Transforming Talent Acquisition: A Longitudinal, Literature-Based Analysis of Generative AI in Early-Stage Sourcing, 2020–2024

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Abstract: *Generative AI tools are used by employers to enhance recruitment activities and gain information about job seekers. Current recruitment methods include the use of the recruiter's expertise and other tools and resources, such as networking and online job boards and databases, as well as keyword searches. Advantages of generative AI tools for recruitment include uncovering other skills and related occupations, interacting with job seekers, and efficiently obtaining other information that would take more time and effort to learn otherwise. This review summarises the use of GenAI in initial hiring processes from January 2020 to December 2024. A longitudinal review of literature provides insights on the shift from other automated tools to GenAI tools and other uses of GenAI in hiring, as well as advantages and challenges for hiring professionals and job candidates and other ethical concerns related to GenAI in hiring. Information sources include academic literature and industry and legal resources through December 2024.*

The study describes potential advantages of GenAI. Potential advantages are different from proven advantages. Potential advantages of using GenAI tools for recruitment tasks include greater recruiter flexibility and efficiency and the ability of recruiters to consider candidates who do not have traditional work histories without relying on previous job titles. Other potential advantages of greater flexibility and efficiency in recruitment tasks are not known, nor are potential advantages of using automated language content in recruitment communications. Initial testing of language tools for recruitment purposes has identified bias concerns. Recommendations include using GenAI tools to support rather than replace human decision making. The paper offers a framework for evaluating long-term contributions and disadvantages of GenAI tools, such as impacts on efficiency, candidate-pool quality, inclusion, candidate experience, and governance.

Keywords: Generative artificial intelligence; talent acquisition; candidate sourcing; recruitment; human resource management; longitudinal analysis; algorithmic bias; skills-based hiring

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Introduction

Hiring does not just involve comparing an applicant's qualifications and other factors to the needs of an employer. It also involves the activities of recruiters in locating and evaluating applicants' interest in available positions. Recruiting is always difficult. Recruiting in a tight labor market or among other unemployed people is especially difficult.

Digital technologies have changed how people recruit. Online job boards and other tools give recruiters access to more job candidates than they could reach through other methods, such as spreadsheets and phone calls. Other AI-based tools and services available to recruiters include résumé screening and other services to connect candidates and employers.

The basic issue persists. Despite having access to information about many individuals, recruiters continue to struggle to identify a few qualified candidates. Search results depend on various factors related to information provided in candidate profiles and other assumptions made during the search process. Candidate qualifications may prevent a candidate from being hired because of differences between the candidate's past and current job titles.

Generative AI tools provide possible alternatives to keyword tools. Generative AI tools communicate with users in natural language. Possible applications of generative AI tools by recruiters include finding new ways to understand text in job postings and other documents, learning synonyms for job search keywords, and discovering other job titles and drafting a first message to prospective candidates.

The November 2022 release of ChatGPT expanded public awareness of generative tools. Discussions about hiring practices and job opportunities in the recruitment field in 2023 and 2024 included speculation about potential uses of generative tools. LinkedIn Talent Solutions reports in 2023 and 2024 identified multiple recruitment tasks that could benefit from generative tools, such as candidate sourcing and job posting (LinkedIn Talent Solutions 2023, 2024).

Enthusiasm has a practical drawback: Does better recruiting effectiveness improve recruiting outcomes? Recruiting tools can help recruiters quickly create many search queries but not find appropriate candidates for positions. Recruiting tools can help recruiters quickly craft tailored messages with incorrect assumptions about candidates. Recruiting tools can help recruiters identify more appropriate candidates but not build a more diverse or appropriate candidate pool. The purpose of the question is early hiring practices to attract potential employees for job openings. Very selective hiring practices may discourage qualified individuals from applying. Less selective hiring practices may result in many unsuccessful job applicants. Other concerns related to the question include fair access to employment.

This paper therefore examines how GenAI became part of early-stage sourcing between 2020 and December 2024. It asks three questions:

- How did early-stage sourcing evolve from conventional recruitment automation to the use of generative AI?

- What practical opportunities and limitations emerged as recruiters began to experiment with these tools?
- How should organizations judge the long-term value of GenAI without losing sight of candidate quality, fairness and accountability?

The key idea in this text is that GenAI tools can influence the amount of time recruiters spend on various hiring activities and the methods they use to find and interact with potential hires. Influences of GenAI tools can be positive or negative, depending on their use. Advantages and disadvantages of GenAI tools include better decision making by recruiters and overreliance on information from GenAI tools.

Literature Review and Conceptual Background

2.1 From recruitment automation to generative AI

AI tools were used in hiring processes before the introduction of generative AI tools. Other AI tools used in hiring include resume-screening tools, keyword search tools, candidate-ranking tools, and automated scheduling and response tools for job applicants. These tools were created to serve specific functions, including matching a job applicant's recorded qualifications to a job opening.

They provided benefits to other organizations by improving information searches. Disadvantages of information searches for other organizations include poor information and other inputs related to the searches. Disadvantages of a narrowly defined job title and education search include missing candidates with valuable work experience.

Research on algorithmic hiring has investigated algorithm use in hiring and other employee-selection activities and assumptions made in algorithm recommendations. Herold and Roedenbeck (2024) performed a literature review on algorithmic hiring and found that previous research on algorithmic hiring had primarily investigated evaluating and hiring job candidates and other topics related to candidate evaluation. This suggests that research on sourcing, the topic of this paper, is less extensive. Additional sources, including Tambe, Cappelli, and Yakubovich (2019), discuss employee-related issues and responses to algorithm use in human resource management, and Langer and Landers (2021) provide a literature review of employee responses to algorithm use and decision making.

Generative AI provides additional capabilities. Applications that include generative AI capabilities can help recruiters by reorganising existing text and generating new text based on prompts. In addition to candidate screening, apps with generative AI capabilities can help recruiters identify other ways to approach recruiting tasks, such as finding other job titles and transferable skills related to a job posting and drafting outreach emails and questions about a job posting. The line between the two approaches is not clear. They can be combined, but they have different uses. Examples of combining the two approaches include using a generative AI tool to create a job search strategy to be used with a job search tool and using a generative summary of a job candidate to help recruiters evaluate candidates without replacing the database of job candidates and other tools used for matching. In this study, use of GenAI in sourcing is defined as using generative AI tools for tasks related to defining sourcing

requirements, developing search strategies, interpreting candidate information and preparing to contact candidates. Other tasks related to contacting and selecting candidates are excluded.

2.2 Why early-stage sourcing matters

Sourcing is generally considered an early step in the recruitment process, but it also impacts other steps. Activities related to other recruitment steps that are influenced by sourcing include determining who will enter the hiring funnel, what skills matter, and where to recruit.

A limited sourcing approach can help you find candidates with similar experience but limit your ability to find other candidates with similar skills acquired in different ways. Skills-based hiring can be especially useful for businesses interested in moving toward skills-based hiring practices.

GenAI tools can help recruiters discover other occupation titles and terms related to the job. Candidates for a cybersecurity job posting might include former security engineers, network administrators, cloud architects, and incident responders. Job candidates' suitability for a cybersecurity position will depend on the job posting.

The technology can help broaden a recruiter's first thinking. The technology cannot verify that other positions and skills held by the candidate are similar to those mentioned in the job posting.

2.3 Human judgment and candidate experience

Hiring is a two-sided process. The applicant assesses the opportunity being offered. The applicant also assesses the communication process and fit with the organization based on the applicant's experience.

AI use can help recruiters communicate more quickly with job candidates. Quick communication with job candidates may not increase job candidates' satisfaction with communication. Horodyski (2023) provides an overview of research on AI use in recruitment. Most job candidates have positive views of AI use in recruitment. Benefits mentioned by job candidates include faster communication. Drawbacks mentioned by job candidates include reduced opportunities for personal communication and questions about the reliability of information provided by AI tools. Glikson and Woolley (2020) provide an overview of other research on trust in AI responses and factors related to trust in AI responses in other areas. Research findings suggest that job candidates will form opinions about their AI interactions, whether or not an employer prefers this outcome.

These risks can occur with GenAI use in recruiting, such as using incorrect information in a message that appears personalised to damage a candidate's reputation and lack of important details in a summary generated by an AI tool that leads a recruiter to make a bad hiring decision about a candidate.

Paramita, Okwir, and Nuur (2024) apply algorithmic management and organisational ambidexterity theories to study recruitment applications of AI. Paramita, Okwir, and Nuur discuss issues and advantages of AI applications to transactional and relational recruitment

tasks and caution against implementing AI technologies to support recruitment processes for purely operational reasons. Key points from this source relate to the question because when assessing the use of generative AI technologies and tools in recruitment, the experiences of recruiters and other stakeholders should be taken into account.

2.4 Bias and inclusion

Using AI does not guarantee fair hiring practices. AI tools can continue discriminatory practices when used with or in conjunction with other information that shows evidence of discrimination.

Kelan (2024) examines how algorithmic inclusion is incorporated into AI hiring tools and lists data, design and decisions as considerations for including algorithmic inclusion in hiring tools. Kelan notes gaps in the literature on human and machine interactions in hiring and algorithm audits to evaluate inclusion. Seppälä and Małecka (2024) challenge claims about the benefits of AI hiring tools in reducing hiring discrimination by challenging assumptions about rationality, bias, fairness and objectivity. Other work on algorithmic fairness also challenges these assumptions. Buolamwini and Gebru (2018) found that error rates are higher for darker-skinned women than for lighter-skinned men when using commercial gender-recognition tools. Dastin (2018) writes that Amazon scrapped an experimental hiring tool because it showed bias against women.

Evidence is beginning to accumulate on generative and language tools, and some of it is troubling. Armstrong et al. (2024) studied the use of GPT-3.5 in hiring tasks, including writing résumés, and found evidence of racial and gender bias, including résumés with female names indicating fewer years of experience than résumés with male names. Wilson and Caliskan (2024) used a laboratory experiment to study use of language tools to screen résumés and found that résumés with white-sounding names were selected much more frequently than similar résumés with Black-sounding names. Smaller gender differences also were found, and Black male names were the least likely to be selected. These studies are limited to résumé screening and specific tools tested in laboratory experiments and should not be extrapolated to other generative tools. But they indicate that users of generative tools should be aware of possible biases.

Concerns about exclusion can arise during recruitment. An employer's recruitment practices, which may limit recruitment to particular colleges or job-related experiences, may exclude other applicants from consideration. Exclusion does not imply that other applicants lack qualifications.

GenAI tools may help increase the diversity of candidate pools with specific types of experience. However, GenAI tools can also reinforce stereotypes about who the best candidates are. Other factors affecting the use of GenAI tools to promote diversity include the training data and other inputs used to create the GenAI tools and the attitudes of hiring managers toward GenAI recommendations they may find difficult to accept.

2.5 The research gap

By the end of 2024, published research suggested that AI tools were being used in hiring and that GenAI tools had the potential to be used in hiring and other initiatives. The evidence on these uses was mixed.

Research on traditional hiring technologies does not generalise to generative technologies. Other research on industry perceptions and use of hiring technologies does not support recruiters' expectations about other technologies' advantages (LinkedIn Talent Solutions 2023, 2024). Audit studies of hiring practices that include the use of generative technology only examine screening practices, not other hiring practices.

There is a difference between finding more and better candidates. The total number of profiles identified is not the same as the number of qualified candidates for a job opening or candidates who will respond positively and move through the hiring process.

This article addresses gaps in the supply management literature through longitudinal research on supply practices and by separating documented and reported supply practices from untested practices.

Research Methodology

3.1 Research design

The report includes a literature review of other work conducted from January 2020 through December 2024. Other sources of information include peer-reviewed journal articles and other publications and government and industry documents issued or released by December 2024.
The longitudinal focus of the research is on technological and other changes over time. The article does not study the same recruiters over multiple years or seek to estimate causal effects of GenAI with new data. Among other things, the article studies changes over time in recruiters' views and needs regarding sourcing technologies as GenAI technologies became more widely available.

3.2 Periodization

For analysis purposes, the time period is broken into three subperiods. The first subperiod, 2020-2022, includes online recruitment tools and other recruitment tools that use AI. The second subperiod, 2023, includes the launch of other publicly available generative tools and limited adoption by recruiters (LinkedIn Talent Solutions 2023). The third subperiod, 2024, includes growing interest in generative tools to help solve other recruitment challenges and improve recruiter outcomes and efficiency and ethics (LinkedIn Talent Solutions 2024; Paramita, Okwir, and Nuur 2024).

The stages are for comparison purposes. Other firms might not have adopted the technology in the order of the stages.

3.3 Evidence and analysis

Sources were chosen for their relevance to topics such as AI uses in hiring and recruiting, generative AI uses in recruiting, company uses of AI, concerns about AI fairness, and other topics. Other factors in source selection included the date of publication and information about the research and reporting methods used.

The review covers five topics: technology challenges, implementation and process integration challenges, supply chain challenges, people and organisational challenges, and governance challenges.

Survey results from industry surveys show information about respondents' experiences and beliefs in the industry surveyed. They do not show that GenAI had beneficial effects across the industry.

3.4 Limitations

The primary disadvantage of using GenAI is a lack of evidence about its long-term effects on sourcing specifically. There is more evidence about AI use in recruiting in general. Trade resources discuss anticipated benefits of AI use in recruiting, including task-specific benefits (LinkedIn Talent Solutions 2023, 2024).

Several other caveats apply. The industry reports are based on different studies and sample sizes and cover different geographic areas and levels of AI adoption. Industry reports draw extensively on LinkedIn data, and LinkedIn has a financial incentive to hire tech workers. Industry reports can be useful tools but are not impartial. The 2023 figures cited below come from another survey characteriz

The findings in this article are meant to represent general patterns and similarities among the studies included and are not intended to represent the full effects of GenAI.

The Evolution of GenAI in Talent Sourcing, 2020–2024

4.1 2020–2022: Building on digital recruitment infrastructure

Generative AI is a new technology, but there are other advanced technologies that recruiters can use. Other digital technologies, including online networking platforms and searchable databases, have changed the way companies interact with potential workers.

These technologies filled a gap in the market. Recruiters lacked time and other resources to find job candidates. Technology and algorithms helped recruiters find job candidates more quickly and efficiently than other approaches.

However, the systems faced challenges due to the search criteria. Job titles searched for did not always match candidates with similar skills who held different job titles. Other search criteria may have excluded candidates with necessary skills gained through apprenticeship and other work- and related-experience programs.

Using algorithms was becoming widely questioned. Recent studies, such as Seppälä and Małecka (2024), advise caution about the advantages of using AI in decision making due to concerns about the fairness of decisions made using AI. Advice to job applicants: New technologies may improve the efficiency of the application process, but other technologies may not have improved fairness in the process.

The importance of 2020-2022 lies in practices from that period. Recruitment practices established during 2020-2022 include data collection and search practices. Advances in generative AI model development have opened up new possibilities for using recruitment data.

4.2 2023: From experimentation to practical use

In 2023, recruiters explored new uses of AI. Interactive AI applications helped recruiters experiment with sourcing ideas without purchasing or creating other recruitment technologies. A recruiter may provide a job description to a model candidate and ask the model candidate to provide a list of qualifications and alternative job titles, search words, and sample cover letters for other candidates applying for the job. Materials provided by the model candidate can help the recruiter prepare marketing materials for future recruitment efforts.

That flexibility made GenAI tools valuable for hiring professionals. Data on opinions about GenAI tools are available in the Future of Recruiting 2023 report published by LinkedIn Talent Solutions (LinkedIn Talent Solutions 2023). A February 2023 survey of more than 225 U.S. recruiters and hiring managers found that 74 percent of respondents were interested in using GenAI tools to free up time for other tasks. Sixty-seven percent of respondents reported interest in using GenAI tools for candidate sourcing, and 59 percent were interested in using GenAI tools for candidate outreach. The small survey sample size limits the conclusions that can be drawn from these data, LinkedIn notes.

These statistics are targets, not outcomes. This does not mean that the same percentage of recruiters achieved these outcomes.

They offer information about hiring needs. Recruiters spend time interacting with and researching job candidates and other job-related information. Some, but not all, activities performed by recruiters could be aided by GenAI tools.

Three uses stood out:

- Alternative terms. GenAI tools may help recruiters by suggesting other language and work experience to add to or consider for job postings.
- Outreach materials. Offering source documents to use as templates may help reduce the time spent responding to initial inquiries about outreach opportunities.
- Collaboration. It can improve communication with hiring managers by giving tips on skills and other interview questions related to the job.

Advantages and disadvantages were identified. The chatbot's search suggestions included irrelevant words, and other email suggestions included faulty assumptions. Other emails that seemed reasonable were not accurate.

2023 was probably a test year. GenAI tools offered some advantages in recruitment, but they needed to be combined with other methods to be effective.

4.3 2024: Moving toward integrated workflows

By 2024, other uses of generative tools in hiring processes were being discussed.
LinkedIn's Future of Recruiting 2024 report identified applications of generative artificial intelligence in recruiting functions, including external and internal candidate outreach and placement in job openings (LinkedIn Talent Solutions 2024). Fifty-seven percent of users of generative AI tools for recruiting said they gained efficiencies in writing job descriptions. Twenty-seven percent of talent professionals surveyed, a small percentage, said they were using or testing generative AI tools. These results suggest low adoption of generative AI. The survey was administered to 1,453 recruiting professionals and 498 hiring managers in 23 countries in October and November 2023.

The 57 percent statistic measures one advantage for adopters of the technology. It does not indicate that the entire recruitment process was 57 percent faster for adopters of the technology or that adopters hired 57 percent more qualified candidates.

The distinction matters for hiring because it involves multiple steps. Detailed job descriptions can make communication with job applicants more efficient without affecting the quality of applicants. More communication with job applicants can make communication more efficient without increasing the number of valuable messages received from job applicants.

The primary advantage of using GenAI tools is better integration of tasks. Recruiting tools powered by GenAI can provide information about job openings and qualifications to help recruiters plan their recruiting efforts and perform other tasks to streamline candidate communication. Recruiting tools powered by GenAI, with proper oversight and training, can help recruiters integrate their recruiting processes.

The recruiter's job is not eliminated. Other tasks include identifying required skills, assessing the applicability of skills and experience to the job, confirming information given by applicants, and interacting with applicants in other ways. Other research on AI use in recruitment suggests that there are other advantages to AI besides increased efficiency (Paramita, Okwir, and Nuur 2024).

By the end of 2024, some organizations had implemented GenAI tools in recruiting. GenAI tool use in recruiting was more prevalent and successful in some organizations than others.

4.4 Comparing the three phases

The main differences between the phases are summarized in Table 1.

Table 1. Main features of early-stage sourcing, 2020–2024

Dimension	2020–2022	2023	2024
Main approach	Digital search, matching and automation	Experimentation with conversational GenAI	Growing attention to recurring workflows
Search preparation	Mostly existing filters and criteria	Generated search terms and alternative job titles	Greater emphasis on connected sourcing activities
Candidate communication	Templates and conventional automation	AI-assisted message drafting	More attention to personalized outreach
Recruiter role	Operating digital tools and reviewing results	Exploring and checking generated outputs	Combining AI assistance with strategic judgment
Main opportunity	Processing information more efficiently	Reducing repetitive drafting and search preparation	Coordinating multiple sourcing tasks
Main concern	Narrow or poorly defined search criteria	Inaccurate and unverified output	Reliable integration, governance and evaluation

Source: Author's synthesis of Herold and Roedenbeck (2024), LinkedIn Talent Solutions (2023, 2024) and Paramita, Okwir and Nuur (2024).

The comparison showed that one of the main advantages of ending the recruiters' use of other recruiting tools was providing more tools for recruiters to use in helping job seekers and gathering other employment-related information.

It would be incorrect to say that these advances occurred rapidly. Some organizations were already using advanced recruitment technologies prior to 2023, and some organizations started experimenting with generative technologies in 2024. These stages of advancement reflect progress made across the recruitment industry, not progress made by individual organizations.

How GenAI Is Changing Early-Stage Sourcing

5.1 Understanding the job before searching for candidates

The success of a sourcing campaign is closely related to your understanding of the job. Standard job postings contain information about the position, such as essential and preferred skills, that is irrelevant to finding candidates.

GenAI tools can help recruiters with job listing tasks. GenAI tools can suggest skills to include in a job listing and other job titles. GenAI tools can also help recruiters make job listings clearer.

Consider a cloud infrastructure engineer job opening. A targeted job search would include candidates with past roles that included "cloud engineer" in their job titles. A broader job search might include candidates from platform engineering and site reliability engineering roles and other infrastructure and DevOps backgrounds. GenAI tools can help recruiters quickly identify other related job titles. Recruiters will need to assess other job titles for relevance, the presence of similar terms in job titles does not mean the candidates have similar skills.

The primary advantage of using former employees is in the early recruiting process, to help recruiters learn more about the job. Interviews with former employees can help recruiters develop other recruiting strategies. Interaction with a former employee cannot replace interaction between the recruiter and hiring manager about the job.

5.2 Looking beyond conventional career paths

One of the top use cases for GenAI is skills-based hiring initiatives.
People acquire work skills in many ways, including paid employment and work experience in other occupations and activities. Heavy use of job titles and other credential information in hiring practices can reduce employment opportunities for some job seekers.

Generative models can suggest other skills and job titles. A recruiter looking for a data analyst candidate might use generative models to find potential candidates for positions such as business intelligence analyst, research analyst, operations analyst, and reporting automation specialist.

LinkedIn's 2024 report discussed advantages of skills-based hiring and other strategies to increase your recruiting pools (LinkedIn Talent Solutions 2024). Limitations of increasing your recruiting pools include an inability to identify qualified candidates and longer candidate assessment times. Goals for increasing your recruiting pools should include identifying candidates you would otherwise be able to recruit, in addition to increasing your pool sizes.

5.3 Making candidate research more manageable

Recruiters may need to find information about potential employees on résumés, bios, portfolios, and other acceptable sources. GenAI tools can provide summaries of information about potential employees to help recruiters.

A recruiter, for example, might use an approved tool to give a general assessment of candidate experience and skills as claimed. As part of this assessment, the recruiter might provide references and other information about the candidate and suggest additional information the recruiter needs.

The primary disadvantage of a summary is that it might include incorrect or misleading information about a person's professional history and skills. Adding a summary without checking the information may cost other people the opportunity to learn about the candidate's professional background.

Candidate summaries created by the model should include links to source documents to help recruiters evaluate the difference between information provided by candidates and information inferred by the model. Key qualifications should be verified before they influence a decision. Privacy is a consideration. Companies using generative technologies need to take steps to make sure the information given to the technology is appropriate for its use and is being handled according to applicable requirements.

Appropriately used, GenAI tools can assist users with information tasks. Precautions should be taken to avoid making uncertain information appear more certain.

5.4 Making outreach more relevant

Initial contact can assess a potential candidate's interest in a job. Advice for recruiters includes offering reasons the job might be suitable for the candidate without making assumptions about the candidate's skills and other interests.

GenAI tools can help rewrite job-related communications for different professional backgrounds. GenAI tools can also help rewrite job communications to change the length and style of existing messages.

A message with references to the candidate, such as their name or previous employer, isn't considered a personalised message. Other methods are better ways to personalise messages. Sending automated messages with incorrect or additional information about a candidate that the recruiter obtained from the candidate may harm the relationship between the candidate and recruiter. Best practice is to review automated messages before sending them to candidates. Organizations can gather more information by tracking other metrics besides the number of messages sent to candidates. Other metrics to consider tracking include response and favourable response rates, unsubscribe rates, candidate feedback, and other signals from the later stages of the hiring process. Tactics to eliminate redundant messaging should be implemented without reducing personal outreach to candidates.

5.5 Improving the organization of sourcing work

GenAI tools can assist with recruiting planning and activities. Ideas for recruiter use cases include helping to assess alternatives and develop ideas to address recruiting challenges. Possible benefits to recruiters include the ability to address challenges with difficult-to-fill roles. Benefits are likely to be greatest for roles with specialised requirements and other challenges in attracting qualified candidates through conventional recruiting methods.

Generated responses should be reviewed by recruiters familiar with the job market and client preferences. Although a model can produce large numbers of responses to a job search request, a model cannot determine which responses would be valuable to a job seeker.

The total value of the product must be considered. Benefits of reduced time writing applications may be offset by increased time spent reviewing the output. Additional applicants may increase the time spent reviewing candidates but not the number of qualified applicants. Productivity measures should take into account both effort and results.

Challenges and Responsible Use

6.1 Bias and unequal access to opportunities

Using generative AI will not prevent discrimination. Recruitment strategies that include education and work history and other connections may favour certain applicants. Audit findings in section 2.4 suggest that generative AI technologies also carry stereotyped associations (Armstrong et al. 2024; Wilson and Caliskan 2024).

These issues can affect hiring because some people are screened out before applying for a job. People who enter an alternative career may be screened out of jobs for which they apply if the skills they have developed in the alternative career are not valued.

Organizations can review hiring policies and procedures to assess whether job requirements for various roles make sense and whether they are excluding potential candidates. Other steps that organizations may be able to take include gathering and using data about diversity and other issues to help eliminate barriers to employment.

Human efforts are needed, but human review processes should go beyond just accepting model results. Staff hired to recruit participants should be trained and allowed to reject model results.

6.2 Inaccurate information and overreliance

Generative models produce false-sounding but plausible-sounding statements about the provided information. Examples of false or implausible-sounding but plausible-sounding statements a generative model might produce in hiring scenarios about a job applicant include false or unreasonable statements about previous experience and skills and their value. The model may also infer something that sounds plausible but is actually not plausible, even if it is not false.

Organizations should try to confirm the information given by applicants, including offering links to other information and clearly distinguishing information offered by AI tools from other information. Communications with applicants should not be automated.

The amount of review needed depends on the risk involved. Developing new search terms carries low risk. Sharing factual information about a particular person who might be considered for the job carries high risk.

6.3 Privacy and confidentiality

Recruitment information, including candidate information, is confidential business information that must be managed carefully. Sharing information about candidates, including résumés and contact details, with third-party AI providers poses data security and privacy risks, including access to shared information.

Organizations should develop policies regarding sourcing technologies and candidate information that may and may not be shared and protections for candidate information. Sourcing staff should avoid sharing information about candidates with other parties. Sourcing

staff should understand relationships with vendors and other third parties and how they handle data. Policies and protections should be integrated into the sourcing process. Organizations should not depend on sourcing staff to determine which information to share with other parties.

6.4 Transparency and accountability

A recruiter who uses a recommendation generated before hiring will not have information about the assumptions and other data used to generate the recommendation. These information deficiencies may limit a recruiter's ability to justify the job search strategy.

A recommendation is to maintain records of important job-related information and recruiting activities and decisions about staffing issues and other personnel matters. Other issues to consider include designating people to handle problems or questions raised by applicants.

The National Institute of Standards and Technology's AI Risk Management Framework describes methods for evaluating risks related to AI tools (Tabassi 2023). The 2024 NIST Generative AI Profile describes risks associated with generative AI tools (NIST 2024). General considerations: The employing organization bears ultimate responsibility for work force issues, including documenting and defending hiring and other personnel decisions involving the use of AI tools.

6.5 Regulatory developments by the end of 2024

The European Union's AI Act entered into force on August 1, 2024. The AI Act includes an AI risk management system and classifies certain types of AI used for employment purposes as high risk. European Commission 2024. Appendix III, paragraph 4(a), of the AI Act, which concerns employment-related AI, includes AI applications for targeting job advertisements, analysing and filtering applications, and evaluating job candidates. European Union 2024

This is significant because hiring tools can impact employment opportunities for job seekers. Users of hiring tools should consider laws related to hiring tools, rather than representations that such tools are writing or job search aids and exempt from regulation. Various uses of generative tools may be regulated differently, depending on the tool and its intended use. Additional regulations affecting the tools covered in this report will be implemented over time following the cutoff date used in this study.

By the end of 2024, the direction was nonetheless clear. Businesses needed to gather information about appropriate governance policies around AI use, including privacy and fairness concerns and other issues involving human supervision.

A Framework for Evaluating Long-Term Impact

The discussion above provides useful information for deciding whether GenAI is improving your organization's sourcing efforts.

The number of searches and applications referred is one outcome of using the search service. Other outcomes to consider include time saved and quality of candidates referred through the

search service. Table 2 provides ideas for outcomes to study in the future. Table 2 is not a summary of study results.

Table 2. Proposed framework for evaluating GenAI in early-stage sourcing

Dimension	Suggested measures	Key question
Operational efficiency	Time spent preparing searches, researching candidates and drafting outreach	Is sourcing becoming less time-consuming?
Candidate-pool quality	Share of sourced profiles meeting essential requirements; qualified-candidate yield	Are recruiters finding more relevant candidates?
Inclusion and reach	Candidate-pool composition and coverage of alternative career paths	Is the search reaching qualified people who might otherwise be overlooked?
Candidate experience	Relevant response rate, opt-outs, complaints and feedback	Does AI-assisted communication remain accurate and meaningful?
Reliability and governance	Verified error rate, review records, privacy incidents and audit findings	Is the process dependable and appropriately controlled?

Source: Author's proposed framework, informed by the literature reviewed in this paper.

The statistics should be interpreted together. A more efficient recruitment process that results in hiring lower-quality candidates may not be desirable. A higher total number of applicants for jobs does not necessarily indicate greater inclusiveness on the part of your organization without efforts to assess the applicant pool and other factors related to the hiring process to promote the fair evaluation of all qualified applicants.

A longitudinal study approach would include collecting information before GenAI tools were used and conducting multiple follow-up observations. Other variables to account for in a longitudinal study include differences between groups over time in variables such as job vacancies, hiring competition, broader economic conditions, and recruiter characteristics and hiring sources. Paired studies of traditional and GenAI hiring methods with similar job vacancies and recruiting teams may also be helpful. Paired studies are likely to yield more conclusive results than anecdotes.

Future research could test the following hypotheses:

- H1: GenAI tools for sourcing can help decrease the amount of time needed to create search and outreach materials for candidates.
- H2: Gains in qualified-candidate yield are affected by job and other human factors.

• H3: Tools with GenAI functions available online can expand the range of backgrounds represented among job applicants considered for hire when skills-based criteria are clearly defined.
• H4: The effect of GenAI on candidate engagement will vary based on the accuracy and relevance of outreach materials generated by GenAI tools.
• H5: Written review processes correlate with more reliable sourcing information from applicants and fewer unverified candidate claims.
These are hypotheses to be tested. They are not findings from this study.

Discussion

Trends from 2020 to 2024 indicate that GenAI tools are impacting preselection hiring practices. Benefits of GenAI tools to recruiters include improvements in text and other content-related processes that were challenging to implement using other technologies.

That shouldn't diminish the value of conventional applicant search tools. Conventional tools such as databases still have important uses in the hiring process and can be used alongside generative AI and other technologies to enhance applicant searches.

One benefit of automated responses to recruiters is that recruiters spend less time reading duplicate responses and more time getting information about jobs and interviewing candidates. Other considerations can influence the time recruiters save with automated responses. For instance, if automated responses need substantial revision, the time savings to recruiters may be less than expected.

Another possible advantage of GenAI for recruiters is the ability to find qualified applicants without traditional work experience. Alternative skill and job names may suggest other potential applicants who might otherwise be missed, but a recruiter's judgment will be needed to evaluate apparent versus actual skill and experience matches.

Fairness is an issue. Even a well-run search process does not always turn up qualified candidates. Factors related to early-stage searches affect the pool of applicants. Topics for employers to consider include strategies for finding qualified applicants and strategies for moving qualified applicants through the search process.

The evidence should be viewed with caution. Industry evidence about recruiter expectations and reported experience can be found in LinkedIn Talent Solutions (2023, 2024). Evidence from other sources about employer practices and ethics and some studies of language model audits document bias in language models. Neither industry nor other sources of evidence establishes that GenAI consistently improves long-term hiring results.

Capability and implementation are different concepts. Technologies can be capable of performing certain tasks but not actually used for those tasks. Organizations can implement technologies but fail to use them successfully. Processes that are successful in one setting may not be successful when transferred to another setting.

Evidence from December 2024 indicates mixed effects of GenAI on sourcing. GenAI tools have some potential benefits for sourcing activities. There is limited evidence on longer-term effects of GenAI on sourcing activities.

Implications for Talent Acquisition Leaders

Organizations adopting GenAI can start by applying GenAI to recruiting tasks with lower risk, such as job description creation and other recruiting tasks, like brain-storming new search keywords and drafting sample communication messages. Recruiting tasks can help recruiters evaluate GenAI outputs without affecting job candidates.

Clearly stated job requirements are just as important. Recruiters need to collaborate with hiring managers to identify other skills and experiences that could meet job requirements. Without this process, the generative tool's suggestions will include many seemingly relevant but ultimately poor matches.

Training programs need to cover more than prompt development. Recruiters need training to review candidate applications, identify false or presumptive statements, protect confidential information, and question recommendations that may not fit the role's requirements. Testing technologies for bias before implementing them on a broad scale is recommended.

Organizations should keep adequate documentation to ensure reasonable confidence that important procurement decisions were made properly. Policies and procedures regarding procurement tools and other technologies, including delegation and escalation procedures, should be in place before giving broad access to a new tool or technology.

Finally, other issues besides speed should be considered in technology assessments. Questions recruiters and other managers can ask about GenAI technology include its potential to identify qualified candidates and applicants, enhance recruitment communications, provide equal access, and preserve data accuracy in recruitment processes. Technology assessments should not inhibit innovation but should help organizations and other employers assess the benefits of GenAI technology for job candidates and others.

Conclusion

From 2020 to December 2024, technology and automation were adopted more widely in hiring practices. Other uses of generative AI tools included ways to learn about job requirements and applicants and communicate with job applicants.

Good job opportunities include positions that use your language skills, such as rewording job and other advertisements, suggesting keywords and other information, and assisting with candidate placement and writing outreach messages. Language skills can help speed up the job search process and provide opportunities for candidates without traditional job titles.

Producing information rapidly is unlikely to help with hiring. A search engine's output will be based on the quality of its inputs. Evaluations of candidates' qualifications will be needed. Tailored messages to candidates will need to be reviewed. The dangers of algorithmic bias and other harms from overuse of algorithms are real and documented in audit studies of language models.

This article suggests that it makes sense to view GenAI applications in recruitment primarily as tools to assist recruiters in doing their jobs, not replace them, and that the pros and cons of implementing GenAI applications should be assessed in terms of recruiter and other outcomes, including candidate quality and diversity, satisfaction, and regulatory compliance.

The key limitation of this paper is that there is little existing longitudinal research on the effects of GenAI on early-stage recruitment. The paper provides a review of existing research and recommendations for future research on GenAI and early-stage recruitment. It does not attempt to quantify the effects of GenAI. Recommendations for future research on GenAI and early-stage recruitment include studies of cohorts of recruiters across multiple recruitment cycles, comparisons with conventional recruitment algorithms, studies of bias in sourcing as well as screening, and studies of the long-term benefits of reduced recruitment time to recruitment quality and outcomes.

Ultimately, the benefits of GenAI tools to the recruiting process will depend on factors such as how well they assist with finding and hiring qualified candidates in an unbiased way. Other technological tools can be useful in recruiting. Users of technology tools bear the main responsibility for unbiased recruiting.

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