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A Enhanced Process for Examining Resumes and Organizing Candidates Through Statistical Methods

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Abstract - Selecting suitable applicants is an important part of the screening process in a recruitment consulting firm. In general, traditional recruiting practices are used by the majority of businesses and consulting organizations. The primary strategy is employing resume-based screening techniques to attract exceptionally skilled researchers and developers for high-tech enterprises. Typically, the organization evaluates the individual's qualifications, professional history, employment experience, motivations, specialist abilities, and past creative projects as shown in their résumé in order to select the most suited candidate. The study sought to examine and mechanize efficient screening techniques utilized by consulting firms, emphasizing the need of ongoing research in comprehending evolving customer requirements and enhancing the screening process. Various techniques typically employ automated image analysis and heuristic methods to extract tabular bioinformatics data from resumes, with the aim of gathering pertinent information. This research employs optical character recognition (OCR) as it circumvents the inherent automotive engineering of the document and has been demonstrated to be a viable approach. Resumes in PDF format were gathered via convenience sampling and systematic random sampling, and data was then extracted from the resume documents by OCR. The pertinent data is subsequently analyzed using statistical techniques such as the Chi-square test, percentage studies, and the weighted average approach based on factors such as experience, technical/non-technical skills, employability, career advancement, salary expectations, and role/designation expectations. The proposed approach empowered the selection of the appropriate resumes for the subsequent recruitment progression.. sections. Such references are made by indicating the section number, for example, “In Sec. 2 we showed…” or “Section 2.1 contained a description….” If the word Section, Reference, Equation, or Figure starts a sentence, it is spelled out. When occurring in the middle of a sentence, these words are abbreviated Sec., Ref., Eq., and Fig.

At the first occurrence of an acronym, spell it out followed by the acronym in parentheses, e.g., charge-coupled diode (CCD).

***Key Words*:** Resume screening process; Optical character recognition; Recruitment; Chi-square test, subsequently analyzed pertinent data; efficient screening technique; appropriate resume; PDF;

1.INTRODUCTION

Employers may find screening to be a challenging and costly procedure as it involves evaluating whether an applicant fits the qualifications for a position. The primary objective is to reduce expenses by identifying potential candidates and evaluating them according to their skills, experience, and employment record. While telephone interviews have changed with the introduction of multimedia interviewing, online application screening can reduce expenses and increase efficiency. As recruiters and HR consultancies, consulting businesses are essential in bridging the gap between employers and candidates. The dynamic economy of today has made people the most important resource, making it harder than ever to identify the ideal candidate in the cutthroat business world. The challenge of locating exceptional, highly skilled resources has arisen from the ever-changing demands and expectations of candidates. One of the most important phases in finding a good resource is screening, and a robust screening process can assist businesses in finding qualified individuals.

The process of locating, enticing, selecting, interviewing, hiring, and integrating new employees is known as recruitment. It addresses every facet, from identifying staffing needs to addressing them. Depending on the size of the organization, several workers may be in charge of hiring. While larger companies may have entire teams of recruiters, some smaller businesses may only have one. In small businesses, the hiring manager may be in charge of hiring.

Numerous corporations outsource their hiring to third-party firms, and hiring software is extensively employed to identify exceptional individuals more rapidly and efficiently. Typically, HR works in tandem with or as a division of recruitment.

Review of literature -:

Bioinformatics is rapidly expanding, generating vast data and discoveries. To ensure reusability, new fields employ computational methods. However, reusing PDF documents is challenging due to outdated data definitions. A proof of concept system uses image analysis and heuristic approaches to automatically extract tabular data [1]. The purpose of the research is to evaluate the efficacy of hiring consulting companies' screening procedures and offer recommendations for enhancements. Utilizing convenient and methodical random selection approaches, a descriptive study was carried out with a questionnaire given to 175 workers in Chennai. Chi-square test and weighted average technique were two statistical tools used to examine the obtained data [2]. Another study suggests a machine learning model for decision-making, which can improve human biases in noisy training decisions. It boosts job offer acceptance, productivity, and competitiveness in white-collar jobs [3]. Technical writing classes frequently involve resume preparation, but with the rise in popularity of job-hunting and resume-profile websites like Indeed.com, educators, and researchers need to reconsider traditional approaches to teaching resume writing, especially for instructors who teach writing but lack disciplinary expertise. Previous studies on traditional resumes have used measures of disciplinary discourse density to quantify resume disciplinarily as a function of resume quality; the same metrics may help examine the characteristics of online resumes [4].By choosing the best applicant for a job profile automatically, the Smart Resume Selector (SRS) model seeks to automate the hiring process. The algorithm divides resume into pieces, pulls out the most important information, tokenizes them, and assigns a score to each resume based on its specialty [5].

2. Data analysis and data interpretation:-

Organizing the data, integrating it with the knowledge already in existence, and deriving significance from it is the process of analysis. Alternatively said, analysis provides a response to the question, "What message is conveyed by each group of data?" which are otherwise unprocessed facts that cannot provide relevant knowledge. Only when they are examined and presented in a meaningful way can raw data become information. The following statistics were analyzed using in this study: 1. Chi Square Distribution; 2. Percentage Analysis Method 3: Weighted Average

THE HYPOTHESES:-

▪ The Null Hypotheses (H0): The ability to comprehend the necessary skills and prior work experience are not significantly correlated.

▪ The Null Hypotheses (H0): The scientific screening procedure and the elements that need to be validated don't significantly relate to each other.

The Hypotheses: 1

▪ Null Hypotheses (H0): No discernible correlation exists between the comprehension of required skills and work experience.

▪ Alternative Hypotheses (H1): Work experience and the comprehensibility of required abilities are significantly correlated.

The Chi-Square:

Table -1: Examining the Association between Experience and Comprehending Necessary Skills

	Understandability of Mandatory Skills				
Experience		Completely Aware	Somewhat Aware	Not Aware	Total
	Less than a Year	20	15	10	45
	1 – 2 years	32	14	8	54
	2-- 3 years	10	13	7	30
	3– 5years	18	9	0	27
	5 years & above	15	4	0	19
Total		95	55	25	175

Degree of freedom: (r-1) (c-1) = (5-1) (3-1) = 8
Calculated Value: 19.7892 Tabulated Value: 20.09

IMPLEMENTATION

19.78 is less than 20.09 for alpha value (0.01) because reject (H0) and null hypotheses. It is implied that there is a connection between candidates' job experiences and their comprehension of the necessary skills. The above table shows the requirements' degree of acceptability as well as their experience-based classification. People with greater experience comprehend better.

The Hypotheses: 2
Null Hypotheses (H0): The screening procedure and the factors that need to be validated don't significantly relate to one another.
Alternative Hypotheses (H1): A noteworthy correlation exists between the elements that require validation and the real scientific investigation procedure.

Table -2: Analyses of Relationship between Important Aspects to be Validated and Scientific Screening Process

Acceptance Level						
Factors	Strongly Agree	Disagree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Total
Noritechnical Fitment	68	52	27	16	12	175
Technical Skills	64	60	25	17	9	175
Interest Of The Candidates	55	66	22	18	14	175
Attractive profile	45	35	40	32	23	175
Work habits	65	60	22	14	14	175
Total	297	273	136	97	72	875

Degree of freedom: (r-1) (c-1) = (5-1) (5-1) = 16.
Calculated value: 43.0091, Tabulated value: 32.00

IMPLEMENTATION:

Accept Null Hypotheses, therefore the alpha value (0.01) of 43.00 is greater than 32.00. It is concluded that there is no meaningful correlation between the scientific screening procedure and significant factors that need to be validated. Due to shifts in perspectives and approaches, the screening process has evolved into a fiercely competitive and difficult undertaking. The analysis of non-technical fitting was conducted using the following criteria: assertiveness, reasoning ability, interpersonal skills, communication skills, and stress management. Workplace behaviors founded on self-control, initiative, motivation, and conscientiousness.

PERCENTAGE ANALYSES:-

Table-3: Analyses the Recruiters Expectation on Candidates Employability

Recruiters Opinion on Core Employability Factors	Know Yourself				
	Personal Value	Interest	Abilities and Skills	Goals & Opportunities	Employment Preferences
Agree	90%	85%	80%	65%	75%
Disagree	10%	15%	20%	35%	25%

IMPLEMENTATION:-

The majority of respondents concur that one of the most crucial employability skills is "KNOW YOURSELF." The consultancies need candidates to meet certain requirements on their career preferences, goals and prospects, abilities and skills, and personal values.

Table- 4: Analyses of Top Factors in Screening Technique

Techniques	Verifying CV	Identify the Career Moments from Role to Role	Job – Person Fit	Score
No. of respondents	154	133	168	175
Percentage (%)	88	76	96	100

IMPLEMENTATION:-

Out of all the respondents, the majority ranked these three methods as the most crucial for screening applications. A list of factors was provided to the respondents, and they gave the aforementioned considerations priority.

WEIGHTED AVERAGE METHOD:-

Table 5: Weighted Average Method for Keeping up Candidate's Expectation in Terms of Salary / Remuneration

Acceptance Level	Frequency(F)	Weight(W)	Σ(FW)
Strongly agree	70	5	350
Agree	40	4	160
Neither agree nor disagree	35	3	105
Disagree	20	2	40
Strongly disagree	10	1	10
	175	15	665
WEIGHTED AVERAGE = ∑ (FW)/∑F = 665/175 = 3.8 = 4(approx.)			

IMPLEMENTATION:-

Based on the weighted average method, it can be deduced that the majority of respondents are in favor of maintaining the candidates' expectations about pay and benefits. The following table demonstrates that the majority of respondents acknowledge the need to pay applicants what they want in order to achieve their expectations.

Table 6: Weighted Average Method for Keeping up Candidate's Expectation in Terms of Role/Designation

Acceptance Level	Frequency(F)	Weight(W)	Σ(FW)
Strongly agree	65	5	325
Agree	70	4	280
Neither agree nor disagree	25	3	75
Disagree	12	2	24
Strongly disagree	3	1	3
	175	15	707
WEIGHTED AVERAGE = ∑ (FW)/∑F = 707/175 = 4.04 = 4(nearest)			

IMPLEMENTATION:-

Based on the weighted average method, it can be deduced that respondents are in agreement to maintain the candidate's expectations regarding role and designation. The majority of respondents agree to fulfil candidates' expectations by assigning them to roles they want.

Results and finding:-

The report reveals that 85.29% of respondents feel they are provided with adequate customer information when handling requests, with 82.35% suggesting that client handlers should visit clients more frequently and improve recruiter comprehension. 64.71% of respondents do not receive a job description that meets all qualifications, and 79.41% seek clarification on requirements. 70.59% of respondents are aware of necessary and preferred skill sets, with 58.82% preferring technical skill training. Fifty percent prefer orientation on the client's project overview. 94.12% of respondents are positive about the candidate's profile before validating, with interest, experience, and technical fit being the most crucial factors. The

target audience is provided to 61.76% of responses, and 47.62% process resumes from similar or equivalent companies. 76.47% of respondents consider both required and desirable abilities when analyzing CVs. 67.65% of respondents evaluate a candidate's professional background based on education, experience, current employer, and previous employment history. 64.71% obtain references from applicants through market information, client style, and interview materials. 88.24% maintain candidates' expectations about role/designation, work location, and salary/remuneration. Benchmark sheets are preferred for self-validation, and 94.12% evaluate a candidate's communication skills in addition to the benchmark.

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3. CONCLUSIONS

Every respondent maintains records and monitors the information for potential future candidate screening.

• Respondents keep records in order to screen candidates later.
• People with experience know what skills are essential and desirable.
• Assertiveness, interpersonal skills, communication, and stress management are examples of non-technical qualities for job fit.
• Personal attributes are valued by employers.
• Traditional hiring practices employed by companies and consulting firms.
• The best ways of screening are CV verification, role-specific career moment identification, and job-person fit.
• The majority is in favor of keeping candidates' salary and title expectations intact.

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REFERENCES

[1] Alptekin, A., Çelik, M. Ö., Doğan, Y., & Yakar, M. (2019). Mapping of a rockfall site with an unmanned aerial vehicle. Mersin Photogrammetry Journal, 1(1), 12-16.

[2] Alptekin, A., & Yakar, M. (2020). Heyelan bölgesinin İHA kullanarak modellenmesi. Türkiye İnsansız Hava Araçları Dergisi, 2(1), 17-21.

[3] Maune, D. F. (2001) Digital elevation model technologies and applications: The DEM User manual. The American Society for Photogrammetry and Remote Sensing. ISBN:1-57083-064-9

[4] Ulvi, A., Varol, F. i., & Yiğit, A. Y. (2019). 3D modeling of cultural heritage: the example of Muyi Mubarek Mosque in Uzbekistan (Hz. Osman’s Mushafi). International Congress on Cultural Heritage and Tourism (ICCHT), 115-123, Bishkek, Kyrgyzstan.

[5] Yakar, M. (2011). Using close range photogrammetry to measure the position of inaccessible geological features. Experimental Techniques, 35(1), 54-5