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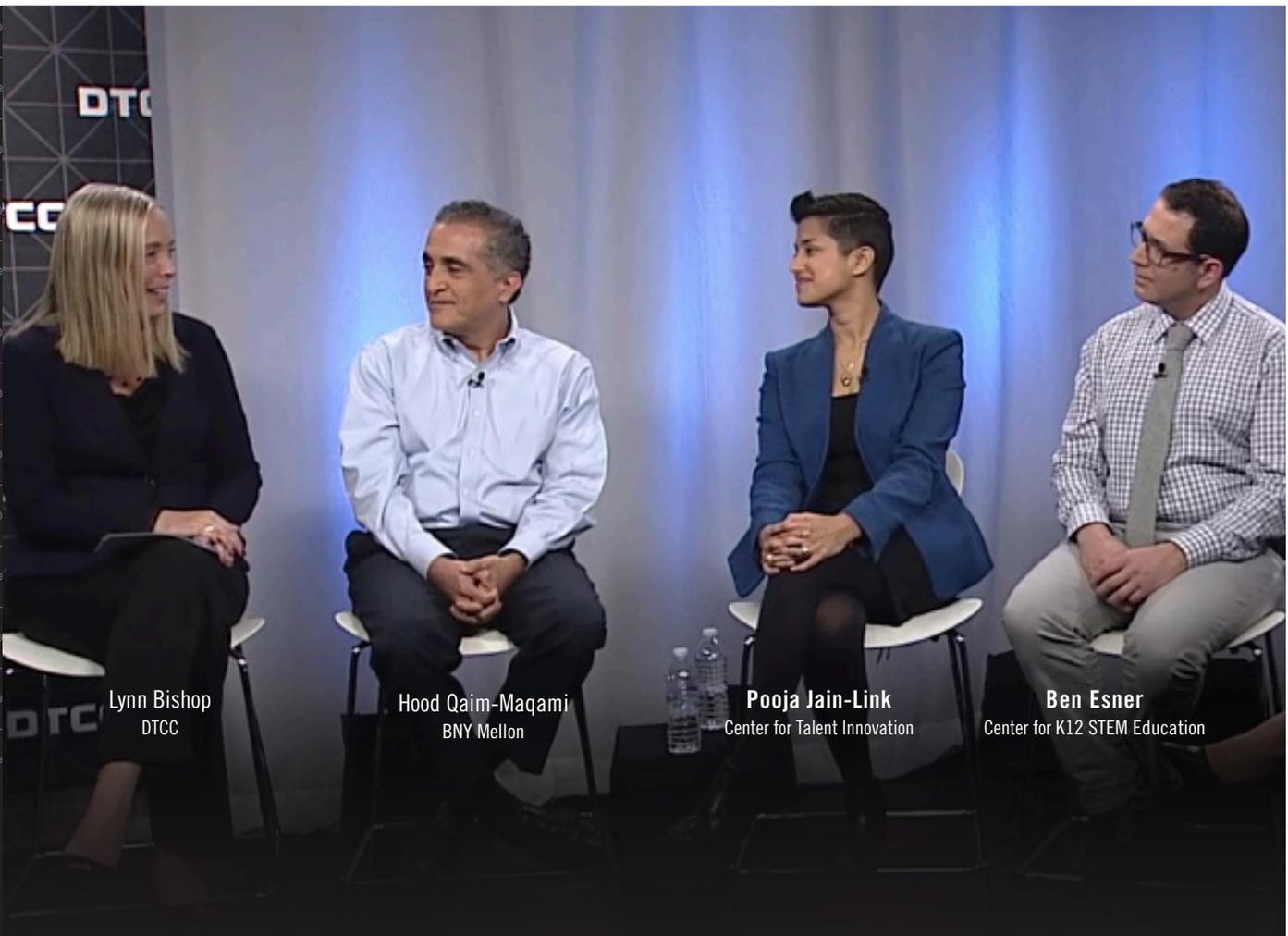
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SmartBrief

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ENABLING FUTURE FINTECH INNOVATION

BUILDING STEM TALENT FOR THE WORKFORCE OF TOMORROW



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A WHITE PAPER TO THE INDUSTRY

ENABLING FUTURE FINTECH INNOVATION:

BUILDING STEM TALENT FOR THE WORKFORCE OF TOMORROW

Companies looking to hire those with science, technology, engineering and mathematics (STEM) backgrounds face a shortage of candidates at all levels. In 2016, there were 3 million more STEM job openings than people to fill them. By 2019, there will be 2 million unfilled roles in cybersecurity alone, and by 2020 the demand for technologists will exceed qualified applicants by 1 million.

When you look at candidates from a diversity perspective, the shortage is even more pronounced. Hispanics, African Americans and Native Americans account for 27% of the overall workforce, but only 11% of STEM workers. Outside of health care, less than 25% of STEM workers in the US are female.

Yet, it's proven that having a diverse workforce pays off. Companies with above-average diversity earn revenue tied to innovation 19% higher than those with less diversity as well as 9% higher earnings margins. Innovation-focused companies that have women in senior positions increase firm value by about \$42 million.

The competition for high-quality, diverse STEM employees is fierce. Financial services firms also face the added disadvantage of having to compete for top talent with traditional technology companies such as Facebook, Google and Microsoft.

A recent webinar hosted by DTCC brought together corporate, research and education experts to talk about ways fintech companies can address the shortage of STEM talent, particularly women and other underrepresented groups.

While there is no one solution to fix the issue, a combination of corporate cultural shifts, early intervention and increased educational programs at all levels can encourage more talented women and minorities to pursue and advance in STEM careers.



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CORPORATE CULTURE CHANGES

To encourage more women and underrepresented groups to enter STEM, corporations must work to change the internal culture of their technology departments if they hope to attract and retain diverse talent. Pooja Jain-Link, Senior Vice President and Director of Research at the Center for Talent Innovation (CTI), pointed out that research shows more than half of women end up leaving the field, often due to cultural reasons such as isolation, male-dominated environments or not being recognized for their contributions. To retain these talented women, companies will need to initiate broader cultural change.

But it's more than just the culture within technology departments that needs to change, said Hood Qaim-Maqami, Head of Client Service Delivery Technology and Shared/Corporate Services Technology at BNY Mellon. The nature of the work itself also needs to change. He cited the example of software engineers working in isolation to accomplish projects, but the next generation of challenges to be solved will require collaborative teams. His company is working to change the core function of how technologists work to be more collaborative in an effort to address these issues.

It will also be critical to make sure that stereotypes and micro inequities don't continue, said Lynn Bishop, Chief Development Officer at DTCC. If there is a lack of diversity and perspective used to develop the technology, such as artificial intelligence, then the problem will continue to compound. Adding diverse perspectives in the beginning will generate better results down the line.

There are some corporate programs that produce better outcomes of attracting and retaining talent, according to CTI research paper, *Wonder Women in STEM and the Companies that Champion Them*. These include:



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DTCC has also created leadership development programs within the technology organization for women and other underrepresented groups, Bishop said. These emerging talent programs help participants build stronger networks, provide them with mentors and focus on developing key skills that are essential for future success. DTCC also implemented inclusive leadership training for managers that aims to mitigate the effects of unconscious bias. In addition, offering intensive tech skills training to recent college grads has been fruitful for DTCC, with 70% retention rates for those who participated in the “pipeline” program over the past several years, with many moving on to senior management roles.

Another important way to help employees connect with each other is affinity groups, which help foster a sense of community and build professional networks. A high correlation has been found between participation in affinity groups and employee engagement and retention, Bishop said.

While shifting corporate culture can help companies attract and retain workers, employers also need to invest in the next generation of talent to ensure the pipeline is filled.

EARLY INTERVENTION

At an early age, most children — equally across race, culture and gender — demonstrate curiosity about the natural world and science and how it all works, said Ben Esner, Director of the Center for K12 STEM Education, New York University's Tandon School of Engineering. It's not until these children enter school and start to encounter biases that their attitudes about science begin to change.



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Schools, companies and nonprofits need to work together to combat dropout rates for STEM and encourage young children from all backgrounds so they can gain the skills necessary for career success in these fields.

Esner said his organization sees thousands of applicants each year for its in-depth summer and campus STEM programs, indicating there is a wide interest among diverse youth. Encouraging these students to succeed, gain further education and succeed academically will propel the next generation of STEM workers.

EDUCATIONAL PROGRAMS

To foster early intervention, many companies are sponsoring STEM education programs. But not all programs are equal. It's critical for companies to evaluate the programs they support to make sure the quality is high and that there are measurable ways to document success.

It's also important to make sure programs are inclusive and don't perpetuate stereotypes or send a negative message to these diverse students. Sitting students in front of computers to code all day isn't the totality of STEM education, Esner said. Programs should work to encourage creativity, collaboration and problem-solving skills if students are to gain the skills to be successful in a STEM career.

CONCLUSION

With a shortage of qualified, diverse candidates, it's critical for companies, schools, nonprofits and other organizations to work together to develop top talent. That means starting early by backing quality education programs and shifting workplace culture to be more inclusive.

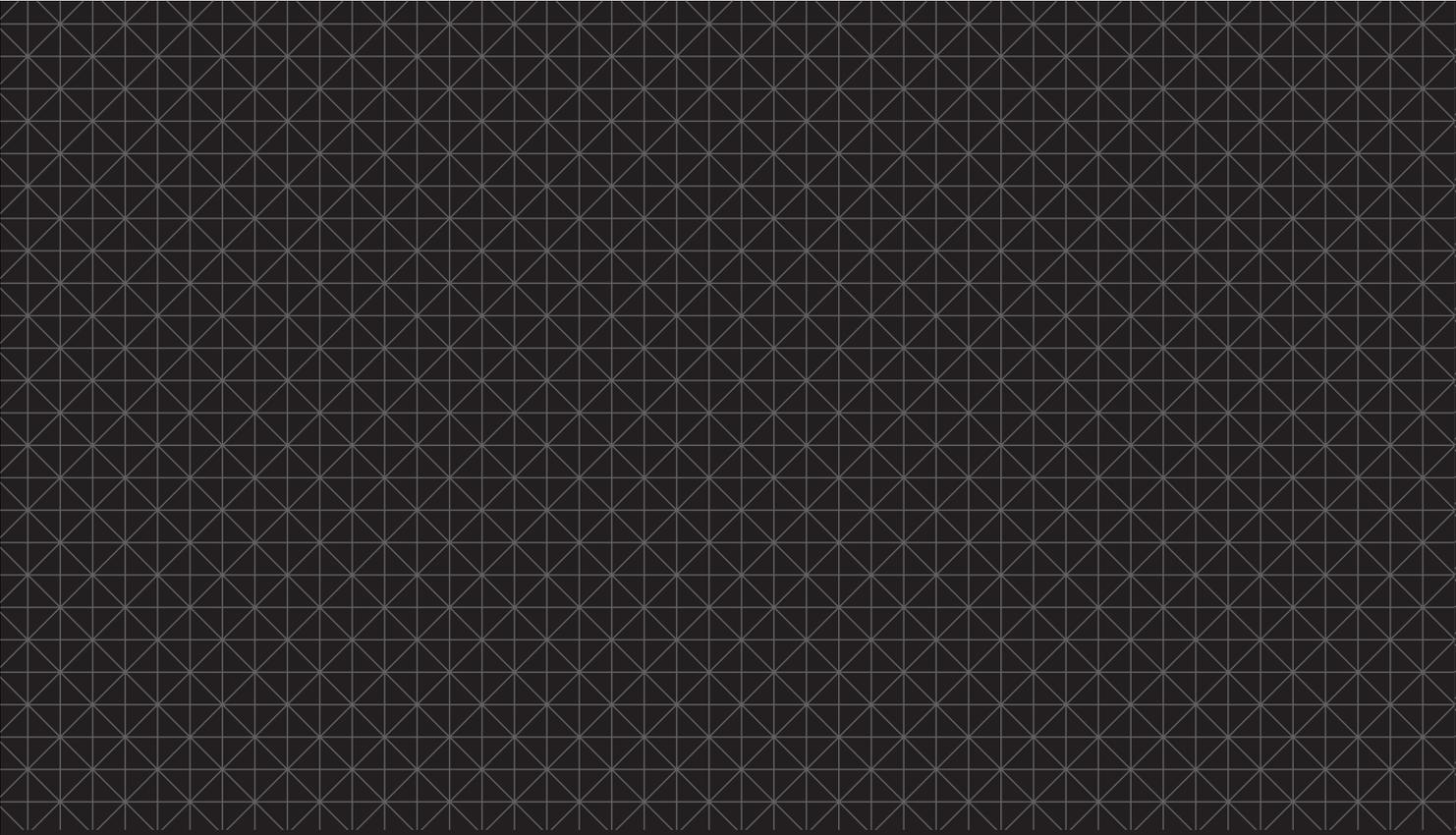
The next big innovation just may depend on the steps that are taken today to address these challenges.

TO HEAR THE FULL CONVERSATION:

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ABOUT DTCC

With 45 years of experience, DTCC is the premier post-trade market infrastructure for the global financial services industry. From operating facilities, data centers and offices in 16 countries, DTCC, through its subsidiaries, automates, centralizes and standardizes the processing of financial transactions, mitigating risk, increasing transparency and driving efficiency for thousands of broker/dealers, custodian banks and asset managers. Industry owned and governed, the firm simplifies the complexities of clearing, settlement, asset servicing, data management and information services across asset classes, bringing increased security and soundness to financial markets. In 2017, DTCC's subsidiaries processed securities transactions valued at more than U.S. \$1.61 quadrillion. Its depository provides custody and asset servicing for securities issues from 131 countries and territories valued at U.S. \$57.4 trillion. DTCC's Global Trade Repository service maintains approximately 40 million open OTC positions per week and processes over one billion messages per month through its group of licensed trade repositories.



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