FIXING THE BROKEN RUNG

How to Progress Women in Technology and Unleash Developer Velocity

MESSAGE FROM
OUR CEO

FOREWORD

At Code First Girls we're on a mission to close the gender gap in the tech industry by providing employment through free education. However, despite efforts to get more women into technology, equitable progression continues to be an issue. Half of all women leave their roles in technology before they're 35, and women are more likely than men to be made redundant when there are layoffs to be made. Of those who continue to work in the sector, only 5% will ever hold leadership positions.

To counter this, in 2023 we launched a new 12-week Mid-Level Accelerator Program, free for women with over 2 years of experience in tech. The course will support women to upskill and progress into mid-level Engineering or Developer roles while also having the opportunity to re-skill to a new specialisation or develop mid-level specialist tech skills. While conducting the research for our curriculum we unearthed some surprising findings: There is an undisputable cross-over in the conditions needed for women to thrive in technology, and those required to unleash developer velocity and create optimally productive software teams.

We wanted to share those findings. If you're a tech employer looking to retain and progress women in tech whilst achieving software excellence, this report is for you. Upskilling women and avoiding attrition is business critical for tech teams facing a reskilling crisis and a tech skills gap. Thousands of talented women are being overlooked and undervalued by the technology sector. It's time to fix the broken rung!

Anna

Anna Brailsford
CEO and Co-Founder at Code First Girls

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EXECUTIVE
SUMMARY

PURPOSE OF THIS REPORT

Code First Girls investigated what is preventing women from progressing in tech. They discovered the key conditions for women to thrive in technology mirror those needed for software teams to operate at their most productive. This report combines these findings for leaders wanting to build technical teams where all genders can thrive equally, whilst unleashing developer velocity and preparing for skills of the future across entire teams.

HOW DID WE CONDUCT OUR RESEARCH?

In August 2023, Code First Girls surveyed more than 1,400 women in the Code First Girls community. Almost half (43%) of those currently employed identified as working at a mid-level. 38% had been working in a tech-based role for the past three to five years and more than one in 10 (12%) said they'd been in a tech-based role for six to nine years.

EXECUTIVE
SUMMARY

FINDINGS

- **44%** of the cohort Code First Girls polled said they couldn't see themselves staying in the industry for the next five years. More than **one in five** are undecided.

- **81%** of mid-level women polled have experienced burnout at work.

- Women are **more susceptible to burnout** than their colleagues largely because of unmanageable workloads, juggling competing priorities between work and home, and being judged on different standards to their male counterparts.

- The average **half-life of skills is now five years and falling.** In some tech fields, it's already as low as two and a half years.

- **61%** of all women polled said that the best way for companies to support women in tech teams and promote retention was through upskilling.

- Women are not being given **equal or enough opportunities to upskill** or work on promotable projects, and are also held back by stereotypes and confidence in their ability to lead.

- **Communication and emotional intelligence** combined with technical skills will be the key attributes for leaders in the future.

EXECUTIVE
SUMMARY

OUR RECOMMENDATIONS

Support and **promote upskilling opportunities**, particularly at a mid-career level that will directly help women progress to the next stage.

Recognise the importance of **glue work** and take this into consideration when appraising performance.

Offer flexibility at every stage of an employee's career. Consider part-time or job-sharing arrangements to enable working parents to continue to develop their careers, even while raising a young family.

Invest in **mentorship and well-being support** to nurture talent from the beginning of a woman's career across the organisation. Do not leave this additional responsibility to the few senior women at the company.

Pivot away from searching for elusive Full-Stack "rockstars" to building **Full-Stack teams with T-Shaped skills.**

Prioritise creating a sense of **psychological safety** that empowers everyone to thrive.

INTRODUCTION

A global poll by Nash Squared and CIONET found 70% of digital leaders say a skills shortage has prevented them from keeping up with the pace of change, and 62% believe they'll never have enough tech staff.

That skills gap is only expanding as technology develops at pace, and the most acute gap isn't happening at a junior level. It's at mid-level. Many tech companies are using AI to plug gaps where they can. It's expected that in the future, much of the manual coding work that junior developers do will be automated. AI can accelerate software development and product testing, and help software engineers write better code faster. But it also needs proper oversight at a senior level. And that requires a very different set of skills to those that have been lauded in a male-dominated sector for years.

50% OF WOMEN WILL LEAVE TECH BY 35
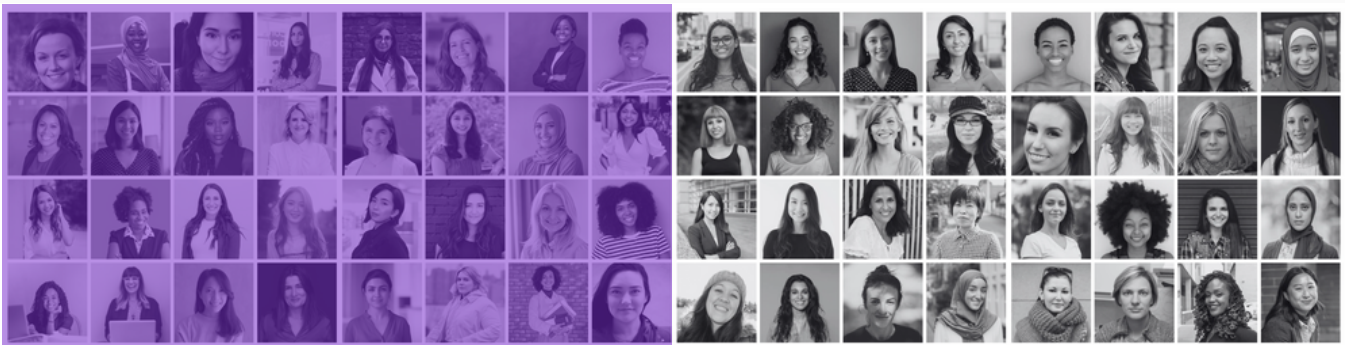
The benefits of diversity are no longer up for debate. It's known that diverse tech teams create better products. They're <u>more creative, more productive, and more profitable</u>. But despite efforts to attract women to the tech industry, many do not stay. It's estimated <u>50% of women are still leaving their roles in technology before they're 35</u>. Many of those that remain end up frustrated at the lack of progression. Only <u>5% will ever hold leadership positions in tech</u>.

ONLY
5% **WILL HOLD LEADERSHIP POSITIONS**

INTRODUCTION
CONTINUED

THE SKILLS CRISIS ISN'T GOING AWAY

The average half-life of skills is now five years and falling. In some tech fields, it's already as low as two and a half years. The global industry needs to get a grip on how it evolves the workforce of the future. But in the midst of those plans, there's a need to address the stark imbalance of opportunity for women in tech. Their talent is being squandered before they're ever really given a chance.

Championing the right conditions to enable women to thrive will unlock benefits far beyond the immediate talent shortage. It's the road to the nirvana of software excellence where men and women work together and progress equitably to form elite teams.

CHAPTER ONE
EQUAL PROGRESSION AND DEVELOPER VELOCITY

Tech companies need to do more with less while facing fierce competition for talent. Rather than searching for hard-to-find full-stack 'rockstars', leaders should be upskilling and reskilling their existing workforce. By providing the conditions for women to thrive, leaders can unlock software excellence and optimum productivity across entire teams.

Almost every company is now considered a technology company in some shape or form. The EU alone wants 20 million technology specialists by 2030 based on its digital ambitions. That's quite the jump for a region that only had 9 million in 2021. In order to compete, salaries have been on the up. But faced with high inflation and an economic crisis, employers are running out of steam. Redundancies are being made and hiring budgets are being frozen. Business leaders are being asked to do more with the people they already have.

If they are hiring, tech leaders are looking for full-stack developers that can do everything in a bid to minimise costs and silos. But full-stack engineers are rare and expensive. And they don't help the rest of the team succeed.

Those that aren't hiring are taking another look at how to get more out of their existing teams. Researchers have put an incredible amount of work into determining the factors that make a technology team perform well, a concept that's become known as underdeveloper velocity.

4-5x
REVENUE GROWTH

55%
HIGHER INNOVATION

20%
INCREASE IN MARGINS

Research by McKinsey has found those businesses that get this right have four to five times the revenue growth and 55% higher levels of innovation than those companies that don't. High developer velocity leads to the adoption of more new technologies, faster innovation, and more competitiveness.
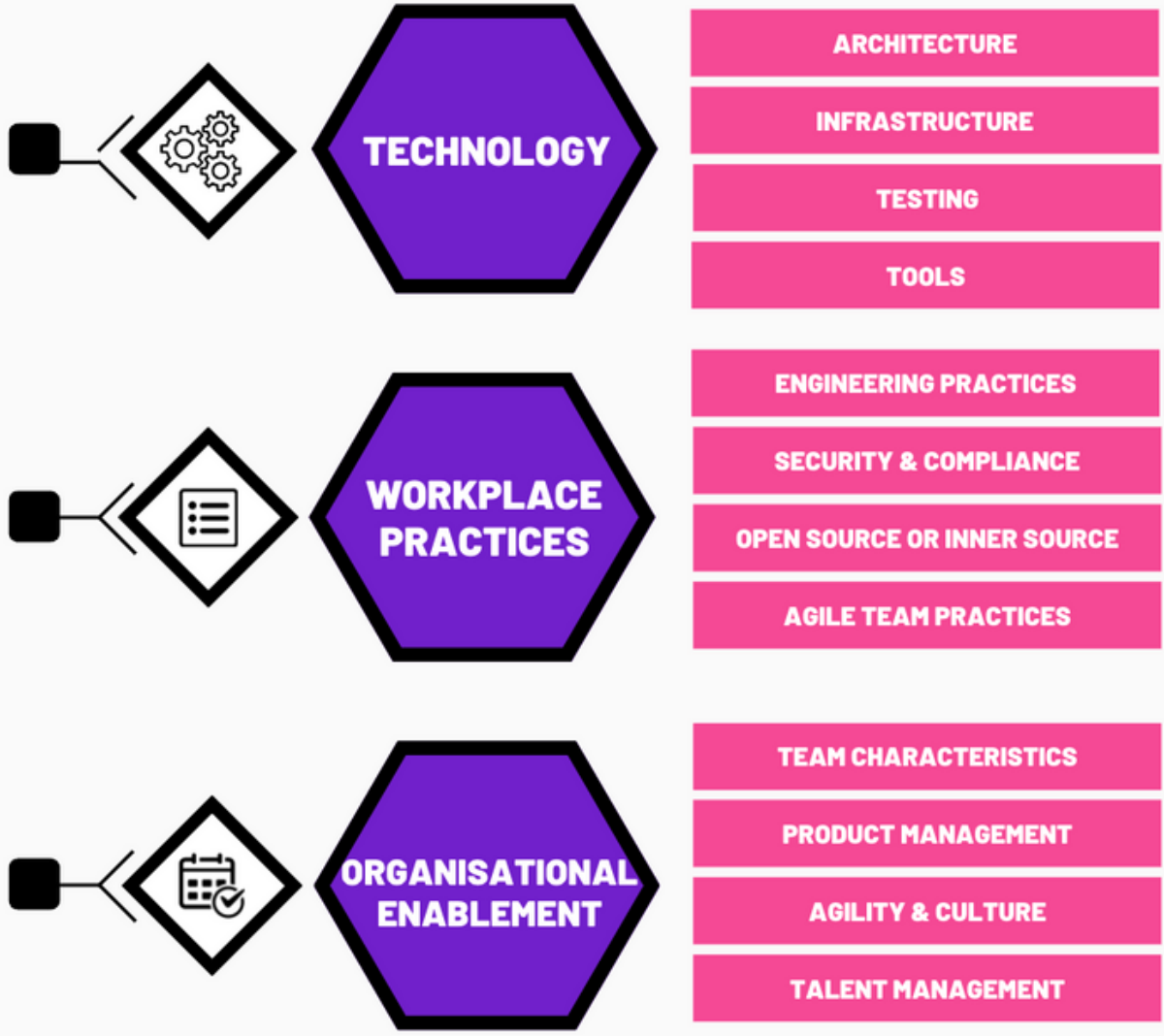
UNLEASH DEVELOPER VELOCITY

In determining how this is achieved, McKinsey analysts conducted hundreds of interviews with experts and senior executives at large enterprises to create the Developer Velocity Index (DVI), which pinpoints the most critical factors needed to unleash the full potential of developer talent.

Essentially, improving business performance through software development comes down to empowering developers to innovate. It means removing points of friction across tools, culture, product management, and talent management. And it's not achieved by hiring one or two full-stack engineers who hamper progress (by becoming bottlenecks) rather than inspire it. It's the team itself that is central to achieving developer velocity.

Technology, workplace practices and elements of organisational enablement that have the greatest impact on Developer Velocity and business performance.

TECHNOLOGY
- ARCHITECTURE
- INFRASTRUCTURE
- TESTING
- TOOLS

WORKPLACE PRACTICES
- ENGINEERING PRACTICES
- SECURITY & COMPLIANCE
- OPEN SOURCE OR INNER SOURCE
- AGILE TEAM PRACTICES

ORGANISATIONAL ENABLEMENT
- TEAM CHARACTERISTICS
- PRODUCT MANAGEMENT
- AGILITY & CULTURE
- TALENT MANAGEMENT

REFERENCE: *Developer Velocity: How software excellence fuels business performance*.

Empowering developers to innovate is a shift in approach that also has the potential to resonate with the women who are leaving the sector. When asked about their experience of working in technology, 45% of Code First Girls' cohort said they'd been deterred from entering the sector as a result of it being a male-dominated industry. When asked to rate their overall job satisfaction on a scale of 0-10 (with 10 being good job satisfaction), only 52% of all respondents gave a score of 6 or higher. Almost half (49%) of the mid-level women polled said they couldn't see themselves staying in the industry for the next five years, versus 44% of the entire sample.

Considering 96% of Code First Girls members are excited and inspired to go into a career in tech, this is a startling statistic. Elaborating further on how their roles meet their initial expectations, we see a disconnect with how women are treated in reality. One respondent said: "Due to being a young female, I receive a lower salary than my male peers or older people despite my skills and knowledge". There are other incidents where expectations don't line up, highlighting a potential disparity between how a role is sold and how it's managed. Another said: "I expected more flexibility, higher salary, and opportunities to work on new tech".

PSYCHOLOGICAL SAFETY

Rather than hire full-stack engineers that sit on a pedestal, tech leaders need to create a supportive work culture that enables everyone to thrive. All software developers need to feel safe to try new things, even if it means failing. This is known as psychological safety, and this is a key part of unleashing developer velocity. Architect Amy Edmondson defines it as "a belief that one will not be punished or humiliated for speaking up with ideas, questions, concerns or mistakes, and that the team is safe for interpersonal risk taking."

ONLY 20%
OF ORGANISATIONS HAVE SUCCESSFULLY CREATED PSYCHOLOGICAL SAFETY IN THEIR TEAMS

"Failing is a fantastic win because you've crossed something off the list in a very cheap and lightweight way."

CHRISTINA SCOTT
Chief Product and Technology Officer

In practice, psychological safety is a culture whereby employees know they're free to experiment in the pursuit of continuous improvement and innovative problem-solving. Team members collaborate with each other and share knowledge without bias or favour.

Creating psychological safety is not easy to do. McKinsey's research into developer velocity revealed that while most executives recognise the importance of psychological safety, only 20% say their organisations have created this culture. What can help is investing in the systems and safeguards that absorb and minimise the cost of failures, and providing regular opportunities for developers to upskill and learn from their mistakes.

Businesses that have built conditions of psychological safety and software excellence across their teams perform far better than others. They're full-stack teams rather than individuals. Developers of all genders and backgrounds understand how their work is aligned with customer needs and the organisation's long-term goals. They're more confident in their abilities, collaborative and innovative as a result.

"Your role is to set everybody up for the biggest type of success, accepting failure is a really big one. I'm not talking about persistent, huge failure but if you don't fail you're not learning. if you don't fail, you're not at the edge of knowing something. If you fail and don't learn, that's the failure."

SARAH MILTON-HUNT
Chief Information and Digital Officier

There's often a mismatch between the type of culture managers think they have created and what women experience on the ground. Accenture found that while 68% of leaders feel they have created "empowering environments where people have a sense of belonging", only 36% of employees agree. If every company were on par with the top 20% of companies in Accenture's study in terms of inclusivity, researchers estimate the annual attrition rate of women in tech could drop by as much as 70%.

68%
of leaders feel they have created "empowering environments where people have a sense of belonging"

36%
of employees agreed (in the same study)

KEY ACTIONS

- *Consider the levels of psychological safety within your own team or organisation.*
- *How comfortable do people feel to raise ideas, questions, concerns or mistakes?*

CHAPTER TWO
EXPLAINING THE BROKEN RUNG

Women experience discrimination once they become parents, are given far more non-promotable tasks, and are judged differently than their male colleagues. Consequently, they're at a far higher risk of burnout and less likely to progress. Fixing these things is the key to retaining and promoting women in tech.

Despite the progress that society has made in pursuit of gender equality, the shadow of traditional gender roles continues to negatively impact the progression of womens' technology careers. It's known as the broken rung – a gap in the career ladder where men progress to senior management positions while women are left behind. But there is also evidence it's affecting careers at a much earlier stage. For example, <u>more than half of women in tech careers</u>, start in entry-level positions, whereas only 39% of men begin from the bottom rung.

PARENTING IN TECH

By their mid-thirties, many women will take time away from their careers to have children. Despite the advances in shared parental leave, whereby mothers and fathers can take up to 50 weeks of shared leave when a new baby is born, <u>only 5% of employee fathers take it</u>.

LESS THAN 25% OF MOTHERS WILL GO BACK TO WORK FULL-TIME

PARENTING IN TECH
CONTINUED

Many women don't catch up again. Research by That Works For Me found less than a quarter of women go back to work full-time after having children across industries and 85% leave the full-time workforce within three years of having their first child. There's also a 32% reduction in women in managerial roles after starting a family, with many stating it's easier to find flexible work opportunities at a more junior level. Almost half say they're earning less than they were before they had children and many estimate it's taken more than 10 years for their careers to recover.

When those who said they were a parent in Code First Girls' research sample were asked how companies can best support working parents, most said offering flexible hours would be helpful. Others pointed to the need for role models to set a good example in juggling priorities between work and home. Almost one in four respondents said there were no women in technical leadership roles in their company.

85%
of women will leave the full-time workplace within three years

NON-PROMOTABLE WORK

Previous research by Harvard Business Review found women are 48% more likely to volunteer for non-promotable work compared to men, such as mentoring new team members, filling in for a colleague, or taking on routine administrative work. It's not just women volunteering – managers ask women to take on these tasks 44% more of the time. A survey by WomenTechNetwork found more than one in 10 women have even been asked to "supply the food" during meetings.

Tanya Reilly is the author of The Staff Engineer's Path, a senior principal engineer at Squarespace and former staff engineer at Google. Part of her research has centred around a concept called 'glue work', which engineering team success relies on but is often not properly recognised. It includes tasks such as writing documents, improving team processes, mentoring and coaching, and establishing coding standards.

Reilly's research has found doing glue work too early can be career limiting or even push people out of the industry. Someone becomes treated as an unofficial lead but not a technical superstar. And often that someone is a woman. Women are subsequently more likely to be left with a portfolio full of tasks that are less promotable, meaning they will progress more slowly than would otherwise be the case.

There are also examples of women experiencing microaggressions at work. Almost half of those from Code First Girls' sample who have been in positions of leadership say they've been the subject of "assumptions that I do not know how to do my role, despite being qualified". Almost four in 10 say they've experienced discrimination due to gender, and three in 10 say they've been the subject of sexist jokes.

1 in 10 *women have been asked to supply the food during meetings*

Almost 4 in 10 *women polled said they've experienced discrimination due to their gender*

**3 in 10** *women polled said they've been subject to sexist jokes in the workplace*

THE CRISIS OF BURNOUT

According to Code First Girls, 77% of the cohort said they'd experienced burnout at work. This is higher among mid-level women, with 81% saying they've had burnout. The top causes were unmanageable workload (47%); unfair treatment (18%); lack of work-life balance (10%); and bad communication and support from managers (7%). The prevalence of burnout is causing one in five (20.8%) mid-level women to consider leaving the sector altogether.

Compared to men, the prevalence of burnout among women is noticeably heightened. A March 2022 study among IT professionals in 33 countries showed women were more likely to report feeling "run down and drained of physical and emotional energy" than men. They were also at a higher risk of burnout (46% versus 38%).

What are the main causes of burnout in women?

Unmanageable workload — 47%

Unfair treatment — 18%

Lack of work-life balance — 10%

**Lack of support from manager** — 7%
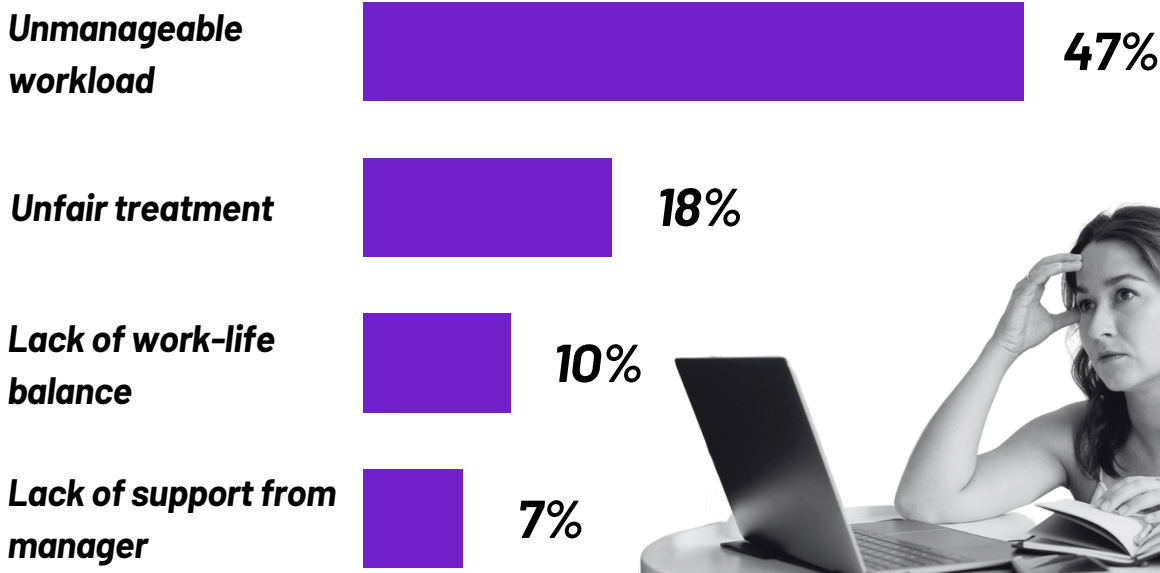
KEY ACTIONS

- *Make a list of the 'glue work' that your developers do on a daily basis*
- *Ask yourself: Do you give credit for these tasks when it's promotion time?*

CHAPTER THREE
FIXING THE BROKEN RUNG

Equipping women with the skills, mentors, flexibility, and support that they need will build confidence and empower them to progress. Focusing on capability hiring rather than minimum requirements will encourage women to put themselves forward for opportunities.

Beyond the constraints of gender roles, there is also a difference in how men and women view their own abilities when applying for roles and promoting themselves at work. According to a report by the IDC, 54% of men in tech felt it was likely they'd be promoted to executive management in their company but only 25% of women said the same.
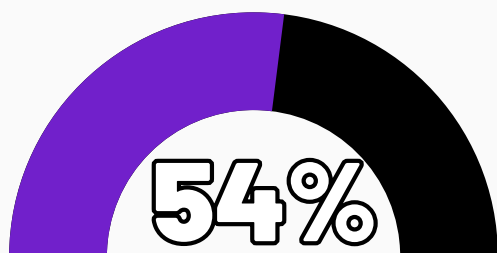
54%

% of men in tech felt it was likely they'd be promoted to executive management

25%
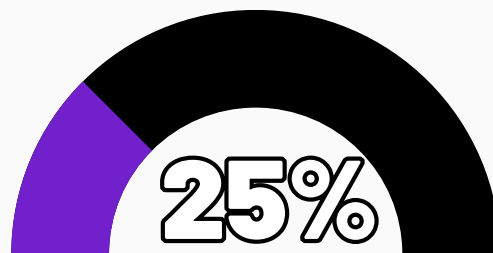
% of women in tech felt it was likely they'd be promoted to executive management

Women pointed to a lack of support, self-confidence and mentorship, as well as feeling they needed to prove themselves more than men to get promoted.

"To progress at work you need confidence and communication skills, as well as knowledge, which a lot of women have but they're not given the opportunities as often".

COMMUNITY MEMBER
Code First Girls

BUILDING FULL-STACK TEAMS

Companies that prioritise filling Full-Stack developer roles, for example, are likely to discourage women from applying right at the start of the recruitment process. Full-Stack is often considered the pinnacle of engineering skills and very few candidates will ever tick all of the boxes. After all, job descriptions with a laundry list of 'must-have' skills and experience are rarely an accurate reflection of the skills needed for a particular job.

A recent report found men will apply for a job if they meet just 60% of the job description, whereas women will ensure they have the full 100%. Among Code First Girls' cohort, almost a third (29%) of all respondents say they haven't ever applied for a role where they didn't have all of the levels of required experience.

"Most women I know would be great for roles don't believe in themselves and yet I see time and time again unsuitably qualified men going and getting roles"

COMMUNITY MEMBER
Code First Girls

Candidates that don't tick all the boxes in a job description can do just as well as those that do. One study by TalentWorks, for example, found candidates were just as likely to get an interview when matching 50% of the skills listed, as those that matched 90% of them. And another analysis by LinkedIn highlighted the importance of keeping job descriptions brief, with most candidates spending just 14 seconds deciding whether or not to apply. LinkedIn also found including masculine wording makes a difference – words such as "aggressive", "dominant", "outspoken" and "rockstar" tend to put women off applying.

THE POWER OF UPSKILLING

According to McKinsey, women who aspire to better tech roles often feel like they need to change employers to progress. Code First Girls' research from 2022 found 81% of career switchers say they would have stayed in roles if they'd been given the opportunity to upskill.

In the most recent survey, 56% of mid-level career women said they hadn't been given the opportunity to upskill or receive training at work, although 70% rank it as the best way to support women in tech teams and promote retention.

When asked about the challenges that women face when breaking into leadership roles...
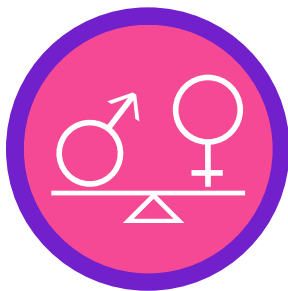
71%
Stereotypes

45%
Lack of confidence

53%
Judgement

When asked about the challenges that women face when breaking into leadership roles, 71% said stereotypes, 53% said women are judged differently and 45% said confidence. Investing in women's skills is therefore invaluable for both instilling vital confidence in women who are hoping to progress and for retaining talent.

SPONSORSHIP AND MENTORSHIP

Investing in sponsorship and mentorship is one of the key factors men and women in leadership positions say has made a difference in their careers. A survey conducted by Capital One, for example, showed that 75% of women who stayed in tech careers had role models at their companies.

Connecting senior colleagues with women early in their career journeys can help accelerate their development, particularly when coupled with transparent processes and well-defined criteria for each level of seniority. During Code First Girls' research, 61% said upskilling is the number one priority for companies looking to support the career progression of their female employees. But providing mentoring is just behind at 51%. That shouldn't be the sole domain of the few women senior leaders either. Men can play an important role by showing allyship in this way.

What is the best way for companies to support women in tech teams and promote retention?

61%	54%	51%	47%
Upskilling	Better Onboarding	Mentoring	D&I Programs
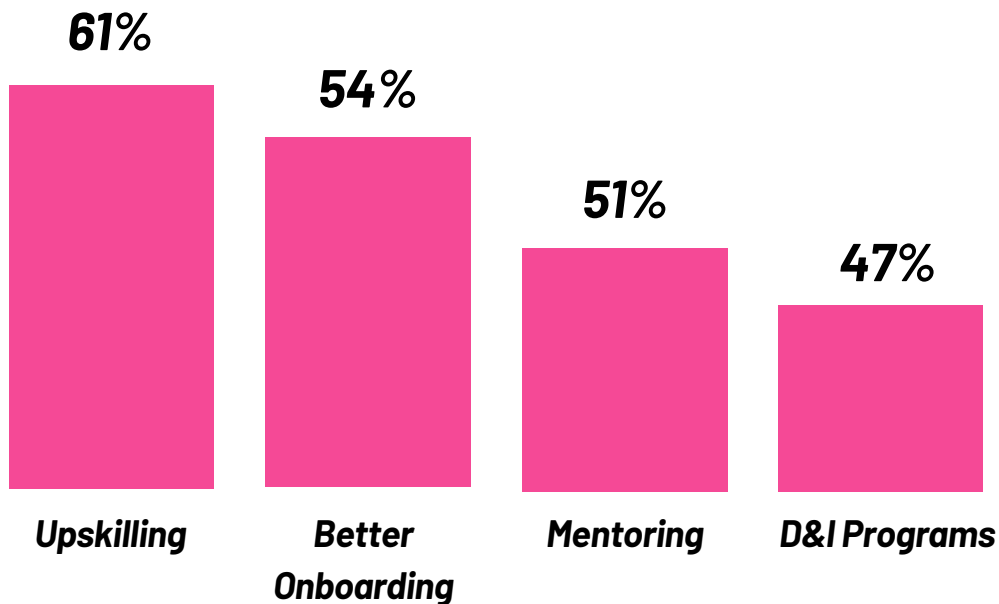
KEY ACTIONS

- *Review job descriptions when advertising for positions*
- *Are you including a laundry list of skills for the sake of it?*
- *Have you used masculine language?*
- *Are you highlighting the opportunities for upskilling once in the role?*

CHAPTER FOUR
REAPING THE BENEFITS OF CHANGE IN A NEW WORLD

Equitable teams that feel safe to experiment, collaborate and fail, perform better than those that don't. Women have the soft skills necessary to thrive within this culture and champion it at a mid-management level. And as the world faces challenges at an unprecedented scale – many of which technology will be expected to solve – it will need their leadership. The holy grail of software excellence won't be achieved without ensuring the men and women in tech teams can progress at a fair and equitable rate.

Change is coming. Among those who women have left tech and since returned, 43% say they had seen positive changes in the industry around diversity, equity and inclusion that made them feel more welcome and valued. And 35% said they had a renewed sense of purpose and wanted to contribute to using technology for positive social or environmental impact.

What are Code First Girls members interested in?

48%	33%	27%
CLIMATE CHANGE	EDUCATION	GENDER EQUALITY

That sense of social purpose came through strongly in the research. Almost half (48%) said they were interested in climate change, 33% said access to education and 27% said they were interested in gender equality. The sector needs women's voices and diversity of thought if it's to contribute to the global challenges the world is facing today.

T-SHAPED DEVELOPERS

With the advancement of AI, it is skills such as cross-functional collaboration and understanding of the wider impact of technology that are going to be highly prized by businesses. And rather than Full-Stack developers leading the pack, it will be T-shaped developers who are able to make the biggest difference.

T-shaped developers excel in their core responsibilities and technical skills, but also have softer skills such as emotional intelligence and creativity. They're high performers who excel in cross-functional work, and can empathise with others within the team. Leaders might encourage team members to become more T-shaped by rotating employees through different specialisms and projects. Doing so encourages learning and growth for everyone – including women who may have been lacking the same opportunities to gain experience.

"A T-Shaped Developer is a person who is an expert in a particular area but they are curious about how the work they do fits in with the wider picture. Essentially trying to understand the dependencies across the wider team that you're in and maybe even wider functions."

GYMSHARK ⌁ **EVIE DINEVA**
Head of Data Science and Data Engineering

Done right, creating a Full-Stack team with T-shaped individuals, where everyone is empowered to make a difference strengthens collaboration and communication within and between teams. It boosts a business's productivity and innovation. And it improves retention as employees are nurtured to grow. Women are perfectly positioned to lead this new way of working. They thrive when they both technically specialise and are encouraged to collaborate. By promoting the importance of softer skills alongside technical understanding, they'll be perfectly placed to shape cultures where it's safe to explore, develop and learn, and to create teams that can adapt and evolve in a resilient way.

BUILDING DIVERSITY OF THOUGHT

That diversity of thought is also paramount when creating the products the world will need in the future – with inclusivity and innovation at the core. Inclusive teams have been found to make better business decisions up to 87% of the time, and deliver 60% better results.

To succeed, diverse teams need time and space to come together, with the understanding that it might take them longer to work through their differences of opinion. They need to celebrate allyship within the team, and to encourage open conversations whereby everyone feels comfortable sharing their perspectives. In doing so, teams will be empowered to think more creatively about the challenges facing the world, and have the empathy needed to identify the products that will resonate with customers in the future.

KEY ACTIONS

- *Are you creating T-shaped developers that have a good understanding of*
- *cross-functional work?*
- *Are you giving diverse teams the time and support they need to make innovation happen?*

CONCLUSION
THE TIME FOR ACTION IS NOW

This is the key moment for technology leaders to fix the broken rung. The talent crisis, pace of technology and need for diversity at the highest level means there are clear business benefits to championing the progression of talented women in tech.

To succeed in tech, women need opportunities to upskill and grow their confidence as the needs of the organisation evolves. They need flexibility and well-being support so they don't burn out juggling competing priorities at work and home. They need mentorship and the chance to work on important projects. And they need to know what it will take to move up the ladder, and upskilling opportunities, so they can see a clear path to progression.

Innovation in tech requires everyone to be at their best. If technology leaders don't lay the foundations for equitable professional development now, their teams won't have the skills they need to thrive in the next technology revolution.

RECOMMENDATIONS

CONCLUSION
RECOMMENDATIONS

Reading this report is one thing, but below you'll find a list of recommendations to take to your business to drive real change and action across the organisation.

Support and **promote upskilling opportunities**, particularly at a mid-career level that will directly help women progress to the next stage.

Recognise the importance of **glue work** and take this into consideration when appraising performance.

Offer flexibility at every stage of an employee's career. Consider part-time or job-sharing arrangements to enable working parents to continue to develop their careers, even while raising a young family.

Invest in **mentorship and well-being support** to nurture talent from the beginning of a woman's career across the organisation. Do not leave this additional responsibility to the few senior women at the company.

Pivot away from searching for elusive Full-Stack "rockstars" to building **Full-Stack teams with T-Shaped skills.**

Prioritise creating a sense of **psychological safety** that empowers everyone to thrive.

THANK YOU

Thank you for taking the time to read this report. If you have any questions or would like to discuss our findings further, please don't hesitate to reach out to us.
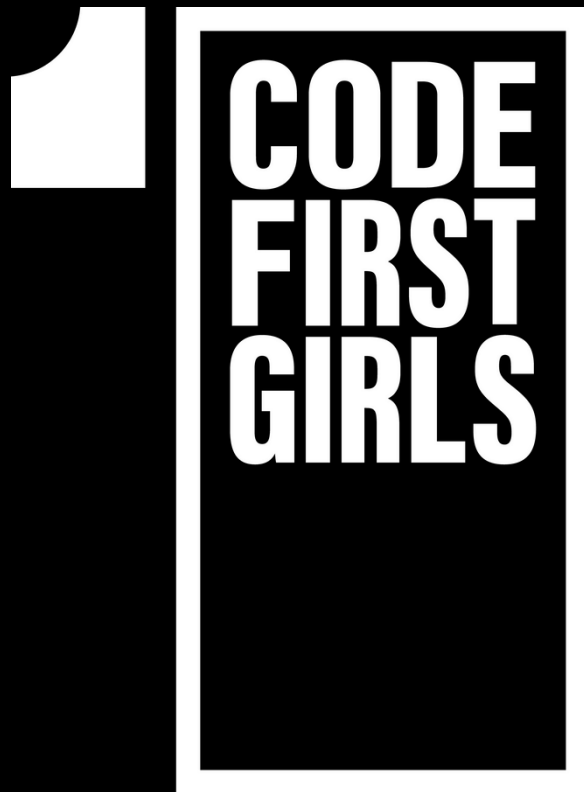
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