

talent works

Women in Technology

Why are there so few women
working in such a booming industry?

It's time to make a change.

Women in Technology

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Introduction

The technology industry is indeed colossal and is constantly growing as the world's reliance on technology expands at an ever-increasing rate.

In turn, this ends up generating a large amount of profit along with many jobs that need to be filled by qualified and talented individuals. Many companies generate massive amounts of revenue and jobs, and the industry is showing no signs of slowing down. In fact, between 2010 and 2020 investment in the UK's tech industry grew from £1.2bn to £11.3bn, with most of this increase taking place since 2015, when investment was £4.1bn, according to figures from the government's Digital Economy Council report¹.

On Career Builder, a popular job search website, there were 57,736 technology and IT related jobs posted in the last seven days alone². On the Indeed website, there are 92,210 jobs available in the technology sector³. For software developers alone, there were over 1.3 million jobs available for 2018⁴. Information Technology is a very attractive industry to enter and work in, so it would only make sense that the split among men and women would be equal, especially since women make up 49% of the workforce⁵. ✓

Between 2010 and 2020 investment in the UK's tech industry grew from

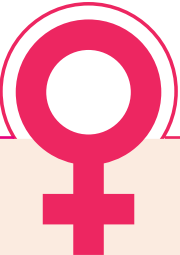
£1.2bn^{to}
£11.3bn



It is no secret that right now women are vastly underrepresented in the technology industry with no concrete explanation as to why.

In 2022, the number of women working in the technology industry declined from 26.1% in 2014 to 19% in 2022⁶. This is a very alarming statistic, considering how much emphasis has been placed on attracting women to the tech sector in the last decade. However, Talent Works research into the lack of women in technology roles uncovered that 62% of UK and 56% of US participants suggested that some progress has been made in attracting women to tech roles in the last decade. This definitely shows the commitment of the organisation and industry as a whole to make it better for women in this sector. However, the issue still stands, and we needed to understand why.

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Talent Works research into the lack of women in technology roles uncovered that 62% of UK and 56% of US participants suggested that some progress has been made in attracting women to tech roles in the recent decade.

Some common theories around the lack of women in tech roles are that women are not naturally good at or interested in technology, the education system is failing young women, or there are not enough role models to follow. This study performed by Talent Works International seeks another explanation that it is rooted in the toxic technology culture and sexism that keeps women out of the technology industry, or subtly forces them out with time, as evidenced by the presented numbers above.

This proprietary research has been formulated on the hypothesis that female talent is looking beyond gender-neutral advertising and traditional methods of attracting a diverse workforce, they are looking into the core of the organisation and its culture. Results of this research not only supported this hypothesis for both UK and the US samples, but also identified the role of toxic culture in the talent acquisition pool.

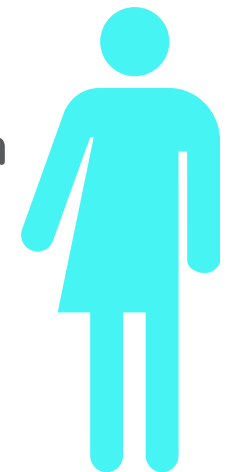
Methodology:

This study was based on a self-reported questionnaire on culture in the technology industry. Talent Works have conducted two surveys, via 'Pollfish', with females in technology industries

Our sample size for the UK was 300 and for the US was 400 participants. The results of the study provided support for the hypothesis, by showing that indeed women are not applying for jobs in the technology sector due to toxicity within the organisations. In addition, findings suggested that having male to female ratio and gender-neutral language in job advertising has little to do with them not choosing the tech industry. Furthermore, the identified figures, show that, in the short term, the culture needs to change before more women will go into the technology sector. Such findings are presented and discussed further in this article.

At the end of the paper, some recommendations for future research are given along with some recommendations on how to address the issue of the lack of women in technology roles at present.

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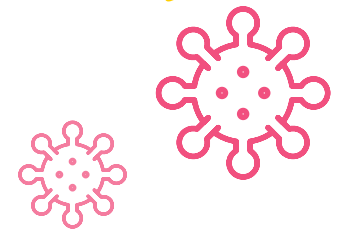
The problem and the purpose:

The problem that this research addresses is not only long-standing but also complicated with deep roots. What is causing women to stay away from the technology industry despite a large number of jobs and industry growth?

There are a couple of major theories that gained significant prominence, but so far, none has been able to solve or simply address this issue correctly. Due to the number of women that are graduating with degrees, even though it has decreased, there should be some amount of parity in the technology industry when it comes to jobs. Factor in that those women who major in technology development or engineering are declining, it is clear that there is an issue that is not getting any better despite considerable conversation and research in this area. In fact, there is research in this area which dates to 1996 where Silverman and Pritchard⁷ looked at why girls were not as interested in math and science as boys were.

The purpose of this research article is to identify the reason why there are so few women who work in the technology industry from a toxic work culture perspective. Previous research in the area has failed to consider toxicity as one of the reasons behind the lack of female talent in the technology industry and chose to focus on education or biological differences which do not address the whole issue. The end goal of this research is to fill the gaps in the knowledge around toxicity in the workplace while attempting to answer the questions first, why there are so few women in technology, and further, how can this issue be resolved.

Previous research in the area has failed to consider toxicity as one of the reasons behind the lack of female talent in the technology industry



Research questions:

This article seeks to address the following research questions:



1

Does the toxic technology culture affect the number of women who seek jobs in the tech industry?

2

Is the technology sector culture pushing women out?

3

Is there sexism in the technology industry that keeps women out?

4

Do current methods of intervention to attract women to technology role work?

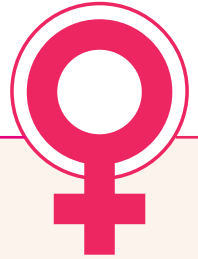


The background features a close-up of a woman's face, looking directly at the camera with a slight smile. Overlaid on the right side of her face is a futuristic, semi-transparent interface consisting of concentric circles, lines, and a central padlock icon. At the bottom of the image, there is a pattern of white circuit board traces on a dark background.

Women in Technology

The change starts here

To find the solution, we must understand the problem.
By learning more about the lack of equality in tech, we can
drive meaningful change and attract the top female talent
back into technology.



Perceptions in the technology industry

Perception is reality, and the perception of the technology field continues to be negative to this day, despite constant ongoing conversation around diversity.

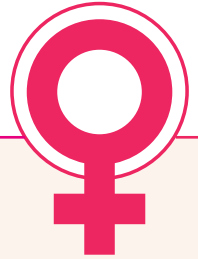
In early 2015, Newsweek ran an article titled 'What Silicon Valley Thinks of Women', and the message it portrayed painted the information technology sector as sexist and misogynist⁸, unfortunately, this message still stands. This perception of the industry has a long-standing and other researchers like Zuga⁹ found the industry to be unwelcoming and off-putting for women.

While things may seem to be getting better on paper, as there are more conversations, tools, and strategies available to organisations, little has changed since then. In addition to the field being seen in a negative light, the technology sector often is seen by society as unhealthy, not diverse, with no work-life balance and constant burn-out, which many young women and men do not want to be associated with. These perceptions, especially the cultural one, present a huge barrier to women who are interested in the technology sector.



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Past research

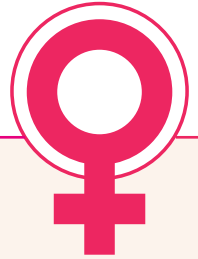
Research into the lack of women in technology has been an ongoing battle, as research dates back to the 1990s. Even today, no one fully understands why or what to do about the lack of female talent in the tech sector.

Many of the early research articles focused on the classroom and how it impacted girls' ability to learn. For example, one such research is from the American Association of University Women (AAUW)¹⁰ where they researched the ways the classroom was failing girls and found that there were significant differences between how boys and girls were treated. The paper was published in 1992 and still has some relevance today, 23 years later regarding technology, education, and sexism.

Another study, that was mentioned earlier in the paper, focused on education for girls. It was a two-phase study by Silverman and Pritchard¹¹ which analysed two areas in education, specifically first phase focused on middle school girls taking education classes which were mandatory and exploring their attitudes towards technology classes, and the second phase focused on high school girls and their reluctance toward taking technology classes. Similar to the AAUW study, the researchers in this study found that middle school girls showed just as much interest in technology classes as boys, which again, tapered off in high school. As we can see there is a clear developing pattern of reduced interest in technology, math, or sciences for girls.



“The type of personality of women encountered in a male-dominated area usually provides for an easier mix of attitudes and does not allow for slurs to be seen in every action”



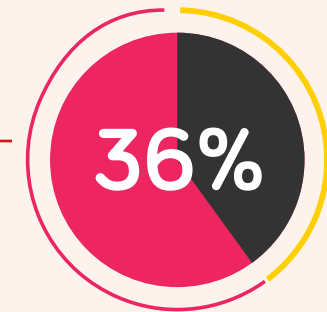
Past research (cont'd)

One of the most relevant items to this research coming out of these early studies is one conducted by Haynie¹² that looked into a couple of novel ideas. The first was to collect data on how technology educators perceive the learning environment for boys and girls, and the second was to attempt to monitor the cultural climate change related to technology subjects.

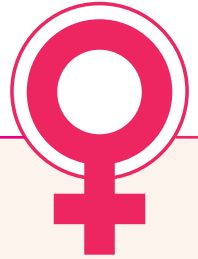
This research runs in direct parallel to this paper and specifically, mentions that more research will be required to evaluate how the culture will change over the years and eventually end up affecting the technology sector as a whole.

An interesting observation was noted by the researcher “The type of personality of women encountered in a male-dominated area usually provides for an easier mix of attitudes and does not allow for slurs to be seen in every action”¹³.

This view is still prominent even today, with society deeming certain fields to be the ‘domains of men’. If only a certain type of women would be interested in working in the technology industry, then that could provide a partial explanation as to why there are so few women working in technology. However, this view does not consider the toxicity of the culture within the technology sector, which has a clear support from the findings of this research. For example, 36% of women surveyed stated that the main reason behind not wanting to apply for technology roles is that culture in the organisations looks toxic or off-putting¹⁴.



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Past research (cont'd)

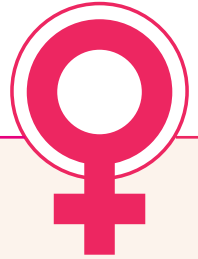
Further research, by Chamberlain and Hodson¹⁵ looked into how toxic or harmful working conditions are an important problem for workers and organisations. The authors stated that fully understanding the consequences of such conditions has been difficult because in-depth information across organisational contexts is not widely available.

The analysis of this research confirmed the role of lack of autonomy and lack of skills as toxic working conditions but suggests an equally important role for organisational chaos. Importantly, returning to the narrative accounts allows exploration of the buffering and exacerbating roles of co-worker relations and employee involvement and the mechanisms through which these work to moderate other conditions.

Similarly, research by Hardey¹⁶ considered several features of technology cities and masculine technology culture and their impact on the conditions of work and interactions of professionals working within them, particularly women.

This research used interdisciplinary perspectives of gender, technology culture, and professional identity and status to understand the lack of progression for women in the tech sector. Interestingly, this research used focus groups involving 60 women and men across different professional backgrounds at three tech city sites in the UK and USA, the article examines the extent of change in work roles and status norms in a highly male-dominated sector and physical space.

Professional life in tech cities is shaped by 'points of contact', characterised by heightened knowledge and awareness of masculine culture that restricts women's progression. Three such points of contact are identified. As increased scholarly and policy attention is paid to the lack of diversity in tech, this study contributes to a much-needed shift in tech culture. Attitudes and professional identities built around work and social networking in tech cities reveal the importance of professional communities and networks in supporting women to manage rejection and career barriers.



Past research (cont'd)

In older studies such as the ones mentioned above, the idea of a “man’s domain” in relation to technology seems a constant. Despite the progress within the technology sector, these same thoughts and phrases are present even today. Talent Works research¹⁷ showed that 44% of UK participating women encountered toxic culture in the last 5 years, and even more top three problems that organisations in the technology sector need to address were identified as ‘Promote healthy work cultures’ (59%), ‘The gender pay gap’ (56%), and ‘More women in leadership roles’ (54%). Such findings strengthen the hypothesis of this article and the notion that toxic culture is a common problem in the tech sector, but also the understanding that healthy work culture is a must for women in tech.

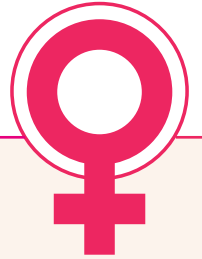


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The role of toxic cultures

It is not uncommon nowadays to hear the expression that a work environment is toxic, or organisation is toxic or even the industry as a whole is toxic.

Most people have an intuitive sense of what this means; primarily that the workplace is in some way harmful to workers' well-being, often their psychological and emotional health, but also in relation to their success and progression. Despite widespread use of the term, there is not much consensus on what the definition of toxic culture or toxic workplace is.

Most workplace toxicity researchers have discussed toxic leaders and their effects¹⁸; much fewer, however, have viewed the phenomenon more broadly and considered contributors beyond leaders, such as co-worker interactions¹⁹, work-related processes²⁰ and organisational culture and gender²¹.

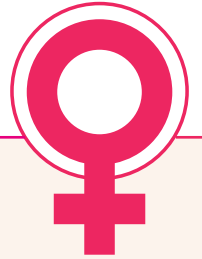
In this research, performed by Talent Works, the toxic substance of interest is toxic work culture, rather than chemical, and will be referred to as 'workplace toxicity' or 'toxic culture'. As previously mentioned, there is no consensus on the definition of toxic culture in the organisation, that being said, Walton²² defined a toxic organisation "as one within which behaviours which poison, are disruptive, destructive, exploitive, dysfunctional and abusive are pervasive and tolerated".

In addition, Shain²³ defined a poisoned work environment as: "... one in which there is a (usually) persistent and repetitious pattern of abuse, harassment or discrimination over time that is ignored, allowed to exist and/or supported by the employer and no adequate steps are taken to correct the situation".

Consistent with these definitions, workplace toxicity researchers have noted that the mere presence of stressors (e.g., high workload, destructive behaviour) in the work environment does not necessarily imply toxicity in the organisation²⁴.

Walton defined a toxic organisation

"as one within which behaviours which poison, are disruptive, destructive, exploitive, dysfunctional and abusive are pervasive and tolerated".

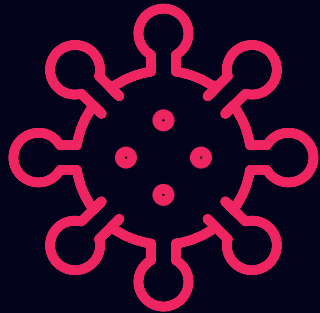


The role of toxic cultures (cont'd)

Considering the definitions mentioned above, this research, with a focus on women in the technology industry, suggests toxic culture to be defined as an enduring experience of negative emotion on the part of women in response to conflictual, interpersonal, job-related, organisational, and cultural conditions. Overall, the various perspectives on toxic culture do not appear mutually exclusive; rather, they seem to represent different lenses from which this phenomenon has been viewed. In fact, it shows the grandiosity of the research that has been previously conducted and the lack of viable solutions to workplace toxicity for women in the technology industry.

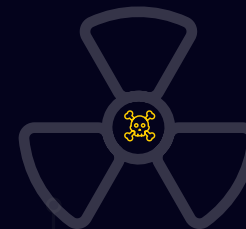
Given the nature of the problem at hand, Talent Works, wanted to leave no stone unturned in this research, hence we have included a list of both cognitive and behavioural symptoms of toxic work culture. Such behaviours and cognitive symptoms have been supported by a variety of psychological literature on workplace toxicity in the last decade. In addition, noting such symptoms can give women an advantage in recognising toxic cultures, even though 46% of UK respondents and 42% of US respondents are confident that they can spot toxic cultures.





List of toxic culture traits:

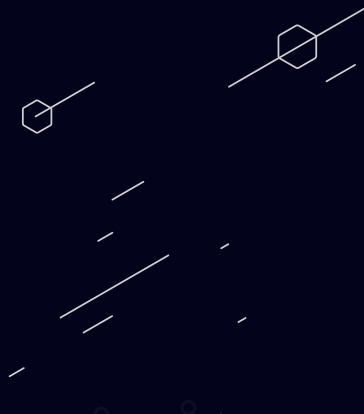
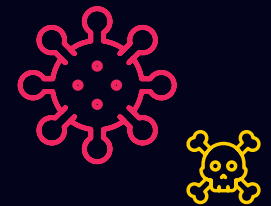
1. Lack of company core values
2. Clear divide between leadership and employees
3. Gossip mill
4. High turnover
(depending on the nature of the technology business)
5. Unfriendly competition
6. No good reviews on the culture
7. No acknowledgement or rewards for the employees
8. Teams are siloed
9. Outdated recruitment strategy
10. 'Bro' culture

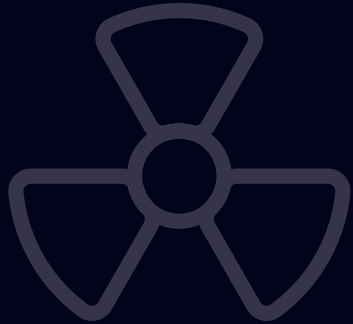




List of behavioural symptoms resulting from toxic workplace culture:

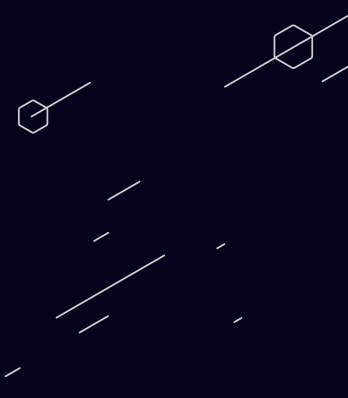
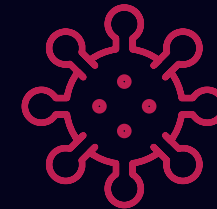
- 1. Reduced interaction**
(Brown, 2004; Chamberlain & Hodson, 2010; Dyck & Roithmayr, 2001; Goldman, 2006; Steele, 2011)
- 2. Reduced cooperation**
(Dyck & Roithmayr, 2001)
- 3. Reduced job effectiveness**
(Flynn, 1999; Ghosh, Jacobs, & Reio, 2011; Kimura, 2003; Pelletier, 2010; Steele, 2011)
- 4. Increased interpersonal hostility has also been reported**
(Appelbaum & Roy-Girard, 2007; Chamberlain & Hodson, 2010; Dyck & Roithmayr, 2001; Steele, 2011; Stein, 2007)
- 5. Increased complaints**
(Goldman, 2008; Kulik, Cregan, Metz, & Brown, 2009; Reed & Olsen, 2010)
- 6. Increased accidents**
(Brown, 2004)
- 7. High turnover**
(Appelbaum & Roy-Girard, 2007; Brown, 2004; Chamberlain & Hodson, 2010; Steele, 2011; Ghosh et al., 2011; Goldman, 2006; Flynn, 1999; Kimura, 2003)



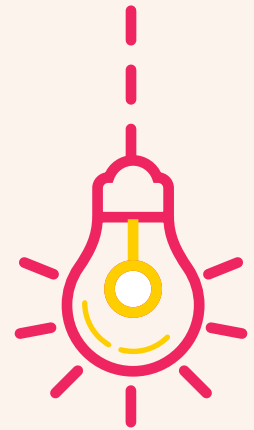
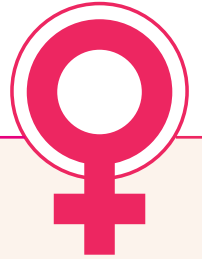


List of cognitive behaviours resulting from toxic workplace culture:

- 1. Decreased job satisfaction**
(Ghosh et al., 2011; Goldman, 2006; Lawrence, 2008; Pelletier, 2010; Steele, 2011) and
- 2. Decreased commitment to the organisation**
(Ghosh et al., 2011; Goldman, 2006; Pelletier, 2010; Steele, 2011)
- 3. Greater intention to leave the organisation**
(Goldman, 2006; Lawrence, 2008; Pelletier, 2010)
- 4. Impaired judgment**
(Appelbaum & Roy-Girard, 2007; Chamberlain & Hodson, 2010; Dyck & Roithmayr, 2001; Gallos, 2008)
- 5. Inability to concentrate and memory loss**
(Appelbaum & RoyGirard, 2007; Dyck & Roithmayr, 2001)
- 6. Heightened awareness of their environment**
(Dyck & Roithmayr, 2001; Yeo & Carter, 2008)
- 7. Increased anxiety**
(Taghavi, Neshat-Doost, Moradi, Yule, & Dalglish, 1999)
- 8. Workplace toxicity can result in high absenteeism**
(Appelbaum & Roy-Girard, 2007; Chamberlain & Hodson, 2010; Dyck & Roithmayr, 2001; Goldman, 2006; Flynn, 1999; Kimura, 2003)



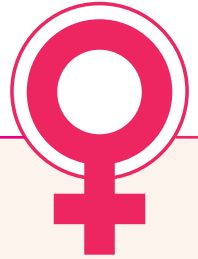
Women in Technology



It has been suggested that toxic culture results from cumulative effects of toxic behaviour in the workplace²⁵ and that its severity, which depends on the number, frequency, and intensity of those behaviours²⁶. Others have suggested that toxicity occurs when issues are chronic²⁷ within an organisation or extend over space and time, such issues become mutually reinforcing, and create a pervasive feeling of contamination and resistance among workers²⁸. It has also been suggested that toxicity develops based on the interplay between an issue or a stressor and organisational members' actions and emotions in response to it²⁹. For women in technology roles, 43% of UK participants and 38% of US participants agreed that organisations are willing to address environments that are not inclusive, so it's not all doom and gloom for the technology sector. There is definitely a shift towards gaining a deeper understanding and importance of a positive, healthy culture for an organisation.

43% UK
38% US

participants agreed that organisations are willing to address environments that are not inclusive, so it's not all doom and gloom for the technology sector



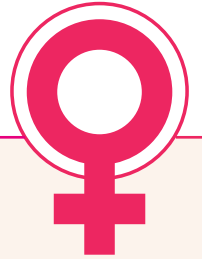
Current methods and recommendations

As established, there is a clear lack of women in the technology sector.

However, more and more companies are turning their resources to methods that they think will attract women to tech roles, but disappointingly their numbers remain low, and with no significant change in sight. But what are those methods, and why aren't they working on their own? Surely D&I strategy and gender-neutral language should be enough? The most well-established method of attracting talent is based around gendered job advertising. Yes, indeed, there is such a thing as gender bias with regards to job descriptions, however, companies don't discriminate consciously – they're not actively doing it to appeal to men rather than women. Talent Works research found that over half of both US and UK sampled women³⁰ agreed that organisations consciously and unconsciously create gendered adverts for jobs. In fact, a lot of job descriptions include either feminine or masculine words and terminology that organisations think will appeal to talent. For example:

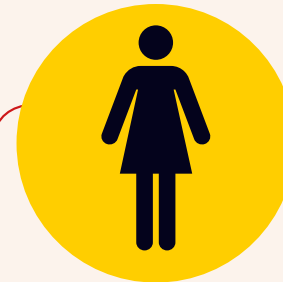


There is such a thing as gender bias with regards to job descriptions, however, companies don't discriminate consciously – they're not actively doing it to appeal to men rather than women.



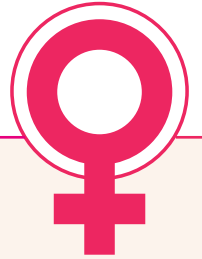
**Top 10
masculine
words:**

1. Strong
2. Lead
3. Analysis
4. Individual
5. Decisions
6. Driven
7. Competitive
8. Expert
9. Objective
10. Principles



**Top 10
feminine
words:**

1. Support
2. Share
3. Responsible
4. Understand
5. Together
6. Committed
7. Interpersonal
8. Feel
9. Collaborate
10. Connect



Research suggests that, even though feminine sounding words do appeal to women, they are less likely to apply for a job if the job advert is gendered towards them³¹.

As a final thought, Talent Works has put together a list of recommendations to tackle toxic culture first, which then can be followed by tools to create gender-neutral job descriptions and D&I strategies.

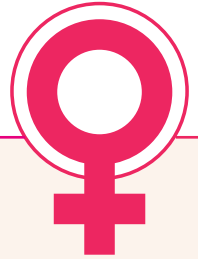
First of all, our survey showed that 73% of UK and 67% of US participants stated that they are more likely to join a tech firm if it had female leadership. But what does that actually mean? Well, it's simple, women are more likely to join a technology sector if they see more female leaders. This doesn't just stop at the leadership level; women want to see more women as hiring managers and hiring leads. This way they can see that company does take women's concerns seriously and it all starts from the top of the organisation.

Secondly, we identified that the top three problems for UK and US participants that companies need to address are 'The gender pay gap', 'Promote healthy work cultures', and 'More women in leadership roles'³².

This is the recommendation in itself for the companies. Talent Works believes that in order to attract diverse talent, especially women, the change has to start within. If an organisation is addressing and working towards improving these issues, it will be visible to the applicants, and not only visible but appealing.

Thirdly, don't underestimate the understanding of what safe working environments are for women. Participants in UK and US rated the top two ideal and safe working environments, first, the ability to work from home (62% UK and 61% US), and secondly emotionally intelligent Leaders (55% UK and 52% US). These are compelling statistics, that show the importance of safe working environments

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67% US
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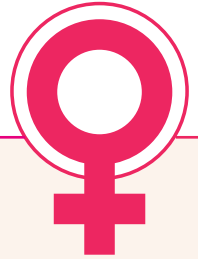
In addition, 61% of UK and 42% of US participants stated that they felt the psychological impact that hinders them from applying to tech roles. Imposter syndrome needs to be understood further. When it comes to the job application process, technology organisations need to understand the psychological impact on women during a long and drawn-out application process. The longer the process, the more likely women are to drop out, as it is stressful enough to apply into a male-dominated field, but it becomes unbearable to wait and doubt yourself whether you are good enough to be in this sector in the first place.

Talent Works survey uncovered very interesting findings, both UK and US respondents answered in that they would feel most uncomfortable discussing culture in a male-dominated atmosphere during an interview³³. This is an alarming thought, that women do not feel comfortable discussing company culture in the presence of a male. But here is where you can make a difference, by simply giving way to more female hiring managers and leads. A simple change like that will make the hiring process more comfortable and less daunting for female talent.

65% of both UK and US samples stated that it is important to see a positive and recognisable example of inclusion at a prospective company. It might sound simple, and you might think you already have a D&I strategy in place, but it's not that straightforward. There's growing significance placed on creating environments where a variety of different voices, including female talent, are encouraged, and heard. It is vital to remember that there is much to learn from leaders in diversity and inclusion, but every company's D&I initiative will look different. What works for companies like Shopify and BASF, might not work for your organisation. You should tailor your diversification initiatives to address specific industries and your company's areas of weakness, this will show female tech talent that you take diversity and inclusion seriously, and are not just using the same old strategies.



When it comes to the job application process, technology organisation needs to understand the psychological impact on women during a long and drawn-out application process.

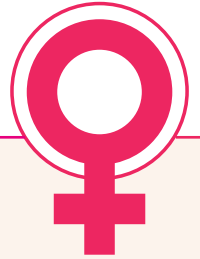


Finally, when it comes to toxic culture, you want to avoid all biases to a maximum, hence one of the best investments a company can make is bringing in a third party to help identify the root cause of a toxic culture, potentially through EVP rebranding. While the role of human resources is to create a safe environment for all employees, unfortunately very few trust their HR department, as it might be seen as biased towards the organisation. For example, Team Blind, an anonymous community workplace app, conducted a survey across tech companies and learned that 70% of employees don't trust their HR department. What's more alarming is that employees are reluctant to report toxicity to HR because 41% of respondents have been retaliated against or witnessed retaliation against a victim.

Talent Works recommends investing in a third party, as an essential first step toward repairing a toxic workplace culture. An impartial side will seek to understand what the current culture is and what is the desired culture for the organisation. From there, they'll identify toxic behaviours and attitudes that negatively impact the workplace culture, this is a vital step in understanding the root cause of the workplace toxicity. As third parties assess the culture and identify recurring patterns, through internal interviews, focus groups, and perception surveys, a plan will be developed that will help dismantle and repair the toxic culture, leading to being more appealing to female talent.

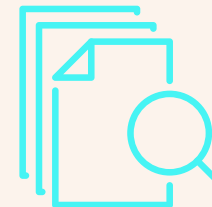
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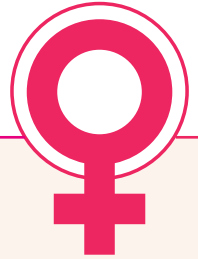
samples stated that it is important to see a positive and recognisable example of inclusion at a prospective company.



Conclusion

Overall, the research by Talent Works suggests that various characteristics of an organisational toxic culture system can contribute to the lack of women in technology roles.





Conclusion (cont'd)

These characteristics extend beyond gender-neutral language, leaders, and D&I strategies, in order to understand the problems as a whole, the need to include culture is evident. Indeed, it appears that workplace toxicity may be more about the dynamics of a work environment, and specific hiring practices than obvious workplace issues. That is, for women to claim their workplace is toxic would be more than indicating their workload was too high, or that their boss was mean; it would be indicating there were deeper issues with the organisation, that need to be addressed from the top.

In fact, Talent Works research showed that 74% of UK and 69% of US participants stated that the main responsibility for cultural change lies at the top, and it needs to be a top-down approach. But it's not all dismal for the technology industry, the list of recommendations outlines the next and immediate steps an organisation can take to repair their culture, therefore attracting more female talent, that is so desperately needed in the technology sector.



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Women in Technology

Thank you for taking the time to read our Women in Technology whitepaper. We hope you've got all the information you need to understand the change required within the industry.

If you'd like more information on all things recruitment, we'll be happy to have a chat on elena.hill-artamonova@talent-works.com

