Inclusion and Diversity: Tech it or leave IT

UNTIL: Technology includes all
This report offers a snapshot of the state of diversity and inclusion in the tech industry. This snapshot doesn’t contain original research. Instead, we put this together by pulling ideas, data, and best practices from numerous sources. The report ends with recommendations on how tech companies can improve performance and impacts by embracing diverse & inclusive workforces, perspectives, services and products.

Technology can be an enabler of advancing diversity and inclusion across the globe. There is a risk of perpetuating or strengthening existing biases and power imbalances if diversity and inclusion in tech are not specifically addressed. Critical considerations are necessary to ensure that no group is inexistent, invisible or discriminated against within the tech sector or by technology, and technology includes all.

Promoting diversity and inclusiveness is both a core value and substantive goal of the UNTIL network and this report is a first step in shedding light on this subject within the tech sectors of member states. The purpose of this initial report is to raise awareness so start-ups and investors can have more productive conversations at SLUSH 2019 and beyond.

ACKNOWLEDGEMENTS
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PARTNERS
JOINT UNITED NATIONS PROGRAMME ON HIV/AIDS (UNAIDS)
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SLUSH
Key messages:

- Workforce diversity is good for business. There’s a strong link between diversity in the workplace and higher revenues, levels of innovation, effective decision-making, and low staff turnover.

- Promoting diversity and inclusion in the workforce and in the design of technology helps products and services function better and they appeal to more people.

- Tech companies need to keep investing in how they recruit and manage staff at every level of the company to value and prioritize diverse and inclusive workforces.

- Technology has the power to move humanity forward but human biases hold us back.
What Do We Mean by Inclusion and Diversity?

Diversity is the reality. Inclusion is the smart choice. Diversity and inclusion are not only the responsibility of human resource managers. They should be an organizational priority.

Diversity encompasses many visible and invisible human traits, such as:

Demography: age, race, gender identity, sexual orientation.
Experience: economic or social position, class or caste, education, occupation, faith, physical ability, geography, and caring responsibilities.
Cognitive: approaching problems/solutions differently based on demographic, background and experiences.

We should understand diversity as cross-sectional. Every person has a unique combination of characteristics. Some of them have permanence such as age or a gender identity.

Others evolve, such as physical ability, caring responsibilities, and education.

Inclusion is the combination of action and feeling. At an individual level, one feels ‘inclusion’ after their needs are addressed. In an organization, inclusion can mean fair representation of diverse people across all departments, or inclusive policies such as fair compensation, or anti-discrimination codes of conducts.

Technology which through its application promotes diversity and inclusivity reaches more people with a wider range of abilities, realities, and needs. It ultimately has greater appeal.

Like all technologies before it, AI will reflect the values of its creators. So inclusivity matters — from who designs it to who sits on the company boards and which ethical perspectives are included. Otherwise, we risk constructing machine intelligence that mirrors a narrow and privileged vision of society, with its old, familiar biases and stereotypes.

Kate Crawford, Founder at AI Institute, 2018.
The Roots of Exclusion and Corporate Sameness

To understand the need for diversity and inclusion in tech we can start by asking why teams or products aren’t naturally inclusive? Exclusion partly comes from the biases and stereotypes that we hold and from our environment.

Biases are like mental shortcuts that help us make decisions faster. A bias is associating a fact or experience to an existing pattern or belief which we feel comfortable with. Biases can be triggered by stereotypes and discriminations, like racism, sexism, ableism. They are rooted in our social environment and have developed over centuries.

In technology, bias and power imbalances can appear from beliefs and values of a product’s creators as well as from a homogeneous data set. While algorithms may offer the promise of removing human judgment from decisions, there is evidence that they may reinforce human prejudice and embed biases.

When is a bias dangerous?
When it comes to making decisions about people, such as communicating with them, hiring staff, assessing customer needs, and designing products to solve their challenges. Here are some examples:

### FIVE COMMON BIASES WITHIN THE TECH SECTOR

<table>
<thead>
<tr>
<th>Type of bias</th>
<th>Explanation</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dataset bias</td>
<td>Training dataset has uneven representation.</td>
<td>Facial recognition trained only with white skin does not categorize dark skin tones as human faces.</td>
</tr>
<tr>
<td>Association bias</td>
<td>One value correlates to another.</td>
<td>Translator tools recognizing pilots as men, and flight attendants as women. Overpoliced minority communities due to their higher association with danger.</td>
</tr>
<tr>
<td>Automation bias</td>
<td>Reinforces stereotypes.</td>
<td>Online beauty filters that lighten the skin or associated beauty to a Western stereotype.</td>
</tr>
<tr>
<td>Interaction bias</td>
<td>Learns from harmful interaction.</td>
<td>Chatbots can be trained to communicate in a sexist and racist way if the users input such language and there are no barriers to prevent it.</td>
</tr>
<tr>
<td>Confirmation bias</td>
<td>Over amplified personalization makes biased assumptions for a group or individual, excluding less popular choices.</td>
<td>Shopping sites that show recommendations for items the customer has already bought or best sellers.</td>
</tr>
</tbody>
</table>

Inspired and adapted from “In pursuit of inclusive AI Booklet”, Microsoft.
Diversity Within Global Tech Workforce in 2019

The 2019 Stack Overflow’s Developer Survey (which is the world’s largest annual survey of people who code) reveals that white males of European descent remain the majority of developers.

**GENDER: PROFESSIONAL DEVELOPERS**

- Man: 92.1%
- Women: 7.5%
- Non-binary, genderqueer or gender non-confirming: 1.1%

70,717 responses

**RACE AND ETHNICITY: PROFESSIONAL DEVELOPERS**

- White of European descent: 72.5%
- South Asian: 11.1%
- Hispanic or Latino/Latina: 7.3%
- East Asian: 5.3%
- Middle Eastern: 4.5%
- Black or African descent: 3.1%
- Multiracial: 2.3%
- Biracial: 1.2%
- Native American, Pacific Islander, or Indigenous Australian: 0.8%

63,487 responses

**GENDER: GENDER MINORITIES BY COUNTRY**

- United States: 11.7%
- Canada: 10.7%
- United Kingdom: 8.6%
- Australia: 7.5%
- India: 7.0%
- Netherlands: 6.7%
- Germany: 6.3%
- Russia: 6.1%
- Poland: 5.9%
- Sweden: 5.9%
- France: 5.5%
- Spain: 5.4%
- Brazil: 5.2%
- Italy: 3.7%

86,210 responses; % who identify as women or non-binary
93%  
**CAPITAL INVESTED.** 93% of all funds raised by European VC-backed companies went to all-male founding teams in 2018.

46%  
**GENDER DISCRIMINATION.** Almost half of the women reported that they have experienced discrimination in the European tech sector. This is a point of clear tension with the 75% respondents who think the culture at their European startup is inclusive. In European tech, discrimination appears to be someone else’s problem.
The VC [Venture Capitalist] industry is very much about what you’ve done lately. I was lucky enough to be active in my nine months of pregnancy so I only ‘lost’ six months. But that loss of six months felt brutal upon return. I was missing the new networks, rusty on pitches, not connected into the deal flow, missing half a year of operations of our companies, and so forth. Essentially you feel lapped in a marathon and it is very difficult to come back from. You know you will have to run 2x as fast to catch up with the elite.

Reshma Sohoni Founding Partner - Seedcamp

Parent-friendly policies can help mothers and fathers combine parenthood with their career. A few examples of such policies can be flexible or remote working, mandatory parental leave, or above average parental leave salary compensation.

<table>
<thead>
<tr>
<th>The average MALE entrepreneur is described with attributes such as:</th>
<th>The average FEMALE entrepreneur is described with attributes such as:</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Young and promising”</td>
<td>“Young, but inexperienced”</td>
</tr>
<tr>
<td>“Arrogant, but very impressive competence”</td>
<td>“Lacks network contacts and in need of help to develop her business concept”</td>
</tr>
<tr>
<td>“Aggressive, but a really good entrepreneur”</td>
<td>“Enthusiastic, but weak”</td>
</tr>
<tr>
<td>“Experienced and knowledgeable”</td>
<td>“Experienced, but worried”</td>
</tr>
<tr>
<td>“Very competent innovator and already has money to play with”</td>
<td>“Good-looking and careless with money”</td>
</tr>
<tr>
<td>“Cautious, sensible and level-headed”</td>
<td>“Too cautious and does not dare”</td>
</tr>
<tr>
<td>“Extremely capable and very driven”</td>
<td>“Lacks ability for venturing and growth”</td>
</tr>
<tr>
<td>“Educated engineer at a prestigious university and has run businesses before”</td>
<td>“Visionary, but with no knowledge of the market”</td>
</tr>
</tbody>
</table>
Inclusion goes beyond gender and ethnic diversity

Most work on diversity and inclusion ‘prioritizes’ one inequality over another. For instance, increasing the number of women in leadership positions. With such a narrow approach, the women who benefit tend to be white, middle class, able-bodied, heterosexual and cis.

It is important to understand the overlapping natures of inequalities with factors such as race, health, immigration status, geography, socioeconomic, and cultural factors to build intersectional solutions that can truly embrace diversity.\(^\text{11}\)
Three activists in workplace diversity and inclusion.

Ellen Pao sued her employer in Silicon Valley for gender discrimination. She later became an activist and founded “Project Include”, a nonprofit for diversity and inclusion in the tech industry.37

After having spent his life hiding his sexual orientation, Harold Hillman now advocates for gay rights in the workplace. He trains CEOs on the importance for marginalised employees to fit in with a team before standing out from the group.38

Drisana Levitzke-Gray, born deaf, advocates for people with disabilities, arguing they bring something invaluable for organisations and businesses.39
The winds of change are blowing

Fact 1: By 2025 millennials will contribute 75% of the global workforce.¹³

Fact 2: 74% of millennials believe their organization is more innovative when it has a culture of inclusion.¹⁴

Fact 3: 47% of millennials actively look for diversity and inclusion when sizing up potential employers.¹⁵
Hey Siri, Why Do Women Own Fewer Smartphones than Men?

The global internet penetration rate of women in 2018 was about 45%, compared to men’s 51%. Signalling about 250 million fewer women than men online.\textsuperscript{16}

**Gender Gap in Smartphone Ownership**\textsuperscript{17}

Gender Rift Runs Through Smartphone Ownership

- **Overall** 26%
- **Latin America and Caribbean** 4%
- **Europe and Central Asia** 4%
- **Middle East and North Africa** 21%
- **South Asia** 70%
- **Sub-Saharan Africa** 21%
- **East Asia and Pacific** 4%

% = The above percentages indicate the gap between female ownership and male smartphone ownership. For instance: in Europe and Central Asia, women’s smartphone ownership is 4% lower than men’s. In South Asia, women’s smartphone ownership is 70% lower than men’s.

**Literacy and Security Explain A Lot**

A 2018 study by GSMA, a trade lobby group for mobile network operators, reported that 40% of Nigerian women who did not own a mobile phone reported that literacy presents a key barrier to ownership. 40 percent of illiterate women said they had no phone compared to 22% in the case of men.\textsuperscript{18}

Digital skills education and school integration becomes crucially important to reduce digital inequalities rising from digital illiteracy.

The same GSMA study found that 40% of women in Mexico who do not own a mobile phone indicated they are concerned about sexual harassment (vs. 24% of men).\textsuperscript{19}

Access to technology does not guarantee inclusion. Technology has to follow the principles of availability, affordability, safety, skills, content, and norms. When it comes to the gender divide, extra layers of considerations become important: time, financial control, violence, literacy, data, and gender norms.\textsuperscript{20}
How Tech Exclusion Distorts The Human World

“How would a woman know to apply for a job she never saw advertised?

How might a minority community learn that it was being overpoliced by software?”

The representation of information about trends and events around us may not always be accurate insofar as it captures the concerns of one interest group. The presence of some bias is likely in the presentation of news, quite often driven by un-noticed prejudices and power imbalances. Data which incorporates biases can misguide our decision-making processes, and lead to less effective products and services.

Gender data gap
Throughout the world, crucial data on women and girls is lacking from many data sources. An example of this gender data gap is the failure to account for unpaid housework, childcare, or harassment. These are aspects that heavily affect women’s behaviours, from their decisions on transport to their working habits. Yet tracking the progress on how women and girls are doing remains challenging. UN WOMEN found in 2018 that, globally, only 17% of the gender-specific indicators with data have information for two or more points in time, allowing for trend analysis. Such data gaps can be caused by time lags, but also because of chronic underinvestment and difficulties to mainstream gender into data production.

Sometimes, gender data gaps comes from information drawn from databases and presented in a way which does not offer insights on gender-related challenges and opportunities. For instance, by disaggregating smartphone ownership by region and gender it is then possible to identify barriers, such as literacy or security, which hinder equal access for women into the digital world. Smartphone ownership data only by region wouldn’t give us such an insight.

[The] world [is] increasingly reliant on and in thrall to data. Big Data. Which in turn is panned for Big Truths by Big Algorithms, using Big Computers. But when your Big Data is corrupted by Big Silences, the truths you get are Half-Truths, at best. And often, for women, they aren’t true at all.

Caroline Criado Perez

Mitigating bias in research and decision making

Gender data that can be accessed tends to be old and not comparable over time.

When we look at datasets, we should ask ourselves:

Whose data is/ isn’t included?
Whose data could be interpreted differently?
Diversity and Inclusion: Smart For Your Business Today, Vital for Your Success Tomorrow

**BETTER BUSINESS PERFORMANCE**

Openness to diversity widens our access to the best talent. Inclusion allows us to engage talent effectively. Together, this leads to enhanced innovation, creativity, productivity, reputation, engagement and results.

- **21%**
  - Businesses with a healthy balance of men and women are 21% more likely to outperform their competitors.

- **33%**
  - Businesses with a good mix of ethnic backgrounds are 33% more likely to outperform their competitors.

- **87%**
  - Teams that are gender, age and ethnically diverse make better decisions up to 87% of the time.

**TEAM SUCCESS**

And diverse teams make better decisions 87% of the time. Inclusion instantly activates existing gender, age and geographic diversity for better business decision making.

- **58%**
  - All male
  - % of the time a better decision is made

- **66%**
  - Team average

- **73%**
  - Gender diversity

- **80%**
  - Age + Gender diversity

- **87%**
  - Age + Gender + Geographic diversity

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**Diverse Teams, Real Successes**

Homogenous groups are more likely to share certain assumptions and perspectives and less likely to identify their own knowledge gaps — they often don’t know what it is they don’t know. Gender/ethnically diverse teams, in contrast are less susceptible to this bias. Inclusive and diverse offices can excel because:

- they can reduce groupthink and increase innovation
- they can make better decisions and have a global mindset
- they can aim at higher goals and reduce risk
Pursuing Inclusion as a Competitive Advantage

- Companies in the top-quartile for ethnic/cultural diversity on executive teams were 33% more likely to have industry-leading profitability.

- Representational racial/ethnic diversity could help the tech sector generate an additional $300-$370Bn in revenue annually.

- Achieving representational gender diversity in leadership could help drive $320-$390Bn in increased market value. Combined, these could reflect 1.2-1.6% growth in national GDP.

- Inclusive business opportunities are estimated to be worth $6.6 trillion to business and could create 340 million jobs in developing countries by 2030.

The more diverse an investment firm, the higher its performance.

Diverse people, opinions, and approaches within investment management are fundamental to building truly diversified portfolios.

SUCCESS RATE OF ACQUISITIONS AND IPOS

<table>
<thead>
<tr>
<th>+11.5%</th>
<th>+22%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teams with diverse school backgrounds</td>
<td>Teams with diverse ethnic backgrounds</td>
</tr>
</tbody>
</table>
Good Business Opportunities Abound

Technology can help meet global challenges, such as hunger, poverty, lack of housing, energy efficiency, healthcare. Data can empower people by increasing access to information and enabling new types of engagement.

MOBILE DEVICES CONNECTED TO THE INTERNET

2018 (7bn)  2030 (125 bn)

AN OVERLOOKED POPULATION AWAITS TECH SOLUTIONS

Unmet needs | Market size
---|---
No toilet or clean water | 2 billion people
No decent housing | 1 billion people
No all weather roads | 1 billion people
No reliable electricity | 1 billion people
No mobile phone | 1.5 billion people
No internet / data usage | 4 billion people
No formal identity | 1 billion people
No property titles | 70% of residential land

Digital Inclusion Successes

PAKISTAN: HEALTH, EDUCATION, AND WOMEN. SEHAT KAHANI (UK AID FUNDED)

In Pakistan around 70% of medical school graduates are women, but only 30% begin practising medicine and many of those who do soon stop. Only 13% of licensed physicians are women. Meanwhile, 108 million people (50% of the population) do not have access to quality, affordable healthcare. Sehat Kahani provides female doctors with the tools to work remotely through video conferencing, transmitting images, e-health patient portals and remote monitoring of vital signs. This circumvents socio-cultural barriers which restrict some women to their homes.
UNTIL Recommendations

Technology can help meet global challenges, such as hunger, poverty, lack of housing, energy efficiency and healthcare. Data can empower people by increasing access to information and enabling new types of engagement.

Inclusion and diversity strategies will be unique for every company, but here are some general recommendations to help organizations plan.

1. Examine Biases, Establish Values, and Prioritize Inclusion and Diversity

2. Start at the Top: Embed Diversity and Inclusion strategies from the Board Level

3. Inclusion and Diversity In Your Product
1. Examine Biases, Establish Values, and Prioritize Inclusion and Diversity

Understand biases in people and in tech products is the first step. Having a conversation with your team will help trigger strategies to work on them.

**Biases in people – team related**
Recognize the existence of bias and determine your values and priorities. Write down what you are looking to achieve so you won’t change your criteria later. Remember that diversity is not only about increasing female participation, it is intersectional.

A starting point to understand how bias affect us is taking the Harvard Implicit Association Test.

**Biases in tech – product related**
Think about the technology and machines around you. Whose needs do they serve? What assumptions does it make about you?

A starting point can be thinking about the assumptions that trigger the customized ads or suggestions we each receive on tech platforms.
2. In Your Team: Start at the top. Embed Diversity and Inclusion Strategies from the Board Level

Be proactive in designing processes, policies, and systems for diversity and inclusion.

Inclusion in strategic positions, not only in social events
Are there underrepresented groups on your board? The Shortcut, a tech talent accelerator, places diverse people in strategic positions over time creating role models which attract and retain diverse employees.

Design inclusive team and policies
Project include has recommendations to establish policies, refine hiring practices, enrich codes of conduct and rules that can nurture diverse workforces and prevent the influence of bias.

From accountability to transparency
Set your targets, capture your diversity using metrics, evaluate, and report.

Increase your talent attraction and retention by being transparent on the state of diversity and inclusion in your workforce.

Being transparent on such practices will also contribute to a less biased information ecosystem and foster more diversity and inclusion initiatives.

### EXAMPLES: CULTURE AND HIRING
Design a culture and an environment that fosters belonging and a growth mindset

<table>
<thead>
<tr>
<th>Use communications that are inclusive and that do not speak in ways that are fixed, associated values</th>
<th>Hotjar uses Gender neutral communication: guys -&gt; peeps, folks, mates, friends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seeking inclusion queries</td>
<td>Paradigm avoids fixed language: a competitive team player -&gt; a motivated team member</td>
</tr>
<tr>
<td><strong>Focus feedback on the process, not the person:</strong></td>
<td><strong>You are a good communicator</strong> -&gt; You communicated effectively because you kept people updated on the status of your project</td>
</tr>
<tr>
<td>Create a supportive physical environment</td>
<td>Culture Amp Enables tailoring queries on its workers experience hub to highlight diversity, inclusion, and interdisciplinary in institutions.</td>
</tr>
<tr>
<td><strong>Mesh/Diversity Aids customers to use suitable and practical indicators to their diversity policies.</strong></td>
<td></td>
</tr>
<tr>
<td>Hiring for culture fit risks diversity</td>
<td>For organizations such as Streetbees or Inklusiiv, this practice may be reinforcing groupthink, unawareness to bias, and worse performance</td>
</tr>
<tr>
<td>Seeking inclusion queries</td>
<td>Textio helps its clients by flagging biased terms such as “ninjas” or “killers”</td>
</tr>
<tr>
<td><strong>Zillow Group saved 2.5 weeks and increased female applicants by 12%</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Johnson&amp;Johnson increased female applicants by 9%</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Nvidia filled jobs twice as quickly</strong></td>
<td></td>
</tr>
<tr>
<td>Diverse pool of applicants through non-traditional sources</td>
<td><strong>Paradigm</strong> reminds its clients the importance to write down in advance and use checklists to remind to do consistently what you already know.</td>
</tr>
<tr>
<td><strong>Hubspot successfully structured interview processes by asking the same questions to every participant and comparing them at a horizontal level.</strong></td>
<td></td>
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</tbody>
</table>
3. In Your Product: Design for Inclusion and Diversity

**PRINCIPLES FOR DIGITAL DEVELOPMENT**

- Design With the User
- Understand the Existing Ecosystem
- Design for Scale
- Build for Sustainability
- Be Data Driven
- Use Open Standards, Open Data, Open Source, and Open Innovation
- Reuse and Improve
- Address Privacy & Security
- Be Collaborative

**PRINCIPLES FOR DIGITAL INCLUSION AND GENDER DIVIDE**

<table>
<thead>
<tr>
<th>Digital inclusion</th>
<th>Gender digital divide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability</td>
<td>Time</td>
</tr>
<tr>
<td>Safety</td>
<td>Violence</td>
</tr>
<tr>
<td>Content</td>
<td>Data</td>
</tr>
<tr>
<td>Affordability</td>
<td>Financial control</td>
</tr>
<tr>
<td>Skills</td>
<td>Literacy</td>
</tr>
<tr>
<td>Norms</td>
<td>Gender norms</td>
</tr>
</tbody>
</table>
Further tools

The Shortcut White Paper on Inclusion and Diversity

Going Digital Toolkit, OECD

Inclusion and Diversity in Tech Guide, Atomico

Table of Referenced Inclusion and Diversity support vendors, RedThread

Inclusive design toolkit, Microsoft

Project Include Recommendations

Harvard Implicit Association, Harvard University

Technology Code of Practice, UK Government

A checklist for digital inclusion, UK Government
Endnotes

3. Imbid
4. Imbid
17. Imbid
18. Imbid
19. Imbid
28. Imbid
34. Imbid