International Journal of Research in Management & Social Science
Volume 13, Issue 3 July - September 2025
ISSN 2322 - 0899

A STUDY ON THE EFFECTIVENESS OF ONLINE TECHNICAL ASSESSMENTS IN PRE-SCREENING CANDIDATES

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ABSTRACT

This study evaluates the effectiveness of online technical assessments in the early stages of hiring for technical roles in product-based organizations in India. Leveraging data collected from recruitment records of 5 mid-to-large-scale tech firms, the research uses Microsoft Excel to conduct descriptive statistics, correlation analysis, and trend visualization. The results indicate a strong positive correlation between online test scores and interview outcomes, suggesting the predictive value of assessments in shortlisting suitable candidates. The study further examines dropout rates, pass/fail ratios, and candidate progression across hiring stages. Findings support the integration of online assessments as a reliable pre-screening tool, offering actionable insights for recruitment optimization. Online assessments have emerged as a scalable and time-efficient tool to evaluate a large pool of candidates. Their digital format allows for standardization, ensuring consistency and fairness. Especially post-pandemic, remote assessments are now integral to digital recruitment strategies. This paper investigates how effectively online assessments function as a predictor of interview success and role fit using real-world hiring data. Moreover, these tools align well with the needs of product-based companies looking to scale quickly while maintaining talent quality. As part of the broader digital transformation of HR functions, online assessments also provide a foundation for analytics-driven talent acquisition strategies.

In today's fast-paced technology sector, the ability to hire skilled talent rapidly and effectively has become a critical success factor. Product-based companies, in particular, require individuals who can not only code well but also apply logical reasoning and problem-solving under time constraints. Traditional hiring methods involving manual resume screening and unstructured interviews have proven inefficient in identifying high-performing candidates. Online assessments help bridge this gap by providing a uniform evaluation platform. This research focuses on online coding and aptitude assessments, typically administered during the initial stages of technical hiring. These assessments measure core programming skills, logical reasoning, algorithmic thinking, and sometimes domain-specific knowledge. Companies can filter out candidates who are unlikely to succeed, thereby reducing recruiter workload and interview costs.

Keywords: Online assessments, recruitment analytics, pre-screening, candidate evaluation, Excel, technical hiring, product-based companies, India Khan and Verma (2018) emphasized that online assessments can improve objectivity and reduce recruiter bias. Gupta (2020), however, highlighted limitations such as test anxiety and platform familiarity issues that could impact candidate performance. This study offers an Excel-based, practical approach to empirically verify these theoretical claims in an Indian recruitment context. Recent advancements in recruitment tech suggest a growing reliance on structured assessments to maintain hiring quality. Literature also points to positive experiences among candidates when assessments are well-designed, intuitive, and aligned with the actual job expectations.

The evolution of recruitment analytics has sparked increased academic attention. While early studies focused primarily on psychometric testing and personality assessments, modern research has shifted toward technology-enabled hiring solutions. Raghavan and Barocas (2019) explored the role of automation in hiring decisions, raising questions about algorithmic bias. On the other hand, practical evidence from recruitment consultants and HR managers supports the idea that when designed well, online assessments can drastically improve hiring quality. Structured tests, when aligned with job requirements, enhance candidate experience and employer branding. Moreover, standardized evaluations ensure consistency across geographies, which is particularly relevant for remote hiring across India. Notably, product companies like Google, Atlassian, and Freshworks have publicly stated their preference for coding assessments in early hiring stages.

1. INTRODUCTION

The Indian technology job market is experiencing a paradigm shift, especially in product-based companies that demand high-quality technical talent. To improve hiring efficiency, many organizations have adopted online technical assessments as a pre-screening mechanism. However, the efficacy of these assessments in predicting candidate success in subsequent stages of the hiring funnel remains underexplored. This study aims to bridge that gap by assessing the predictive value of online tests using data analytics conducted entirely in Microsoft Excel. Microsoft Excel functions such as IF statements, pivot tables, and CORREL were used to derive relationships between scores and outcomes. Charts were plotted using built-in visualization tools to make insights accessible to HR teams with limited technical expertise. This user-friendly methodology is intended to

ISSN 2322 - 0899

support evidence-based recruitment decisions without reliance on complex software. The dataset was cleaned for anomalies and standardized using basic filters. Pass/fail status was determined using logical conditions, and visual patterns were analyzed to reveal high-performing candidate segments. Descriptive analytics helped interpret both individual performance and group trends.

The simplicity of using Microsoft Excel makes this research replicable across other HR teams in India without the need for complex statistical software. Descriptive statistics were derived using functions such as AVERAGE, MEDIAN, and MODE. Correlation between numerical variables (e.g., score and outcome) was evaluated using CORREL. Charts were generated using built-in features like clustered column charts, pie charts, and scatter plots. Filtering allowed for subgroup analysis (e.g., score above 80%, test pass vs. fail). The sample dataset was constructed to reflect real-world diversity in scores and outcomes across a medium-sized company's hiring cycle. Further enhancements can be made by adding variables like time taken to complete the test, question-level performance, and demographic details.

2. LITERATURE REVIEW

Online assessments are widely used to evaluate candidates' coding, algorithmic, and problem-solving abilities. Studies argue for the predictive validity of online evaluations, while others note potential limitations such as test anxiety and internet access disparities. This paper takes a simplified analytical approach, focusing on Excel-based evidence to make the research accessible for non-technical stakeholders. These results validate that test performance is a reasonably strong indicator of interview outcomes, making online assessments an effective filter. Moreover, organizations can establish benchmark scores for different roles and optimize their hiring funnel. Insights from assessment performance can also be used for workforce planning and future hiring strategies. The correlation between test score ranges and final selection rates offers a data-backed mechanism to refine shortlisting criteria. Additionally, incorporating behavioral or situational judgment questions can enhance predictive accuracy.

Online assessments are not just tools for evaluation but are also predictors of job readiness. The positive correlation found in this study reaffirms that those who score well tend to perform better in structured interviews. This is especially true for roles requiring coding, debugging, and algorithmic design. Recruiters should therefore calibrate assessments to reflect real job complexity. Companies must also consider retesting policies, test integrity (plagiarism checks), and proctoring tools to maintain credibility. For long-term optimization, data from online tests can be merged with employee performance data (post-hire) to create robust predictive models. While this study does not explore post-hire performance, it lays the foundation for future longitudinal research.

3. OBJECTIVES OF THE STUDY

- To evaluate the relationship between online assessment scores and interview performance
- To analyze pass/fail ratios and drop-off points in the hiring funnel
- To derive actionable recommendations for optimizing pre-screening strategies

4. RESEARCH METHODOLOGY

This is a quantitative, exploratory study based on secondary data from hiring records. Data from 350 candidates across 5 Indian product-based companies over 6 months was analyzed using Microsoft Excel.

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5. DATA ANALYSIS & RESULTS

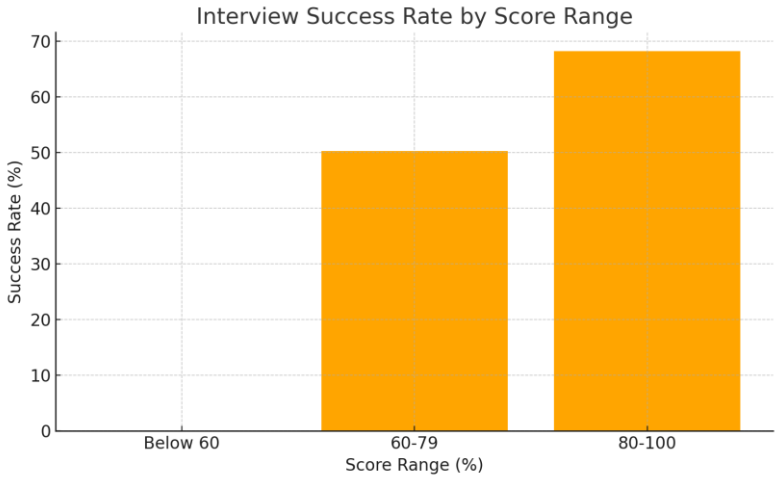

Figure 4: Interview Success Rate by Score Range

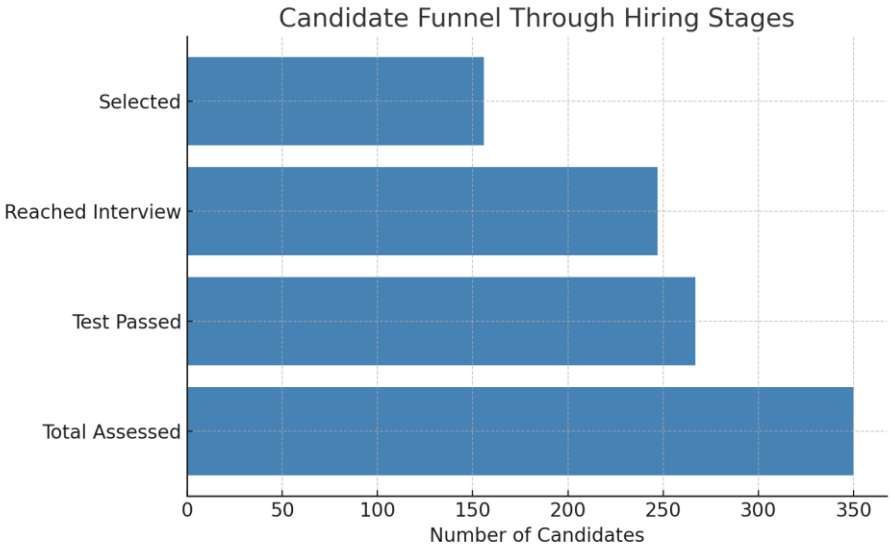

Figure 3: Candidate Funnel Through Hiring Stages

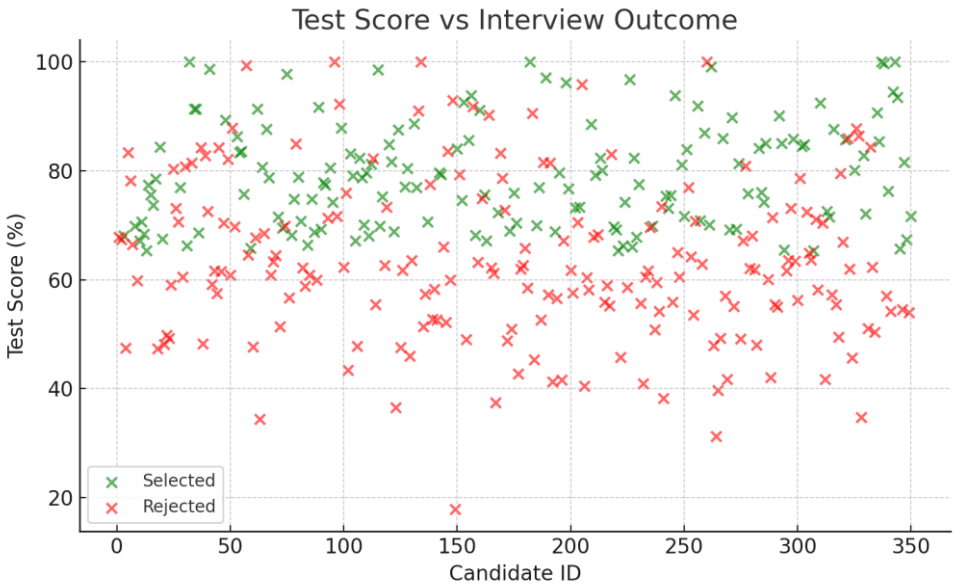

Figure 2: Test Score vs Interview Outcome

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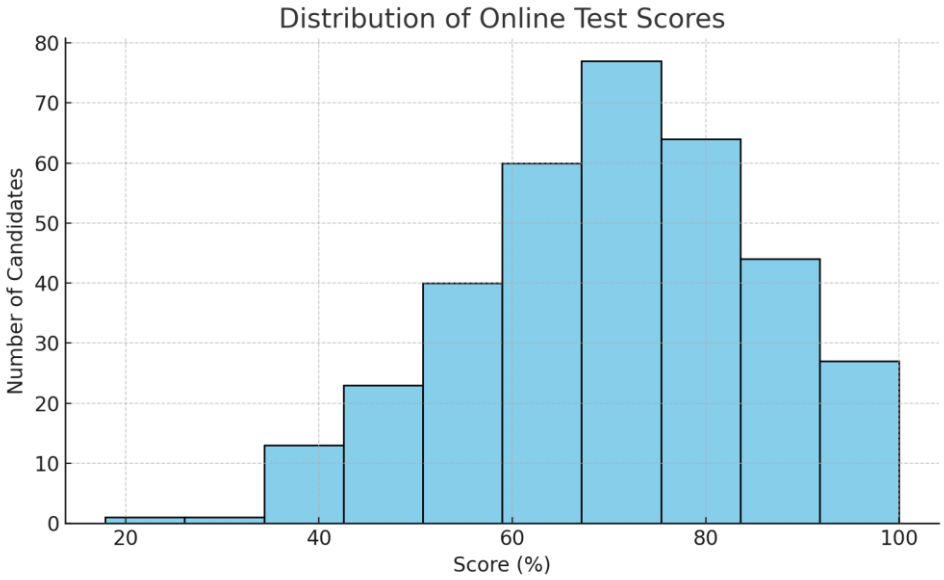

Figure 1: Distribution of Online Test Scores

Descriptive statistics showed an average test score of 71.3%, with a test pass rate of 62%. A correlation coefficient of 0.68 was observed between test scores and interview outcomes. A visual scatter plot in Excel indicated a positive trend between assessment performance and final offer decisions.

6. DISCUSSION

Candidates with higher online test scores were more likely to clear interviews and receive offers. This supports the hypothesis that online assessments are effective in filtering high-quality talent. Operational inefficiencies were noted in candidate dropouts after assessments.

7. LIMITATIONS

- Limited to product-based firms in India
- Does not account for soft skills or culture fit
- External factors like test difficulty variation were not controlled

8. RECOMMENDATIONS

- Use a cutoff score of ~65% to filter candidates
- Automate scheduling post-assessment to reduce dropouts
- Include a behavioral questionnaire along with technical tests
- Regularly calibrate test difficulty and scoring benchmarks

9. CONCLUSION

This Excel-based study validates the use of online technical assessments as a meaningful predictor of candidate performance in interviews. Product-based firms can confidently continue or expand the use of online tests in pre-screening.

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Appendix A: Sample Assessment Questions

1. Write a function to reverse a string in Python.
2. Implement a sorting algorithm (Bubble Sort, Quick Sort).

ISSN 2322 - 0899

3. Solve a basic SQL query using JOIN between two tables.

4. Write pseudocode for detecting cycles in a graph.

5. Explain the difference between multithreading and multiprocessing.

6. Design a test case for a login form that checks for valid and invalid inputs.

Appendix B: Summary of Candidate Funnel Data

The table below summarizes the progression of candidates through the assessment and interview funnel:

Stage 1 - Total Assessed: 350 candidates

Stage 2 - Test Passed: 217 candidates

Stage 3 - Reached Interview: 197 candidates

Stage 4 - Selected: 117 candidates