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Influence of AI in HR Skill Optimizing

Sandhya Sheshadri[1]
[1] DBA Research Scholar, Swiss School of Business and Management School Geneva, Geneva Business Center, Avenue des Morgines, Genève, 1213, Switzerland

Hemant Palivela[2]
[2] Visiting Professor, Swiss School of Business and Management School Geneva, Geneva Business Center, Avenue des Morgine, Genève, 1213, Switzerland

Abstract:-

- ***Introduction*** –

Human capital informatics is a computation technique to People management. Human Resource Planning has advanced tremendously during the last century. It evolved from a strategic to a fundamental strategy. It enables your firm to measure the impact of a selection of HR KPIs on organizational effectiveness and adopt data-driven judgments.

- ***Purpose*** –

HR is expected to accomplish objectives, the function of HR is shifting from data collection to data interpretation. HR is, unfortunately, one of the most under-resourced areas in most companies. Machine Intelligence in HR Resource management helps businesses run effectively and successfully. HR departments can make smarter judgments, eliminate prejudices, and boost productivity in their businesses. So, the major goal here is to provide organizations with the best job seekers depending on their skill preferences and potential business places.

- ***Methodology*** –

Using different matching techniques, we can achieve a proper set of candidates for firms that have some set of skills or subjects listed and the candidates are also experienced in those skills or subjects. Here we are trying to match skills of students with company required skills and then we are using different constraints with skills preference matching like location and Myers-Briggs Type Indicator (MBTI). Statistical techniques for matching like Multiple Preferences Matching Algorithm (MPMA) will be utilized for the matching process. Competing with the present statistical models we have employed other machine learning techniques like word-2-vec and latent semantic techniques.

- ***Findings*** –

After performing Skill Preference Matching, we have concluded that MPMA is giving better results Now we are looking for other points to capture like match quality, global search, and controllability.

***Keywords*:-** *Artificial Intelligence, Human Resource Analytics, Human Resource Management, Semantic Analysis, Statistical Models.*

I. INTRODUCTION

Human resource analytics, commonly referred to as people analytics, enterprise systems, or opportunity analytics, is the process of gathering, analyzing, and evaluating Information and data. It enables your organization to evaluate the impact of several HR Parameters on organizational effectiveness and conduct data-driven initiatives. Advanced analytics, in plenty of other terms, is a bandwidth perspective to Human Resource Development. Talent acquisition analytics is a new method on the market. Therefore, most of the academic papers on the issue remain undiscovered. They say that HR analytics is the systematic research and characterization of social factors that affect company success.

Throughout the previous century, Human Resource Management has progressed significantly. It has progressed from a tactical to a conceptual subject. The development of the concept Effective Talent Organization is an example of this (SHRM). This attitude is followed in HR analytics, which is characterized by a data-driven orientation. When we apply people analytics, we no longer need to rely on a person's abilities. HR professionals may make computation decisions with the help of analytics. Informatics also aids in the measuring the effectiveness of HR policies and plans. Advanced analytics and predictive analysis are similar, although the principles are used in slightly different ways. This potential to use knowledge in judgement calls has become increasingly crucial throughout the worldwide epidemic. Countless economic growth is occurring as we get closer to a post-pandemic future, whether that be the rising prevalence of combination jobs or the expanded use of technology. In this era of changing circumstances, making the proper decisions is crucial for navigating our new world.

Growing advent of the working population, but also the growing implementation of business intelligence as a corporate strategy skill, have had a substantial effect on human resource management. While people management informatics has received a lot of attention in the past few years, if there were to be an analytical determination and categorizing of significant themes. Intellectual submissions aimed at providing a clear explanation of ideas and inquiry areas connected to Advanced analytics are particularly welcome. Researchers try to divide the sense of human resources analytics as provided in an immense but segmented publications then use a comprehensive literature process, and researchers recognize 106 vital relevant studies based on these three big centers: success factors of HR analytics, implementations, and importance. This study

involves a thorough systematization approach as well as a comprehensive study for additional investigation in the subject of HR analytics. From the standpoint of a specialist, the report contains information to aid in the development of breakthrough performance measurement systems within enterprises.

Because HR is expected to accomplish objectives, the function of HR is shifting from data collection to data interpretation. HR is unfortunately one of the most under-resourced areas in most companies. HR managers, despite this, are expected to offer the same high-quality deliverables as any other department [13]. We need data – a lot of data — for any AI system to work. Not just any data will suffice; it must be relevant to the situation at hand, as well as clean and ready to be evaluated. Fundamentally, the more data we measure and track, the more data we will have to make decisions with. There are two categories of data: quantitative and qualitative. Data from record systems tells you a lot about people. Consider systems like human resource management, talent management, and learning management. Employee-generated data: this information is gathered through direct employee feedback. Consider employee satisfaction surveys. Most businesses that are adopting AI technologies are already heavily reliant on record-keeping systems. However, by combining this data with employee-generated data, you can have a much better understanding of the problems you're trying to solve at your organization. It's only normal to make a mistake while manually dealing with data from numerous teams and departments. When this data is combined with AI, however, we can develop plans and come up with novel ideas to assist your personnel. From their actions, AI can help detect employees' mood patterns and anxiety levels. AI can give you the knowledge that you need to make a conscious decision by regulating staff phone calls with clients and analyzing the tone of their voice throughout these discussions.

When it comes to hiring, finding a decent potential employee entails looking beyond the prospects' previous experience. Conventional retail hiring platforms frequently use simple Logical operators to check the basic needs of jobs offered by companies. Similarly, the governmental firm's shortage of a job consultant precludes the counting of many characteristics from people looking for work and industrialized businesses. Even though statistical formulae cannot guarantee appropriate recommendation, they are frequently used in matching systems. Unsuitable job placement is expensive for both the employee and the organization, as it inevitably results in decreased productivity. The corresponding method must consider both technical training requirements and demographics of both the company and potential hires to boost efficiency effectiveness and reduce the incidence of desertion.

- *Skill Preference Matching:*

Advanced ways of analyzing employee data are increasingly being used by cutting-edge firms to achieve a competitive advantage. Giants such as Facebook, Finest Buy, Sysco, and others are figuring out when to get much more out of their best employees based on productivity, engagement, and retention, and then replicating their achievement [8]. Employees are both your greatest asset and your largest expenditure. Here are some examples of how some companies are using statistics to improve their intellectual capital: Employee engagement is valued by nearly every organization, but just a handful, such as Starbucks, Limited Brands, and Dollar Stores, can quantify the value of a 0.1 percent increase in human satisfaction at a selected point.

Numerous organizations favor applicants with better intellectual records from prestigious universities, but AT&T and Google believe that a demonstrated ability to take responsibility is a far more reliable measure of excellent job performance when analyzed quantitatively. Turnover of employees remains less of a burden when management anticipates it. Sprint has figured out which criteria best predict which employees will leave after a short amount of time.

Professional sports teams have been early users of analytics due to their enormous investments in talent. To protect its investments, AC Milan, a soccer team, maintains its own biomedical research unit. To help the organization assess the physical fitness of its players making agreement negotiations, the unit uses 60,000 pieces of information for each player. Recruiters can employ machine intelligence during any phase of the interview process, from advertising and luring candidates to predicting job performance. Recruiters will use AI to sort through application materials like résumés and exams to identify which candidates should be contacted first [8]. But AI doesn't merely work in the background. Some solutions assist HR departments in moving across big pools of applicants more quickly, resulting in lower hiring costs. They will be fairer and more rigorous than a tired company that seeks scanning from hundreds of resumes and job descriptions, according to enthusiasts. AID was created to handle difficult real-world design problems. It has four modules: a data preprocessor, a data analyzer, an optimizer, and a modeler. It has actual information via Restful API and bigdata from the commercial, Networking Sites Services, and government for importing data types. Exploratory Data Analysis (EDA), which frequently observed allocation (count, mean, standard deviation, measurement items), cluster analysis, and Pearson correlation for preset factors, is performed in the data pre-processing module.

- *AI Adoption:*

The construction of a new management information system has laid the groundwork for AI technologies. The Human-Computer Interaction feature produced by AI improves operating performance by supporting the accumulation, maintenance, and validation of data required by the company. Artificial intelligence (AI) is replacing regular work with the least amount of human intervention. AI is participating in several aspects of the recruitment and selection, namely Reviews and dissemination, computerized messaging services, and reference monitoring. These algorithms outperform HR personnel in terms of minimizing turnover and increasing employee happiness, according to

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research. Simple HR tasks are planned and carried out here by Machine learning; but, in more complicated issues, it is still important to double-check. AI has various advantages for businesses, including the ability to deliver large benefits in a faster timeframe and with more precision. Machine Intelligence is a next-generation technology that can feel, think, plan, and execute actions to improve human performance [11]. Three forms of AI systems that are applicable to HR systems are voice recognition, BOTS, and algorithms. Constrictive AI services are well-suited for data collection in the HR industry, such as reviewing information and resolving related backend issues. The components that distinguish AI from traditional software include large processing, complicated calculations, and a large availability of special data. By applying an algorithm that mixes high-quality data with speedy computing services, Key AI provides stability and precision to typical procedures. AI has a lot of potential for improving HR functions in firms, such as recruitment, payroll, self-service transactions, and access restrictions and procedures. Machine learning system provides fuller knowledge of how to function and deliver, and machine intelligence is working to produce a vast number of Employment cloud storage. Recruiting and retaining top talent in today's competitive market is a huge problem for the Human resources department. HR will have to provide exceptional employees and application encounters throughout the employment, learning, and management functions with efficiency, consistency, and flexibility. That's a huge task, but AI may help greatly if correctly incorporated. How? Chatbots, the endearing vendor characteristic of advanced algorithms while behind backstage, nowadays can flawlessly duplicate face-to-face communication. Chatbots give the rapid onset of action that today's users anticipate whether they have questions regarding career, benefits, or training because they are available at any time and on any device. Contemplate AI as a valuable resource for your HR department. Of most teams trying to do more with less, Intelligent machines may be able to help business teams by reducing procedural and routine tasks, placing an emphasis on more complex tasks that make a significant contribution to almost the same function. Thanks to the personalized experiences we've grown to expect in our daily lives, the future of desktop workstations is brighter than ever. Prospective and colleagues want prior exposure to Hiring, prompt notices, and increased collaboration, as well as personalized learning based on demographics and inclinations. Hardly anything surpasses analytics when it relates to immediately discovering new patterns and concerns. You'll know right away if many of your contenders or employees are having the same conversation or stating similar concerns, and then you wll be highly responsive to grasp opportunities and handle difficulties until they become more important. AI also aids other positive advances in HR processes. By helping you to focus and change current target engagement very easily and instantly, AI may help you to boost your marketing, talent retention, onboarding, and education, providing it more interesting and fulfilling with both your applications and their Human resources department. We can also be successful in promoting the business's morals and heritage in real, emotions are evoked, independently of how much you're struggling to meet, by understanding further about a core demographic. In the screening test of résumés, AI can save a lot of time. Today's modern AI solutions improve productivity and allow employers to evaluate candidates based on their potential rather than their historical performance. Employee empowerment and promotion collision detection are the same. Statistics can assess an employee's relevant experience and achievements, then recommend the incremental development possibilities and career trajectories for them. With the pandemic hastening existing trends toward AI and automation, it's more likely that your organization will adopt them now, if not adopted already. Like with any new technology, implementation of AI in the recruitment process will be a disruption. So, how can your organization and HR staff effectively prepare for the impending change? It employs several co-strategies to handle the changes affecting your information, people, and activities. The importance of communication and context cannot be overstated. Many employees, understandably, are concerned that technology may render their jobs obsolete. It's critical to educate people to understand that AI is meant to assist them rather than replace them. Human capital will indeed necessitate a personalized experience. Intelligence could help open up your workforce' resources for but one conversation that counts much more by simplifying repetitive chores. AI helps overworked management be concerned with managing the spectrum of applicants and job requests they tackle per day in today's climate of blended work and even during large retraining. When developing a comprehensive proposal, it's critical to clarify these contrasts and benefits. You must help your staff adjust for the disruptions to their employment and daily work by identifying which procedures, operations, and procedures will be simplified through AI. It is also a good idea to encourage your employees that some of the most valuable job abilities, such as positive psychology, creativity, and sophisticated problem solving, are still immensely popular and required by your company. AI should always be adopted through departments of an organization to fulfil its full potential. Cooperation for Virtual tools may result in more effectiveness; industry is strong that blends the best from physical and technology competencies, from IT to hiring. AI is a strong tool that can assist HR in improving how we seek, recruit, analyze, promote, and encourage talent. Nevertheless, from creating relations to coaching and coordinating activities, finding and employment will still involve very human abilities. Human resource professionals can better represent their organizations if they have the important insights to develop strategic planning that are aligned with organizational objectives by placing the right employees in the correct range.

II. LITERATURE REVIEW

Artificial intelligence (AI) has been intensively studied in a range of domains. This research focuses on the application of artificial intelligence and its influence on human resource managers in terms of technological improvements in the IT landscape. Almost every organization is currently integrating AI into its functional

areas to increase efficiency. AI plays a crucial role in the HR field, from employee recruitment to performance evaluation. The goal of this study is to see whether the relationship across Machine learning HR services and organizational innovation in the IT sphere in Delhi/NCR is moderated by Traditional HR simplicity (Bhardwaj et al.). This poll included 115 Human resource companies from different Technology industries in the Delhi/NCR vicinity. AI exists and plays a vital role in several HR processes, according to the study. Artificial intelligence is being utilized to replace traditional HR activities with minimal human involvement. In terms of minimizing attrition and enhancing talent retention, AI has been found to outperform humans. AI exists and plays a vital role in several HR processes, according to the study. This study presents an AI framework that is related to human resources. In the realm of human resource management, several firms have employed data mining and machine language, with AI playing a key role in employment, evaluation, recruitment, key trends, conducting research on personnel, giving information, and providing credible information.

The purpose of this article is to investigate the impact of artificial intelligence (AI) on recruitment effectiveness. Data was obtained using a survey questionnaire from 100 HR practitioners in Bangalore's Capability maturity model integration software businesses (Nawaz, et al). To test the hypothesis, descriptive statistics and structural equation modelling were utilized in Bangalore. According to the findings, applying artificial intelligence in the recruitment process selects the best candidates for the organization's talent pool. The goal is to gain an understanding of the impact of artificial intelligence on the recruitment procedure as well as the potential presented by Application domains. AI technology, according to the recruiters, is useful in locating new talent.

Occasionally, potential employees might be confident that artificial intelligence will assist them in finding the appropriate job. Artificial intelligence gives two forms of trimming intelligence to both the interviewer and the candidate. This strategy will ensure that the talent management is efficient. Recruiters debated artificial intelligence in the hiring process, and they believe that implementing AI in the entire recruiting process is a danger (Sanchari Chattaraj et al.). However, it can only be used in the early phases of recruitment, not all of them. It might be possible if developers adapted their algorithms to match industrial objectives; otherwise, replacing human labour would be tough. According to the interviewers, using artificial intelligence in the selection process can improve enrollment speed while also saving time and money.

The goal of this study was to optimize a recruitment process using a lean mindset, which would result in increased flow efficiency and encourage a higher level of service quality. Here the main objective was to assess the present recruitment process and identify wastage in the form of inefficient, time-consuming, or superfluous qualities (Appelberg et al.). The research was done as a case study for a cooperative whose name is not included in this thesis. Conceptual perspective investigates the acquisition concept as well as the industry's future challenges. It covers the typical stages of the hiring process as well as how the current pandemic crisis and technological advancements are affecting the sector. Furthermore, the application of lean philosophy presented the key features of lean as well as its applicability to the recruitment sector. This multi-method approach was chosen in this study since it allowed for a thorough examination of the research phenomenon. In the scholarly investigation, data was gathered partially through concept and partly from performed surveys and interviews. The research found that the recruiting sector is transitioning to automation, with artificial intelligence and data managing increasing work productivity. The most important wastes, according to the empirical investigation, appeared in the fields of language, work standardization, and process functionality. As a result, new development proposals were made, which included strengthening the part of this assignment and performance, as well as promoting sharing of information, where automation is somewhat involved.

The purpose of this study is to see how successful artificial intelligence is at eliminating both verbal and nonverbal biases in the recruiting process. Artificial Intelligence, a much more fiercely debated and anticipated technical innovation, has taken over a range of positions in science, engineering, and finance. For the past decade, HR professionals have based on a crude system that might aid end-to-end marketing procedures, from application sourcing through boarding a potential employee. Would AI be able to eradicate both conscious and unconscious prejudices in the process of recruitment and selection? The precise field of removing biases in the selection of qualified individuals throughout the recruitment procedure isn't yet fully investigated. To tackle the research topic, HR managers and senior employees' perspectives are gathered. We began gathering data through secondary sources and began investigating potential answers to the notion that AI's performance may be used to eliminate subconscious inequalities in the recruitment procedure. Artificial intelligence is generally used in all aspects of analysis. The significance of artificial intelligence and its succeeding features has long been recognized. They are viewed as tools and methods for helping the environment. Artificial Intelligence (AI) streamlines the selection process by automating jobs and increasing recruiter productivity. We discovered that using artificial intelligence to eliminate prejudices has been helpful instead at the procurement stages of the implementation. The most minute component of the process of hiring is searching and interviewing. The cause of such a difficulty is the type of data provided to artificial intelligence software for such purpose of retrieval, or, more crucially, who is contributing the data. The programmers are asked to write evaluation parameters in a way that they instantly serve as a barrier when something comes to removing biases. In the fields of selection and identification, multiple attempts to eliminate biases when building artificially intelligent software have not yet shown complete success.

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The primary purpose of the research was to obtain a better knowledge of artificial intelligence (AI) in human resources, specifically in Bahrain. This study provides a sneak peek into how AI might be used to better understand HR practitioners' attitudes and perspectives across a variety of frameworks. According to the report, if the Kingdom of Bahrain's vision (2030 vision) is fulfilled, the public sector will have immense potential to keep up with the digital revolution. This has resulted in a shift in the makeup of business organizations' workforces (Marwan Mohamed et al.). It allows men and women to contend in a variety of positions, and because of the desire for gender equality, it will place a new pressure on management of human resources. Furthermore, this offers for a strong incorporation of the feminist's component. It is suggested that sophisticated artificial intelligence (AI) programs are a vital method for firms that operate in a volatile situation. It has become necessary to fabricate pay and payment lists using a laptop; software devices are available to help speed up and improve the approval process. Focused in areas where there are presently programmed in this industry focusing on calculating pay and evaluating performance outcomes, especially in large or massive enterprises. These programs have however aided in the classification and upholding of fairness in the distribution of rewards, such as a framework that includes a series of programs that assist retirement accounts in calculating various sorts of reimbursement.

The development of information and the sophistication of technologies often worsen the creation of modern complex systems. Considering modern dynamic systems difficulties may hinder an organization's ability to effectively manage political and social systems, approaches and strategies that rely on individuals' systems abilities are critical. Companies update their talent acquisition strategies on a regular basis to uncover qualified individuals only with required degree of operational capabilities who are also more matched to their company's aims and ambitions (Sterman et al.). The goal of this study is to see if processes understanding abilities can be used as a secondary screening method when recruiting employees. To our recollection, no preceding research has been done into the usage of critical reasoning ability in the recruitment process. With both the fuzzy linguistic approach, the conceptual framework offers HRM experts with a well-established method for analyzing and monitoring possible future employees of an organization associated with the level of processes and metacognitive strategies while influencing the complexities of a sophisticated judgement call. The above structure functions as an optimization technique to select the strongest candidate and improve the organization's human resources. Several major corporations, including Boeing, the administration, such as the Military, Naval Academy, and National Association, have emphasized the significance of having specialist (systemic) staff who can consistently deal with severe ecosystem challenges. The right hiring selection will prevent employment attrition while also allowing firms to save money on costly hiring processes.

Not only is it increasingly difficult to locate the right employment in such a vast and competitive workforce, although identifying and maintaining good employees appears to have become a strategic advantage for companies trying to flourish and expand. The major elements used to discover the perfect applicant are skill preference and personality qualities, and many of these processes were previously done manually. The Myers-Briggs Type Indicator (MBTI) gives the description of job prospects and fundamental employees (DongSeop et al.). These are some of the principal factors for looking at personality qualities to find and hire job candidates that share the same characteristics as the company's core employees, who are diligent and trustworthy, so that new hires have an easier time transitioning to the company culture and environment. The Artificial Intelligence based Design platform (AID) architecture was utilized in this article to match applicants and employers' appropriate skill requirements and MBTI, despite the institutional framework's limitations. The study investigates three forms of performance increases in idea matching: (1) talent interests, (2) expertise priorities with a work region limit, and (3) talent and MBTI priorities with a working area constraint. The analytical experiments demonstrated that the proposed technique provides improved quality comparison when compared to previous methods. Traditional procedures, such as statistical calculations, are introduced, as well as a novel method known as MPMA, to handle three identical concerns that consider the talent and traits of both the industrial organization and the job candidates. The matching quality and computational efficiency of AID's numerical findings with MPMA and statistical models are compared.

Through talent management to employee leave, HR professionals are turning to AI technology that can help them with a variety of activities. In many firms, AI technology is utilized to find new employees. The usage of Artificial intelligence for potential is investigated in this study. This paper provides a methodology to investigate the implementation of Advanced technologies for recruitments using the Information systems and Assignment frameworks. A set of questions was used to undertake this study of 562 HR department and talent development professionals. PLS-SEM was being used to perform the data analysis (Rajasshrie et al.). Pricing, facilitating conditions, supervisory support, HR preparation, intense competition, and AI product support all significantly influence AI adoption process for talent management, according to this study. The deployment of AI technology is hampered by security and privacy concerns. The project and technology fit of Advanced technologies for online recruitment is influenced by problem and solution features. The real use of AI technology for recruitments is influenced by its popularity and technology acceptance fit. Behavioral loyalty to conventional online recruitment approaches is found to strongly regulate the relationship involving AI adoption and genuine use in online recruitment. The suggested model is tested and evaluated, revealing the drivers of AI digitalization and practical use in talent development. This study examines the factors that influence the implementation of artificial intelligence (AI) for employee training, which is

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becoming increasingly popular in the human resource field. It gives human capital managers crucial information about how to rank Artificial intelligence for recruitments. Targeted marketing their marketing strategy based on adoption criteria. Then that would assist designers in comprehending adoption variables and designing Artificial intelligence procedures and programs for employee training. It advances the study on technology acceptance by combining this with information on recruitments in the people management area. Using the TOE and TTF framework, this study verifies the concept for the implementation of Machine learning for talent management. It elucidates the aspects that influence the introduction and actual application of AI technology in the manpower recruiting process.

III. METHODOLOGY

For getting better quality candidates with respect to their corresponding roles previously skill preference matching vectors and other statistical methods were used. We can achieve a proper set of candidates for firms that have some set of skills or subjects listed and the candidates are also experienced in those skills by using different matching techniques. We can match the skills of candidates with the skills required by the company, and we are then using different constraints. For almost any matching algorithm to really be completely effective, the information getting paired up must be measurable and widely available. Therefore, for a system to "understand" and predict viable matches in corporate recruiting, you need millions of objective resumes (ideally, with calculable estimation and/or capabilities test results) and millions of appropriate and well documented position descriptions. This volume of objective data will take many years to collect. Previous statistical approaches seem to be slower, and it requires a lot of resources plus it needs to adjust in many scenarios to verify if the solution obtained by statistical approaches. If we are getting the resume of a candidate and then we must match the skills preference according to the company's needs, we can use other Machine Learning techniques like word-2-vec embedding or semantic analysis techniques.

- *Word-2-Vec:*

Word embedding is a common way of representing document vocabulary. It could capture the context of a term in the document, lexical and pragmatic similarity, relationship with other words, and so on. Word2Vec is not just a single algorithm, but instead a collection of model architectures and optimizations for learning word embeddings from large datasets. Word2Vec embeddings had also been reported to be efficient in a range of different downstream natural language processing tasks. Word2Vec is one way to construct an embedding. It can also be achieved using one of 2 methods (both of which involve Neural Networks): Common Bag of Words and Skip Gram (CBOW). The Continuous Bag-of-Words Model guesses the middle word given on the context words around it. A few words before and after the current (middle) word make up the context. Because the order of words in the context is unimportant, this design is known as a bag-of-words model. The Continuous Skip-gram Model predicts words in a specific range before and after the current word in a phrase.

- *Semantic Similarity:*

High dimensionality wreaks havoc on text data. Singular Value Decomposition is a prominent dimensionality-reduction methodology that provides the same concept as Latent Semantic Analysis (LSA). LSA tries to address text data by means of r latent that is, hidden features, where r is smaller than m, the count of terms in the data. Language is far more than just words on the page there next to us. When we read a text, our mind creates images and ideas in our head. Themes emerge after reading many works, particularly when they are never mentioned directly. Our natural ability to comprehend and interpret language defies algorithmic explanation (for the moment). LSA is one of the most widely used Natural Language Processing (NLP) techniques for quantitatively determining text topics. LSA involves substantial text documents and divides them into n pieces, each of which provides a different perspective on the text's meaning. If we consider the text data to be an idea, there are n distinct ways to look at it, or n different ways to conceptualize the entire text. Our table of data is reduced to a table of latent (hidden) concepts using LSA. SVD, or Singular Value Decomposition, is a matrix factorization algorithm. SVD is used in these situations because, unlike PCA, it does not necessitate an association or covariance matrix to breakdown. As a result, SVD is unaffected by any empirical assumptions of normality (covariance calculation assumes a normal distribution of data). A, U, and V are the three matrices. The document-term matrix (documents in rows (m), unique words in columns (n), and frequencies at document-word intersections) is represented by the letter A. The document aspect is represented by the U matrix, the word aspect by the V matrix, and the singular values are represented by the diagonal matrix. SVD, like PCA, produces the U matrix by linearly combining columns of the original matrix. The V matrix is created by SVD linearly combining the rows of the original matrix. As a result, a dense document-aspect matrix can be generated from a sparse document-term matrix, which can then be utilized for document clustering or classification using existing machine learning approaches. The V matrix, on either side, is a word embedding matrix (each word is represented by r floating-point integers) that can be applied to different sequential modelling problems. Word2Vec and Glove vectors, which are more popular, are available for such tasks.

So here we have seen the two efficient methods to solve the matching problems for matching the skills with the company's requirement. The Standard procedure may be less compatible towards words and other documents. So, we can use some more advanced NLP methods which already try to solve our problem. Word-2-vec and Semantic Similarity are two methods which result in a very good state of results for matching the skills with the company's needs.

IV. RESULTS

When we examine the findings of the previous statistical study, we can observe that statistical models appear to operate, and MPMA can produce a 92% significantly higher matching rate with 95% constancy.

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MPMA assigns the best job candidates who possess both the necessary abilities and experience (either perfect or secondary perfect matching). But as statistical Analysis seems to take more time in calculation and the solution is not optimized, we have presented an optimized way to solve this problem using Word-2-vec and Latent semantic analysis for matching the skills with the company's requirement.

Table 1 Word-2-Vec and Latent Semantic Analysis for Matching the Skills with the Company's Requirement

Model	ROC – AUC sample Mean	Standard Deviation
LSA	0.745	0.016
W2V2	0.822	0.024
W2V3	0.946	0.065

The results are all expressed in terms of ROC-AUC. ROC curves are derived from the discipline of signal analysis and are used in medicine, for example, to examine the strength of tests and treatments. The AUC is the region just under the ROC curve that would be used to determine the efficacy of a metric of interest.

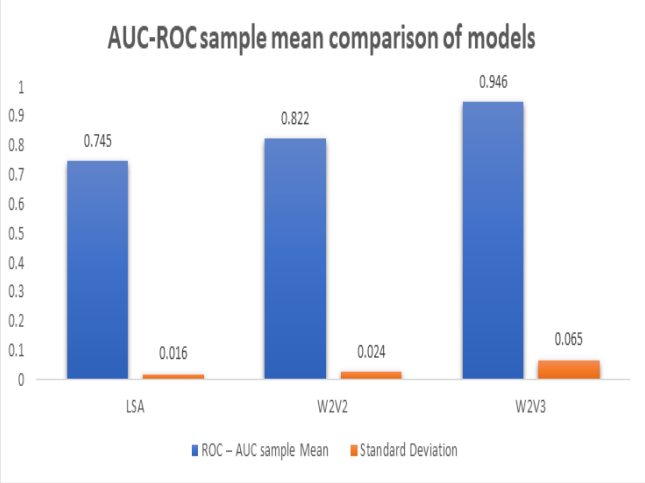

Fig 1 A.1. AUC-ROC Sample Mean Comparison of Models

Appendix A.1. shows the outcomes of our final model and are expressed in probabilistic terms, i.e., the algorithm delivers the possibility of a given applicant for each application. As a result, we can read our greatest results (0.946) considering the ROC-AUC metric, as the average successful application has a 16 percent chance of having an unsuccessful application scoring higher than it.

V. CONCLUSION

Now if we see how AI is changing the current HR management systems there are different systems which are being developed like using statistical techniques to find out HR attrition or turnover rate. Lot of researchers have seen that AI can prove to be risky while employing it to change the current selection and recruitment process, but it can be employed in an early stage but not for all processes. Major Statistical Techniques were employed in most of the HR management systems to meet the requirements but as there is more variability in the data and complexity, we need to optimize the current systems with some other approach. For matching a skill with the company's requirement statistical techniques were employed but the techniques were taking a lot of time and we must set some constraints on top of that. So, we can use other techniques which are a lot more intelligent and feasible to use. For the matching process, we can totally change the matching mechanism with language understanding techniques like Natural Language Understanding. Word-2-vec and Latent Semantic analysis has resulted in a more efficient way of matching the employ skills with the company requirements; here we don't need to set a preference or vectors for every skill and job description. NLP models can be easily used to look for resumes and cover letters to perform a proper match based on the company's skills and requirements. Later, it is a much easier process rather than setting the features when implying the statistical techniques.

REFERENCES

[1]. Bhardwaj, Garima, S. Vikram Singh, and Vinay Kumar. "An empirical study of artificial intelligence and its impact on human resource functions." 2020 International Conference on Computation, Automation and Knowledge Management (ICCAKM). IEEE, 2020.

[2]. Nawaz, Nishad. "Artificial intelligence is transforming recruitment effectiveness in CMMI level companies." International Journal of Advanced Trends in Computer Science and Engineering 8.6 (2019).

[3]. Appelberg, Katarina. "Improving a recruitment process through lean mindset." (2020).

[4]. Veluchamy, Ramar, Sanchari Chattaraj, and Surbhi Kumari Gupta. "ARTIFICIAL INTELLIGENCE WITHIN RECRUITMENT: ELIMINATING BIASES IN HUMAN RESOURCE MANAGEMENT." ARTIFICIAL INTELLIGENCE 8.03 (2021): 2021.

[5]. Minbaeva, Dana. "Disrupted HR?." Human Resource Management Review 31.4 (2021): 100820.

[6]. Nawaz, Nishad, and Anjali Mary Gomes. "Artificial intelligence chatbots are new recruiters." IJACSA) International Journal of Advanced Computer Science and Applications 10.9 (2019).

[7]. Sterman, John D. "Learning in and about complex systems." System dynamics review 10.2-3 (1994): 291-330.

[8]. Lee, DongSeop, and ChangKuk Ahn. "Industrial human resource management optimization based on skills and characteristics." Computers & Industrial Engineering 144 (2020): 106463.

[9]. Karam, Sofia, et al. "Integrating systems thinking skills with multi-criteria decision-making technology to recruit employee candidates." Expert Systems with Applications 160 (2020): 113585.

[10]. Leslie, David, and Morgan Briggs. "Explaining decisions made with AI: A workbook (Use case 1: AI-assisted recruitment tool)." Available at SSRN 3808512 (2021).

[11]. Li, Wenjing, et al. "Impact of workforce diversity management on employees' outcomes: Testing the mediating role of a person's job match." SAGE Open 10.1 (2020): 2158244020903402.
[12]. Karam, Sofia, et al. "Integrating systems thinking skills with multi-criteria decision-making technology to recruit employee candidates." Expert Systems with Applications 160 (2020): 113585.
[13]. Wold, Espen André, and Helle Cecilie Sandberg. The Role of Procedural Justice and Entitlement in a New World of AI-Controlled Recruitment Solutions. MS thesis. Handelshøyskolen BI, 2019.
[14]. Metz, Rachel. "There'sa new obstacle to landing a job after college: Getting approved by AI." CNN Business (2020).
[15]. Braganza, Ashley, et al. "Productive employment and decent work: The impact of AI adoption on psychological contracts, job engagement and employee trust." Journal of business research 131 (2021): 485-494.
[16]. Abdeldayem, Marwan Mohamed, and Saeed Hameed Aldulaimi. "Trends and opportunities of artificial intelligence in human resource management: Aspirations for public sector in Bahrain." International Journal of Scientific and Technology Research 9.1 (2020): 3867-3871.
[17]. Cubric, Marija. "Drivers, barriers and social considerations for AI adoption in business and management: A tertiary study." Technology in Society 62 (2020): 101257.
[18]. Hmoud, Bilal Ibrahim, and László Várallyai. "Artificial Intelligence in Human Resources Information Systems: Investigating its Trust and Adoption Determinants." (2020).
[19]. Hmoud, Bilal. "The adoption of artificial intelligence in human resource management and the role of human resources." Forum Scientiae Oeconomia. Vol. 9. No. 1. Wydawnictwo Naukowe Akademii WSB, 2021.
[20]. Sivathanu, Brijesh, and Rajasshrie Pillai. "Smart HR 4.0–how industry 4.0 is disrupting HR." Human Resource Management International Digest (2018).
[21]. Upadhyay, Ashwani Kumar, and Komal Khandelwal. "Applying artificial intelligence: implications for recruitment." Strategic HR Review (2018).
[22]. HMOUD, B."ASSESSING HR LEADERS' ATTITUDE TOWARD THE ADOPTION OF ARTIFICIAL INTELLIGENCE IN RECRUITMENT." Journal of EcoAgriTourism 17.1: 2021.
[23]. Michailidis, Maria P. "Hie Challenges of AI and Blockchain on HR Recruiting Practices." Cyprus Review 30.2 (2018).
[24]. Pillai, Rajasshrie, and Brijesh Sivathanu. "Adoption of artificial intelligence (AI) for talent acquisition in IT/ITeS organizations." Benchmarking: An International Journal (2020).
[25]. Pereira, Vijay, et al. "A systematic literature review on the impact of artificial intelligence on workplace outcomes: A multi-process perspective." Human Resource Management Review (2021): 100857.

ABOUT THE AUTHORS

Sandhya Sheshadri is a Fellow of the World HR Board in Strategic Learning & Development with an MBA specializing in HR from Madurai Kamaraj University. She has about 15 years of combined experience in both academia and industry. She is accomplished in designing, developing, and delivering training programs for professionals and students.

Hemant Palivela is a visiting professor at Swiss School of Business management and Head of AI and Machine Learning at eClerx Services LTD. He has been awarded the prestigious 40 under 40 Data Scientists by Analytical India Magazine 2021. After spending nearly seven years working with renowned organizations like NMIMS and Aureus Analytics, he shifted to Centre of Excellence, Digital Analytics Division of eClerx where he works on Campaign Analytics, Speech Processing, Natural Language Understanding/Generation and Recommendation Systems. His principal areas of interest with reference to the theoretical frame include, Machine learning optimization, linear algebra, probability theory, and practical frame include, drug discovery, insurance analytics, and recommendation systems. He has published around 35 plus research papers in International Conference and Journals. He has done his Bachelor's, Master's and Doctorate in Computer Engineering