

Artificial Intelligence in Human Resource Management



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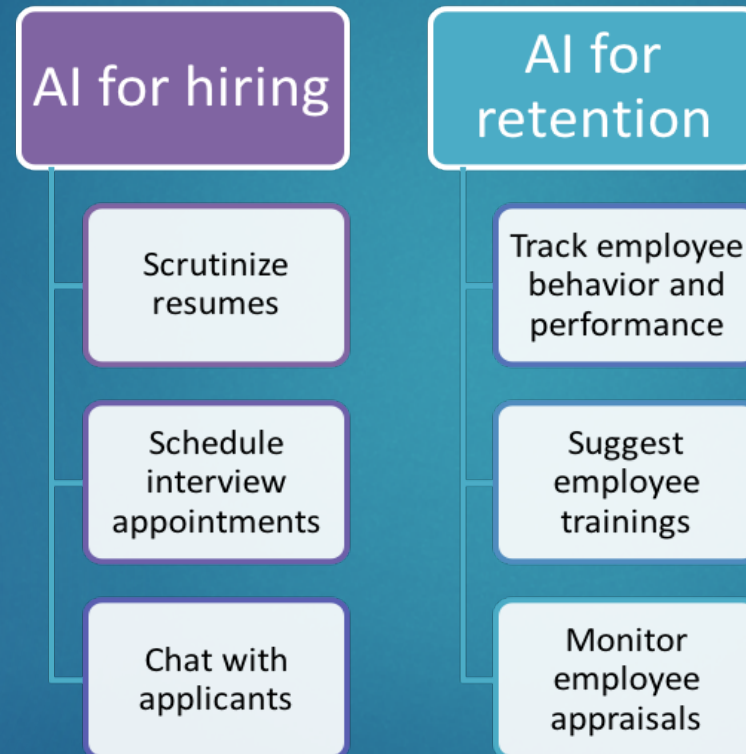
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Introduction



- ▶ AI has been around for more than 50 years. There was a rush of advancement in natural language processing (NLP) during the 1970s and 80s.
- ▶ Artificial intelligence again were mostly used in professional system during the 1980s and mid 1990s which was followed by machine learning by the 1990s.
- ▶ Artificial intelligence is targeted to establish human-like intelligence, especially in the automation perspective (Tian and Jianbang).
- ▶ Various opportunities for artificial intelligence in HR technology existed especially in the respects of talent sourcing, candidate assessment, employee engagement, development (Thacker).

AI in HR Practice



Candidate Screening



- ▶ The benefits of using AI as recruiting tools include finding candidate resumes online effectively.
- ▶ The AI implements its search using keywords people specify, and it creates a list of candidates that fit the job description perfectly.
- ▶ Normally HR departments will obtain many potential candidates from different sources and then they can use automation to attain the purpose of resume screening. This enables people to narrow down the candidate list. In some occasions, there are some tools using keyword analysis to find the optimal candidates from the pool the resume (Thacker).

Candidate Engagement



- ▶ Half of candidates are not getting any kind of correspondence or having any sort of contact with the employer once they apply for a job on a profession site or employment board (Cappelli, Tambe and Yakubovich).
- ▶ Artificial intelligence makes the candidate engagement process automative beyond standard automated emails or messaging workflows (Tian and Jianbang).
- ▶ Artificial intelligence enables HR departments to re-engage a very focused or targeted section of candidates to decide their interest level and update their candidate record to show new positions, work experiences or skills they have obtained since the last time they were engaged (Thacker).

Onboarding



- ▶ When the hiring processes finalized, the AI system will insert the new employee's information to the company overall information poll on their first day.
- ▶ Many aspects including Job profiles, company policies, team members, task assignment, will be relayed to them through an app or computer automatically. This process is defined as onboarding (Thacker).
- ▶ Onboarding is an integral part to achieve the goal of improving employee retention rates and increasing productivity of HR department (Qiu and Zhao).

Learning and Training



- ▶ AI systems can be also used to teach and train the employees in their own domains (Yawalkar).
- ▶ AI will evaluate the employees' skills and recommend videos or learning programs relying on their job requirements (Zel).
- ▶ AI can also make a detailed analysis of the data collected from many years of experiences and notify the HR team a specific employee needs a specific kind of training in a specific field (Dsouza).

AI-Based Decision-Making in HR



- ▶ HR department can establish the foundations for the mental, emotional well-being of an employee besides their work contributions.
- ▶ AI systems will handle the assignments of observing and analyzing employees' mood before and after a client call. The HR can then determine whether a specific employee needs a rest or can continue to work (Thacker).
- ▶ AI can also find anxiety in an employee's behavior and tone of voice. This will contribute to determine whether they should analyze the matter in detail and solve the issue before its being harmful to the employees and the company.

Administrative Tasks in HR



- ▶ Software using AI technology can make the repetitive administrative tasks go automatically. It is an integral part in many different aspects including HR strategy, employee management, analysis of company policies, managing payrolls etc.
- ▶ It can make the workforce go automatically as well which can investigate corporate compliance, and litigation strategies (Thacker).
- ▶ HR staff can be relieved from relaying company-related information to employees. At the same time, it can generate an overall view of the company (Filsinger).

Challenges of implementing AI in Human Resource Management

- ▶ There are many challenges when the AI was applied to human resources problems.
- ▶ This includes practical and conceptual issues. For example, when data science analysis was applied to people, it can produce a terrible conflicts with what the social norms normally see about an individual (Premnath, and Arun).
- ▶ The biggest problem will be the distressing feeling that machines have taken over the lives of human beings.

Complexity of HR Outcomes

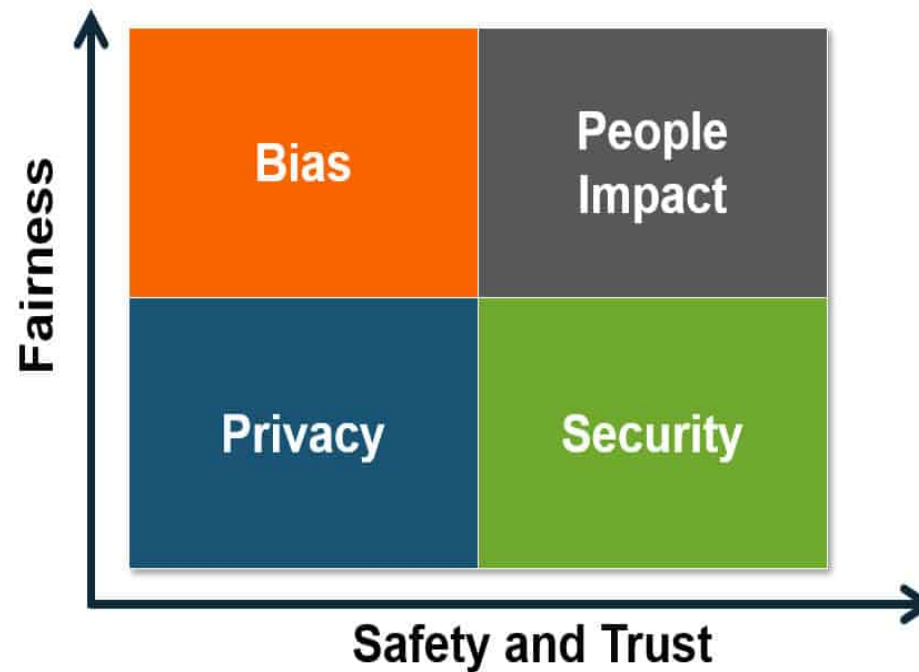
- ▶ Firstly, there will be a complexity of HR outcomes. For example, what is the standard of a good employee is always a confusing issue.
- ▶ The standards to measure if a person is a good employee is extremely difficult. One of the most widely-used standard, performance appraisal scores, has been challenged due to the lack validity and reliability and possibly generating bias (Thacker).
- ▶ It is hard to differentiate one's own contribution to the group performance. Every complex works constitutes the efforts of all the employees (Ma, He, and Wang).

Tasks that Require a Human Element

- ▶ The issue such as dismissals are quite common to most managers and they can learn experience from the process. But the sampling size are still tiny in the data science. Many outcomes of interest are rarely observed, such as the firing of employees for poor performance, and data science techniques perform poorly when predicting relatively rare outcome (Kreutzer, Ralf and Sirrenberg).
- ▶ The lack of human element in some HR decisions will make firms appear cruel to their employees.

AI and Ethics

A Framework For Ethics of Data and AI



Legal Consequences

- ▶ Some human resource decisions, such as enrollment and dismissals have such serious consequences for individuals because it can be connected to procedural justice and ethics, which are crucial to a company.
- ▶ Sound legal frameworks are also responsible for making employees'-related decisions in a fair manner.
- ▶ There is also one vital issue in AI systems such as which attributes are determinant to the final decision. This is normally absent in AI systems, which will generate legal results for the company.

Complex Socio-psychological Concerns

- ▶ Employment decisions are always affected by other aspects such as socio-psychological. For example, personal worth and status, the level of fairness, and contractual and relational expectations (Amritaa and Achwani).
- ▶ Companies will find it hard to explain, prove, and make employees to accept the algorithms. When employees rejected the system, they will try to figure out various adverse reactions to the decisions created by the AI and finally affect organizational outcomes.
- ▶ When a human decision-maker can monitor adversarial behavior and adjust the decisions, it is still a challenging problem for the most advanced algorithms.

Employee's Reaction to Changes in Decision-Making

- ▶ Employees' experiences and behavior are strongly affected by the changing in the decision-making algorithms.
- ▶ Employment practices such as how fast to work based on time and decisions about work organization by breaking tasks to simple elements were based on an established engineering principles and human experiments (Tian and Jianbang).
- ▶ The introduction of changes in decision making will break down the crucial relationships that have sustained the work environment for the last one hundred years. Even though employees have little commitment to their employer, they will feel committed to their supervisor. With AI employees may have little commitment their superiors.

Machine Learning and Causation



- ▶ Most algorithms which based on machine learning can do a much better job in pattern recognition by associations rather than causation.
- ▶ Recognizing images will be as easy as determining good workers. The range of performance indicators is broad, and it is hard to observe and measure precisely.
- ▶ Any attempts to find them out from digital traces of human behavior within and outside organizations will finally produce serious issues of control, privacy, and ethics and still do not make sure that anything worthwhile will be found.

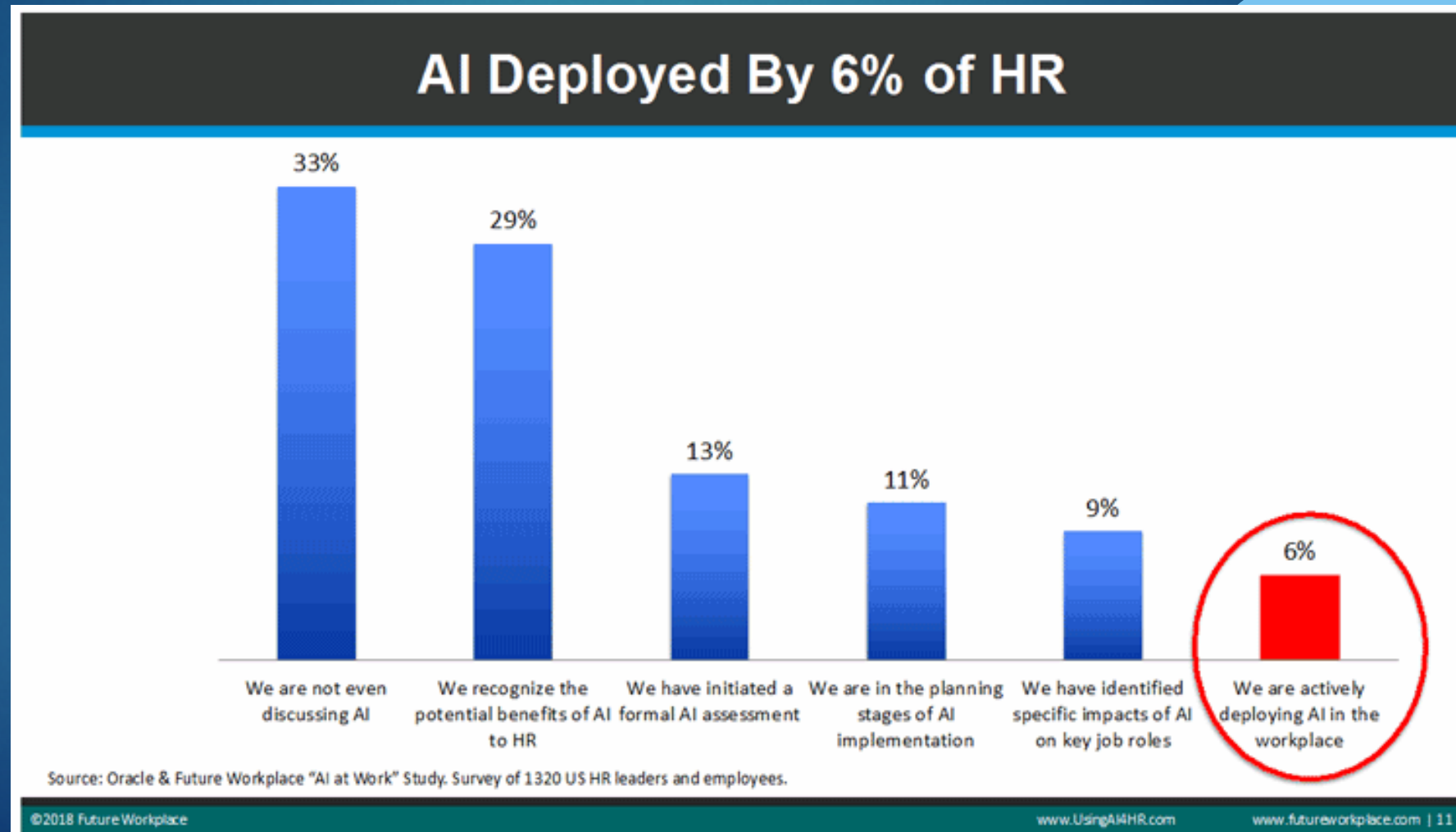
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- ▶ Even if tight connection between a series of observable worker characteristics and behaviors within a company is found, it is unlikely to be fully usable on the pool of job candidates.
- ▶ Causal reasoning mainly focuses on the characteristics and behaviors which are relevant, and it can help to reduce the costs of data management and takes time to meet the requirements of fairness and explainability that are central to the future of AI algorithms (Tian and Jianbang).
- ▶ The merits of causal reasoning always have additional costs. Causal models have lower predictive power when compared with algorithmic associational models. Even though the evidence for this in the HR area is still not valid, we do not have evidence from HR tech vendors and proprietary algorithms on their validity.

Continuation...

- ▶ Causal models need not only data, but also expert knowledge of businesses and social scientists who should be engaged with data and computer scientists.
- ▶ To order to make causal assumptions explicit, algorithm designers make themselves vulnerable to criticism and organizational politics (Tian and Jianbang).
- ▶ Employers must accept the greater costs and reduce predictive power from their algorithms, and they must work to develop consensus about causal assumptions in advance of modeling.

Companies using AI tools in HR



Standard Analytics vs Possible Future

- ▶ In the standard approach, the HR department is seen as the intersection between management and employees. They are the people dealing with work conflicts, solving difficulties for both parties, and solving performance reviews.
- ▶ HR representatives must monitor everyone's activity and report their findings to the manager of the company. Therefore, they are the unit that collects and processes the data relying on the specific decisions made (Tian and Jianbang).
- ▶ The tools used by most HR departments are limited considering the wide range of factors. For example, a performance review questionnaire is normally not sufficient to understand why employees don't feel engaged or motivated in a certain position (Cappelli, Tambe and Yakubovich). Specialized training, human empathy, and a keen spirit of observation to grasp employees' negative states are needed. Besides, it's important to know when the problem is personal and when it's company-related

Recommendations

- ▶ The two tech-trends AI in HR should be accepted for decision-making and effective people management.
- ▶ In order to handle the obstacles, HR teams should be encouraged to reduce their fears (Cappelli, Tambe and Yakubovich).
- ▶ Employers should train the HR department to work in concurrence with advanced technologies in order to realize the power of robotics in HR (Tian and Jianbang).
- ▶ HR departments should make sure they have fully control of human interpretability of algorithmic decisions.

Continuation...

- ▶ Some of the decisions have legal implications and it is vital for the HR staff who handle the AI system to have some basic algorithmic decisions.
- ▶ Decisions by Artificial Intelligence in a HR environment must be affected or controlled by human decision councils in the organization (Cappelli, Tambe and Yakubovich). There should be a legal basis for making decisions that are legally binding to the firms.
- ▶ AI system should be secure to avoid the prospect of hacking. They should be safeguarded from hackers.

Conclusion



- ▶ AI is just simply a wide range of algorithms and machine learning tools that can rapidly process data, identify patterns, and optimize and predict trends. The systems can understand speech, identify photos, and use pattern matching to pick up signals about mood, honesty, and even personality.
- ▶ HR departments must decide of the effectiveness and appropriateness of the use of AI. If it is not suitable for the company, just stay with the traditional HR management procedure.
- ▶ AI technology will continue to grow and will become an industrial standard. At that time, the tradiontional recruiting will disappear.

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