accelerated timeline is warranted.
5.3 Who would likely be the stakeholders involved?

Potential stakeholders involved will likely include partnerships between the following entities: PWDs, industry (across industry sectors, various sizes), researchers, advocacy groups, non-profits, non-governmental organizations, communities, educational organizations at all levels (Pre-K, K-12, undergraduate and graduate, postdoctoral), faculty, policy makers, standardization bodies, and practitioners (e.g., social workers, human resources, rehabilitation professionals, occupational therapists).

![Potential partnerships diagram](image)

Figure 4: Potential partnerships that can come about under the theme with some example organizations. There is expected to be a greater role for individuals with disabilities to play towards disability inclusion under the convergence accelerator framework.

5.4 What are possible tangible outcomes (sample topics)?

For each of the identified broad themes, multiple breakout groups were used to first list and then refine possible tangible outcomes. These outcomes can be suggested in a potential solicitation on the topic.

5.4.1 Theme A: Design and Innovation of Assistive Technologies & Access

- Scalable and sustainable assistive technologies for work and education
- Frameworks for digital involvement and advocacy
- Participatory design tools towards usable technologies
- Disability-inclusive transportation/mobility solutions (e.g., interfaces for autonomous vehicles, navigation/mobility aids within workplaces)
• Disability inclusive workplace tools for diverse industrial sectors and formats (virtual, in-situ)

• Secure, privacy-preserving, and trustworthy (from a person with a disability context) digital tools

5.4.2 Theme B: Hiring and Workplace Accommodations & Policy/Economics

• Disability inclusive hiring tools/technologies/processes (e.g., fair AI tools, incorporation of strength-based metrics, DEI initiatives that include disability)

• Methods for improved community-building and employment networks specific to persons with disabilities

• Centralized clearinghouse of information on funding/resources and Medicaid buy-in programs

• Enhanced beneficent disability inclusion approaches within legislation/policy/government

• Quantify the impact of increasing the employment rate of PWDs on the US economy

• Revised asset limits on means tested disability benefit programs and their effect on the labor participation rate of persons with disabilities

5.4.3 Theme C: Training, Workforce Development, and K-16 Education

• Education and leadership tracks for persons with disabilities

• Start-up accelerators; workshops to teach tech skills/understanding to become advocates

• Innovative platforms to match training with workforce needs and hiring practices.

• Scalable and adaptive retraining tools

• Programs for teacher/faculty preparation in accessibility and peer mentoring

• Accessible curriculum tools, and improved testing solutions and online learning

• Innovative resources and curriculum incorporating disability and other intersections (e.g., gender, race)

• Evolutionary standards/definitions for accommodations and creation of processes for consistent implementation
5.5 How will all this help PWDs, employers, etc. in terms of benefits?

A diverse workforce that includes PWDs is smart. Diversity facilitates novel and creative thinking and problem solving. It increases the likelihood of innovative solutions, processes, and products. The stigma and misconceptions about the abilities of PWDs together with misunderstood cost/benefit to hiring PWDs have resulted in missed opportunities for hiring qualified employees. These problems of stigma and misconceptions about the abilities of PWDs is compounded for women, persons of color, and people from other underrepresented groups of society who are also members of the disability community. The outcomes from this effort could significantly decrease barriers to entrance into the workforce, sustained and productive employment, and advancement into leadership positions. Having a larger portion of the workforce made up of PWDs, that includes women, minorities and other underrepresented groups with disabilities, will lead to a paradigm shift toward a focus on a person’s abilities, rather than disabilities. Also, it will ensure that outputs are inclusive, addressing needs of various users. Ultimately, accessible solutions will benefit everyone - inclusive and accessible workplaces support innovation and create a feedback loop that further amplifies these efforts. Inclusion and participation of PWDs leads to greater interaction and the design of products, environments, and experiences that are inclusive and accessible. Outcomes from this track can provide resources for potential employers to overcome barriers in employing PWDs; for instance, toolkits, best practices, means to reduce the cost of hiring and supporting PWDs.

It’s Not Just the Right Thing To Do
It’s the (Economically) Smart Thing To Do

Supplemental Security Income (SSI) guarantees a minimum level of income for persons with disabilities including low vision and individuals over 65 years of age.

- January 2020: 7.3% of qualified PWD (5.2 million) received SSI payments costing taxpayers an average of $6708/year/person ($34.9 B/year1)
- Fulltime employment at $15/hr (Minimum Wage) for each 1% of working-age PWD that would otherwise be receiving SSI
  - $350M reduction in annual SSI expenditures
  - $405M increase in annual tax revenue2
- Net benefit of $755M annually per 1% employment of the 7.3%
- Revenue Neutral at an Employment Rate less than 50% (46.2%) of the 7.3% of qualified PWD currently receiving SSI
- At 100% employment of qualified PWD -
  Net Tax Revenue: +$525B/yr

1. www.ssa.gov

Figure 5: Main points on why disability inclusion in workplaces is also economically smart.

There are also immediate tangible economic benefits to disability inclusion in workplaces. One dimension is the availability of talent which results in greater economic activity and output. The 15.1 million people of working age living with disabilities in the U.S. represent a talent pool of more than 10.7 million people for U.S. companies [5]. The other dimension is of direct economic
benefits through revenue and savings to the federal government. Supplemental Security Income (SSI) under the Social Security Administration (SSA) guarantees a minimum level of income (e.g., safety net) for aged, blind, or disabled individuals. As of January 2020, 7.9 million individuals received SSI payments averaging $559/month ($6708/year); federal SSI expenditures during calendar year 2019 were $56.2 billion [21]. Considering that about 62.2% of the PWDs population in the U.S. is of working age (18-64), a goal of achieving full-time employment for 15% of PWDs will result in a $4.9 billion reduction in SSI expenditures. When one adds the $1.4 billion increase in annual tax revenue projected by the addition of 15% of this population (considering a minimum wage of $15/hour)) [22], the net benefit is $6.3 billion annually.

Put another way (as highlighted in Figure 5), there is a net benefit of $755M annually per 1% employment of the 7.3% of PWDs who are receiving SSI payments. This can result in being revenue neutral at an employment rate of only 46.2% of the 7.3% of qualified PWDs currently receiving SSI. For reference purposes, at 100% employment of qualified PWDs (at $15/hour), the net tax revenue can be $525B/yr.

6 Example Applications/Solutions

In this section we present two example applications/solutions that are representative of the type of innovative research and solutions that are needed under an accelerated timeframe. These are becoming mainstream applications, and addressing accessibility of such applications is critical for being disability inclusive in the workplace of tomorrow.

6.1 Self-Driving Cars

Independent mobility has always been a challenge for PWDs. Many disabling conditions make it difficult to safely operate a vehicle necessitating the use of transit or relying on others to provide rides. Transit (including paratransit) often has limitations in terms of availability or routes served. Transit is often limited beyond urban areas. Utilizing others such as friends for rides is not always possible or desirable. Ridesharing services are very popular, but are not economically viable for most if used frequently, and often do not offer wheelchair accessible transportation options. If PWDs can independently operate vehicles, it will make not just a big difference to their quality of life, but also allow them to take on many more employment opportunities. What is needed is disability-inclusive transportation/mobility solutions (e.g., interfaces for autonomous vehicles, navigation/mobility aids within workplaces). For example, appropriate user-interfaces for blind individuals or amputees to operate vehicles are sorely needed. A lot of the current self-driving initiatives are focused on the general population; convergence accelerator projects that can take these efforts and customize it to the diverse needs of PWDs can make a profound impact.

6.2 Telework Toolkits

A contrasting challenge of importance for PWDs is the ability to effectively telework. While teleworking reduces some of the mobility challenges, this modern paradigm shift brings forth a new set of challenges. Deaf or hard of hearing individuals find themselves unable to effectively participate in online meetings or discussions. Blind individuals are having challenges in accessing
software tools for work and digital information. Individuals with limited dexterity are having challenges with computer input. Teleworking tools were designed for the general population, and many facets have to be re-visited to make them welcoming and accessible for PWDs. There is a need for disability inclusive workplace tools for diverse industrial sectors and formats (virtual, in-situ). For example, contributions must be made in the natural language processing realm to convert PWD speech (that may be different from other users, for example due to stuttering) to text, and alternatively, take PWD-usable input streams into digital information. In addition, these tools must be secure, privacy-preserving, and trustworthy (from a person with a disability context).

7 Conclusions

A diverse workforce that includes PWDs is smart. The stigma and misconceptions about the abilities of PWDs together with misunderstood cost/benefit to hiring PWDs have resulted in missed opportunities for hiring qualified employees. Challenges of disability inclusion have typically been compounded for women, persons of color, and people from other underrepresented groups of society who are also members of the disability community. An objective of this workshop was to have PWDs be represented at all stages—Design, Implementation and Evaluation—of disability inclusion solutions in the workplace. The participants agreed that the workshop goals fits within the scope of national and NSF top priorities.

The outcomes from this effort could significantly decrease barriers to entrance into the workforce, sustained and productive employment, and advancement into leadership positions, which:

- Can lead to a paradigm shift toward a focus on a person’s abilities, rather than disabilities
- Can establish accessible solutions that benefit everyone - inclusive and accessible workplaces support innovation and create a feedback loop that further amplifies these efforts
- Involvement of PWDs at all stages of product/assistive technology development: Design, Implementation and Evaluation
- Could impact 26% of the US population
• Could convert billions in expenditures into revenue
• Could improve the quality of life of tens of millions of people in the US

References Cited


Addendum

1. Names of workshop participants
3. Accenture’s report on Disability Inclusion Advantage
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The question of whether people with disabilities should be hired as employees can be considered from three different perspectives: moral, legal, and economic. From a moral point of view, the question can clearly be answered in the affirmative. After all, respect and charity are among the most important cultural and religious values of our society. If a company does not face up to this moral obligation, the company’s image suffers and there may be social consequences that can result in negative word-of-mouth and lower sales. The legal situation differs between countries but is usually relatively simple and straightforward. In Italy, for example, companies with 15 to 35 employees must employ one person with a disability. For larger companies with 36 to 50 employees, this figure rises to two and with more than 51 employees, a total of 7% of all employees must be disabled. If a company does not comply with this quota system, fines will be imposed. This article deals with the third aspect, which for many companies is most important: the economic one. The central question is whether and under what conditions an employee with a disability can perform just as well or even better than a non-disabled colleague and therefore contribute to the economic success of a business. With a number of examples from research and practice, it is illustrated that economic reasons—in addition to moral arguments and legal obligations—also speak in favor of hiring disabled employees.
Introduction

When it comes to finding appropriate jobs, people with disabilities are still heavily disadvantaged. This is mainly because of negative prejudices of employers, which often believe that people with disabilities are not able to perform as efficiently as non-disabled workers, or that they are a burden rather than a source of added value to the company. These fixed patterns of thinking and unwelcome corporate cultures (Ali et al., 2011) prevail in most industries and across borders, having a significant impact on the lives of people with disabilities who are looking for a job or that are currently working. In both situations, the biased reasoning of managers and corporate decision makers leads to disadvantages not only for the jobseeker or employee, but also for the employer. Whether it is because companies are not hiring a person with a disability or because they are not fully using their employee’s skills, they are missing out on important opportunities and ultimately hurting their firm’s profitability and success.

This article’s focus does not lie on the moral or legal obligation of companies to include people with disabilities, but on the economic aspects of employment that contribute to the success of a company. The results of countless studies speak for themselves: If the right people with disabilities are selected for the right job and are given responsibility, they often outperform other employees, with higher levels of efficiency, productivity, accurateness, commitment, loyalty, and satisfaction. This, in turn, increases the company’s profitability and overall shareholder value. The key arguments are summarized in Fig. 1.

People with disabilities are highly motivated to work

The majority of people with disabilities wish to be engaged in some sort of meaningful activity (Boardman et al., 2003). For most people, this meaningful activity is a synonym for work as an employee. In fact, more than 50 studies exploring the meaning of work for people with cancer, mental illnesses, brain injuries, paraplegia, AIDS, and musculoskeletal disorders found that work continued to play a vital role in their lives, as it is perceived to be a source of identity, while providing feelings of normality, socialization, and financial support (Saunders and Nedelec, 2014). Although paid work is obviously an important source of income for families with a disabled family member, the major motivational drivers to continue working, despite a disability, are social integration and participation rather than a financial nature (Marti et al., 2012). Research also shows that motivational levels of employees with disabilities are not just comparable but significantly higher-than-average. One reason for this is that it is considerably more difficult for them to even get a job. Once hired, people with disabilities appreciate the opportunity to work and are more motivated to perform above what is expected. On the other hand, the higher motivation is also due to the fact that others, e.g., co-workers or managers, place less confidence in people with disabilities, who in turn want to convince their colleagues of the opposite. This higher level of motivation leads to better quality, friendlier dealings with customers, higher loyalty towards their employer, and more consistent performance.

Another key aspect of human resources management is employee satisfaction. A broad body of research suggests high job satisfaction in people with disabilities (Kocman and Weber, 2018), which generally leads to lower employee turnover and higher return on investments in training and development. Employees with disabilities work harder, are more productive, more loyal, and show lower absenteeism rates (Hernandez et al., 2008). For example, a participant in a study about employers’ perceptions of their disabled workforce reported:

“[A disabled employee has] been with us for 35 years. He’s never missed a day and he’s never late. Whenever there’s a snowstorm, he prepares to get to work on time and most of the time the manager’s not there. So, we look at that individual and say, ‘Wow! We need more guys like that.’” (Hernandez et al., 2008, p. 162)

Advantages for companies hiring people with disabilities

The authors of the same study (Hernandez et al., 2008) concluded that although costs associated with employing people with disabilities were minimal, and employing them helped create an overall more positive work environment, managers are still biased against hiring workers with disabilities. From a business perspective, these kinds of biases are very problematic, as it is the manager’s duty to select people and manage operations in a way that maximizes profits and shareholder value. Excluding people with disabilities ex ante can therefore harm the economic performance of the firm, and ultimately place a business at risk for losing customers to its competitors. The following examples are

<table>
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<th>Characteristics of people with disabilities</th>
<th>Advantages of hiring people with disabilities</th>
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<tr>
<td>• Higher motivation to work</td>
<td>• Lower absenteeism rates</td>
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<td>• Very loyal towards their employer</td>
<td>• Lower employee turnover</td>
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<td>• Friendlier dealings with customers</td>
<td>• Higher ROI in training and development</td>
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<td>• Score higher in job satisfaction</td>
<td>• Overall more positive work environment</td>
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<td>• Perform more consistently</td>
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<td>• Better ability to identify creative solutions</td>
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<td>• Higher willingness to experiment</td>
<td>• Increased business performance, market share, and shareholder value</td>
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<td>• Superior problem-solving skills</td>
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Fig. 1 Key economic arguments for hiring people with disabilities.
meant to highlight best practices and to advocate disability inclusive hiring.

In 2007, the American company Walgreens opened a distribution center in which more than 30% of the 800 employees lived with a disability. The result was surprising, as the center was 20% more efficient than comparable facilities without disabled workers. In addition, employee turnover was half that of other employees, and people with disabilities had a third fewer incidents or accidents than their non-disabled colleagues (Kaletta et al., 2012). To successfully integrate and to take full advantage of the skills and capabilities of people with disabilities, it is often sufficient for the company to make small changes to the people’s workplace or production process. This can be done, for example, by creating a little more space for a wheelchair user or by breaking a production step into two simpler individual operations. Besides changes of work tasks and physical adaptations of the workplace, it may also be enough to change working time (Kuznetsova and Cerdeira Bento, 2018).

People with intellectual disabilities often work more concentrated and accurately, which is why they perform repetitive tasks particularly well. One company that relies on this strength is the Asperger Informatik AG (Conza and Juric, 2013). The Swiss company prefers to employ people with Asperger’s syndrome, a mild form of autism. People with Asperger’s are often intellectually gifted, have a quick grasp, high attention to detail, extreme ability to concentrate, tenacity and perseverance. These are ideal conditions for a company working with information technology. In order to be able to use these special abilities, the company creates a low-irritation environment for its employees, minimizes stress and pressure, finds suitable task areas and plans the work processes as accurately as possible (Conza and Juric, 2013). Despite these advantages, applicants who mention their Asperger’s syndrome when applying for an accounting position receive about 26% fewer expressions of employer interest (Ameri et al., 2018). This percentage value is counter-intuitive and can only be explained by either a lack in knowledge by the hiring manager and/or a conscious or unconscious bias against people with disabilities.

Even severely handicapped people can contribute to the economic success of a company, if they are deployed correctly. Computer-assisted activities in particular can also be performed by blind people or people with severe motor disabilities. Since they are usually also dependent on technical products in their private lives, there is often an increased interest and an above-average understanding of technology and information technology. The increasingly frequent possibility of working from home also facilitates the integration of these people into the world of work. This is exactly what the more than 100-year-old American company Alphapointe—which offers manufacturing, assembly, and contract management—does. The company employs more than 120 blind employees, which make up more than 50% of the total workforce. According to an article published on July 23, 2017 on the New York Post website, Alphapointe’s CEO confirms that “People who are blind are capable, productive, skilled and loyal employees when given the opportunity to prove themselves. Truly, hiring someone who’s blind is the same as hiring someone who’s sighted”.

Disadvantages for companies not hiring people with disabilities

When a company decides not to employ people with disabilities, this can lead to a number of potential competitive disadvantages. Three key issues are missing out on employing individuals that are highly skilled, losing employees that could provide alternative approaches to problem-solving, and not being able to properly target customers with disabilities.

Average grades and graduation outcomes are mostly identical between students with disabilities and able-bodied students (Jorgensen et al., 2005). In many Western and industrialized countries where access to higher education is guaranteed and sometimes even incentivized for disadvantaged groups, large percentages of people with disabilities complete secondary or higher education. In Germany, for example, the relative percentage of people with disabilities that are considered to be qualified specialists is higher than amongst people without disabilities. Therefore, when a company’s recruitment policies and practices are biased against hiring people with disabilities, they can miss the opportunity to employ highly skilled workers.

Secondly, people with disabilities are often more likely to find appropriate solutions to complex and unexpected problems. This is because they are coping with sometimes difficult personal situations in environments that are not always meant to accommodate their specific requirements. This necessity to adapt and to find solutions to problems and situations in life that non-disabled people do not face, equips people with disabilities with superior problem-solving skills (Lindsy et al., 2019) and higher willingness to experiment. Given that a company’s ability to identify creative and innovative solutions can give it a competitive edge, not hiring people with these sought-after capabilities certainly poses a financial threat to businesses.

Thirdly, the number of customers with disabilities is increasing and becoming a more important target segment for many companies (Aichner and Shaltoni, 2018). According to the World Health Organization, about 15% of the world’s population has some form of disability, which makes them significant when it comes to selling products and services. Having employees with disabilities being involved in product development and other strategic management and marketing functions certainly helps in better understanding customers with disabilities which constitute one seventh of the people living on the planet. Losing this opportunity may mean losing market share and can lead to lower returns.

A study including 140 U.S. companies confirms that disability inclusion efforts increase business performance, specifically innovation, shareholder value, productivity, and market share (Accenture et al., 2018). Comparing so-called “disability inclusion champions” with companies that score lower in their efforts to hire and include people with disabilities, revenue of companies hiring disabled employees is 28% higher, economic profit margins are 30% higher, and net income is 111% higher.

Conclusions

Employment rates of people with disabilities are lower than average, while their motivation to work is generally high. The combination of these two pieces of information alone would suggest that companies should be willing to hire people with disabilities. In addition, previous research shows that people with disabilities score higher in a number of efficiency-related metrics and assessments and not hiring disabled employees can mean companies are missing out on opportunities to increase productivity and economic success.

So why are so many people with disabilities still unemployed even though they are of working age? A reason why commitment to disability inclusive hiring is limited may be low employer knowledge, especially at the HR and management levels (Sahle and Bruyère, 2018), as well as social barriers resulting from a lack of social support (Naraine and Lindsay, 2011). If more companies recognize the potential of disabled workers and manage to recruit the right person for the right job, everyone could benefit. The
Asperger Informatik AG calls it a win-win-win situation for the economy, society, and the individual.

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Competing interests
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GETTING TO EQUAL:
THE DISABILITY INCLUSION ADVANTAGE
“Persons with disabilities present business and industry with unique opportunities in labor-force diversity and corporate culture, and they’re a large consumer market eager to know which businesses authentically support their goals and dreams. Leading companies are accelerating disability inclusion as the next frontier of corporate social responsibility and mission-driven investing.”

– Ted Kennedy, Jr., Disabilities Rights Attorney, Connecticut State Senator and Board Chair, American Association of People with Disabilities
Introduction

What if you found out that your company is significantly underutilizing a critical talent pool? At a time when there are more job openings in the U.S. than workers, you’d want to know more, wouldn’t you?

And, what if, by recognizing the value of that talent pool and leveraging it, your company could also realize significant gains in profitability, value creation and shareholder returns—as well as other business benefits?

New research from Accenture, in partnership with Disability:IN and the American Association of People with Disabilities (AAPD), reveals that companies that embrace best practices for employing and supporting more persons with disabilities in their workforce have outperformed their peers.

In large part, companies haven’t leveraged the talents of persons with disabilities for three reasons:

• A lack of understanding of the scope of the talent available;
• A lack of understanding of the potential benefits; and
• Misconceptions about the cost versus the ROI of disability inclusion.

But leading companies that are working successfully toward disability inclusion have also achieved tangible financial benefits. For example, the research shows that leading companies were, on average, twice as likely to have higher total shareholder returns than those of their peer group.
A Vast, Untapped Market

Despite the strength of the U.S. labor market, persons with disabilities are strikingly under-employed. As of July 2018, only 29 percent of Americans of working age (between ages 16 and 64) with disabilities participated in the workforce, compared with 75 percent of Americans without a disability. In 2017, the unemployment rate for persons with disabilities was more than twice that for those without a disability—9.2 percent versus 4.2 percent.

There are 15.1 million people of working age living with disabilities in the U.S., so the research suggests that if companies embrace disability inclusion, they will gain access to a new talent pool of more than 10.7 million people.

That represents a significant opportunity to strengthen our businesses and our economy. According to other research cited within this report, employees with disabilities offer tangible benefits, including increased innovation, improved productivity and a better work environment. And, of course, workers are consumers, too. The GDP could get a boost up to $25 billion if just 1 percent more of persons with disabilities joined the U.S. labor force.

The good news, according to our analysis, is that U.S. organizations are successfully employing persons with disabilities and initiating and developing their disability inclusion programs.

Figure 1: A Wide Employment Gap
Persons with disabilities are much less likely to be employed.

Source: Accenture analysis based on data from the Bureau of Labor Statistics, July 2018

1 The Americans with Disabilities Act Amendments Act (ADAAA) defines a person with a disability as someone who has a physical or mental impairment that substantially limits one or more major life activities; has a record of such an impairment; or is regarded as having such an impairment. The ADA was amended in 2008 and became effective January 1, 2009. The ADAAA requires a broader interpretation of disability by schools, testing agencies and employers than the original law.
Accenture’s internal disability champions network of more than 16,000 employees worldwide helps colleagues feel included at work.

A Market Worth Targeting

The U.S. Office of Disability Employment Policy categorizes persons with disabilities as the third-largest market segment in the U.S., after Hispanics and African-Americans. The discretionary income for working-age persons with disabilities is $21 billion—greater than that of the African-American and Hispanic segments combined.²

²A hidden market: The purchasing power of working-age adults with disabilities, American Institutes for Research, April, 2018
Disability Inclusion and the Bottom Line

We took a closer look at DEI results over the past four years to unearth best-in-class companies—those that stood out for leadership in areas specific to disability employment and inclusion. We identified an elite group of 45 companies that excelled in these key categories, which we are calling Disability Inclusion Champions (or “Champions”). They make up 32 percent of the 140 U.S. companies that are part of this study. (See “About the Research” for more details.)

Our analysis focused on two important measures of financial performance among respondents: profitability (revenues and net income) and value creation (economic profit margin).

Across all the dimensions of the DEI that we analyzed, Champions are, compared with other companies in the sample, performing above-average financially. Champions achieved – on average – 28 percent higher revenue, double the net income and 30 percent higher economic profit margins over the four-year period we analyzed.

Figure 2: A Deep Dive into the DEI
A new independent scoring system developed by Accenture Research identifies Disability Inclusion Champions for their unique leadership in disability inclusion.

The Disability Equality Index

Disability:IN, in partnership with the American Association for People with Disabilities, produces the Disability Equality Index (DEI)—an annual transparent benchmarking tool that gives U.S. businesses an objective score on their disability inclusion policies and practices. It measures and weighs a wide range of criteria across key best practice categories: culture and leadership; community engagement and support service; employment practices; enterprise-wide access and supplier diversity (not included in this analysis). Companies participating in the DEI are typically large, with annual revenues of the total sample averaging $43 billion.

Source: Getting to Equal 2018: The Disability Inclusion Advantage, Accenture

N=140 (unique respondents to DEI survey 2015-2018)

3Economic profit margin (or economic value add margin) is a measure of profitability that compares net operating profit to total cost of capital.
Moreover, Disability Inclusion Champions were, on average, two times more likely to outperform their peers in terms of total shareholder returns compared with the rest of the sample.

Whether or not a company qualifies as a Champion, strengthening its commitment to persons with disabilities makes a difference:

Champions were **twice as likely** as others to have higher total shareholder returns than those of their peer group

Companies that have improved their inclusion of persons with disabilities over time were **four times more likely** than others to have total shareholder returns that outperform those of their peer group

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4 Improvers were identified as the top 25 percent of DEI study participants based on the ratio between their annual DEI score change and the maximum number of points they could gain to reach 100.

5 In our TSR models, we compared survey respondents with the top 10 company peers. The peer group is defined by S&P Capital IQ’s proprietary algorithm, which is based on five main components: (1) Revenue within similar ranges; (2) Industry (based on S&P Capital IQ classification derived from SIC codes); and (3) Amount of common equity analysts’ coverage; (4) Available information on recent financial data; and (5) Company location based on macro-regions (e.g., Europe) and country GDP.
What’s Holding Companies Back?

Some companies are not taking advantage of the benefits of disability initiatives. While many are concerned about the costs of accommodating persons with disabilities, these are actually minimal and fruitful investments.

According to employers participating in a recent study by Job Accommodation Network, a service from the U.S. Department of Labor’s Office of Disability Employment Policy, a high percentage (59 percent) of accommodations cost absolutely nothing to make, while the rest typically cost only $500 per employee with a disability.⁶

CEOs and investors need to know the strong qualitative and quantitative business case for robust disability inclusion programs. If we make companies aware of the potential gains, share success stories and demonstrate how to build these programs, we can quickly get more persons with disabilities into the workforce, where they can thrive.

“Deafness is just a way of life, a lifestyle. I tell my colleagues all the time, just because someone has a disability, it doesn’t prevent them from delivering great work.”

– Joaquin Ortiz, Consultant, Accenture

⁶https://askjan.org/topics/costs.cfm
“Being honest about where you stand can be a hard—yet crucial—first step toward becoming a more inclusive company. Accountability and creating an environment of trust where employees feel comfortable self-identifying as having a disability are true measures of inclusion.”

– Chad Jerdee, General Counsel & Chief Compliance Officer and Persons with Disabilities Sponsor, Accenture
How can companies build an inclusive workplace and reap the benefits?

The Four Key Actions

Accenture’s in-depth interviews with leaders from DEI-participating companies reveal four key actions for attracting, hiring, retaining and advancing diverse talent.

1. **Employ**

Organizations must ensure that persons with disabilities are represented in their workplace. Beyond hiring, employers should implement practices that encourage and progress persons with disabilities.

**Recruiting in Fresh Ways**

“In the case of people with autism, the knowledge base and technical aptitude of individuals can be very high, so we had to figure out why we weren’t placing them. We discovered the problem—the interview process. We changed our approach to what the process should look like. Now we work with a local group to bring candidates in for a week-long academy. We offer team work and technical exercises, and a lot of training. At the end of the week, we have an idea of those who will receive a job offer.”

– Jenny Lay-Flurrie, Chief Accessibility Officer, Microsoft

2. **Enable**

Leaders must provide employees with disabilities with accessible tools and technology and/or a formal accommodations program. Consider cultivating greater awareness through formal training programs for those without disabilities to learn about the tools and accommodations available for better integration across teams.

**Making it Work**

“We have a support services team that is made up of 300 people with intellectual disabilities. They work in four different locations in the U.S., and do fulfillment services and external client engagement. That helps the individual, the community, and us. They service all customers – those with and without disabilities; both internal and external.”

– Wil Lewis, SVP of Diversity and Inclusion, Bank of America
3 Engage

To foster an inclusive culture throughout the organization, companies must generate awareness-building through recruitment efforts, disability education programs and grass-roots-led efforts (for example, an employee resource group) and events.

Building the Pipeline

“Four years ago, we started sponsoring the National Wheelchair Basketball Association. Their youth tournaments are a blast! But we are there for more than the fun. The events allow us to talk to youth about what it means to work at T-Mobile. These conversations are pivotal because many of these kids have never considered that they have an option for an independent life. My favorite part is seeing their self-confidence improve, and the inspiration that comes from these events.”

– Bri Sambo, Senior Program Manager, Military & Diversity Sourcing, T-Mobile

4 Empower

Companies must offer mentoring and coaching initiatives, as well as skilling/re-skilling programs, to ensure that persons with disabilities continue to grow and succeed. Persons with disabilities should occupy roles at all levels, including top leadership positions.

Getting the Best

“People with disabilities tend to be some of the most creative, innovative and, quite frankly, most loyal employees. A person with a disability wakes up every day thinking about being innovative – that is a skill set. That ability to problem solve is innate to them. Our training programs quickly went from philanthropy to skill search.”

– David Casey, VP, Workforce Strategies & Chief Diversity Officer CVS Health
Beyond Revenue: Countless Benefits of Inclusion

A large body of previous research shows that disability inclusion efforts are a boon to employers, specifically across six key areas of “inclusion incentives.”

### Increased Innovation

Persons with disabilities have to be creative to adapt to the world around them. As such, they develop strengths such as problem-solving skills, agility, persistence, forethought and a willingness to experiment—all of which are essential for innovation.7

Having employees with disabilities across departments helps ensure that the products and services that go to market are truly inclusive. And making things more accessible for persons with disabilities can translate into products and services from which everyone benefits—for instance, home devices using natural voice recognition, driving sales and growth.8

### Improved Shareholder Value

Businesses that hire persons with disabilities and foster inclusive cultures report bottom-line benefits that show proven ROI.9

Regulators and the investor community increasingly monitor company culture and diversity. Disability inclusion is a key component of these metrics, and mandatory reporting on them will be enforced for some federal contractors starting in 2019.10

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8 Break down disability barriers to spur growth and innovation, Financial Times, September 2017


**Improved Productivity**

All workers benefit from a more diverse workplace. Studies show that working alongside employees with disabilities makes non-disabled individuals more aware of how to make the workplace more inclusive and better for everyone. Staff turnover is also lower—by up to 30 percent—when a well-run disability community outreach program is in place.¹¹

Work environments that are more inclusive of persons with disabilities often see improved productivity levels. For example, Microsoft has built a successful disability hiring program specific to people on the Autism spectrum. More organizations are discovering that employing persons with disabilities is not as expensive or challenging as is often assumed. A DuPont employee survey found that when employees with disabilities are graded on the same scale as other employees, 90 percent of them receive performance ratings of “average” or above average.”¹²

**Access to the Supplier Ecosystem**

Business leaders have discovered that a diverse supply base is a competitive advantage.¹³ Hackett’s 2016 Supplier Diversity Study, for instance, found that companies allocating 20 percent or more of their spend to diverse suppliers attributed 10 to 15 percent of their annual sales to supplier diversity programs. According to the WeConnect report on global supplier diversity and inclusion, the advantages of inclusive sourcing are:

- Access to new suppliers, innovative solutions and cost savings through increased competition;
- Awareness of diverse customer needs, increased market share and shareholder value; and
- Brand enhancement and recruitment/retention of employers who want meaningful work.

Government incentives to contract diverse suppliers also benefit businesses. In addition to the “set-asides” in federal contracts, disability-owned businesses are eligible for preferred purchase programs run by various state governments.¹⁴ ¹⁵

¹¹ Disability Employment and Inclusion: Your Guide to Success — Business Case, Workplace Initiative, 2017,
¹⁵ Set-asides are a procurement preference that may be total or in part where the contract is “set aside” for bidding only by a designated and identified group of firms (e.g., small business, small minority-owned business, environmentally “green” firms, etc.).
Improved Market Share

Persons with disabilities represent a significant portion of the consumer market. The U.S. Office of Disability Employment Policy categorizes persons with disabilities as the third-largest market segment in the U.S., after Hispanics and African-Americans. This market expands when family members, caregivers and others who prioritize goods and services that are inclusive of persons with disabilities are counted.

A study by the American Institutes for Research (April 2018) reveals that the total after-tax disposable income for working-age persons with disabilities is about $490 billion (compared with $582 billion for Hispanics and $501 billion for African Americans.) According to the Workplace Initiative 2017 report, companies that set up specific disability-related programs and complete targeted marketing efforts can expect an increase in patronage from persons with disabilities.

Enhanced Reputation

Companies that adopt inclusive marketing and advertising efforts tend to stand out from the competition. A survey undertaken by the National Business and Disability Council in 2017 found that 66 percent of consumers will purchase goods and services from a business that features persons with disabilities in their advertising, while 78 percent will purchase goods and services from a business that takes steps to ensure easy access for individuals with disabilities at their physical locations.  

A Nielsen study in 2016 found that persons with disabilities tend to be more brand loyal and also make more shopping trips and spend more per trip than the average consumer.

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16 A hidden market: The purchasing power of working-age adults with disabilities, American Institutes for Research, April 2018,

The Next Frontier of Corporate Social Responsibility

Encouragingly, we estimate that the number of DEI companies empowering their employees with disabilities has increased 40-fold over the past four years. But there is still much work to be done.

To unleash the trapped value within the persons-with-disabilities community, organizations must assess where they are by leveraging benchmarking tools such as the DEI, self-identification of their current employee base, and employee engagement and awareness surveys. Then, they should share the compelling business case for disability inclusion and implement the holistic actions that are associated with increased innovation and profits, a better reputation and other benefits—for all employees and customers.

Empowered companies are not merely compliant or acting out of perceived obligation. They are excitedly embracing the advantages that come with employing more creative, industrious and well-rounded people.

“As a single mom with a physical disability, I struggled to find work. Now I have a job I love and can support my family. It has changed my life completely.”

– Ntombifuthi Dhlamini, employed through Leonard Cheshire Disability’s “Access to Livelihoods” program, supported by Accenture
About the Research

This research is based on approximately 140 unique respondents of the Disability Equality Index (DEI) between 2015 and 2018. In partnership with Disability:IN and the American Association of People with Disabilities, we analyzed two measures of financial performance: profitability (revenues and net income) and value creation (economic profit margin). Our sample includes companies from all the major industries but is limited to the U.S. market.

We applied econometric models to public and proprietary data to identify:

1. The link between disability inclusion policies and business performance in terms of profitability, value creation and total shareholder return.

2. The relationship between disability workforce participation and GDP.

PERSONS WITH DISABILITIES
The Americans with Disabilities Act Amendments Act (ADAAA) defines a person with a disability as someone who has a physical or mental impairment that substantially limits one or more major life activities; has a record of such an impairment; or is regarded as having such an impairment. The ADA was amended in 2008 and became effective January 1, 2009. The ADAAA requires a broader interpretation of disability by schools, testing agencies and employers than the original law. https://www.ada.gov

CHAMPIONS
Accenture Research assessed 140 leading disability-inclusive companies with select data from a four-year sample of the DEI. The assessment revealed key differentiating factors, activities and best practices in 45 of the 140 companies (32 percent). All companies that participate in the DEI are already advancing disability inclusion. However, the 45 “Disability Inclusion Champions” are those assessed as providing leading-edge disability programs and initiatives that can be potentially implemented by others.

IMPROVERS
Since 2014, there has been an overall improvement in the DEI scores achieved by participating companies. To quantify the effort in improving the disability-related policies, we introduce an “improvement score metric” calculated as the ratio between the annual score change and the maximum number of points they could have gained to reach 100. We define top improvers as those companies that ranked in the top 25 percent of our own improvement score metric.

PEER GROUP
In our TSR models, we compared survey respondents to the top 10 company peers as recommended and reviewed by Vanguard. The peer group is defined by S&P Capital IQ’s proprietary algorithm, which is based on five main components: (1) Revenue within similar ranges; (2) Industry (based on S&P Capital IQ classification derived from SIC code); (3) Amount of common equity analysts’ coverage; (4) Available information on recent financial data; and (5) Company location based on macro-regions (e.g. Europe) and country GDP.
About Accenture

Accenture is a leading global professional services company, providing a broad range of services and solutions in strategy, consulting, digital, technology and operations. Combining unmatched experience and specialized skills across more than 40 industries and all business functions – underpinned by the world’s largest delivery network – Accenture works at the intersection of business and technology to help clients improve their performance and create sustainable value for their stakeholders. With 459,000 people serving clients in more than 120 countries, Accenture drives innovation to improve the way the world works and lives. Visit us at www.accenture.com. And for more on Accenture and inclusion, visit www.accenture.com/pwd

Accenture Research

Accenture Research shapes trends and creates data-driven insights about the most pressing issues global organizations face. Combining the power of innovative research techniques with a deep understanding of our clients’ industries, our team of 250 researchers and analysts spans 23 countries and publishes hundreds of reports, articles and points of view every year.

Our thought-provoking research—supported by proprietary data and partnerships with leading organizations such as MIT and Singularity—guides our innovations and allows us to transform theories and fresh ideas into real-world solutions for our clients. www.accenture.com/research

About Our Partners

Disability:IN, formerly known as the US Business Leadership Network, is the leading nonprofit resource for business disability inclusion worldwide. Partnering with more than 160 corporations, Disability:IN expands opportunities for people with disabilities across enterprises. The organization and 50 affiliates raise a collective voice of positive change for people with disabilities in business. Through its programs and services, Disability:IN empowers businesses to achieve disability inclusion and equality, with the goal of advancing inclusion to the point when the organization is no longer necessary. https://disabilityin.org/

The American Association of People with Disabilities (AAPD) is a convener, connector and catalyst for change, increasing the political and economic power of people with disabilities.