Identifying and Resolving Challenges in the IT Hiring Process: A Comprehensive Review

Prof.Parinita Chate[1] Prof.Ajit Patil[2]
Prof.Sangram Patil[3]
Bharati Vidyapeeth's College of Engineering, Lavale,
Pune, India, [1,2,3,5,6]

Prof.Shalini Wankhede[4] Mrs.Shubhangi Satav [5]
Mr.Mayur Mahajan[6]
Vishwakarma Institute of Information
Technology Pune, India [4]

Abstract—Hiring talent in IT is very essential for companies to stay competitive. As more and more aspects of human life transform into a digital world, new IT positions and new skill sets are appearing. Right now the IT industry faces a big problem in the form of its use of traditional hiring methods. Traditional Hiring methods have been heavily criticized by industry experts. Research suggests that traditional hiring methods are stressful to candidates in the sense they can cause cognitive load on the candidate and decrease their performance, discriminatory towards women, seniors, and underrepresented candidates, and yet they are being practiced in the majority of IT companies. In this research paper, we take a look at some of the biggest challenges from Whiteboard Interviews to Take Home Assignments that companies face during their Hiring process. We will look in-depth at how these challenges affect hiring, what their side effects on qualified and misrepresented candidates are, and how companies can tackle these problems to improve their hiring process.

Index Terms- **hiring, stressful, discriminatory, performance, Take-Home assignment, interview, whiteboard.**

I. Introduction

In today's competitive IT industry, having a well-educated and skillful workforce is no longer an advantage but a must-have factor for every company [1]. Thus hiring the best candidate is a top priority for every IT company. Yet the current hiring process in IT is full of leaks, and sometimes the best candidates are turned down in the process. The existing hiring system in IT is flawed [2].

The current hiring process is very tiring and sometimes frustrating for candidates. Candidates are judged on skills that they might not even need in their job [3]. Interviews are time-consuming both for the companies and the candidates. Candidates applying at multiple companies have to reappear for the same kind of tests again and again. Technical

Interviews have a timeline to solve multiple problems. While solving the problem the candidates are required to talk and explain what they are doing for the interviewer to assess the candidate's thinking process. But talking and explaining during the solving a problem can cause stress to the candidate [7][8] and also remove the chance for reflection[6]. Aspiring IT job seekers like to think that they are being treated fairly during the interview process, but neuroscientific studies suggest otherwise [5]. In this research paper, we shall study many common problems in the Hiring process in IT. We also discuss the potential solutions for these problems from the company's perspective.

II. Problems and Solutions

Each company has a varied requirement set. Companies have a hard time finding the perfect candidate. There are flaws in the existing hiring process that keeps even qualified candidates away from the job. Let's go through some of these flaws.

1. **Limited Candidate Pool** -

Common Issues to Identify Qualified Candidates
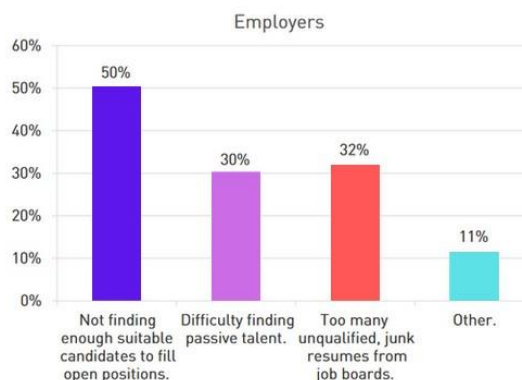
Source: 2016 Recruiter and Employer Sentiment Study

Eur. Chem. Bull. 2023,12(10), 8768-8773

8768

Companies post job openings on various online platforms like Linkedin, Glassdoor, etc. How many people will apply to these job openings depends upon various factors such as the brand value, the job culture, job description. Even if a company has an ample amount of applicants for job openings, the number of qualified candidates is less. The number of candidates with qualifications to work in IT can only meet 50% of the market demands [16]. Thus companies need to increase the size of their candidate pool. One possible solution for this is to hire from within the company itself, promoting junior roles to take up more responsibility. According to Harvard Business Review, only 28% of talent acquisition leaders believe that internal candidates can fill up vacancies [9].

Another way to increase the number of applicants is by making sure that your job description is clear and easy to understand. Companies should avoid unrealistic expectations in job descriptions because that limits the number of potential applicants.
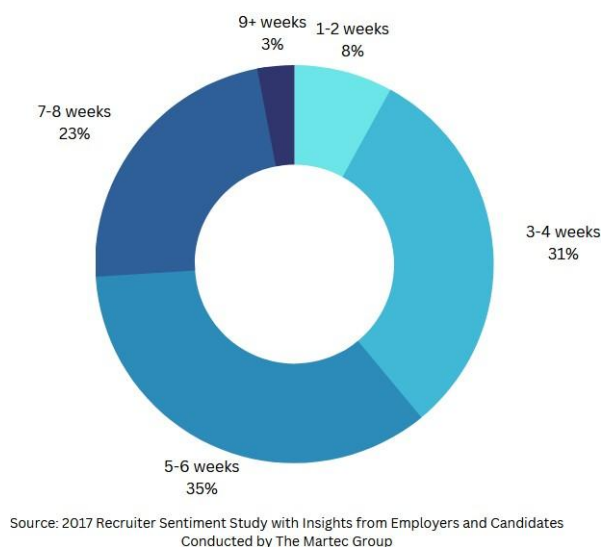
Organizing hackathons or technical competitions can also attract talented candidates. They can also improve the business activities of companies by finding new ideas, prototypes, or even business plans [10][11].

Finally, companies should bolster their reputation among candidates by promoting diversity, maintaining a collaborative work culture, and offering eye-catching perks. Evidence suggests that more diverse software engineering teams are more innovative and productive [12][13][14][15].

2. **Slow Speed of Hiring** - Even though companies want to hire as quickly as possible, traditional hiring methods and untrained hiring staff can slow down the hiring speed. Slower hiring speed may give candidates the impression that the company is not interested in them [17]. It also gives candidates time to find a job elsewhere. Thus there is a need to improve the speed of hiring.

One reason why the speed of hiring may be slow is that there is an excess amount of unqualified candidates applying for a job. This problem can be taken care of by setting up realistic base-level criteria for applications based on skills and

How long does it take to get an offer?

Source: 2017 Recruiter Sentiment Study with Insights from Employers and Candidates Conducted by The Martec Group

experience and quickly rejecting applications below that threshold [18].

Another way to improve the speed of hiring is by using Data-Driven Process to assess candidates and hire top-performance engineers[19]. Modern AI and ML models can also be used to quickly assess applicants [20].

One more solution that can speed up the process of hiring is to look internally for candidates or use referral programs.

3. **Less Communication with Candidates** - Communication is vital in the hiring process and yet companies often overlook it. 84% of candidates expect a personal email response to acknowledge their application. About 36% of them expect to be updated throughout the entire process. And yet, only 26% of employers let candidates know their application's status. A majority of candidates base their future purchasing decisions on their hiring experience [21]. Better communication can not only improve the hiring process but bolster the company's image. Companies can request feedback from candidates about their hiring experience and how that could be improved. Communication should be done with a little caution and professionalism.

4. **Everything Wrong with Technical Interview** - The typical hiring process consists of a whiteboard interview where candidates are required to solve

8769

Eur. Chem. Bull. 2023,12(10), 8768-8773

multiple technical questions based on Data Structures and Algorithms. While this process is industry standard, it should be accompanied by some kind of skill judgment round.

A candidate may be great at solving technical interview questions that they have crammed over the years but that may not translate into real software development skills [3]. While they serve as a good metric for judging if a candidate can actually code or not, which is very important since the majority of applicants for software development jobs can not code [25], often companies set too high standards for these questions which may result in them losing a great candidate. Whiteboard interviews are also punishing for experienced developers who are busy working on real-life software development tasks and do not have time to cram for a month [3]. Research has shown that technical interviews may promote exclusion and discrimination, which serves as a barrier to entry for qualified underrepresented candidates [24]. Technical interviews can also be stressful for the candidates [7][8][6] and may be riddled with unfortunate bias [5].

Let us discuss how companies can improve their technical interview process. The technical interview process should be changed. First of all, companies should reduce the complexity of questions, which can be done by avoiding rare data structure-related questions. Remember the goal of an interview is to know if your applicant can code or not, asking them theoretical computer science questions can not guarantee their real-world software development skills [3].

During the technical interview, candidates should be allowed to use a Code Editor rather than them solving questions on whiteboards since they can be intimidating and stressful [26]. By replacing whiteboards with IDEs we can remove certain biases caused by them [27][24].

During the interview candidates should be allowed to take small breaks, this can help candidates relieve some stress and also increase their performance during the interview [28][29]. Since talking during solving a problem may cause

stress and affect the candidate's performance [7][8] [6], the candidate should be allowed to choose to solve the problem in silence. Once the problem is solved then the interviewer can ask questions that can help to assess the thinking process of the candidate.

The confidence of a candidate is also an important factor that is considered during the technical interview. This may not be the best practice because research shows that women think less of their abilities than they are, whereas men have an inflated sense of their abilities. Thus male candidates may appear very confident and women candidates may look very under-confident, even when their qualification and competence is the same [27]. Interviewers should be trained with this and similar scientific data that may improve their evaluation of future candidates and remove unintentional bias.

Technical Interviews should be followed by a Skill-Based Task that the candidate is required to solve within a 1-2 hour window. Not to be confused with Take Home Assignments which we will discuss soon. These skill-based tasks should be short, entry-level tasks, such as writing an API call, creating unit tests, writing a set of database queries, designing a component, etc. These tasks should be timed. And they should be conducted after a thorough screening of the candidate [33]. These tasks must have a low 'pass' rate, meaning the tasks should not be daunting [31]. Candidates should be monitored during the process and encouraged to ask for help from the interviewer. They should be allowed to use their preferred tools or environments to complete the task.

5. **Take-Home Assignments** - Take-Home Assignments are long coding tasks that the candidates are required to complete within weeks. These assignments have a problem statement that is highly relevant to the day-to-day job role in question. They are a great way for Hiring Managers to evaluate the skills of a candidate and if the candidate will be right for the job. They offer flexibility to the candidate in the form of tools they want to use or the schedule they prefer. But if not

8770

Eur. Chem. Bull. 2023,12(10), 8768-8773

conducted in the right way, take-home assignments can tarnish the company's image. And recent research shows that Take-Home Assignments are causing more harm than good [30][31].

The three main problems with Take-Home Assignments are their timeframe, second their order of appearance in the hiring process, and finally the way they are conducted.

Typically Take Home Assignments last for days or even weeks. This may make the candidates feel that their time is being exploited [32]. In addition to that, it slows down the hiring speed. The solution for this is companies should reduce the Take Home Assignment timeframe to 1 to 2 days and they should only be conducted if the company is not going or has conducted a technical interview of the same candidate. Companies should use take-home assignments as a replacement for other parts of the interview [33].

Take-Home Assignments should only be conducted after the initial screening of the candidate is completed and the company is genuinely interested in the candidate. They should serve as an "evaluative" round and not a "screening" round [31]. Finally, take-home assignments should have a limited scope that is related to the job. But they should not be burdensome or too complex. They should have a clear objective that can be comprehensively evaluated by the interviewer. If used properly they can prove to be efficient.

6. **Training New Employees** - According to a study, organizations spend an average of $1250 per employee on training and employers dedicate an average of 33 hours of training for new employees [22]. In addition to these standard fees, employers have to incur hidden costs such as equipment fees, instruction materials, etc [23]. The cost of training can be reduced by modifying the recruitment process for selecting highly skilled employees. Another solution is for companies to improve Employee Retention. Both these ways can help to save the cost of training [23]. Training is essential, companies should think of it as an investment. But should strive to reduce it whenever possible.

III. Future Work

It is clear from our research that the hiring process needs to change and match candidate expectations. Companies have started moving from traditional hiring methods to new modern methods. Some of the hiring trends are illustrated as follows:

Top trends for the future of recruiting:
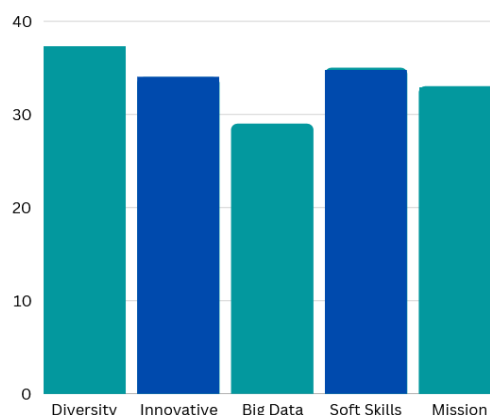
Source: LinkedIn Global Recruiting Trends 2017

Around 37% of recruiters are giving importance to more diversity in candidates. 35% of recruiters are going to focus on soft skills assessment while 34% agree that investment in Innovating Interviewing tools can be beneficial. About 29% of companies are going to use Big Data in their recruitment process.

We feel that there is a need to improve the existing methods and streamline them using some kind of application or hiring platform. There is a need for automation in this area that uses more data-driven techniques. This will reduce the time required for hiring and also the cost required for hiring. The new hiring practices should aim at promoting diversity, modern tools, and collaboration.

This area needs more research, and more surveys in order to improve for both companies and candidates. More and more communication and feedback should be encouraged by companies regarding their hiring practices.

Eur. Chem. Bull. 2023,12(10), 8768-8773

8771

IV. Conclusion

Hiring new talent is essential for IT organizations to stay competitive. With the modern approaches in almost every aspect of IT operations, the Hiring process has been left behind. It is intimidating for candidates, sometimes stressful and discriminatory. The current hiring process results in companies missing out on qualified candidates.

The demand to hire quality IT engineers is only going to increase in the future. But currently, there are some common hiring problems that many companies face. By solving these problems companies can hire better and generate more revenue. Companies should carefully design the hiring process after considering it from the candidate's perspective.

One issue that companies face is the limited number of qualified candidates. Companies should increase their pool of candidates and should use Hackathons and other events to engage bright people. Prioritizing internal employees to take up senior roles is beneficial. Currently the slow speed of hiring costs companies of valuable resources. Training the hiring staff and using data-driven methods for quick evaluation of candidates can increase the speed of hiring. Companies should regularly and formally communicate with candidates to improve their Interview experience. Technical Interviews on a whiteboard are the most dreadful part of today's hiring process. The timeframe and complexity of problems if reduced can improve the process. The use of candidates' favorite tools to solve a problem could improve their performance and cause them less stress. Take Home Assignments are a step forward from traditional hiring methods but are often exploited by companies. If used properly they can give results. Expecting your candidate to know everything about the job is an overstatement. Training can be very beneficial to increase your new employee's productivity.

V. REFERENCES

[1] P. F. Drucker, "Management Challenges for the 21st Century" HarperBusiness, Newyork, 1999

[2] M. Behroozi, S. Shirolkar, T. Barik and C. Parnin, "Debugging Hiring: What Went Right and What Went Wrong in the Technical Interview Process," , 2020, pp. 71-80.

[3] Larson, Quincy. "Why is hiring broken? It starts at the whiteboard." Free Code Camp(2016).[Online]. Available: https://medium.freecodecamp.org/why-is-hiring-broken-it-starts-at-the-whiteboard-34b088e5a5db/

[4] M. Behroozi, A. Lui, I. Moore, D. Ford and C. Parnin, "Dazed: measuring the cognitive load of solving technical interview problems at the whiteboard", , pp. 93-96, 2018.

[5] Freada Kapor Klein and Ana Díaz-Hernández, "Pattern recognition: how hidden bias operates in tech startup culture", , vol. 20, no. 4, pp. 20-23, June 2014, [online] Available: https://doi.org/10.1145/2604991.

[6] Jane Dawson. "Reflectivity, creativity, and the space for silence. Reflective Practice" 4, 1 (2003), 33–39

[7] Chris Parnin and Spencer Rugaber. "Resumption Strategies for InterruptedProgramming Tasks. Software Quality Control" 19, 1 (March 2011), 5–34. https://doi.org/10.1007/s11219-010-9104-9

[8] J.Edward Russo, EricJ. Johnson, and DebraL. Stephens. "The validity of verbal protocols. Memory & Cognition" 17, 6 (1989), 759–769.

[9] Marcus Hatten, "4 Tech Hiring Problems Your IT Company will face", [Online]. Available https://mondo.com/blog-tech-hiring-problems/

[10] J. F. DeFranco, C. S. Eagle, J. B. Michael, J. Viega and J. Voas, "Hackathons 101," in Computer, vol. 54, no. 5, pp. 65-69, May 2021, doi: 10.1109/MC.2021.3064435.

[11] G. Valença, N. Lacerda, C. R. B. de Souza and K. Gama, "A Systematic Mapping Study on the Organisation of Corporate Hackathons," 2020 46th Euromicro Conference on Software Engineering and Advanced Applications (SEAA), 2020, pp. 421-428, doi: 10.1109/SEAA51224.2020.00074.

[13] Catolino, Gemma, et al. "Gender diversity and women in software teams: How do they affect community smells?." _2019 IEEE/ACM 41st International Conference on Software Engineering: Software Engineering in Society (ICSE-SEIS)_. IEEE, 2019.

[14] Rodriguez, Edel. "How Diversity Makes Us Smarter." Scientific American 311.4 (2014).

[15] Vasilescu, Bogdan, et al. "Gender and tenure diversity in GitHub teams." Proceedings of the 33rd annual ACM conference on human factors in computing systems. 2015

[16] Lotus QA, "Top 7 Challenges in IT recruitement faced by Tech Giants", [Online], Available https://www.lotus-qa.com/top-challenges-in-it-recruitment/

8772

Eur. Chem. Bull. 2023,12(10), 8768-8773

[17]   Peter Cappelli, "What job applicant 'ghosting' says about the current workplace" , 2019, [online] Available: https://www.barrons.com/articles/job-applicant-ghosting-51547761704.

[18]   Ed Hallen, "4 Major Hiring Problems and How to Solve them", [Online]. Available

[19]   https://www.teamengine.io/blog/4-major-hiring-problems-and-how-to-solve-them

M. R. Neece and S. A. Wulf, "Selecting Excellence: A

[20]   Data-Driven Process to Hire Top Performance Engineers With Greater Speed and Certainty," in IEEE Engineering

A. A. Mahmoud, T. AL Shawabkeh, W. A. Salameh and I. Al Amro, "Performance Predicting in Hiring Process and Performance Appraisals Using Machine Learning," 2019 10th International Conference on Information and

[21]   Communication Systems (ICICS), 2019, pp. 110-115, doi: 10.1109/IACS.2019.8809154.

CareerBuilder, "Nationwide Study from CareerBuilder Reveals Six Facts Every Employer Should Know About the Candidate Experience", [Online]. Available http://press.careerbuilder.com/2015-05-21-Nationwide-

[22]   Study-from-CareerBuilder-Reveals-Six-Facts-Every-Employer-Should-Know-About-the-Candidate-Experience

Association for Talent Development, "ATD Release 2016

[23]   State of the Industry Report", (2016) [Online]. Available https://www.td.org/insights/atd-releases-2016-state-of-the-industry-report

Indeed Editorial Team, "The Cost of Training New Employees", [Online] Available https://www.indeed.com/career-advice/career-evelopment/cost-to-train-new-employee

[24]   Alvino, C. "Technical interviews an instrument of exclusion and discrimination." (2014).

[25]   Atwood, Jeff. "Why Can't Programmers. Program?." http://www.codinghorror.com/blog/archives/000781.html (2007).

[26]   Wästlund, Erik, et al. "Effects of VDT and paper presentation on consumption and production of information: Psychological and physiological factors." Computers in human behavior_21.2 (2005): 377-394.

[27]   Thomas, R. "How to make tech interviews a little less awful." (2017). [Online] Available: https://medium.com/@racheltho/how-to-make-tech-interviews-a-little-Iess-awful-c29f35431987.

[28]   The University of North Carolina at Chapel Hill, "Taking Breaks - Learning Center", [Online]. Available: https://learningcenter.unc.edu/tips-and-tools/taking-breaks/

[29]   Fritz, Charlotte, et al. "Embracing work breaks." Organizational Dynamics 42.4 (2013): 274-280.

[30]   Chechique, Edward. "Why design managers should stop using take-home assignments in the hiring process".

(2022) [Online]. Available: https://uxplanet.org/take-home-assignments-challenges-edc3d932451b.

[31]   Gayle, Laakman Mckdowell. "Companies who give candidates homework assignments: knock it off!" (2013). [Online]. Available: https://www.gayle.com/blog/2013/09/18/companies-who-give-candidates-homework-assignments-knock-it-off

[32]   Magazzo, Sarah. "Why Take-Home Assignments are the Biggest Mistake for Hiring Managers". [Online]. Available: https://mondo.com/insights/biggest-hiring-mistake-take-home-assignment/

[33]   Hiring for Tech. "How fair is the take-home assignment?" (2020). [Online]. Available: https://hiringfor.tech/2020/08/10/how-fair-is-the-take-home-assignment.html

[34]   MRI Network, Inc. "2016 Recruiter and Employer Sentiment Study" (2016). [Online]. Available: https://mrinetwork.com/media/303943/recruiter_sentiment_study_1st_half_2016.pdf

[35]   MRI Network, Inc. "2017 Recruiter Sentiment Study with Insights from Employers and Candidates Conducted by The Martec Group" (2017). [Online]. Available: https://mrinetwork.com/media/304094/2017hiringsentimentstudy.pdf

[36]   Schnidman, A., L. Hester, and P. Pluntke. "Global recruiting trends 2017." LinkedIn Talent Solutions (2017): 1-32.

8773

Eur. Chem. Bull. 2023,12(10), 8768-8773