In Pursuit of Diversity, Equity, and Inclusion in AI

Ramani P, Sr Director, Customer and Partner Programs, VMWare India

Ranjani Mani, Director, Analytics and Data Sciences, VMWare India
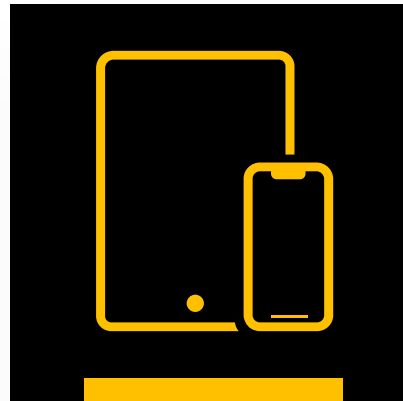
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Agenda

Pervasive Tech and the conundrum we face today

50B USD

- ~ Companies invested in AI systems in 2020. That figure is expected to [more than double](), to $110 billion, by 2024. [2]

- Our lives revolve around technology, and it is becoming more pervasive every year

- **AI is omnipresent** - From self-driving cars to robots replacing our jobs, everything that seemed like a distant reality is within our vision.

- With the immense potential – fairness of these AI systems, inclusion and diversity in the systems could impact millions of people from all backgrounds

- *"Impact of technology biases can be order of magnitude worse than individual biases"*

1943 Guide to Hiring Women

The following is an excerpt from the July 1943 issue of Transportation Magazine.

This was written for male supervisors of women in the work force during World War II.

Eleven Tips on Getting More Efficiency Out of Women Employees: There's no longer any question whether transit companies should hire women for jobs formerly held by men. The draft and manpower shortage has settled that point. The important things now are to select the most efficient women available and how to use them to the best advantage.

Here are eleven helpful tips on the subject from Western Properties:

1. Pick young married women. They usually have more of a sense of responsibility than their unmarried sisters, they're less likely to be flirtatious, they need the work or they wouldn't be doing it, they still have the pep and interest to work hard and to deal with the public efficiently.

2. When you have to use older women, try to get ones who have worked outside the home at some time in their lives. Older women who have never contacted the public have a hard time adapting themselves and are inclined to be cantankerous and fussy. It's always well to impress upon older women the importance of friendliness and courtesy.

3. General experience indicates that "husky" girls - those who are just a little on the heavy side - are more even tempered and efficient than their underweight sisters.

4. Retain a physician to give each woman you hire a special physical examination - one covering female conditions. This step not only protects the property against the possibilities of lawsuit, but reveals whether the employee-to-be has any female weaknesses which would make her mentally or physically unfit for the job.

5. Stress at the outset the importance of time the fact that a minute or two lost here and there makes serious inroads on schedules. Until this point is gotten across, service is likely to be slowed up.

6. Give the female employee a definite day-long schedule of duties so that they'll keep busy without bothering the management for instructions every few minutes. Numerous properties say that women make excellent workers when they have their jobs cut out for them, but that they lack initiative in finding work themselves.

7. Whenever possible, let the inside employee change from one job to another at some time during the day. Women are inclined to be less nervous and happier with change.

8. Give every girl an adequate number of rest periods during the day. You have to make some allowances for feminine psychology. A girl has more confidence and is more efficient if she can keep her hair tidied, apply fresh lipstick and wash her hands several times a day.

9. Be tactful when issuing instructions or in making criticisms. Women are often sensitive; they can't shrug off harsh words the way men do. Never ridicule a woman - it breaks her spirit and cuts off her efficiency.

10. Be reasonably considerate about using strong language around women. Even though a girl's husband or father may swear vociferously, she'll grow to dislike a place of business where she hears too much of this.

11. Get enough size variety in operator's uniforms so that each girl can have a proper fit. This point can't be stressed too much in keeping women happy.

Since numbers don't lie…

Diversity is not just the right thing to do but also one that makes business sense

1. Companies with racial and ethnic diversity are [35% more likely to outperform similar companies](#) with less diversity.
2. Companies with gender diversity are [15% more likely to have higher performance](#).
3. Companies with gender equality earn [41% higher revenue](#).
4. Inclusive companies are [1.7 times more innovative](#) than their non-inclusive competitors
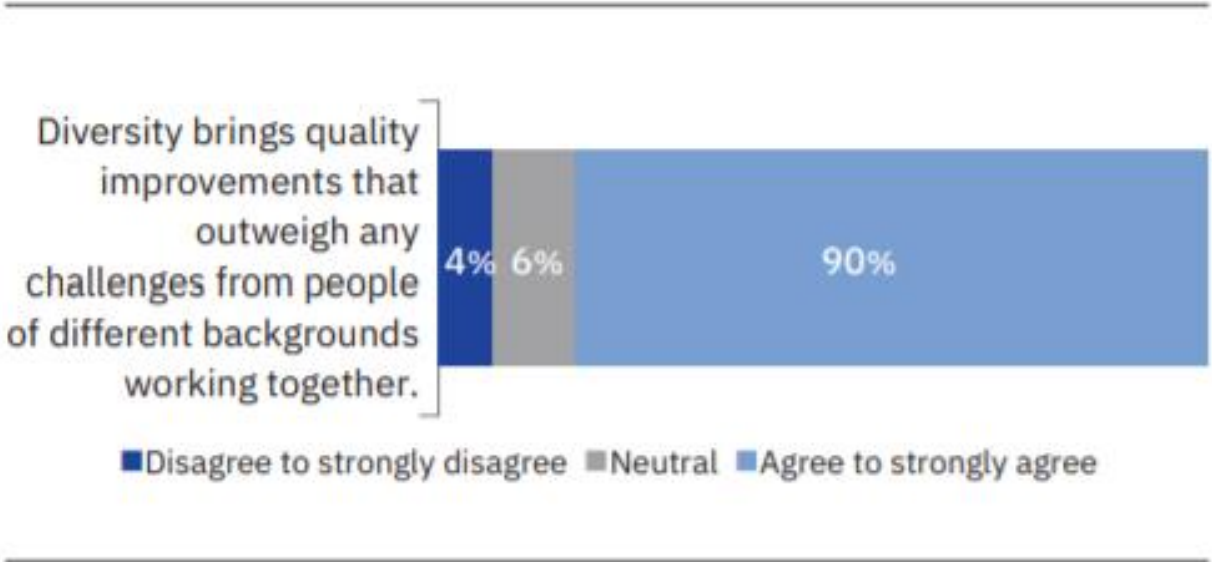
Diverse workplaces attract better talent

1. 67% of job seekers [place great importance on a diverse workplace](#).
2. Racially and ethnically [diverse companies outperform industry norms by 35%](#).
3. Diverse teams have better decision-making power, and [make better decisions 87% of the time](#).

Diverse Executives and leaders drive profits

1. 43% of [companies with diverse boards have higher profits](#).
2. [Executive teams with gender-diversity](#) are 21% more likely to outperform on profitability.
3. Companies with diverse leadership have [19% higher revenue](#).
4. Inclusive companies are more productive, leading them to be [120% more likely to hit financial goals](#).

Source : [9]

Figure 1. Most HR professionals believe the benefits of diversity outweigh challenges

Diversity brings quality improvements that outweigh any challenges from people of different backgrounds working together.

4% 6% 90%

■Disagree to strongly disagree ■Neutral ■Agree to strongly agree

Source: 2018 IBM and UNLEASH HR professional survey (n=182)

Source : [7]

Bad AI – Bad Consequences

AI is being applied in all walks of life – Identifying people, recruiting decisions, judicial sentencing, credit decisions. ….Any bias in the data would lead to affecting large swathes of people.

"ML based recruiting system that didn't like women" [10]

Facial Recognition for dark skin

Crime Prediction Software targeting racial minority neighborhoods [5]

Google Search Images for "CEO"

Lower credit line recommendations for women

To employment options, school admissions and level of risk in criminal cases……

Associations and stereotypes

Extreme *she* occupations

1. homemaker
2. nurse
3. receptionist
4. librarian
5. socialite
6. hairdresser
7. nanny
8. bookkeeper
9. stylist
10. housekeeper
11. interior designer
12. guidance counselor

Extreme *he* occupations

1. maestro
2. skipper
3. protege
4. philosopher
5. captain
6. architect
7. financier
8. warrior
9. broadcaster
10. magician
11. figher pilot
12. boss

Source : [5], [6]

Delving into the Why

Bias in the training data

PredPol is an algorithm designed to predict when and where crimes will take place, with the aim of helping to reduce human bias in policing….software could lead police to unfairly target certain neighborhoods with a high proportion of people from racial minorities, regardless of the true crime rate in those areas

…software learns from reports recorded by the police rather than actual crime rates [5]

Data Imperfections cannot be solved programmatically

Not having the variable doesn't ensure no bias. There is plenty of proxy to arrive at gender and race. Not having the variable makes it harder – system finds proxies

Machines Learn What Humans Teach

Much like kids learning from adults – *"systems are built on learning from data, and if the data is skewed as per the view of the person building it, it can have major consequences"*

Cognitive Bias can influence AI

Human Cost of biased AI in healthcare

Bias built into artificial intelligence has societal, legal, and monetary implications

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Why can't AI move forth without DEI?

- **Bias in data in AI systems**

- **Bias in people building AI systems**

Myth or Fact

Myth : 'We drive Women in tech programs' for diversity

Fact : Diversity is not unidimensional. Organizations are better suited to improve company diversity when considering diversity in a multidimensional way, that examines industry, the nation of origin, and gender instead of just one label. [3]

Myth : AI as a machine is neutral and objective

Fact : "We need a thorough understanding of the biases that exist in both humans and Algorithms… decision-making processes can be designed in which algorithms and humans, working jointly to compensate for respective blind spots, can arrive at clearer and less prejudiced outcomes" [2]

"Technology can make a major impact, but an algorithm does not provide an objective truth. Humans must teach AI what information is relevant and what outcomes are moral in order to create a system that ethically reduces conscious bias"[3]

Tackling hard problems

Starts with acknowledgement

1) Bias is a Spectrum

It isn't a fight of good vs evil. "Rather than focusing on the most extreme cases, we learned that teams engage faster with AI bias issues when they consider a spectrum of bias, where bias can show up in small ways in our everyday experiences" [13]

2) Enlist customers to correct bias

'Crowd sourced initiatives to train speech models'

3) AI doesn't automatically become better over time
Cultivate diversity with privacy and consent

4) Building a human centered AI

MIT Sloan human-centered AI and the norm of having a feedback loop from people of various perspectives, backgrounds and lifestyles into the design of AI systems – "human-centered AI, the practice of including input from people of different backgrounds, experiences, and lifestyles in the design of AI system" [2]

5) Programming out Lazy Bias and unintended consequences - Man is to Computer Programmer as Woman is to Homemaker? [5]

"They don't mean to algorithmically punish you for being female or having an ethnic name or living in a low-income neighborhood. They were just hustling to push a product out. "The tech industry slaps this stuff together in the expectation that the social implications will take care of themselves." [6]

6) Building Inclusive Teams
"Artificial intelligence will reflect the value of its creators" [13]

Using AI to enhance DEI

When organizations consider adopting AI in HR to enhance D&I, there are a few critical actions to consider [7]

Bring in the right expertise. When it comes to training AI, it is very important to involve both experienced industrial-organizational (I-O) psychologists and data scientists. I-O psychologists bring expertise in data collection and legal requirements, so the data used to train machines can be free of biases and meet EEO requirements [Equal Employment Opportunity (EEO) requirements]; data scientists bring their expertise in model building and algorithm creation to reduce any biases in models and algorithms.

Adopt frameworks for fairness - Adopt frameworks for fairness. Using standardized job descriptions and competency models can help organizations eliminate personal subjectivity by focusing on skills and behaviors rather than other potentially biased attributes

Use the right data and the right algorithms. Biases can occur in data selection as well as algorithm creation. It is important to first collect a high-quality dataset and then test for and mitigate bias in the data being fed into the AI machine

Looking beyond the 'pipeline issue' [8]

The focus on the pipeline has not addressed deeper issues with workplace cultures, power asymmetries, harassment, exclusionary hiring practices, unfair compensation, and tokenization that are causing people to leave or avoid working in the AI sector altogether

Regulation

Inclusion of AI ethics in research and development

Responsible AI

Fairness

Accountability

Transparency

Explain ability

Tackling Hard Problems through policy

Addressing Bias and Discrimination in AI Systems [8]

- Is the data representative of the target population?

- Does it have the right interdisciplinary team, including personnel such as AI ethicists, including ethics and compliance, law, policy, and corporate responsibility.

- Is there a measurable, actionable de-biasing strategy that contains a portfolio of technical, operational, organizational actions to establish a workplace where these metrics and processes are transparent

- Rigorous testing should be required across the lifecycle of AI systems in sensitive domains.

- The field of research on bias and fairness needs to go beyond technical debiasing to include a wider social analysis of how AI is used in context

- The methods for addressing bias and discrimination in AI need to expand to include assessments of whether certain systems should be designed at all, based on a thorough risk assessment.

"Despite great intentions to build technology that works for all and serves all, if the group that's responsible for creating the technology itself is homogenous, then it will likely only work for that particular specific group," [4]

If you want to find out which are your biases, you can take the Implicit Association Test (IAT), carried out by Harvard University.

Thank you

Connect with us

https://www.linkedin.com/in/p-ramani-020926/

https://www.linkedin.com/in/ranjanimani/

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