

## Artificial Intelligence Shaping Talent Intelligence and Talent Acquisition for Smart Employee Management

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### Abstract

**INTRODUCTION:** Due to the increased importance of artificial intelligence (AI) in talent intelligence (TI), and TI in talent acquisition (TA), this paper shows how AI improves the TI and consequently, the TA process of an organization.

**OBJECTIVES:** The objectives of this paper are to understand the evolution of AI-driven TI concepts and explore the role of AI in TI.

**METHODS:** Primary and secondary data were used for research and analysis was performed using SPSS. Primary data was collected through a survey of 20 HR managers from 20 companies in Delhi-NCR. These 20 managers were selected through random sampling method and from them the data on role of AI in TI and TA was collected using a questionnaire. Secondary data through literature review was used to explore TI.

**RESULTS:** The paper not only brings out the role of AI in TI, but also elaborates the TI concept. From the survey data of HR managers, and secondary data, it is understood that AI contributes to TI of an organization, which helps in making TA more effective and efficient.

**CONCLUSION:** AI enables better TI, which improves TA processes of an organization Thus, AI contributes to the TA of an organization.

**Keywords:** TI; Talent intelligence; TA; talent acquisition; AI; artificial intelligence; ATS; application tracking system; smart employee management

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### 1. Introduction

Hiring is an age-old tradition and was followed by great emperors all across the globe. But in modern times, recruitment and its process has evolved drastically because of technological growth especially artificial intelligence (AI). During ancient times, word-of-mouth and references were some of the key techniques used to recruit workers with desired skill sets. With the passing of time and with the evolution of organizations, recruitment and talent acquisition techniques also evolved and today, AI, machine learning and deep-learning driven talent intelligence (TI) and talent acquisition (TA) are in place

in most companies. It is believed that implementation of AI in employee management leads to substantial benefits in organizational efficiency [2].

It is known that recruitment begins with identifying potential candidates, attracting them to apply for the jobs, interviewing them, selecting the best ones available, hiring them, and then onboarding them, but it should also be understood that all these steps for talent acquisition are now using AI for better performance and results. The process of use of AI starts from need identification to selecting the best talent available in the market. In the 1990s, due to the widespread use of the internet, online job portals were widely used by organizations and

jobseekers to search and apply for jobs. These job portals not only made job-hunting convenient for job seekers, but the employers also gained an advantage as talent acquisition became handy [3]. With further technological advancement, recruitment/talent acquisition process has become smarter. In order to underscore the importance of TI, in the following four headings, the authors first provide an understanding of smart recruiting using AI, how smart recruitment is being practiced through AI-driven application tracking system (ATS), integration of TA with TI and AI, and how TA is improved through recruitment marketing using AI. As TI has a vital role to play in the TA process of an organization [12], the authors outline the objectives and research questions of this paper as following:

The objectives of this paper are as follows:

1. Understand the evolution of AI-driven TI concept.
2. Explore role of AI in TI.

The research questions (RQs) of this paper are as follows:

1. What is TI as a concept?
2. What is the role of AI in TI?

## 2. Recruitment to AI-Driven Smart Recruiting

Gone are the days when recruitment was a complete manual process. Recruitment is an automated process with integration of AI. There are several AI-embedded solutions which are available in the market and are increasingly used by organizations globally to automate the process within their organizations. Application Tracing System (ATS), Sniper AI, Zyre, Phenom [9] are a few AI-enabled applications in the market today. With the help of these applications, organizations get access to the right tool, technique and technology to explore more candidates per vacancy and ensure finding the right fit for talent. One such application which will be discussed in the paper is ATS.

### 2.1. ATS: A Step towards Smart Recruitment

ATS is a programme, or a software designed for the recruiting process and is used by companies as a smart way to hire and keep track of the candidates applying for a job. The software helps in automating all the steps involved in the hiring process. From job postings, interview scheduling, and hiring to final decisions, the software does all and thus has become a crucial partner in the company's talent pipeline management endeavor [8]. Also, the company has to decide which type of ATS it prefers online ATS or on-premises ATS. The online ATS is cloud-based and is available anytime anywhere through subscription on the internet. On the other hand, the on-premises ATS is server-based and is available through a

server of the company on payment of license fees to the software provider. On-premises ATS involves high initial investment in comparison to online ATS and requires the company to setup a dedicated unit. This mostly makes online ATS more preferable to organizations. Organizations which adopt ATS need to adhere to the TOE (technology-organization-environment) model [4].

### 2.2. Evolution and Integration of AI-driven ATS with TA

The TA process has evolved over a period of time, due to various factors like competition, requirement of skilled workforce, technological advancement etc. The first phase of Talent acquisition was in the period 1990-2004 in which finding the candidate was done through online job boards. Online job boards were job ads on the company's website. Companies advertise the jobs with detailed job descriptions so that candidates who visit the website get a clear idea about the job profile. This saved time and cost both for the employers and the employees. There are numerous job boards, some of which provided the services on a payment basis, while others offered free job postings. The other advantages of online job boards are that they not only enable employers to reach the talent-pool but also create a resume bank. ATS 1.0 was used to track candidates on these online job portals and final closing of the postings was done through recruitment agencies like ABC Consultants, which is one of the most renowned recruitment agencies in India. Some job boards, like LinkedIn and Indeed, provide an option to create a company's page on the website. This helped the organization as they could share their organization's vision, culture, and values with the prospective employees [11]. In the second phase of TA, which was in the period 2005-2017, TA was done through active and passive sourcing. Active sourcing involves searching among those talented candidates who have no jobs currently through modes like campus selection, job fairs or other networking events. For proactive/passive sourcing, prospective candidates were tracked through ATS 2.0 (software-as-a-service) and the subsequent process was outsourced. The final decision was taken by a recruitment process outsourcing (RPO) agency in consultation with the employer. Since recruitment is a routine and a systematic process, some of the organizations also outsourced it to recruitment agencies [12]. Thus, the RPO model was adopted by many organizations by signing a contract with them and with no intervention from the company's HR department in identifying, screening or assessment of the candidates.

The third phase of TA which started in 2019 and is expected to continue till 2028 is primarily technology driven, wherein finding the candidate is done through recruitment marketing and big data recruiting tools. The tracking is through ATS 3.0 and ATS 4.0. Recruitment through AI-based tools is also prevalent: Hilton's hotels

conducted recruitment through AI-driven video interviews and reduced the recruitment time from 42 days to 5 days [7]. The implementation of generative AI such as ChatGPT (which employs natural language processing) can aid in the reading of resumes, identification of job applications, and selection of the right applicant for the position [10].

### 2.3. TA through AI-driven Recruitment Marketing

To make TA more effective, many organizations have started marketing their hiring process. This not only helps the company stay competitive but also works towards attracting talent. Moreover, ATS will be useful only if companies are able to attract the prospective candidates, thereby ensuring that they apply for the jobs. Organisations are using recruitment marketing to search and attract talent and AI is helping in this process. Greater stress is placed on engaging the right talent as well as nurturing them. This is termed as pre-applicant phase of TA as this happens before the candidates apply for the job. It promotes the company’s employer brand gets communicated through the recruitment marketing. The aforementioned functions of TA and recruitment marketing are made more effective when an organization possesses TI (see Figure 1). Hence, authors aim to study the topic of TI in this paper.

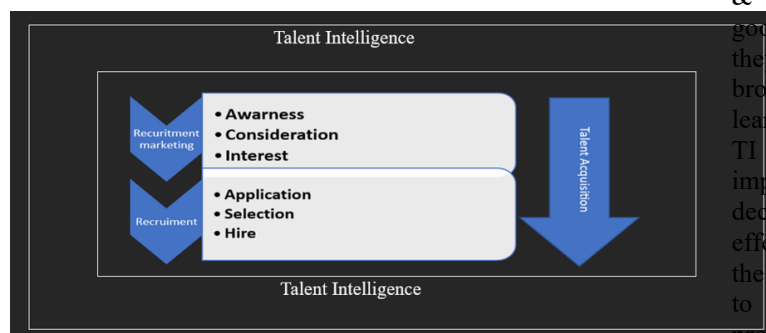


Figure 1. TA and TI connect

## 3 Research Methodology

The mixed research method was used for this study.

### 3.1. Data Collection

The paper involves the study of secondary data. Literature review of research articles was performed for TI. Also, primary data was collected through a survey of 20 HR managers from companies in Delhi-NCR who had relevant experience of AI in their domain.

### 3.2. Sampling Method

The random sampling method of probability sampling was used. The managers were selected through random sampling method from the list prepared from websites of companies operating in Delhi-NCR. The top 100 companies list of Delhi-NCR were identified from website. On excel a random list of 100 companies was generated and 20 were selected. The HR office of these companies was contacted, and survey was emailed.

### 3.3. Findings for RQ1

Secondary data source of articles was used to answer RQ1. Literature review of articles was performed. On searching ‘Talent Intelligence’ on Scopus database, 19 documents appeared as a result. On applying the refine search to language criteria of English, the result was reduced to 14 documents. After this, no further refined search was performed because the articles were very few in number and the researcher wanted to study each and decide after that. On going through the articles, only 4 articles were found to be relevant. Nik Kinley & Shlomo Ben-Hur define TI as “the understanding that businesses have of the skills, expertise and qualities of their people... And it is essential because companies can only make good talent decisions if they know what they need, what they have and what is available”. A problem as stated by Nik & Shlomo was “Either companies are not generating a good understanding of the capabilities of their people, or they are not then using that information to inform their broader talent management, leadership development and learning activities” [6].

TI is required to make good people decisions. TI is important because companies invest heavily on selection decision. TI is required to help measure talent more effectively [5]. Also, it helps in finding the people with the right fit with organizations. So, the major aim of TI is to measure fit. Since measuring talent is a complex process, the organizations face problems in finding what to measure and how to measure. In their book ‘Talent Intelligence’ Nik & Shlomo describe four types of fit: Person-job fit, person-organization fit, person-team fit, and person-manager fit. These respectively indicate how the qualities of the candidate fit with the job requirements, work-culture of the organization, teams and colleagues he has to work with, and with the superior(s) under whom he is required to work [6]. Finding these fits is now possible through AI. Thus, technology has a great role in TI evolution.

### The AI-TA-TI Connect

AI has a huge potential to challenge human intelligence as it can do many tasks like reasoning, learning, interpreting, adapting and applying [1]. Machine learning, a category of AI, is the data-observation ability of the machine. Through this ability the machines can interpret data

patterns and use them to upgrade themselves to process the data better next time and every time. Deep learning refers to the learning process used by machines. To successfully implement AI, it is important that machines are able to run the program that enables them to observe the data and learn from it. It has found application in various areas useful to humanity like language processing, recognition of speech and images etc. Machine learning and deep learning are a part of AI, and AI contributes to TI, which in turn helps improve TA of organizations. AI and ML drastically influenced TI and TA. Their impact was felt on both direct sourcing and indirect sourcing (see Figure 2). Through direct sourcing organisations develop their own candidate pool. The Direct sourcing methods using AI like talent network, talent marketplace, etc. have become popular since they save time and cost [13].

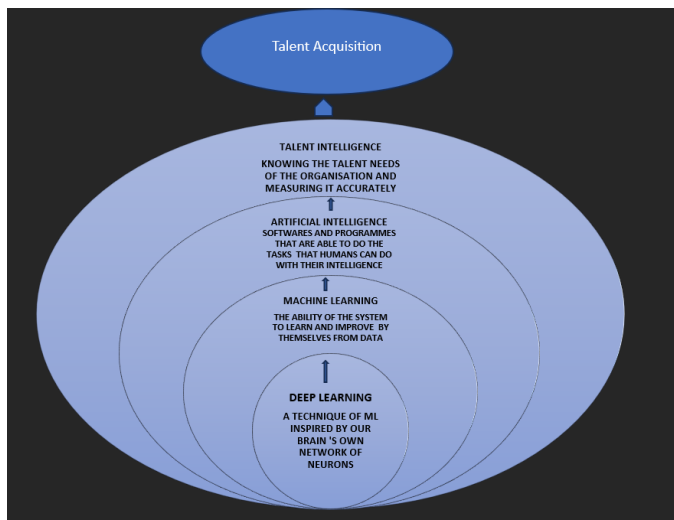


Figure 2. The AI-TI-TA connect

### Market Intelligence and TI

Here, the difference between TI and market research is studied. Market research is a key element of market intelligence. However, the key component to AI-powered market intelligence is the advanced AI technology actually contributing to the market research. Market research, on its own is focused on gathering data on a specific target population and providing insights into the overall market trends, while AI-powered market intelligence combines advanced AI technology & machine learning with market research to provide real-time insights into the competitive landscape of an industry or role [11]. Leveraging AI algorithms, an AI-powered TI tool analyses large amounts of data quickly and accurately, helping organizations better understand the overall talent landscape, market conditions and other area-specific situations that may be relevant to their talent search. It goes a step further by combining automated data collection and analysis with natural language processing

and machine learning to provide recruiters with the most accurate and upto-date talent profiles available. AI and machine learning together power big data. AI and machine learning are the tools that power big data, which in turn provides market intelligence, and market intelligence is the tool that essentially powers the outcome – which is TI. Market intelligence provides real-time information on the skill-sets available external to the organization, while TI, among other things, helps organizations know the skill sets possessed by them.

### ATS Adoption by Indian HR Fraternity

Indian companies are no longer lagging behind in technology adoption as compared to their western counterparts. Over the years many Indian companies have automated their recruitment and TA process. Some of the ATS used by Indian companies are Zimyo, Naukri RMS, FreshTeam, Talocity, SuccessFactors, Gohire, and iSmartRecruit. The professional networking sites such as LinkedIn, and social media sites started the transformation of TA through candidate engagement. But total transformation commenced when machine learning and AI started delivering big data. Both recruitment marketing and TA were transformed drastically through AI and machine learning. office of these companies was contacted, and survey was emailed.

### 3.4. Analysis and Findings for RQ2

The answer to RQ2 was explored through secondary data and primary data. To answer RQ2 through primary data, the following items were used in the questionnaire with Likert scale (5 response categories):

1. AI has an overall positive role in TI in data integration for better analysis.
2. AI has made the TI more effective version of itself.
3. AI has helped the TI process by providing a more accurate talent need-mapping of the organisation.
4. AI has helped the TI process in better tool-mapping for talent measurement.
5. AI has helped the transition of recruitment process and TA from manual processes to technology driven systems of TI.

The output in Table 1 obtained from IBM SPSS shows that for all items a majority of the HR managers either agreed or strongly agreed. It shows that the HR field anonymously agreed to the fact that AI and TI shall grow in future.

Table 1. Items and their medians

**Statistics**

		Al has an overall positive role in TI in data integration for better analysis	Al has made the TI more effective version of itself	Al has helped the TI process in more accurate talent need mapping of organisation.	Al has helped the TI process in better tool mapping for talent measurement	Al has helped the transition of recruitment process and TA from manual processes to technology driven systems of TI
N	Valid	20	20	20	20	20
	Missing	0	0	0	0	0
Median		4.00	4.50	5.00	5.00	5.00

For item 1 (see Table 2), 90 % (55% agree and 35% strongly agree) of HR professionals agreed that AI has a better role in TI in data collection, assimilation, integration and implementation.

**Table 2. Item 1**

**Al has an overall positive role in TI in data integration for better analysis**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neither Agree nor Disagree	2	10.0	10.0	10.0
	Agree	11	55.0	55.0	65.0
	Strongly Agree	7	35.0	35.0	100.0
Total		20	100.0	100.0	

For item 2 (see Table 3), 100 % (50% agree and 50% strongly agree) of HR professionals, agreed that AI has made TI better than before by providing the tools for better data collection, assimilation, integration and implementation. Thus, TI has become more effective than before. implementation.

**Table 3. Item 2**

**Al has made the TI more effective version of itself**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	10	50.0	50.0	50.0
	Strongly Agree	10	50.0	50.0	100.0
Total		20	100.0	100.0	

For item 3 (see Table 4) , 100 % (30% agree and 70% strongly agree) of HR professionals agreed that AI has a made TI better than before by providing the tools for better data collection, assimilation, integration and implementation, thus effectively estimating the talent requirements of the organization.

**Table 4. Item 3**

**Al has helped the TI process in more accurate talent need mapping of organisation.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	6	30.0	30.0	30.0
	Strongly Agree	14	70.0	70.0	100.0
Total		20	100.0	100.0	

For Item 4 (see Table 5), 100 % (40% agree and 60% strongly agree) of HR professionals agreed that AI has helped TI process in providing better tools for talent-measurement. This makes the entire TA process quick and accurate in meeting the needs of the organization. of the organization.

**Table 5. Item 4**

**Al has helped the TI process in better tool mapping for talent measurement**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	8	40.0	40.0	40.0
	Strongly Agree	12	60.0	60.0	100.0
Total		20	100.0	100.0	

For Item 5 (see Table 6), 100 % (45% agree and 55% strongly agree) of HR professionals agreed that AI has helped the transition of recruitment and TA from manual processes to technology driven systems of TI.

**Table 6. Item 5**

**Al has helped the transition of recruitment process and TA from manual processes to technology driven systems of TI**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	9	45.0	45.0	45.0
	Strongly Agree	11	55.0	55.0	100.0
Total		20	100.0	100.0	

## 4 Conclusion

This paper brings out clearly that AI has played a significant role in the evolution of TI as a concept and a practice. In answer to RQ1, it was found that TI refers to the organization's ability to not only identify the skills it needs, but also has the ability to measure the skills accurately. Thus, effective TI is possible through AI in the present times. TI also helps find if the employee has requisite fit with manager, team, job, and organization. Technology, in the form of AI, augments TI, which in turn helps make the TA process of a company more effective (see Figure 2).

In answer to RQ2, from the analysis of the survey it was found that AI positively contributes to TI and makes it a better tool for TA by organizations, and also AI has helped transform the recruitment process and TA from manual processes to technology-enabled systems of TI. TI, augmented by AI, improves the TA process by organizations, and is only set to grow in the future, on the wings of AI. The results related to RQ2 also show that mostly TA has transitioned from manual process to AI driven process now. AI tools are seen by HR professionals, as aiding and leveraging the whole process of TA and TI. This helps in better talent measuring and mapping to the jobs and also to the organizations. In fact, AI helps in finding the right employee fit. Thus, AI has created a hassle-free and effective way of working for TI and TA processes. When integrated with ATS, talent search and match is easily achieved. For example, softwares built on multiple ML models, like Arya, match jobs and relevant candidates more accurately than was possible before the advent of AI. Such AI-driven softwares help to enhance recruiter efficiency with an effective recruitment automation tool that decreases sourcing and shortlisting time by 50%. It also helps companies diversify their talent pipeline by reducing bias and encouraging client diversification. TI powered by AI is transforming the recruitment and TA industry [5]. AI-powered software in use like Arya and Paradox are on their way to becoming a conversational recruitment software. They claim to save 80 percent of the repetitive managerial administrative tasks. The administrative parts of an HR professional's role are increasingly getting automated [14]. Some efficient AI programmes like Paradox, contribute hugely to hourly hiring in companies like McDonald's. For example, Paradox has made hourly recruiting at McDonald's easy and engaging like other AI tools available in the market. AI in TA and TI is here to stay as they have won the support of the HR managers widely.

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