

At What Cost? The Collectivity of Diversity, Responsibility, and Gain. A deep discussion of diversity in STEM.

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Summary

Innovation drives scientific progress. Innovations resulting from science, technology, engineering, and mathematics (STEM) fields have positively impacted nearly every aspect of human life. Scientific discoveries do not arise on their own, rather, it is through the hard work and ingenuity of scientists across the world that these discoveries are made.

Looking at population demographics, large percentages of women and minoritized people are present in the overall population, however, they are largely absent in STEM fields. Research in the United States identified the geosciences as the “least diverse discipline within STEM.”¹ Investigating diversity within STEM has been a futile attempt as the conclusions are fruitless: the sciences are overwhelmingly white, male, and middle class. The *diversity problem* in science is not just a gender issue, rather, it is a problem that concerns nearly every facet of diversity: race, ethnicity, socio-economic status, etc.

Diversity initiatives have identified that differences of identity lead to greater diversity of thought. Diverse teams are more innovative, more efficient, and more productive. User design initiatives that have excluded women from the innovation process have had fatal consequences; excluding women from the design of car airbags proved deadly, medical trials investigating heart disease excluded women, and even NASA failed to provide adequate equipment for their female spacewalk.

The business case for diversity in science is clear: diversity leads to higher revenues, profits, and innovation. However, representation in STEM continues to be stagnant. I submit this abstract with the aim of investigating the impact of the *diversity problem* in STEM. I seek to articulate the urgency, the need, and the cost of not advancing diversity principles in the sciences – both in research and in the workplace.

Does Diversity Matter in STEM?

The word “diversity” is used in many contexts to mean many different things. Often, and unfortunately, diversity is used as the antonym of heterosexual, able-bodied, middle-class-to-wealthy white men. This is not what diversity is about. Diversity refers to *difference*. As such, diversity is a property of groups, not individuals. An individual cannot be diverse, but groups of individuals (e.g., the scientific research workforce) can possess diversity.

¹ *Women, Minorities, and Persons with Disabilities in Science and Engineering: 2017* NSF 17-310 (National Science Foundation, 2017); <https://go.nature.com/2lp2i6A>

There are many dimensions of difference (hence, some of the confusion about what diversity means). I will focus on differences across social identity. These include, but are not limited to, race/ethnicity, gender, disability, nationality, religious affiliation, sexual orientation, socioeconomic background, and many more. Every person possesses multiple, intersecting social identities. For some dimensions of social difference (e.g., nationality), the scientific enterprise has a considerable degree of diversity. In other ways, the scientific field lacks diversity, particularly diversity of women, minoritized groups, and people with disabilities.

While correlation does not equal causation (greater gender and ethnic diversity in corporate leadership doesn't automatically translate into more profit), the correlation does indicate that when companies commit themselves to diverse leadership, they are more successful. More diverse companies are believed to be better suited to win top talent and improve their customer orientation, employee satisfaction, and decision making – and all that leads to a virtuous cycle of increasing returns. This in turn suggests that other kinds of diversity—for example, in age, sexual orientation, and experience (such as a global mind-set and cultural fluency) – are also likely to bring some level of competitive advantage for companies that can attract and retain such diverse talent.

According to a study published in the Proceedings of the National Academy of Sciences, a more diverse team is more likely to outperform a more homogenous team – even when the homogenous team is considered to have “relatively greater ability” as individuals than the more diverse group.² Authors of the study suggest this is because people with different backgrounds have different experiences and perspectives, and as a result, they approach problems differently, ask different questions, and develop more innovative solutions. By increasing diversity in the workplace, grounded in inclusion principles, the likelihood of scientific success is higher, promoting economic growth and competitiveness.

The Diversity Case

Diverse perspectives are important for scientific research and innovation, yet there is a lack of diversity and an underrepresentation of minority groups across the scientific fields. Moreover, individuals from minority groups face systemic and disproportionate barriers when pursuing a career in the sciences.

McKinsey has been examining diversity in the workplace for several years. The latest report, *Diversity Matters*, examined proprietary data sets for 366 public companies across a range of industries in Canada, Latin America, the United Kingdom, and the United States.³ In this research, they looked at metrics such as financial results and the composition of top management and boards. The findings were clear:

- Companies in the top quartile for racial and ethnic diversity are 35 percent more likely to have financial returns above their respective national industry medians.⁴

² L. Hong and S. E. Page, “Groups of Diverse Problem Solvers Can Outperform Groups of High-Ability Problem Solvers,” *Proceedings of the National Academy of Sciences* 101, no. 46 (August 2004): pp. 16385-16389, <https://doi.org/10.1073/pnas.0403723101>.

³ Vivian Hunt, Dennis Layton, and Sara Prince, “Diversity Matters” (McKinsey & Company, n.d.).

⁴ Ibid.

- Companies in the bottom quartile both for gender and for ethnicity and race are statistically less likely to achieve above-average financial returns than the average companies in the data set (that is, bottom-quartile companies are lagging rather than merely not leading).⁵
- While certain industries perform better on gender diversity and other industries on ethnic and racial diversity, no industry or company is in the top quartile on both dimensions.⁶

These numbers underline the work that remains to be done, even as the case for greater diversity becomes more compelling. We live in a deeply connected and global world. It should come as no surprise that more diverse companies and institutions are achieving better performance. Most organizations must do more to take full advantage of the opportunity that diverse leadership teams represent. That's particularly true for their talent pipelines: attracting, developing, mentoring, sponsoring, and retaining the next generations of global leaders at all levels of organizations.

⁵ Ibid.

⁶ Ibid.

Bibliography

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