



Candidates Engagement In The Recruitment Process Using Artificial Intelligence

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Abstract:

In this study, we delve into the intriguing world of candidate engagement during the recruitment journey, particularly focusing on how artificial intelligence (AI) technologies are seamlessly integrated into this process. We embark on a thorough investigation of a myriad of AI tools employed in recruitment, spanning from friendly chatbots to sophisticated algorithmic matching systems. Our primary objective is to unravel the impact of these AI innovations on candidate engagement. Moreover, we adopt a survey-based methodology to glean insights from the perspectives of both candidates and seasoned recruitment professionals. Through this approach, we aim to decipher underlying patterns, discern preferences, and evaluate the efficacy of AI-driven engagement strategies. By harmonizing insights from theoretical exploration and real-world data, our study aspires to furnish a holistic understanding of AI's influence on candidate engagement in recruitment workflows. Ultimately, we endeavour to offer valuable insights and pragmatic recommendations to enhance recruitment practices in our contemporary landscape.

Keywords: Candidate engagement, Recruitment process, Artificial intelligence (AI), Chatbots, Algorithmic matching systems, Survey-based methodology, Efficacy.

INTRODUCTION

In the dynamic world of employment, finding the right talent is crucial for organizations. The rise of artificial intelligence (AI) has revolutionized how companies approach recruitment. AI tools are now essential in this process, offering improved efficiency, precision, and interaction with potential candidates. As businesses adapt to the challenges of talent acquisition in the digital era, grasping how AI influences candidate engagement is essential.

This research sets out to thoroughly investigate how candidate engagement intersects with the use of AI in recruitment. By diving deep into this intriguing subject, our goal is to illuminate the complex ways in which AI seamlessly fits into the recruitment process. We will examine a broad range of AI tools utilized in recruitment, from conversational chatbots to advanced algorithmic matching systems. Through this exploration, we aim to uncover the subtle ways in which these AI advancements impact and mold candidate engagement from start to finish in the recruitment journey.

Our core mission is to grasp the concrete effects of AI on candidate engagement. To accomplish this, we employ a robust research methodology that blends theoretical exploration with real-world analysis. A pivotal aspect of our approach involves conducting surveys, enabling us to glean insights from candidates and experienced recruitment experts alike. By tapping into the perspectives of these critical stakeholders, our aim is to uncover hidden patterns, understand preferences, and assess the effectiveness of AI-driven engagement methods.

Moreover, our research strives to offer a comprehensive understanding of the wider implications of integrating AI into recruitment processes. By amalgamating insights from both theoretical discussions and practical data, our aim is to provide practical recommendations for enhancing recruitment methods in today's environment. Through this effort, we seek to contribute to the ongoing conversation about the intersection of AI, candidate engagement, and recruitment, ultimately empowering organizations to effectively utilize AI technologies in their quest for top talent.

Ultimately, this study will shed light on how artificial intelligence will shape candidate involvement in the future. There will be additional chances to improve the hiring process, take use of data-driven insights, and develop more individualized engagement tactics as technology develops. Recruiters will be able to keep ahead of the curve and draw in the top prospects for their companies if they have a thorough understanding of these upcoming developments and their possible effects.

AI has the power to completely change how candidates participate in the hiring process. Recruiters can increase productivity, improve the applicant experience, and make more informed judgments by utilizing AI technology. But it's imperative to address moral questions and make sure AI is applied sensibly and openly.

This study will offer insightful information about the level of candidate engagement with AI in recruiting today and in the future. Throughout the hiring process, artificial intelligence (AI) is essential to increasing candidate engagement. AI-powered chatbots provide candidates with personalized and timely contact by answering their questions, updating their applications, and assisting them along the way—all while making them feel important. Another area where AI shines is resume screening automation, which effectively scans resumes to find the best applicants. This expedites the procedure so that recruiters may concentrate on speaking with qualified candidates.

AI-powered pre-employment tests guarantee a comprehensive analysis of applicants' talents, both cognitive and otherwise, and offer insightful information to recruiters and candidates alike. AI also makes video interviews easier, giving candidates more freedom and preserving a uniform interview process.

AI improves matching by analyzing applicant profiles and job requirements, resulting in improved skill alignment and cultural fit. With the ability to provide virtual office tours that attract applicants and strengthen their bond with the organization, virtual reality (VR) and augmented reality (AR) technologies offer an immersive element. AI uses predictive analytics to forecast applicants' performance in certain jobs based on past data, giving recruiters the ability to strategically focus engagement efforts. A pleasant and interesting candidate experience requires striking a balance between AI-driven interactions and human touch.

In essence, this study acts as a guiding light, showcasing the transformative potential of AI in reshaping recruitment practices. By unraveling the complex dynamics of candidate engagement within AI-driven recruitment processes, we aim to lay the groundwork for innovative strategies that harness technology's power to connect organizations with their most valuable resource: talent.

Research Objective:

1. Investigate the impact of artificial intelligence technologies on candidate engagement throughout the recruitment process: This objective involves examining how AI technologies, such as chatbots, algorithmic matching systems, and automation tools, affect candidate engagement at various stages of the recruitment journey. By analysing the utilization of AI in tasks like initial contact, application screening, and interview scheduling, the research aims to understand how these technologies shape candidates' interactions and experiences.
2. Examine the effectiveness of various AI-based tools and techniques in engaging candidates during different stages of the recruitment process: This objective focuses on evaluating the efficacy of specific AI tools and techniques in enhancing candidate engagement at different stages of recruitment. By assessing the performance of AI-driven solutions like chatbots for communication, resume parsing algorithms for screening, and predictive analytics for candidate assessment, the research aims to identify which approaches are most effective in fostering candidate engagement.
3. Explore candidates' perceptions, attitudes, and experiences regarding the use of AI in the recruitment process and its influence on their engagement levels: This objective involves gathering insights directly from candidates to understand their views on AI technologies in recruitment. Through surveys, interviews, or focus groups, the research aims to uncover candidates' perceptions of AI tools, their attitudes towards AI-driven recruitment processes, and how these factors influence their engagement levels and overall experience.
4. Investigate the influence of candidate engagement on recruitment outcomes, such as candidate attraction, applicant conversion, and overall candidate experience: This objective seeks to examine the relationship between candidate engagement and key recruitment outcomes. By analysing metrics such as application rates, offer acceptance rates, and

candidate satisfaction scores, the research aims to determine how candidate engagement impacts outcomes such as attracting top talent, converting applicants into hires, and delivering a positive candidate experience.

5. Explore the potential challenges and barriers that organizations may encounter when implementing AI-driven candidate engagement strategies and develop strategies to overcome them: This objective focuses on identifying obstacles organizations face when adopting AI technologies for candidate engagement in recruitment. By conducting organizational case studies, surveys, or interviews with HR professionals, the research aims to uncover challenges such as technology integration, data privacy concerns, and resistance to change. Additionally, the research seeks to propose strategies and best practices to address these challenges and facilitate successful implementation of AI-driven candidate engagement strategies.

HYPOTHESIS:

Hypothesis 1:

We predict that incorporating artificial intelligence (AI) into the recruitment process will elevate candidate engagement beyond what traditional methods can achieve. Through the utilization of AI tools like chatbots for initial contact, algorithms for resume screening, and predictive analytics for candidate evaluation, recruiters can foster more personalized and effective interactions with candidates. This heightened level of engagement is expected to drive increased candidate satisfaction and, consequently, enhance the overall effectiveness of recruitment efforts. Additionally, AI's capacity to automate routine tasks and deliver timely updates is poised to streamline the recruitment process, alleviating administrative burdens and affording recruiters more time to cultivate meaningful relationships with candidates.

Hypothesis 2: The integration of personalized AI-powered communication tools into the candidate engagement process will fundamentally transform the experience for potential hires. By tailoring interactions to individual needs, preferences, and questions, AI can foster a sense of connection and demonstrate that the organization values each candidate's unique journey. This level of personalization will lead to a more positive and empowering candidate experience, resulting in higher engagement throughout the recruitment process and a significantly increased likelihood of accepting job offers.

Hypothesis 3: The integration of AI into candidate engagement has the potential to revolutionize the recruitment process. By automating routine tasks like resume screening, interview scheduling, and candidate communication, AI can dramatically reduce time-to-hire and free recruiters to focus on building relationships with top talent. Additionally, AI-powered tools can facilitate personalized interactions throughout the candidate journey, leading to a significantly enhanced candidate experience. This translates into greater overall satisfaction with the process and a boost to the employer's brand as a desirable place to work.

Hypothesis 4: By integrating AI-based behavioural assessments and predictive analytics into the candidate engagement process, recruiters will significantly enhance their ability to match candidates to both specific job requirements and the overall company culture. These tools analyse candidate data far beyond traditional resumes, providing nuanced insights into personality traits, communication styles, and potential alignment with company values. This empowers recruiters to identify candidates who will flourish within the organization, ultimately leading to improved candidate engagement, higher quality hires with stronger retention rates, and a reduction in costly turnover.

RESEARCH QUESTIONS:

1. How does the implementation of AI in the recruitment process impact candidates' engagement levels?
4. What are the potential benefits and drawbacks of AI-based candidate engagement methods in the recruitment process?
5. How does candidates' perception of AI influence their engagement and overall experience throughout the recruitment process?
6. What role does personalized and interactive communication through AI technology play in candidates' engagement during the recruitment process?
8. To what extent do candidates feel comfortable interacting with AI-powered chatbots or virtual assistants during the recruitment process?
10. What are the best practices and recommendations for integrating AI tools to enhance candidates' engagement in the recruitment process?

Research on candidate engagement in recruitment processes utilizing artificial intelligence (AI) is pivotal in today's dynamic job market. The integration of AI presents opportunities to enhance various aspects of the recruitment process, ultimately leading to improved outcomes for both candidates and organizations.

Firstly, AI has the potential to elevate the candidate experience by providing personalized interactions and streamlining administrative tasks. Through AI-driven solutions such as chatbots and automated scheduling systems, candidates can receive timely assistance and updates, enhancing their overall engagement and satisfaction with the recruitment process.

Moreover, AI can significantly enhance efficiency in recruitment processes by automating tasks such as resume screening and candidate shortlisting. By leveraging AI algorithms, recruiters can analyze large volumes of data to identify suitable candidates efficiently, reducing time-to-hire and overall recruitment costs.

Additionally, AI-driven recruitment tools have the capability to minimize biases and promote fairness in candidate selection. By focusing solely on candidate qualifications and abilities, AI algorithms can mitigate unconscious biases that may influence traditional recruitment processes, ensuring a more inclusive and equitable hiring process.

Furthermore, AI enables organizations to gain valuable insights into candidate preferences, motivations, and behaviors through data analysis. By leveraging these insights, recruiters can tailor their recruitment strategies to effectively engage with candidates and make more informed hiring decisions.

As artificial intelligence (AI) evolves, organizations must grasp its influence on candidate engagement and recruitment to stay competitive. Research exploring emerging AI technologies and their potential to transform candidate engagement is vital. By staying updated on these advancements, organizations can adjust their approaches and maintain a leading edge in the ever-changing recruitment arena.

In summary, research on candidate engagement in recruitment processes using AI holds immense significance as it offers opportunities to enhance efficiency, fairness, and effectiveness in hiring practices. By leveraging AI technologies, organizations can optimize their recruitment processes, attract top talent, and gain a competitive advantage in the job market.

LITERATURE REVIEW:

[1] Nawaz and Gomes (2019) explore the influence of AI chatbots on recruitment, emphasizing their role in service delivery and candidate engagement. Their study underscores the productivity enhancements and the resolution of complex recruitment issues facilitated by AI chatbots, suggesting their potential to shape recruitment strategies and attract top talent. Complementing this perspective, [2] Van Esch and Black (2019) delve into factors influencing new-generation candidates' engagement with digital, AI-enabled recruiting processes. They identify social media use, intrinsic rewards, fair treatment, and perceived trendiness as key determinants of candidate engagement, offering insights for managers seeking to leverage AI in recruitment while emphasizing the importance of candidate perspectives. Building upon these discussions, [3] Achhab and Tamsamani (2022) present an application of machine learning algorithms in an intelligent recruitment system. They highlight the role of AI in mitigating biases and improving decision-making objectivity in recruitment, echoing the potential of AI to transform traditional hiring practices. Furthermore, [4] Karaboga and Vardarlier (2020) investigate the use of AI in recruitment processes within Turkish businesses, revealing a predominant reliance on AI as an auxiliary element rather than a primary tool. Their findings underscore the opportunities and challenges associated with AI adoption in

recruitment, shedding light on the evolving landscape of HRM practices. Lastly, [5] Karaboga and Vardarlier (2020) emphasize the significance of AI in reducing costs, minimizing decision-making errors, and saving time in the recruitment process. Their study highlights the growing trend of AI utilization in recruitment globally, emphasizing its potential to revolutionize traditional hiring practices while addressing organizational challenges.

[6] Mat Saad et al. (2021) conducted a systematic literature review to investigate the impact of artificial intelligence (AI) based platforms on the recruitment process. Their study revealed that these platforms, predominantly deployed on cloud technology via software-as-a-service (SaaS), facilitate various recruitment phases such as sourcing, screening, and selecting candidates. Notably, AI features like source and scan suitable job candidates, facial and voice pattern recognition, and word choice analysis were commonly integrated into these platforms, enhancing efficiency and accuracy. However, the study found variations in the utilization of AI platforms across different phases of recruitment, suggesting potential areas for further optimization and enhancement in AI platform functionality.

[7] Aamer, Hamdan, and Abusaq (2023) delve into the profound influence of AI on the human resource sector, with a specific emphasis on its impact on recruitment and selection methodologies. Their research underscores AI's remarkable capacity to replicate human cognitive processes, thereby revolutionizing how recruitment strategies are devised and executed in the contemporary digital landscape. Through the strategic integration of AI technologies, HR professionals are empowered to enhance talent search efficiency via online platforms and automate diverse recruitment tasks. Consequently, this adoption of AI not only promises notable advantages such as reduced time and cost expenditures, heightened precision in candidate assessment, and an enhanced candidate journey but also signifies a pivotal step towards optimizing HR practices and fostering competitive advantage in talent acquisition endeavours.

[8] Wan Ibrahim and Hassan (2019) delve into the implications of AI for recruitment practices in the era of Industry 4.0, emphasizing AI's role in transforming traditional recruitment methods. Their study highlights the convergence of AI and Industry 4.0, where technologies like the Internet of Things (IoT) facilitate smoother recruitment processes through online portals and job portals. The authors argue that AI technology enhances the efficiency and effectiveness of these processes, making recruitment exercises smoother and more streamlined. By focusing on specific AI capabilities such as Natural Language Processing (NLP) and Machine Vision, the study provides insights into how AI technologies are reshaping HR practices.

[9] Hemalatha et al. (2021) explore the impact of AI on recruitment and selection practices within information technology (IT) companies. Their mixed-methods approach, combining primary data from an online survey with external secondary data, highlights AI's pervasive influence on HR management practices. The study emphasizes the role of AI capabilities such as NLP, Machine Vision, Automation, and Augmentation in streamlining recruitment processes and improving overall outcomes. By examining specific AI capabilities and their implications for recruitment, the study provides valuable insights for organizations seeking to leverage AI to optimize their HR processes.

[10] In their study, Frank et al. (2019) conduct a thorough analysis of how AI and automation could potentially reshape labor markets. They emphasize the nuanced impact of these technologies, noting their ability to both enhance productivity for certain workers and displace tasks performed by others. The researchers delve into the complexities surrounding the measurement of AI and automation effects on future work dynamics, highlighting challenges such as the scarcity of robust data and empirically grounded models. Emphasizing the necessity for enhanced data quality and research methodologies, the study underscores the importance of adopting a comprehensive approach to evaluate and address the far-reaching implications of technological advancements on the future of work.

In the paper by Gupta, Fernandes, and Jain (2018) [11], the authors explore the urgent need for automation in the recruitment processes within the Human Resource Management sector. The study underscores the dilemma faced by companies regarding the adoption of automation and the potential benefits it offers, particularly in streamlining workforce planning and recruitment functions. It emphasizes the role of technology, including Artificial Intelligence (AI), in addressing the challenges encountered by recruitment teams, such as sourcing, screening, and interviewing candidates. Through a case study approach, the paper highlights the necessity of a cultural shift towards technology adoption and discusses the potential impact of AI on the recruitment landscape.

Anitha and Shanthi (2021) [12] explore the integration of chatbots into recruitment procedures, focusing specifically on the IT/ITES sector in South India. Their research evaluates how AI-powered chatbots streamline various aspects of recruitment, including task automation, candidate screening, and overall efficiency. By employing correlational and multiple regression analyses, the authors illustrate the beneficial effects of AI chatbots on the recruitment process, resulting in enhanced outcomes for recruiters and job seekers alike. Additionally, the study offers insights into the widespread adoption of chatbots globally, underscoring their significance in optimizing recruitment practices to meet the demands of a competitive business landscape.

Mukherjee and Krishnan (2022) [13] investigate the impact of AI on aiding employee recruitment and selection processes across various sectors. Employing a quantitative analysis approach, the study assesses the effectiveness of AI adoption in enhancing the talent acquisition systems of leading organizations. The authors highlight the optimism among hiring managers regarding AI's potential to improve recruitment outcomes, despite concerns about its ability to evaluate soft skills and accommodate older age groups. By substantiating the hypothesis through empirical research, the paper contributes to understanding the transformative potential of AI in employee recruitment processes.

Delecraz et al. (2022) [14] address the imperative of responsible AI utilization in Human Resources Management, focusing on a fair-by-design approach to algorithm development for job recruitment purposes. The authors introduce a novel machine learning-based algorithm aimed at automating the recruitment of temporary workers while ensuring fairness and inclusivity. Through an in-depth analysis of biases in their dataset, the authors underscore the importance of evaluating the fairness and effectiveness of AI-driven recruitment models. The paper proposes the concept of "safeguard algorithms" to mitigate biases and promote responsible AI adoption in recruitment processes.

Lastly, Nawaz (2019) [15] investigates the interchange between artificial intelligence (AI) and human intervention in the recruitment process within the Indian software industry. Through a structured questionnaire administered to HR professionals, the study reveals a positive impact of AI on replacing human involvement in recruitment processes. The findings suggest a shift towards AI-driven recruitment strategies within the Indian software industry, emphasizing the need for organizations to align their recruitment strategies and policies with effective AI integration. Through these insights, the paper contributes to understanding the evolving role of AI in shaping recruitment practices in the software industry.

In conclusion, the literature reviewed encompasses a diverse range of studies examining the integration of artificial intelligence (AI) and automation technologies into recruitment processes across various industries. These studies shed light on the transformative impact of AI on human resource management, emphasizing its potential to streamline recruitment tasks, enhance efficiency, and improve outcomes for both recruiters and job applicants. From the exploration of chatbots and AI-based platforms to the examination of responsible AI utilization and the challenges of measuring AI's effects on labour markets, the research highlights the growing importance of technology-driven solutions in shaping the future of recruitment. Furthermore, the findings underscore the need for organizations to embrace AI responsibly, address biases, and align recruitment strategies with emerging technological advancements to stay competitive in the dynamic business environment.

RESEARCH METHODOLOGY

1. Research Design:

The research design for this project encompasses a quantitative approach, aimed at systematically investigating the impact of artificial intelligence (AI) on candidate engagement throughout the recruitment process. Quantitative research involves the collection and analysis of numerical data to test hypotheses and answer research questions. In the context of this study, a structured and systematic process will be followed to gather data from a sample of 200 individuals.

The choice of a quantitative research design offers several advantages for examining the relationship between AI and candidate engagement. It allows for the precise measurement and statistical analysis of variables, enabling researchers to draw objective conclusions based on empirical evidence. Additionally, quantitative research facilitates the replication of findings and the generalization of results to broader populations.

A cross-sectional survey approach will be employed to collect data from participants, providing a snapshot of their perceptions, attitudes, and experiences regarding AI-driven candidate engagement strategies. Cross-sectional surveys gather data at a single point in time, offering insights into the current state of affairs and allowing for comparisons across different groups or variables.

2. Sampling Strategy

People who are currently looking for work or who have recently entered the labour market will make up the sample frame for this study. Convenience sampling, a non-probability sampling method, will be applied to guarantee a representative and varied sample. Convenience sampling is accessible and economical, which makes it appropriate for connecting with participants via a range of media, including social media, professional networks, and online job portals. Participants will be

recruited through various channels, including online job portals, social media platforms, and professional networks. Efforts will be made to ensure diversity in terms of age, gender, education level, and employment status to enhance the generalizability of the findings.

Efforts will be made to enhance the generalizability of the findings by recruiting participants from different demographic backgrounds, including variations in age, gender, education level, and employment status. By capturing a diverse range of perspectives, the study aims to provide a comprehensive understanding of the impact of AI on candidate engagement in the recruitment process.

Overall, the quantitative research design adopted for this project provides a systematic and rigorous framework for investigating the research questions and testing the hypotheses. Through careful data collection and analysis, the study seeks to contribute valuable insights to the existing body of knowledge on AI-driven candidate engagement in recruitment.

3.Data Collection Methods:

The data collection methods for this project will be structured to gather comprehensive insights into the impact of artificial intelligence (AI) on candidate engagement in the recruitment process. Below are the outlined data collection methods:

Structured Questionnaire: A structured questionnaire will serve as the primary instrument for data collection. The questionnaire will be designed based on the research objectives, hypotheses, and research questions outlined in the study. It will comprise a mix of closed-ended and Likert-scale questions to gather quantitative data on various aspects related to candidate engagement and AI in the recruitment process.

Online Administration: The questionnaire will be administered online using survey software such as Qualtrics or SurveyMonkey. Online administration offers convenience, accessibility, and the ability to reach a geographically diverse pool of participants. Participants will receive clear instructions and informed consent before completing the questionnaire.

Recruitment Channels: Participants will be recruited through various channels to ensure a diverse and representative sample. These channels may include online job portals, social media platforms, professional networks, and email invitations. Efforts will be made to reach individuals actively involved in the job market or recent job seekers.

Informed Consent: Before participating in the study, participants will be provided with clear information about the research purpose, procedures, and their rights. They will be required to provide informed consent before completing the questionnaire, acknowledging their voluntary participation and right to withdraw from the study at any time without penalty.

Inclusivity Measures: To ensure a well-rounded representation, the recruitment process will prioritize inclusivity. Various demographic backgrounds will be actively sought, encompassing a diverse range of age groups, genders, educational backgrounds, and employment statuses. This will help us in getting a better result.

4.Research Instrument:

- The questionnaire will comprise a mix of closed-ended and Likert-scale questions to gather quantitative data on various aspects related to candidate engagement and AI in the recruitment process.
- Questions will be designed to measure participants' perceptions, attitudes, and experiences regarding AI-driven candidate engagement strategies, as well as their overall satisfaction with the recruitment process.
- The questionnaire will also include demographic questions to capture relevant participant characteristics, such as age, gender, education level, and employment status.

5.Analytical Methods:

- To offer a thorough understanding, descriptive statistics, including frequencies, percentages, means, and standard deviations, will be applied to encapsulate the demographic profile of the sample and essential variables.
- For deeper comprehension and hypothesis validation, inferential statistics such as correlation and regression analysis will be utilized to investigate interrelationships among variables.

• Statistical analysis will be conducted utilizing Python software, enabling meticulous examination of quantitative data and extraction of meaningful insights.

6. Ethical Considerations:

It is crucial to guarantee the research process's ethical integrity. The following significant ethical principles will be respected during the study:

- a. **Informed Consent:** All participants will receive comprehensive and lucid information about the study's objectives, protocols, possible hazards, and advantages prior to their involvement. Informed permission, which states that participation in the research is optional, will be needed from participants.
- b. **Participant Confidentiality:** Strict measures will be taken to protect the privacy and confidentiality of participant information. Any personal information gathered will be anonymised, securely kept, and only authorized staff will be able to access it. Participants will be given the guarantee that their answers will be kept private and that no other parties will get them without their express permission.
- c. **Respect for Participants' Rights:** Participants' rights will be respected throughout the research process. They will be afforded the opportunity to withdraw from the study at any stage without facing any repercussions. Additionally, their autonomy and dignity will be upheld, and their perspectives and experiences will be valued and treated with respect.
- d. **Minimization of Harm:** Efforts will be made to minimize any potential harm or discomfort experienced by participants. The research procedures will be designed to minimize stress or inconvenience, and participants will be provided with adequate support and resources if they experience any adverse effects as a result of their participation.
- e. **Transparency and Integrity:** The research will be conducted with honesty, transparency, and integrity. Any conflicts of interest or biases will be disclosed, and the research findings will be reported accurately and objectively, without manipulation or distortion of the data used.

7. LIMITATIONS:

While every effort will be made to conduct the research with rigor and accuracy, it is important to acknowledge and address potential limitations that may impact the study's findings and conclusions:

- **Sampling Bias:** The use of convenience sampling may introduce bias into the sample, as participants who choose to participate may not be representative of the broader population. This could limit the generalizability of the findings to other populations or contexts.
- **Self-Reporting Bias:** Data collected through self-report measures, such as surveys, may be subject to bias, as participants may provide responses that they perceive as socially desirable or in line with the researchers' expectations. This could affect the reliability and validity of the data collected.
- **Cross-Sectional Design:** The cross-sectional design of the study provides a snapshot of data at a single point in time, which limits the ability to draw causal inferences or examine changes over time. Longitudinal or experimental designs may offer greater insights into causal relationships and temporal dynamics.
- **Measurement Limitations:** The use of standardized measures and self-report instruments may have inherent limitations in capturing complex constructs such as candidate engagement and AI impact accurately. Alternative measurement approaches or multiple data sources could enhance the robustness of the findings.
- **Resource Constraints:** The scope and scale of the research may be constrained by limitations in resources, including time, budget, and access to participants. These constraints may impact the depth of data collected or the breadth of analyses conducted.
- **Measurement Limitations:** The use of standardized measures and self-report instruments may have inherent limitations in capturing complex constructs such as candidate engagement and AI impact accurately. Alternative measurement approaches or multiple data sources could enhance the robustness of the findings.
- **Resource Constraints:** The scope and scale of the research may be constrained by limitations in resources, including time, budget, and access to participants. These constraints may impact the depth of data collected or the breadth of analyses conducted.
- **External Factors:** Unexpected occurrences (like worldwide pandemics) or alterations in the social or economic environment might have an impact on the research's conclusions and restrict how broadly they can be applied.
- **Interpretation Bias:** The interpretation of data and findings may be influenced by researchers' preconceived notions, theoretical perspectives, or personal biases. Measures will be taken to minimize interpretation bias through rigorous data analysis and triangulation of results.

- Ethical Considerations: Ethical considerations, such as participant confidentiality and informed consent, may impose limitations on the research process, particularly regarding data collection and dissemination can also takes place which could affect out results.

VARIABLES IN THE DATA:

Variables in the form:

- a) Gender (Male, Female, Other)
- b) Age (Under 18, 18-24, 25-34, 35,44, 45-54, 65 or above)
- c) Education Level of the person (High School or equivalent, bachelor's degree, master's degree, Doctorate or Professional Degree, Other).
- d) Current Employment Status (Employed full-time, employed part-time, Unemployed and actively seeking employment, Unemployed and not seeking employment, Student, Other)

Recruitment Process Variables:

Ever applied for a job where AI-based tools were used in the recruitment process (Yes/No)

Specific AI tools or techniques encountered during the recruitment process (if applicable)

Overall experience rating with AI-based recruitment processes (Excellent, Good, Neutral, Poor, Very Poor)

Perception of AI positively influencing engagement during the recruitment process (Strongly agree, Agree, Neutral, Disagree, strongly disagree)

Interaction with chatbots during a job application process (Yes/No) and experience sharing (if applicable)

Impact of AI on the decision to apply for a job (Positively, Negatively, No impact)

Satisfaction with the level of engagement and communication from the hiring organization (Very satisfied, Satisfied, Neutral, Dissatisfied, very dissatisfied)

Importance of personalized communication during the recruitment process (Very important, Important, Neutral, not very important, Not important at all)

Perception of AI providing a more efficient recruitment process compared to traditional methods (Strongly agree, Agree, Neutral, Disagree, strongly disagree)

Trust in AI-driven assessments in evaluating qualifications for a job (Very likely, Likely, Neutral, Unlikely, very unlikely)

Perception of AI technologies leading to a fairer selection process (Strongly agree, Agree, Neutral, Disagree, strongly disagree)

Preference between human recruiter and AI system for handling sensitive or complex inquiries during the recruitment process (Strongly prefer human recruiter, prefer human recruiter, Neutral, Prefer AI system, strongly prefer AI system)

Importance of transparency about the use of AI in the recruitment process (Very important, Important, Neutral, not very important, not important at all)

Perception of AI-driven recruitment processes reducing bias in hiring decisions (Significantly, Moderately, Neutral, Slightly, not at all)

Comfort level with AI systems making initial selections of candidates for interviews (Very comfortable, Comfortable, Neutral, Uncomfortable, very uncomfortable)

Likelihood to recommend a company that uses AI-driven recruitment processes to others (Very likely, Likely, Neutral, Unlikely, very unlikely)

Perception of AI technologies improving the overall candidate experience (Strongly agree, Agree, Neutral, Disagree, strongly disagree)

Satisfaction with the clarity and transparency of the recruitment process (Very satisfied, Satisfied, Neutral, Dissatisfied, very dissatisfied)

Belief in AI technologies in recruitment matching candidates with roles aligning better with their skills and preferences (Strongly agree, Agree, Neutral, Disagree, strongly disagree)

Openness to participating in AI-powered video interviews for job applications (Very open, Open, Neutral, not very open, Not open at all)

Confidence in the ability of AI systems to protect privacy during the recruitment process (Very confident, Confident, Neutral, not very confident, not confident at all)

Satisfaction with the speed of the recruitment process when AI technologies were involved (Very satisfied, Satisfied, Neutral, Dissatisfied, very dissatisfied)

Perception of AI-driven recruitment processes contributing to a more diverse workforce (Significantly, Moderately, Neutral, Slightly, not at all)

Comfort level with AI systems analysing social media profiles or online activities as part of the recruitment process (Very comfortable, Comfortable, Neutral, Uncomfortable, very uncomfortable)

Belief in AI technologies accurately predicting a candidate's performance in a job role (Strongly believe, Believe, Neutral, Disbelieve, strongly disbelieve)

Perception of AI technologies helping in providing constructive feedback to candidates not selected for a position (Extremely helpful, moderately helpful, Neutral, slightly helpful, not helpful at all)

Confidence in the fairness of AI algorithms used in the recruitment process (Very confident, Confident, Neutral, not very confident, not confident at all)

Importance of having a human point of contact available during the recruitment process, even if AI is heavily involved (Very important, Important, Neutral, not very important, not important at all)

Perception of AI-driven recruitment processes being more or less likely to overlook qualified candidates compared to traditional methods (More likely to overlook, equally likely to overlook, less likely to overlook, Not sure)

Satisfaction with the accuracy of job recommendations provided by AI systems during the recruitment process (Very satisfied, Satisfied, Neutral, Dissatisfied, very dissatisfied)

Belief in AI technologies adequately assessing soft skills and cultural fit during the recruitment process (Strongly believe, Believe, Neutral, Disbelieve, strongly disbelieve)

Likelihood to disclose personal information to AI systems during the recruitment process (Very likely, Likely, Neutral, Unlikely, very unlikely)

Perception of AI-driven recruitment processes providing a more transparent application and selection process compared to traditional methods (Much more transparent, somewhat more transparent, About the same level of transparency, less transparent, much less transparent)

Importance of receiving immediate responses to queries during the recruitment process, even if they are automated responses from AI systems (Very important, Important, Neutral, not very important, not important at all)

Belief in AI technologies accurately assessing a candidate's potential for growth and development within an organization (Strongly believe, Believe, Neutral, Disbelieve, strongly disbelieve)

Likelihood to provide honest responses to AI-driven pre-employment assessments (Very likely, Likely, Neutral, Unlikely, very unlikely)

These variables will help in analysing the impact of AI on candidate engagement during the recruitment process and exploring various factors influencing participants' perceptions and experiences.

VISUALISING THE DATA USING EDA

Sno	Q1	Q2	Q3	Q4	Q5	Q7	Q8	Q10	Q35	Q36	Q37	Q38	Q39	Q40
1	0	1	1	3	1	2	1	1	1	3	4	4	1	3
2	1	2	2	2	0	2	2	1	5	1	5	3	5	4
3	2	2	1	1	1	1	1	1	3	3	2	1	4	1
4	0	2	2	1	0	2	2	1	4	2	4	1	3	4
5	0	2	0	5	1	1	3	1	2	5	5	4	1	5

Table-1 Data sample from data used.

As the data was not in numeral form, we have changed the data in to numerical.

For example, If the Gender section has 3 options in the question we have converted Male, Female, and others to 0,1, and 3. In the similar way whole data set is changed.

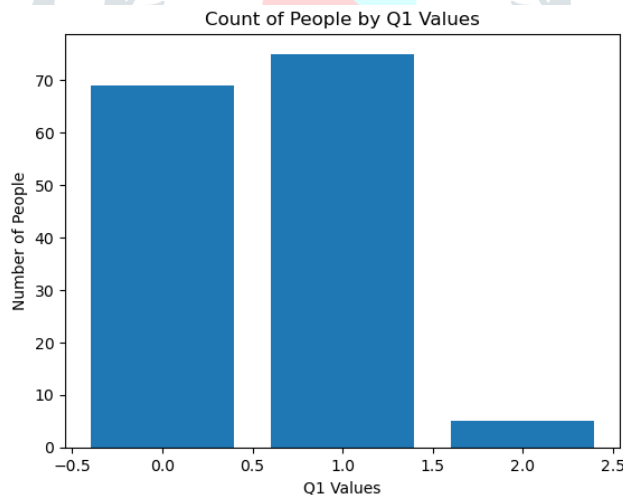


Figure-1 Gender division in the data set.

From the Figure-1 we can see that most on the people who had filled the form are Females and then comes the Male and then others.

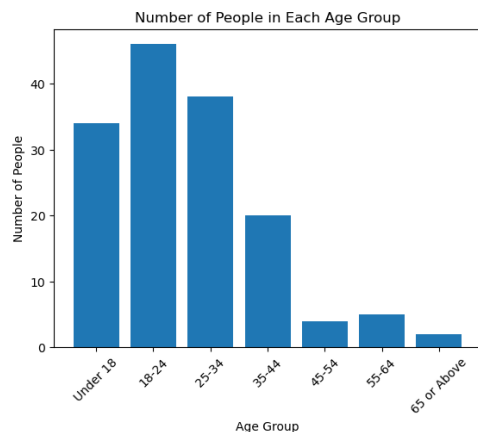


Figure-2 Age Graph for the people who filled the form.

The Figure-2 which is plotted for Q2. We can tell that people from age 18-24 are more in number when compare to any other and the second highest are the people whose age is from 25-34.

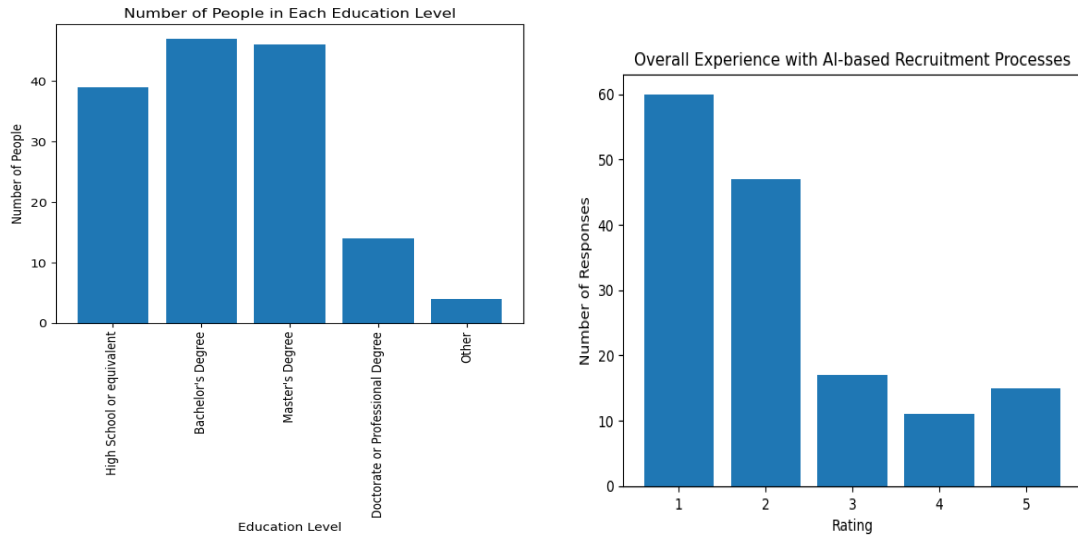


Figure-3a Education level and Number of people. Figure-3b Overall Experience with AI-base.

From Figure-3a We can see that most of the people are other and Doctorate of having Professional Degree and Figure-3b which is a plot of Q7 we can conclude that overall rating of the people is Excellent.

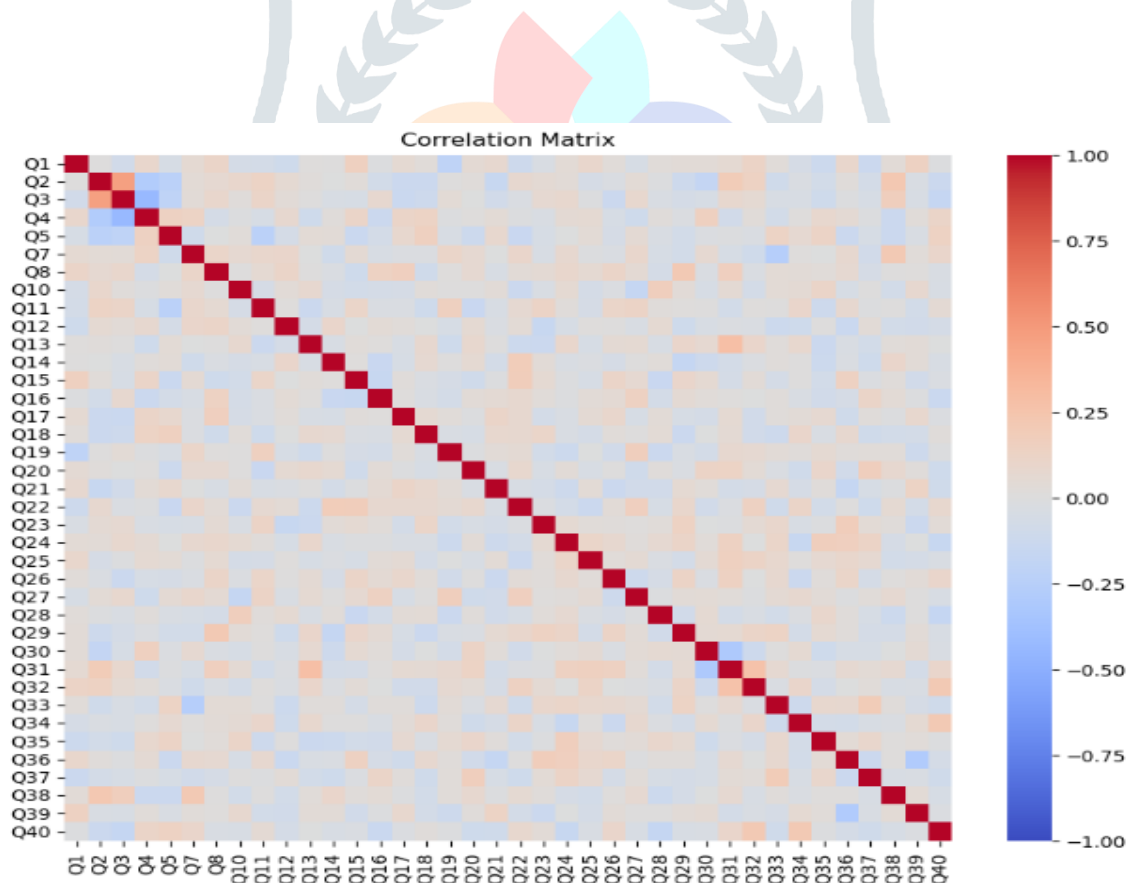


Figure-4 Correlation matrix for all the column names.

From this Correlation matrix we find that elements are mostly negatively correlated to each other.

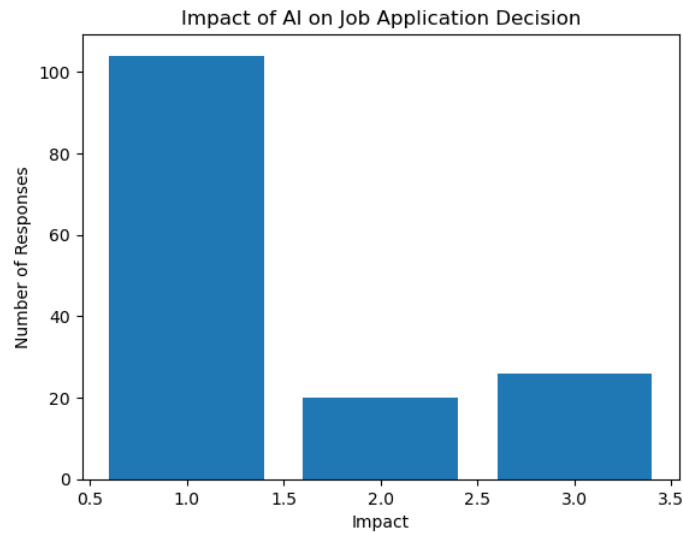


Figure-5 Impact of AI on Job Application Decision.

Figure-5 is a graph plotted on bases on Q10 inputs. We found that when people were asked if the use of AI in the recruitment process affect their decision to apply for a job, the outcomes was mostly Yes, positively.

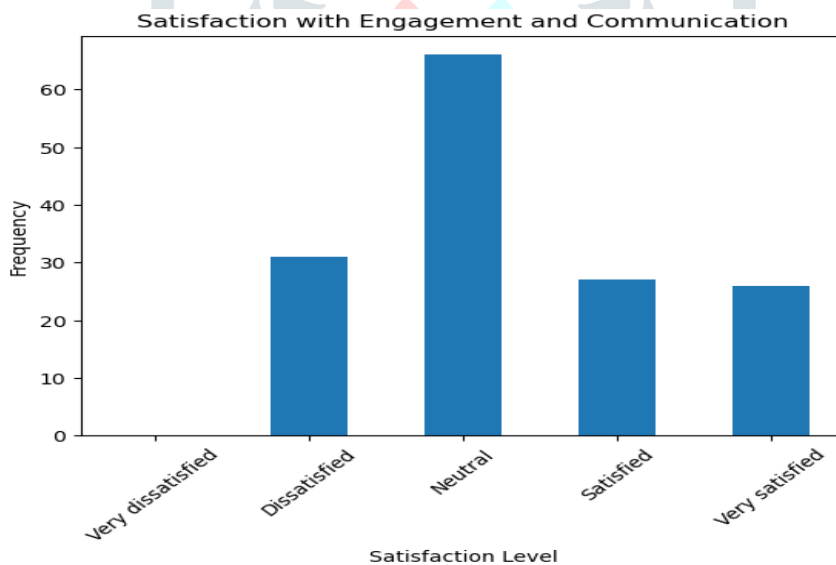


Figure-6 Satisfaction with Engagement and communication.

Figure-6 is a plot of Q11 outputs. We found that how satisfied were they with the level of engagement and communication from the hiring organization during the recruitment process, most of the answers were Neutral and we found that there was no vote for very dissatisfied.

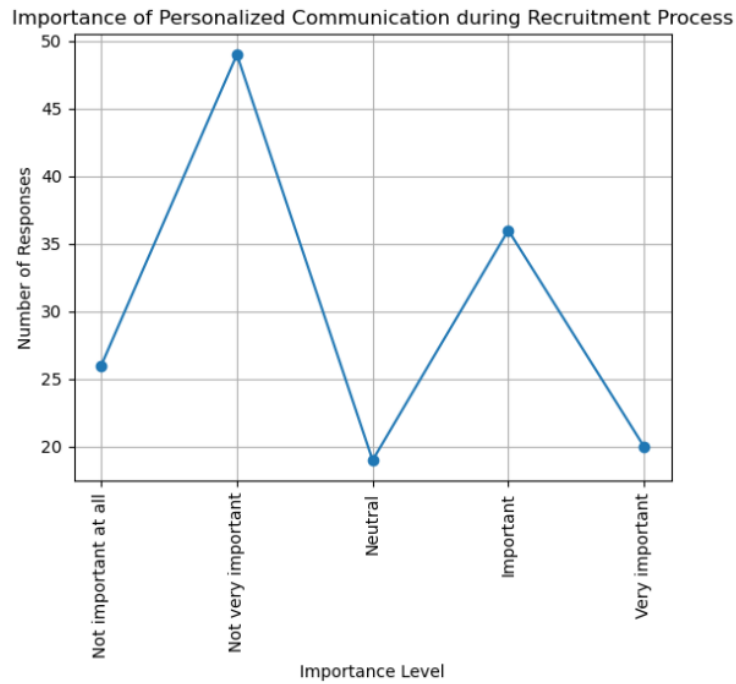


Figure-7 Importance of Personalized Communication during Recruitment Process.

Figure-7 was plotted on Q12 outputs when students were asked "how important is personalized communication during the recruitment process to you?" "most of them answered as Not very Important around 49 of the students.



Figure-8 Belief About AI Efficiency in recruitment Process.

Figure-8 is a plot of Q13 outputs when students were asked "Do you believe that AI can provide a more efficient recruitment process compared to traditional methods?" Most of them answered as they Strongly disagree with it. As AI has no feelings as input the AI cannot detect emotions of the person giving the interview.

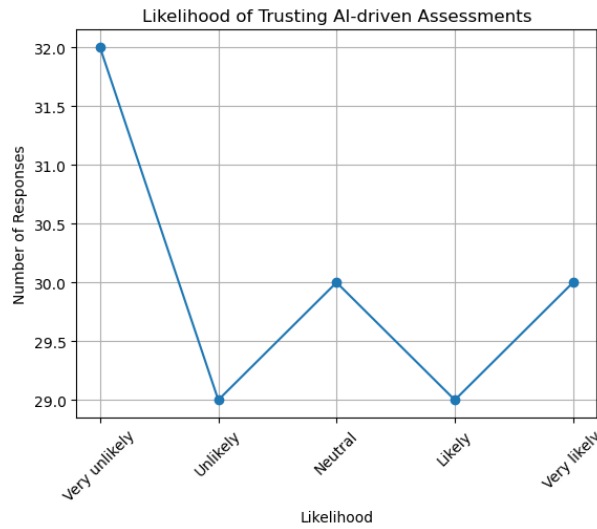


Figure-9 Likelihood of Trusting AI-driven Assessments.

Figure-9 is a plot of Q14 outputs when students were asked “How likely are you to trust AI-driven assessments in evaluating your qualifications for a job?” Most of the people opted for Very Unlikely, as we have discussed earlier AI can help human to get better results but It cannot directly replace Humans.

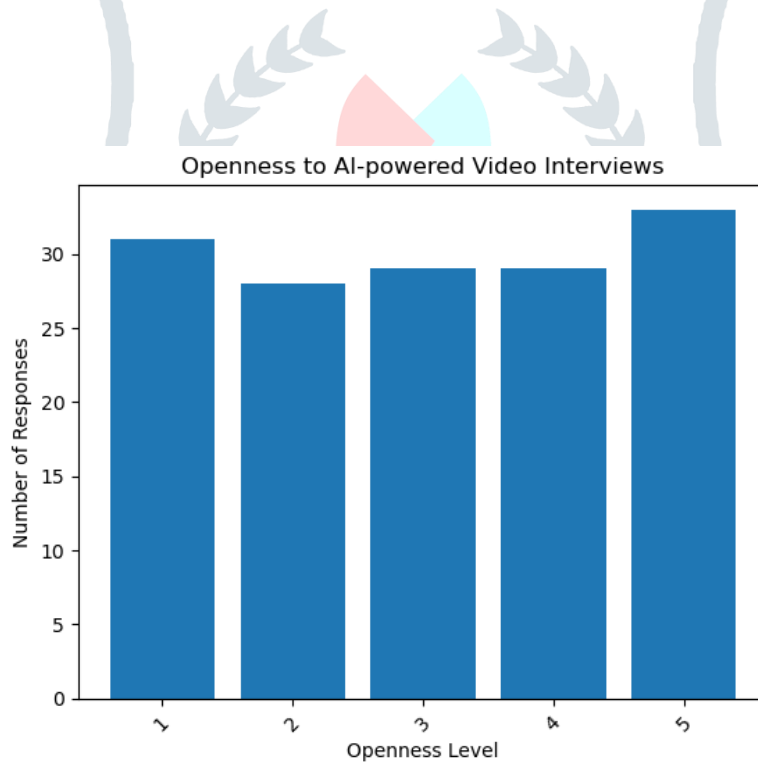


Figure-10 Openness to AI-powered Video Interviews.

Figure-10 is a plot of Q24, we found that when students were asked “Would you be open to participating in AI-powered video interviews for job applications?” Mostly of the people opted for Not Open at all option. All most all the responses were same but Not Open at all was chosen mostly.

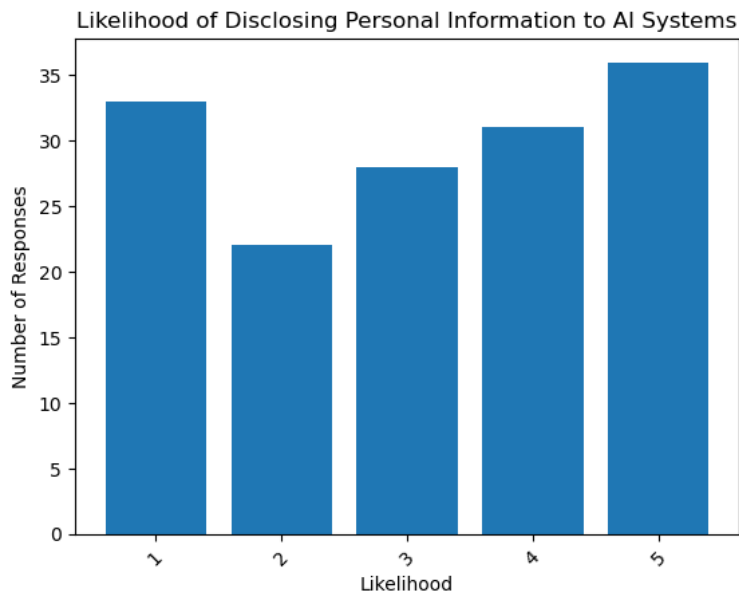


Figure-11 Likelihood of Disclosing Personal Information to AI System.

Figure-11 is a plot of Q36, we found that when students were asked “How likely are you to disclose personal information to AI systems during the recruitment process?” mostly they responded choosing Very unlikely and then comes very likely.

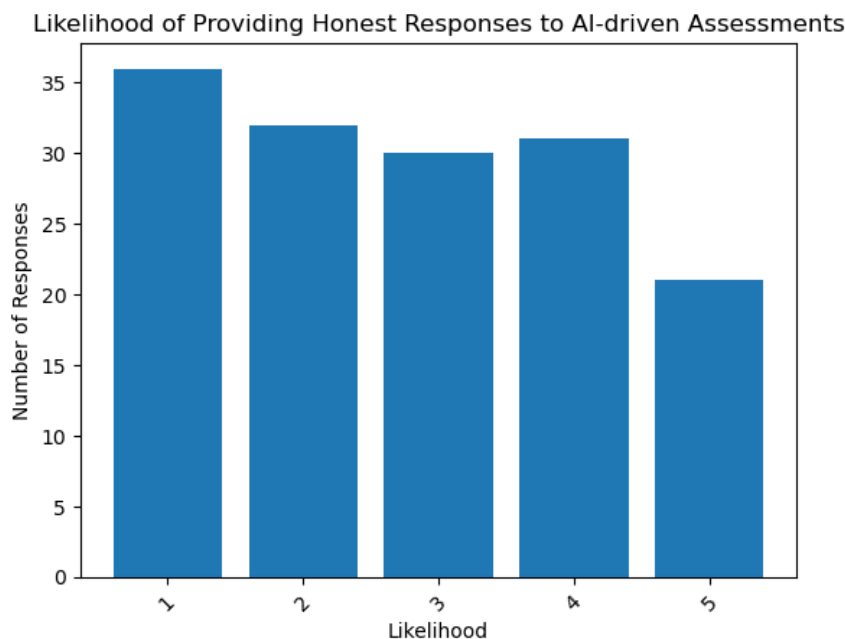


Figure-12 Likelihood of Providing Honest Responses to AI-driven Assessments.

Figure-12 is plotted on bases of Q40 responses, we found that when students were asked “How likely are you to provide honest responses to AI-driven pre-employment assessments?” they responded with very likely and likely.

From the survey we found that most of the people who are searching for jobs, are not free to go to interviews which consist of AI as recruiter, because people are afraid of AI as they don't understand human nature and emotions.

As people who don't have much education would not be able to clear the interview rounds which take place in the presence of AI.

TOOLS which are used (According to survey):

Resume Screening tool:

Resume screening technologies, which use artificial intelligence (AI) to automate and expedite the preliminary assessment of job applications, are essential parts of contemporary recruiting procedures. These tools are intended to help hiring managers and recruiters choose candidates more quickly by rapidly sorting through a lot of applications and identifying quality applicants.

AI-powered resume screening solutions evaluate individuals' credentials, experiences, and talents by analyzing the content of resumes using complex algorithms. Through resume keyword scanning, qualification matching, and targeted job criteria, these technologies assist recruiters in finding individuals that closely meet the job opening's specifications.

Resume screening tools offer a significant advantage by drastically reducing the time and resources required for manual resume review. Capable of swiftly processing thousands of resumes compared to the extensive duration it would take for human recruiters, these tools empower organizations to expedite their hiring procedures and alleviate bottlenecks in recruitment.

Furthermore, AI-driven resume screening tools play a crucial role in addressing unconscious biases prevalent in the recruitment process. By concentrating on the qualifications and experiences detailed in resumes, these tools conduct impartial evaluations guided by predetermined criteria. Consequently, they foster fairness and equality in candidate assessment, promoting an objective approach to recruitment.

However, it's essential to acknowledge that resume screening tools are not without limitations. While they excel at processing large volumes of resumes efficiently, they may overlook candidates with unconventional backgrounds or experiences that do not fit typical keyword criteria. Furthermore, there is a risk of algorithmic bias if the screening criteria are not carefully designed to account for diversity and inclusion.

In conclusion, resume screening tools powered by AI offer significant benefits to organizations by streamlining the initial stages of the recruitment process, improving efficiency, and enhancing objectivity. When used judiciously and in conjunction with human judgment, these tools can help organizations identify top talent more effectively and build diverse, high-performing teams.

AI TOOLS IN OTHER FIELDS:

AI has permeated various fields beyond HR, revolutionizing processes and driving innovation across industries. Here are some notable applications of AI in other domains:

Healthcare: AI's impact on healthcare is profound, with applications ranging from medical imaging interpretation to drug discovery. In medical imaging, AI algorithms analyze radiological images to detect abnormalities, aiding in early disease diagnosis. AI-driven diagnostic tools help clinicians interpret medical data more accurately, leading to timely interventions and improved patient outcomes. Furthermore, AI facilitates personalized treatment plans by analyzing genetic data and medical records to tailor therapies to individual patients.

Finance: In the financial sector, AI is instrumental in enhancing decision-making processes and improving customer experiences. Algorithmic trading algorithms use machine learning to analyze market trends and execute trades at optimal times. Fraud detection systems leverage AI to detect suspicious activities and prevent fraudulent transactions, safeguarding financial institutions and their customers. Additionally, AI-powered chatbots provide round-the-clock customer support, addressing inquiries and resolving issues efficiently.

Retail: AI technologies are reshaping the retail landscape by optimizing operations and enhancing customer engagement. Recommendation systems analyze customer behavior and preferences to suggest relevant products, increasing sales and customer satisfaction. Demand forecasting algorithms predict future sales trends, enabling retailers to optimize inventory levels and minimize stockouts. Chatbots provide personalized assistance to shoppers, answering queries and guiding them through the purchasing process.

Transportation: AI is driving innovation in transportation through the development of autonomous vehicles, optimization of logistics operations, and improvement of traffic management systems. Autonomous vehicles use AI algorithms to navigate roads safely and efficiently, promising to revolutionize the future of transportation. Predictive maintenance algorithms monitor vehicle health in real-time, minimizing downtime and reducing maintenance costs. Additionally, AI-powered traffic management systems optimize traffic flow and reduce congestion, improving overall transportation efficiency.

Manufacturing: AI-powered technologies are transforming manufacturing processes by optimizing production, improving quality control, and increasing operational efficiency. Predictive maintenance algorithms analyze equipment data to predict maintenance needs and prevent costly breakdowns. Quality control systems use machine learning to detect defects in manufactured products, ensuring high-quality output. Robotics and automation technologies streamline assembly and packaging processes, increasing productivity and reducing labour costs.

Education: AI is changing the field of education by automating administrative processes, customizing the learning process, and offering insightful data on student performance. Using AI algorithms, adaptive learning platforms customize course materials to each student's requirements and learning preferences, increasing retention and engagement. Because automated grading systems evaluate student work fast and precisely, they save teachers time. Furthermore, by analysing student data to find trends and patterns, AI-driven analytics solutions empower educators to make data-driven decisions that improve teaching and learning results.

Marketing: AI-driven marketing tools empower businesses to deliver personalized and targeted marketing campaigns, driving customer engagement and brand loyalty. Targeted advertising algorithms use machine learning to analyze customer data and deliver relevant ads to the right audience segments. Sentiment analysis tools mine social media data to gauge public sentiment and inform marketing strategies. Content optimization platforms use AI to optimize content for search engines and improve visibility and reach. Chatbots provide instant support to customers, addressing inquiries and guiding them through the purchasing process, enhancing the overall customer experience.

Energy: AI is playing a crucial role in optimizing energy production, distribution, and consumption, leading to greater efficiency and sustainability. Predictive maintenance algorithms analyze sensor data to predict equipment failures and schedule maintenance proactively, minimizing downtime and reducing maintenance costs. Demand forecasting algorithms predict energy consumption patterns, enabling utilities to optimize energy distribution and avoid overloading the grid. Grid management systems use AI to optimize energy flow, balance supply and demand, and integrate renewable energy sources into the grid effectively.

Agriculture: By streamlining crop management, boosting resource efficiency, and increasing yield prediction, AI technologies are transforming agricultural operations. Drones and satellite photography are used by agricultural monitoring systems to track crop health and identify pests and diseases early on, allowing for prompt responses. In order to anticipate crop yields with accuracy and assist farmers in making well-informed decisions on planting and harvesting, yield prediction algorithms examine agronomic and environmental data. AI is used in precision agricultural techniques to maximize output and minimize waste and environmental effect by optimizing the use of resources like water and fertilizers.

Entertainment: AI technologies are transforming the entertainment industry by enabling personalized experiences, enhancing content creation, and improving audience engagement. Recommendation systems use machine learning algorithms to suggest content tailored to individual preferences, increasing viewer engagement and retention. Content creation tools powered by AI enable creators to generate and edit media content more efficiently, reducing production time and costs. Virtual reality experiences immerse users in interactive storytelling worlds, providing unique and engaging entertainment experiences. Interactive storytelling platforms leverage AI to personalize narratives based on user input, creating dynamic and engaging storytelling experiences.

OVERALL, VIEW IF AI WILL REPLACE HUMAN'S AT OFFICE:

AI's potential to replace people in the workplace is a complicated and diverse topic that considers a number of different factors. While there is no denying that AI has revolutionized many facets of productivity and labour, the idea that AI will completely replace humans is still controversial and theoretical.

On the one hand, AI has shown to be remarkably effective in many industries in automating repetitive work, improving decision-making processes, and enhancing human skills. Artificial Intelligence (AI) has shown to be a potent instrument for increasing productivity and efficiency in the workplace, from data analysis and predictive modelling to customer service and administrative duties. Furthermore, the ability of AI systems to execute more complicated tasks has been made possible by developments in machine learning and natural language processing, which has prompted some to predict that AI may someday surpass human skills in some sectors.

RESEARCH GAP:

The research project aims to address a significant gap in the existing literature regarding the impact of artificial intelligence (AI) on candidate engagement in the recruitment process. While AI technologies have gained traction in recruitment, there is a dearth of empirical studies that comprehensively explore candidates' perceptions, experiences, and attitudes towards AI-driven recruitment methods. By conducting a survey-based investigation, we seek to bridge this gap by providing valuable insights into how candidates interact with AI tools, their preferences, and the implications for recruitment outcomes. This research will contribute to a deeper understanding of the role of AI in candidate engagement and inform strategies for enhancing recruitment practices in the digital age.

FUTURE PROSPECTIVE

Looking ahead, the project's future prospects are brimming with opportunities for further advancement and innovation in the realm of AI-driven recruitment. As technology continues to evolve, we anticipate significant developments that will reshape the recruitment landscape and enhance the candidate experience.

Further research should focus on improving and streamlining the current AI hiring instruments. We can improve these technologies' ability to attract candidates, spot exceptional talent, and enable smooth hiring procedures with continued study and practical application insights. In order to consistently increase accuracy and efficiency in processes like resume screening, evaluations, and candidate-job matching, machine learning algorithms are used.

Moreover, the future of AI in recruitment holds promise for promoting diversity, equity, and inclusion (DEI) efforts within organizations. By utilizing AI to mitigate unconscious biases in recruitment, we can create fairer opportunities for candidates from diverse backgrounds. This includes developing AI algorithms trained on diverse datasets to ensure unbiased decision-making throughout the recruitment journey.

As AI technology advances, we anticipate the emergence of new applications and functionalities that further enhance the recruitment experience. This may involve integrating natural language processing (NLP) for more conversational interactions between candidates and AI-driven chatbots, as well as leveraging virtual reality (VR) and augmented reality (AR) for immersive recruitment experiences.

The use of AI in recruiting is anticipated to grow in the upcoming years across a range of sectors and organizational sizes. Businesses are going to spend more in AI-driven recruiting solutions as they realize the benefits of AI in enhancing recruitment results and obtaining a competitive edge in talent acquisition. As a result, there will be an increasing need for HR specialists with machine learning and AI experience.

Overall, the project's future holds promise for continued innovation and collaboration in the AI-driven recruitment domain. By staying ahead of technological advancements and exploring new possibilities, we aim to contribute to a future where AI enhances recruitment processes, fosters inclusivity, and empowers organizations to build diverse and high-performing teams.

Conclusion

Our study revealed that AI technologies offer numerous benefits, ranging from streamlining administrative tasks to providing data-driven insights for informed decision-making. AI-powered tools such as resume scanners and chatbots have become indispensable assets for recruiters, enhancing efficiency and improving the overall candidate experience.

Moreover, our discoveries emphasize the significance of transparency and ethical deliberations in AI-infused recruitment processes. Respondents emphasized the necessity for clarity concerning AI's involvement in the recruitment process, citing concerns regarding privacy and bias. Mitigating these ethical challenges stands as a crucial element in upholding trust and ethical standards in recruitment operations.

Notwithstanding these hurdles, the transformative potential of AI in reshaping recruitment methodologies remains undeniable. With ongoing advancements in AI technology, there exist prospects for augmenting candidate engagement, bolstering operational efficiency, and advancing diversity and inclusivity within the workforce.

However, while AI has demonstrated its effectiveness in certain aspects of recruitment, it is not without its limitations. Our research highlighted concerns surrounding the ability of AI to accurately assess soft skills, cultural fit, and emotional intelligence, which are crucial factors in candidate selection. Additionally, there is a prevailing preference for human

involvement in sensitive or complex interactions during the recruitment process, indicating the irreplaceable role of human recruiters.

In conclusion, our study contributes to the growing body of knowledge on AI in recruitment by providing valuable insights into candidate engagement and perceptions of AI-driven recruitment processes. By understanding the nuanced dynamics between AI and candidate engagement, organizations can leverage technology effectively to attract top talent and optimize their recruitment strategies in the ever-changing job market landscape. As we look to the future, it is imperative for organizations to embrace AI responsibly, balancing the benefits of automation with the importance of human connection in the recruitment process.

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