

DISCRIMINATED BY AN ALGORITHM

A Summary of “Discriminated by an Algorithm: A Systematic Review of Discrimination and Fairness by Algorithmic Decision-Making in the Context of HR Recruitment and HR Development” by Alina Köchling and Marius Claus Wehner

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OUR TEAM



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OVERVIEW



01.

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02.

**KEY CONCEPTS
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03.

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OVERVIEW



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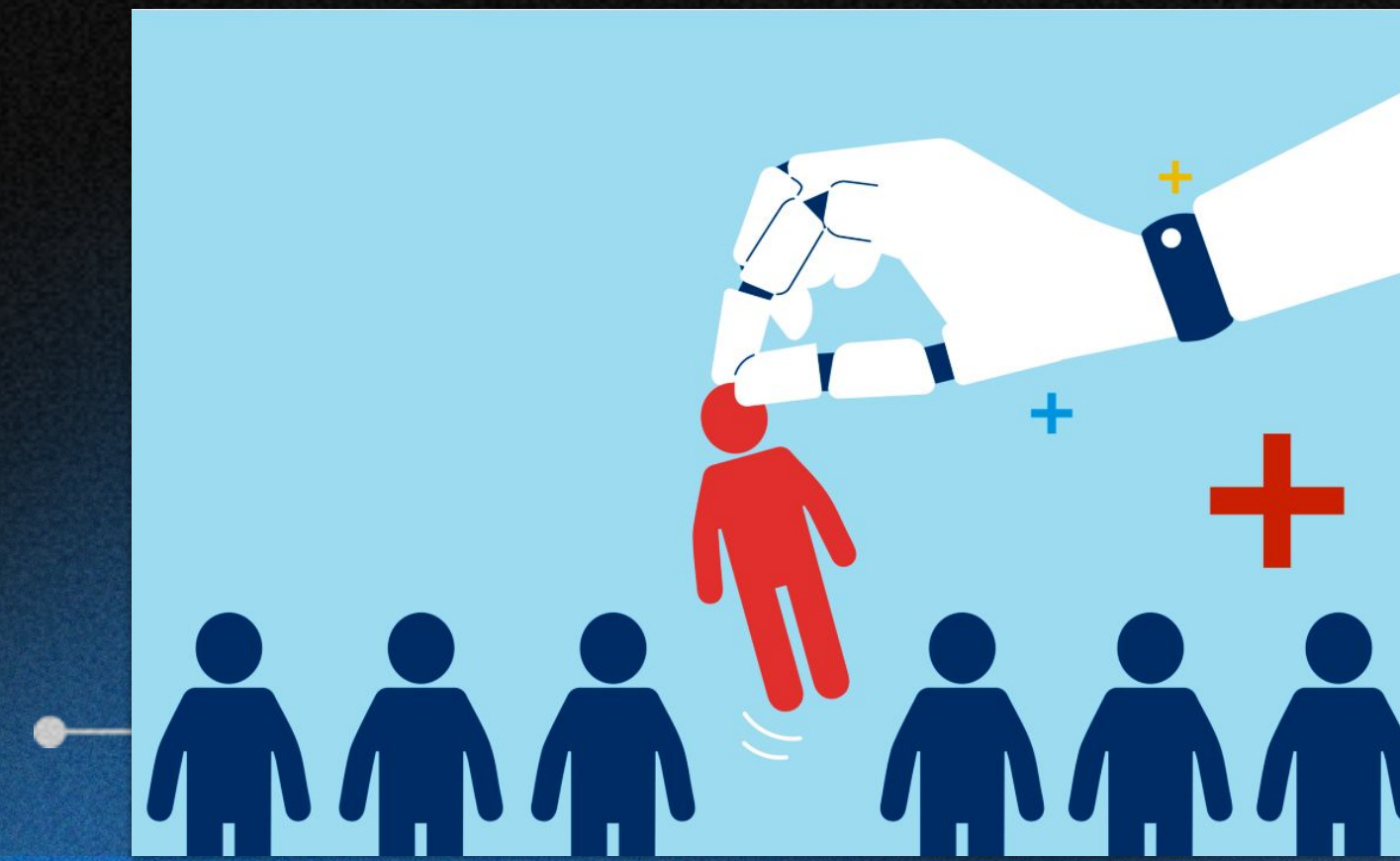


01.

INTRODUCTION

WHAT IS ADM IN HR?

- **Algorithmic Decision-Making (ADM)** is increasingly common as a new source of advice in HR
 - “Automated decision-making and remote control, as well as standardization of routinized workplace decision.”
 - **79%** believe AI technologies is necessary to be competitive
- Tech giants are developing different of AI-driven HR platforms to **optimized** HR functions:
 - Recruitment
 - Performance Management
 - HR Development



WHY ADM IN HR?



**SAVE
COST AND
TIME**



**ENHANCE
PRODUCTIVITY**



**PROMOTE
FAIRNESS
AND REDUCE
BIAS**



**IMPROVE
DECISION-
MAKING**

CAN ADM BRING TRUE FAIRNESS IN HR DECISION-MAKING?

- In short... **NO!**
 - Solid ADM could raise issues such as **bias**, **discrimination** and **unfairness**
 - Mistrained data that are inaccurate, biased or unrepresentative
 - The concern of **transparency**
 - Black box vs. glass boxes
- Candidates and employees might view ADM as **unfair** compare to decisions made by human in HR



OBJECTIVE OF THIS RESEARCH



SYSTEMATIC LITERATURE REVIEW

Highlight the current
state of ADM research in
HR recruitment and
development.



IDENTIFY RISK

Examine sources of bias,
discrimination, and
unfairness in ADM.



GUIDANCE

Propose insights and
suggest future research
directions.

KEY CONCEPTS AND DEFINITION

02.

SOURCES OF ALGORITHMIC BIAS

1

HISTORICAL BIAS

Bias inherited from historical data reflecting past discriminatory practices.

3

TECHNICAL BIAS

Bias introduced by algorithm design, limitations, or incorrect assumptions.

2

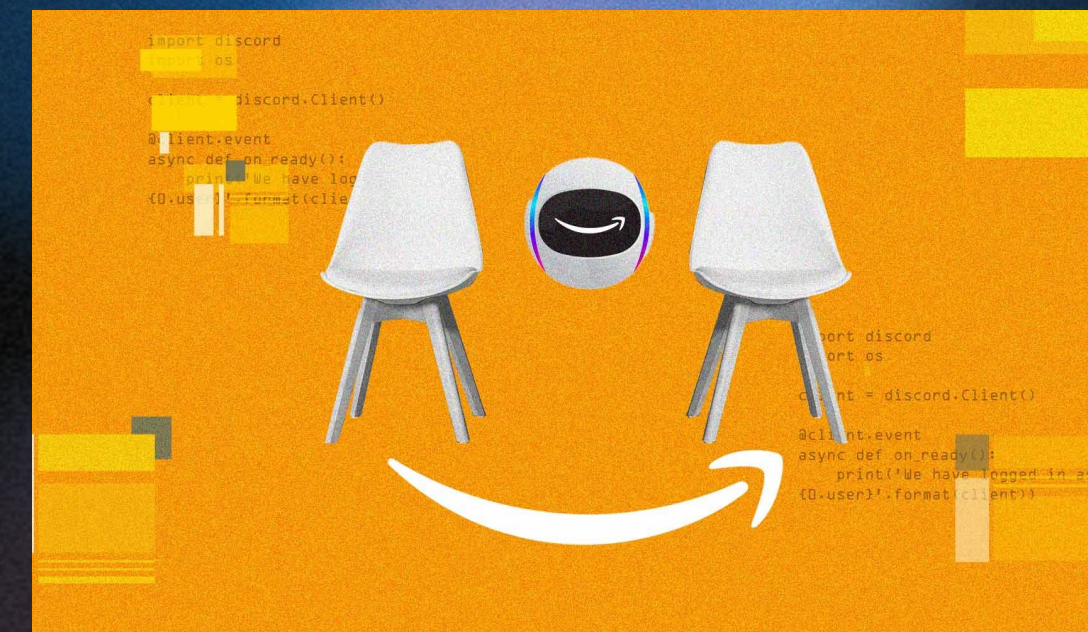
REPRESENTATION BIAS

Underrepresentation or overrepresentation of certain groups in training data.

4

EMERGENT BIAS

Bias arising due to changing societal norms or demographic shifts over time.



FAIRNESS AND JUSTICE

FAIRNESS

- **Individual fairness, group fairness and equal opportunity**
- Whether a candidate feel “fair” or not during the interview could impact the decision
 - Negative experience → damage employer branding

JUSTICE

1. Distributive Justice
2. Procedural Justice
3. Interactional Justice*



03.

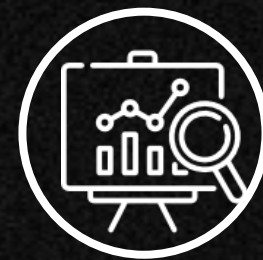
METHODOLOGY

METHODS



PURPOSE

Systematic review of literature on ADM in HR recruitment and development.



SEARCH STRATEGY

1. Databases
2. Keywords
3. Additional sources



SCREENING PROCESS

Final: 36 articles included; few specifically focused on HR.



ROBUSTNESS CHECK

1. Follow-up search with new keywords
2. Verified results

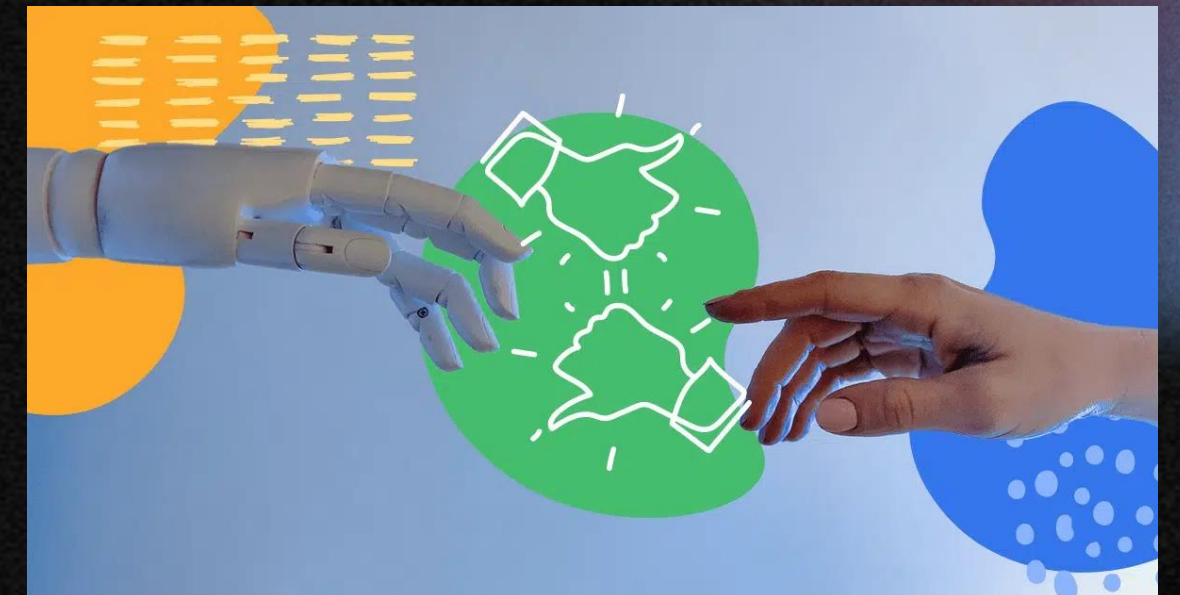
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RESULTS

RESULTS

- **The role of ADM in HR**

- “New source of advice in HR recruitment and HR development”
- Cost-effectiveness, efficiency, and objectivity
- Reduction of human bias
 - Uniform evaluation criteria
 - Less subjectivity overall

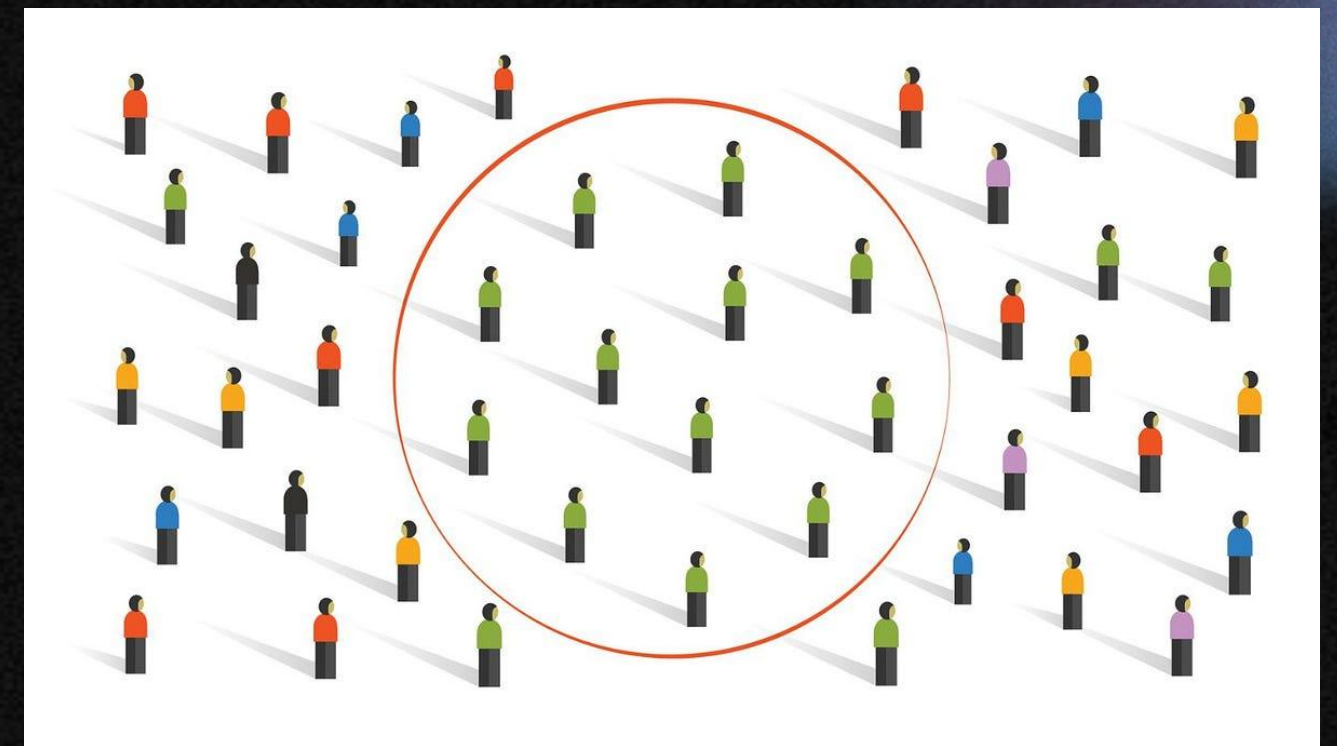


- **The challenges of ADM in HR**

- Biases → historical, representation, technical, and emergent
 - **Despite the fact that ADM is meant to reduce bias, research shows that it actually creates more bias, and as a result, lead to more unfair outcomes.**

RESULTS

- **Perceived fairness**
 - ADM is viewed as less fair compared to human decision-making due to a **lack of interactional justice**
- **Case studies**
 - Amazon's algorithm
 - Job advertisement algorithms

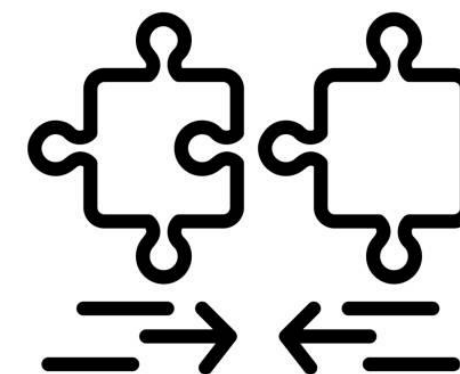


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RESEARCH IMPLICATIONS AND LIMITATIONS

RESEARCH IMPLICATIONS

- **Humans should make the final decision** when it comes to hiring or career development
 - Example: Ed vs. Molly for the next Marketing Director
- ADM cannot replicate human qualities, i.e. empathy and respect which are important from an HR perspective
- Need for more empirical evidence—quantitative research



RESEARCH LIMITATIONS

- **Narrow HR focus**
 - The research only focused on two HR functions: recruitment and development
- **Methodology constraints**
 - The review relied on two main databases: SSCI and EBSCO Business Source Premier
 - Manual screening process of the studies
- **Potential language bias**
 - Only English-language articles were included in the review



FUTURE CONSIDERATIONS

06.



FUTURE CONSIDERATIONS

ACADEMIC STANDPOINT

- How ADM will affect other HR functions because the review only considers HR recruitment and HR development
- More interdisciplinary research should be conducted



HR PRACTITIONER STANDPOINT

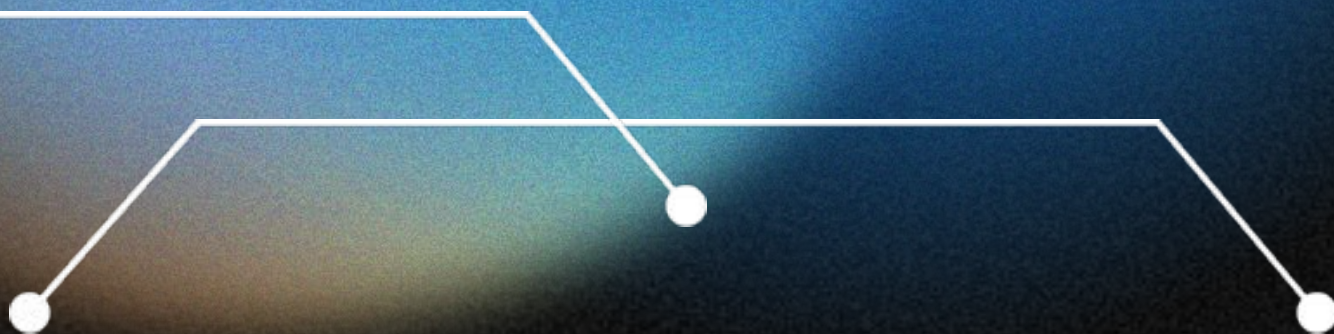
- Clear stakeholder communication
- Transparency in HR processes
- Data monitoring and auditing



THANK YOU!

ANY QUESTIONS?

APPENDIX



Search string	Database	Results ^a
<p>TITLE: (“algorithm* OR algorithmic model* OR data-algorithm*OR algorithmic decision-making OR algorithmic decision* OR artificial intelligence OR facial expression tool* OR facial expression processing* OR language processing* OR natural language processing* OR recommender system* OR search engine* OR data*OR data set*”)</p> <p>TOPIC: (“discrimination* OR discriminat* OR classification* OR “classification problem*” OR “classification scheme*” OR “algorithmic discrimination*” OR “algorithmic bias discrimination*” OR “preventing discrimination*” OR anti-discrimination* OR non-discrimination* OR gender, age, sex, sexism, origin OR “difference* among demographic group*” OR ethic* OR “ethical implication*” OR “data mining discrimination*” OR “unfair treatment*” OR fair* OR unfair* OR “perceived fairness” OR “algorithmic fairness” OR “fairness word*” OR “fairness speech*” OR “fairness recommendation*” OR equal* OR equit* OR unequal* OR “equal opportunit*” OR transparen* OR legal* OR right* OR truth OR impartial* OR correct*OR evaluat* OR judgement* OR “algorithmic judgement*” OR “human judgement*” OR “mechanical judgement*” OR rank* OR rate* OR measure* OR valuation* OR bias* OR “algorithmic bias*” OR “national bias*” OR gender-bias* OR “decision-making bias*” OR “human bias* OR “technical bias*” OR “implicit bias* in algorithm*” OR “dealing with bias*” OR “pattern distortion*” OR pre-justice* OR tendenc* OR prone*OR justice^b OR adverse impact^b) AND TOPIC: (“Human Resource*” OR “Human Resource Management” OR Management OR “applicant selection*” OR “employee selection*” OR “algorithm-based HR decision-making” OR “recruitment process* OR “application process*” OR “selection process*” OR recruitment* OR online-recruitment* OR “personnel decision*”, OR “personnel selection*” OR “people analytic*” OR “HR analytic*” OR “job advertisement*” OR “online personalization*”)</p> <p>DOCUMENT TYPES = (ARTICLE) SSCI 2892</p> <p>AND articles</p> <p>LANGUAGES = (ENGLISH) psychology, psychology experimental, psychology multidisciplinary science, ethics, law, psychology applied, operations research management science, computer science artificial intelligence, computer science interdisciplinary applications, computer science information systems, management, business, behavioral science, social sciences interdisciplinary, sociology, social issues, humanities interdisciplinary</p> <p>Scholarly (Peer Reviewed) Journals, EBSCO Business Source Premier 244</p> <p>Academic Journal, Article English articles</p>		

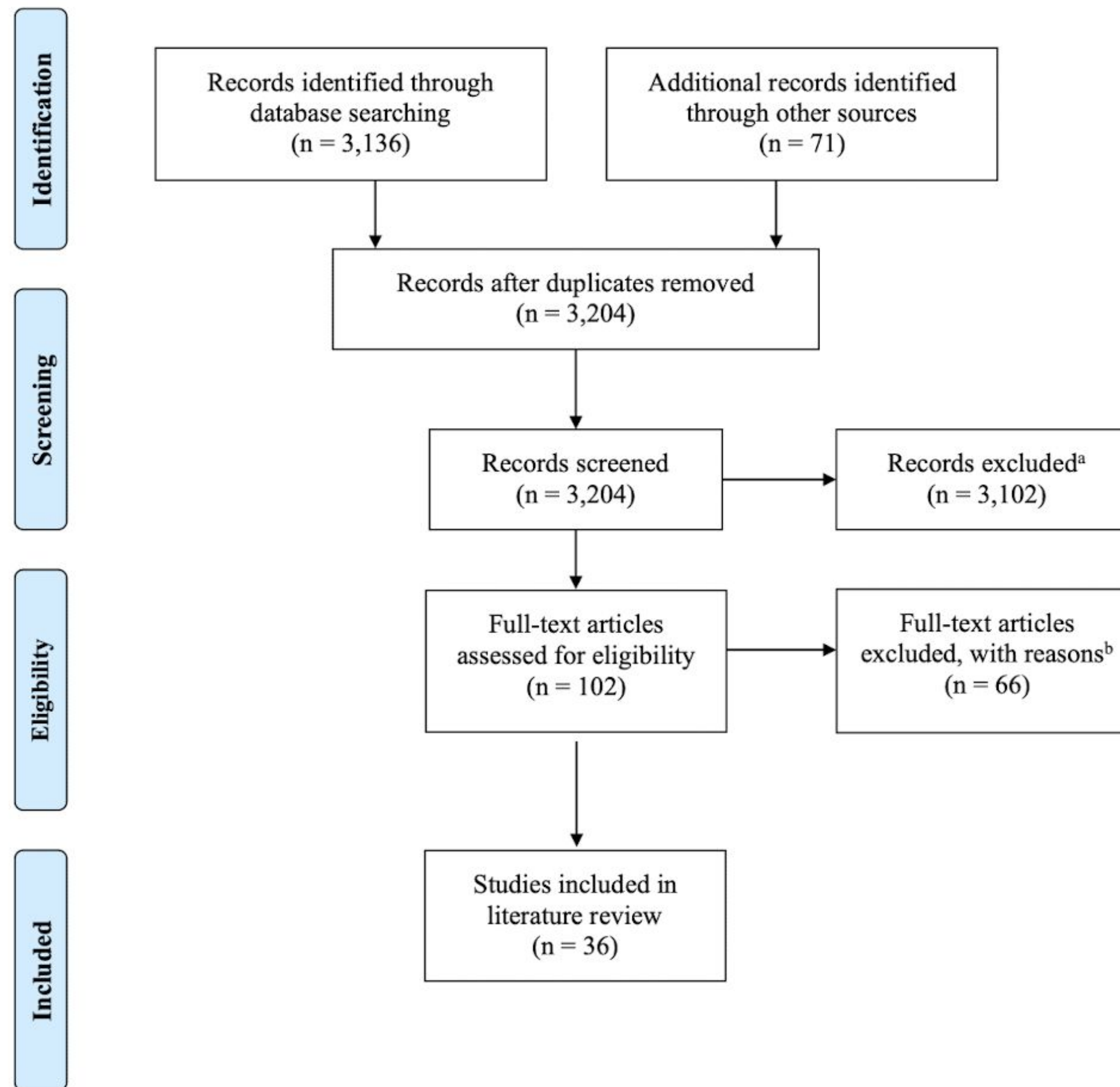


Fig. 1 PRISMA flow diagram illustrating the process. ^aTopic did not fit, mostly no HR and/or fairness, no obvious discrimination context, ^bMostly no HR and/or fairness, no discrimination context after reading the full text or not meeting the inclusion criteria