Psychometric Assessment using Software Simulation

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Abstract - *In the present working situation, the after effects of winning enlistment framework are regularly unacceptable, as reflected in the incessant activity changes, unreliability and generally speaking wastefulness. Through the proposed framework, we plan to just and robotize the procedure with an extra worry of psychometric tests to maintain a strategic distance from awful contract and to guarantee that just best fit for a specific occupation job are chosen. The Psychometric Assessment portal conducts various testing such as abstract, personality and numerical reasoning tests. The automated portal identifies a smaller pool of suitable candidates who have correct potential for the corresponding job; thus reducing the workload, time & money of hiring manager being spent on unsuitable candidates. The psychometric assessment testing would help the employers to calibrate a candidate's future performance and boost employee retention by making successful hiring decisions. This helps to capture an overall ability of an applicant's intelligence & personality traits by using personality questionnaires. The system is an extra ad-on over the traditional interview process which measures the education, skills & experience of the candidate but lacks to assess the behavioral qualities and personality traits of a candidate thus giving a superior by and large assessment of a hopeful's qualities, shortcomings and character.*

Key Words: **Recruitment, Personality test, Psychometric traits, Candidates, Hiring, Organization, Jobs**

1. INTRODUCTION

Human resource which is a very crucial corporate asset determines the overall success & performance of any organization. So having a good recruiting process to attract right kind of people according to your business needs becomes vital. Along with the technical knowledge, the less obvious personality traits such as attitude, patience, anger, positivity, beliefs, etc. are important factors that needs to be considered before hiring people & to ensure the success of the organization. This would help to select appropriate candidates which best fits in a particular role & to avoid loss caused due to bad hire. This could attained by the proposed Psychometric assessment portal which helps various kinds of companies to create psychometric question papers based on different domain and aspects of the company to meets its standard requirement and in a very secure way with no manual work. Online psychometric assessment system leads to speed and accuracy in hiring process of deserving candidates. Each company or organization will contain different set of questions from the database based on their requirement. We select which areas to focus on in a particular topic and ensure that all parts of work domain are covered. At the same time – as we develop the online psychometric assessment we also create the marking scheme that goes with it. This ensures that the overall assessment is valid and all the candidates will be given the marks for answers.

2. PROPOSED SYSTEM

Originally developed for the educational psychology use, the Psychometric tests are been used early from 20th century. But this was just confined to educational purpose.
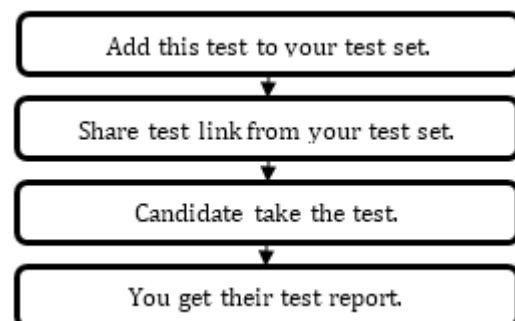

Fig -1: Proposed System

These days, you're likely to encounter the Psychometric assessment tests not just in education but also in recruitment selection. Psychometric assessments provides

valuable information about an individual to the organization. The results produced by this assessment are compared against company's benchmark providing the employer with an insight of candidate's future job performance. Not just the technical & abstract skills but also the psychological attributes of the candidates are being measured giving a rather more precise & holistic view of candidate's potential. Exclusion of psychometric assessments would fail to provide same level of insight into the potential of candidates.

3. FEATURES

3.1 Apply for Job

The system shall provide job option choices for all the vacant position that candidates can apply for. The step-by-step wizard stating the company's criteria is to be documented. The framework will enable possibility to enter the essential data regarding their name, address, specifications, etc. & upload their curriculum vitae, based upon which the system calculates grading to make the first screening. The highlight to check candidate's data or status is additionally given.

3.2 Selecting Candidate

The dynamic screening framework permits precise constant examination of what number of candidates ought to be chosen dependent on the empty or required number of candidates. The system ranks the candidate based on required skill set of the company.

3.3 Retrieve Short-listed Students

The system shall use some mathematical logic to shortlist the candidate's evaluation against the company's requirement criteria. The system shall display only the shortlisted applicants.

3.4 View Final Ranking

The system shall add results depending upon the rank applicants in an ordered fashion. The system shall provide in-depth information of individual applicant whenever needed.

4. OUTCOME BASED EDUCATION

4.1 Components

4.1.1 Candidate Module

Students register themselves to be part of recruitment process. And the module contains test series as follows:

1. Aptitude Test

- Numeric Module: evaluates quantitative analysis based on arithmetic and mathematics
- Verbal Module: Tests communication analogies including grammar and spelling check.
- Abstract Module/Logical Module: tests logical and intellectual capabilities

2. Psychometric Test
- 105 questionnaire: Measures mental capabilities, behavioral styles & other psychometric traits such as openness, extroversion, introversion, confidence, honesty, etc.
- Graphical test: Contains Pictorial questions with no to little text and numbers meant to measure the analytical skills from a given sequence of diagrams & flowchart.

4.1.2 Company Module

Companies register themselves & sets list of recruitment criteria. Can send mail to Selected Students.

4.1.3 Admin Module

It allows admin to add, delete, and modify company & student details.

4.2 Implemented System Model

4.2.1 System Architecture

The system architecture comprises of 3 main primary components namely Candidate, Company & admin modules.
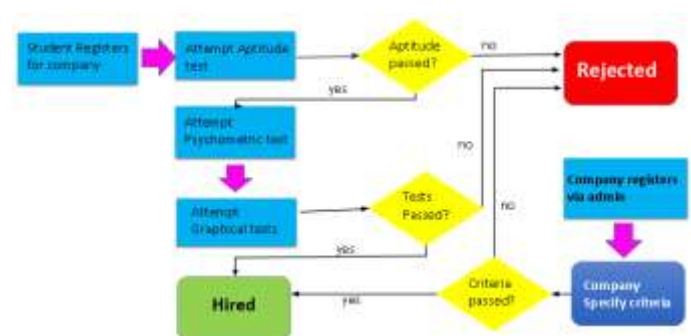

Fig -2: System Architecture

➢ Candidate Module
The candidates willing to seek job undergoes the registration process to become a part of the placement activity. Registering as a new user of the system, would avail the candidates with login credentials which could be used to enter the system as a authentication mechanism. This ensures only valid and authenticated users are permitted and security is maintained. This module contains a test series which basically caters broadly into aptitude

and psychometric tests. The aptitude test is classified into verbal, logical & numeric evaluation & the psychometric test contains 105 set of questions & a graphical test to measure the personality traits of the candidates against the required skills mentioned by the company for a particular job role. If the candidate clears the aptitude test then he is further eligible for psychometric test.

> Company Module

To hire the employee, the company will register themselves. The company will specify the desired set of skills needed for a particular job role. For example, if the job role is of sales manager then the skill-set required for that job would be extroversion, good communication, Bold & openness. Similarly, the leader job role demands the skill-set of cooperation, motivational, impartial-ism & so on. The results of candidates collected from the psychometric test are checked against the required skills specified & the candidates who best matches the requisitions are send an acknowledgement via email & are being hired.

> Admin Module

The admin could access all the element in the system. He can add, delete or alter the candidates in the system and can also manage the employers having certain set of rules or requirements.

4.2.2 Database

The entire data is stored in the system in different repositories. During the process of generating the psychometric test for candidates the data from these different repositories is fetched and processed resulting in the generation of attainment data. The Database used is MS Access.

4.2.3 System Working

The working of this system is explained in the fig-3. Basically, the student can register themselves and then can login into their account where they select company for which they are applying then they have to first attempt the aptitude test and if they clear the aptitude then only they are allowed to attempt the psychometric test of verbal (105 questions)- graphical descriptive and graphical logical. Student cannot view their results they will be informed by the company itself if they passed the selection criteria. The admin can add or delete the company. Company can register themselves via admin module and then can loin via company module. After company's successful login the company will have to give the selection criteria. The selection criteria for students includes five personality factors which company will decide and cut-off for two graphical tests. The list of students who passed the criteria are shown to the company. Company can send mail to the students selected.
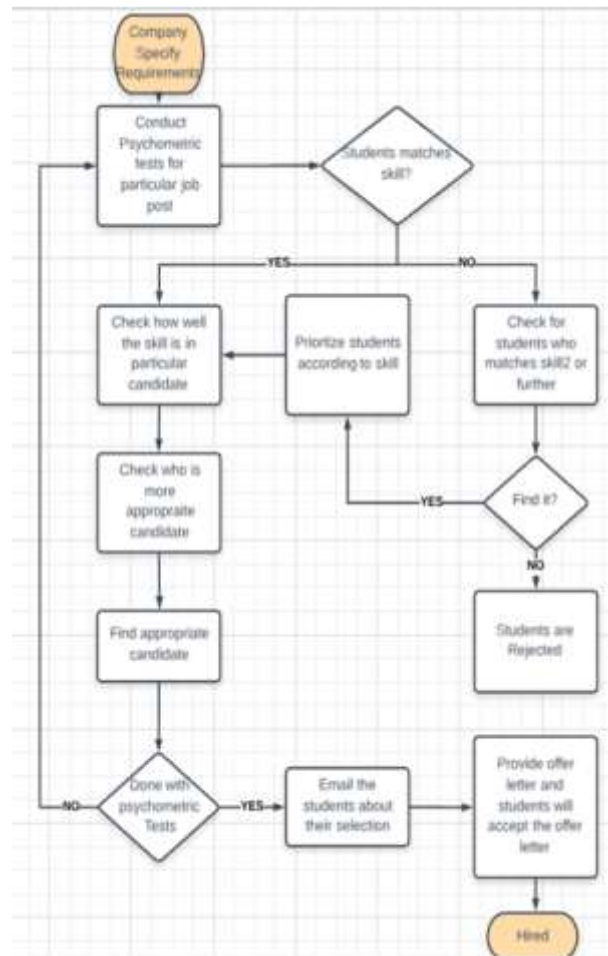

Fig -3: System Working

4.3 Functionalities Provided

Shows description of required candidates in each domain. Has well defined set of required questions for every work domain. Editing, adding and updating of questions becomes easy through this portal. Gives a secure and efficient platform for a psychometric assessment work.

4.4 Result and Discussion

Sample: A group of participants underwent personality test series to check the probability of cheating in a dice-rolling game to win the cash reward. The assessment is done in such a way that it marks the level of personality traits that the candidate have. Each personality factor is taken into consideration and its corresponding level of the probability that the candidate possess. A total of 16 personality factors are judged and also one additional factor is added which is used to judge the honesty level of the candidate i.e. it can figure out if the candidate has attempted a fake test or is genuinely appearing for test. The candidates who suits the required personality that the company demands will be shortlisted. The company can check the list of suitable students in just one click. The company can also send a mail

regarding the successful completion of their psychometric assessment and call them for further interview process.
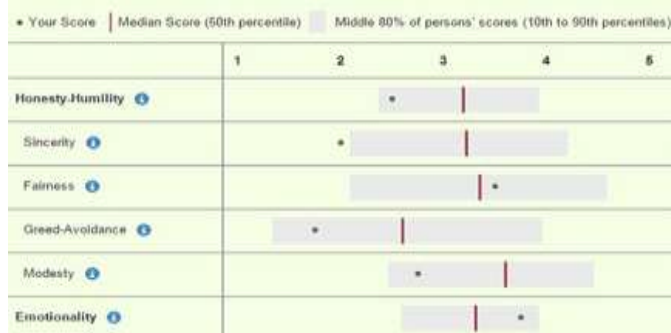

Fig -4: Results Rating

5. CONCLUSIONS

Recruitment activity is a very essential to select candidates for appropriate job. Offline process just helps companies and organization to test the technical knowledge of candidates. Where else this psychometric assessment portal would help them to conduct a test which would help them to know the candidates mental ability, behavior and personality of an individual. The candidates are further asked questions based on cases and scenario to know their level of understanding and problem solving skills.

6. FUTURE SCOPE

In future we can even add on online tracking of candidates to make sure that the candidates are not copying by any source or taking help from third party. This will make use of image processing technique to capture the facial recognition and audio recognition of the candidate. The live tracking feature will even check that the candidate applying for the test is the same person who has applied for job. This additional feature would require candidate to use a laptop or some other desktop machine with a working camera and a working microphone to record the video.

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