

Midocean University

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The Impact of Artificial Intelligence on Human Resources in Saudi Arabia

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Graduation Project – 1

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Dedication

Dedicated to the intersection of innovation and humanity, this project stands as a testament to the transformative power of AI in reshaping the landscape of human resources. May it illuminate the path towards a future where technology enhances our potential, fosters inclusivity, and empowers every individual to thrive in the workplace.

Abstract:

Exploring AI Applications in Human Resources: A Comprehensive Analysis

This study investigates the integration of Artificial Intelligence (AI) in human resources (HR) practices, aiming to enhance organizational efficiency and effectiveness.

Purpose:

The purpose of this research is to examine the impact of AI technologies on HR processes and their implications for modern workplaces.

Methodology:

A mixed-methods approach is employed, combining quantitative analysis and qualitative exploration. The quantitative phase involves surveying HR professionals and employees to gather data on the adoption, perception, and outcomes of AI implementation in HR. Additionally, qualitative interviews with HR experts and organizational leaders provide insights into the nuances of AI integration, challenges faced, and best practices.

Findings:

The findings reveal a significant positive correlation between AI adoption in HR and organizational performance metrics such as employee productivity, retention rates, and overall satisfaction. Moreover, AI-driven tools facilitate more streamlined recruitment processes, personalized employee development plans, and predictive analytics for talent management. However, concerns regarding data privacy, ethical implications, and potential job displacement emerge as prominent challenges associated with AI in HR.

Originality & Implications:

This research contributes to the existing literature by offering a comprehensive analysis of AI applications in HR, emphasizing its transformative potential and the need for ethical considerations and human oversight. The study underscores the importance of striking a balance between technological advancement and human-centric approaches in HR practices. The implications of this study extend to HR professionals, organizational leaders, policymakers, and researchers, providing actionable insights for leveraging AI to drive innovation and foster sustainable growth in the workplace.

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1. Chapter 1: Introduction

1.1. Research Background

In recent years, the integration of artificial intelligence (AI) into various sectors has been revolutionizing traditional practices, and human resources (HR) is no exception. As Saudi Arabia continues its journey towards digital transformation and economic diversification under the ambitious Vision 2030, the role of AI in reshaping HR practices becomes increasingly significant. This essay aims to explore the profound impact of AI on HR functions within the context of Saudi Arabia, delving into its implications, challenges, and opportunities. (AL Zahrani, F., & Jansen, R. 2020)

The Kingdom of Saudi Arabia, with its vast oil reserves and strategic geographical location, has long been a key player in the global economy. However, recognizing the need to reduce its dependence on oil and promote sustainable economic growth, the Saudi government introduced Vision 2030. This transformative vision seeks to propel the nation into a knowledge-based economy, driven by innovation, entrepreneurship, and technological advancements. As part of this vision, the adoption of AI technologies across various sectors, including HR, has been prioritized to enhance efficiency, productivity, and competitiveness. (Ashrafi, K. 2021).

AI's impact on HR in Saudi Arabia encompasses a wide range of functions, from recruitment and talent management to employee engagement and performance evaluation. One of the most notable areas where AI is revolutionizing HR practices is recruitment. Traditional recruitment processes often involve manual screening of resumes, conducting interviews, and assessing candidates based on subjective criteria. However, AI-powered recruitment tools and platforms utilize machine learning algorithms to analyze vast amounts of data, identify patterns, and predict candidate suitability with greater accuracy and speed. This not only streamlines the recruitment process but also helps organizations to identify top talent more effectively, thereby improving the quality of hires. (Bin Hammad, M. A., & Fadhil, M. A. 2019)

Furthermore, AI is transforming talent management practices in Saudi Arabia by enabling organizations to better understand and develop their workforce. AI-powered analytics tools can analyze employee data, such as performance metrics, skills, and preferences, to provide valuable insights into workforce trends and dynamics. This allows HR professionals to make data-driven decisions regarding talent development, succession planning, and workforce optimization. Moreover, AI-driven personalized learning platforms can deliver tailored training programs to employees based on their individual learning styles and needs, enhancing their skills and capabilities in alignment with organizational goals. (Saudi Vision 2030. 2022)

In addition to recruitment and talent management, AI is reshaping employee engagement strategies in Saudi Arabia. With the rise of remote work and virtual collaboration, maintaining high levels of employee engagement and satisfaction has become increasingly challenging for organizations. However, AI-powered chatbots and virtual assistants can provide employees with personalized support and assistance, addressing their queries and concerns in real-time. Moreover, sentiment analysis algorithms can analyze employee feedback and sentiment from various sources, such as surveys and social media, enabling HR professionals to identify areas for improvement and take proactive measures to enhance employee experience.

However, despite the numerous benefits of AI in HR, its widespread adoption in Saudi Arabia also presents several challenges and considerations. One of the primary concerns is the potential impact of AI on job displacement and workforce diversity. As AI technologies automate repetitive tasks and processes, there is a risk of certain roles becoming obsolete, leading to job loss for some workers. Moreover, there is a need to ensure that AI algorithms are free from bias and discrimination, especially in areas such as recruitment and performance evaluation, where decisions can have significant implications for individuals' careers and livelihoods. Therefore, HR professionals and policymakers must implement appropriate safeguards and regulations to mitigate these risks and promote ethical and responsible AI adoption.

Furthermore, the successful integration of AI into HR in Saudi Arabia requires a concerted effort to build digital capabilities and foster a culture of innovation within organizations. This entails investing in employee training and development programs to enhance digital literacy and proficiency among HR professionals and employees alike. Additionally, organizations need to establish clear governance structures and processes for AI implementation, including data privacy and security protocols, to ensure compliance with regulatory requirements and ethical standards.

Despite these challenges, the adoption of AI in HR presents immense opportunities for organizations in Saudi Arabia to enhance their competitiveness and agility in the digital age. By leveraging AI-powered tools and technologies, organizations can streamline HR processes, optimize workforce management, and

foster a culture of continuous learning and innovation. Moreover, AI enables HR professionals to focus on higher-value strategic initiatives, such as talent development and employee engagement, thereby driving organizational growth and success.

In conclusion, the impact of artificial intelligence on HR in Saudi Arabia is profound and multifaceted, touching upon various aspects of recruitment, talent management, and employee engagement. As the Kingdom continues its journey towards digital transformation under Vision 2030, the effective integration of AI into HR practices will be critical to unlocking the full potential of its workforce and driving sustainable economic growth. However, realizing the benefits of AI in HR requires careful consideration of ethical, regulatory, and organizational factors, as well as a commitment to building digital capabilities and fostering a culture of innovation. By embracing AI responsibly and strategically, organizations in Saudi Arabia can position themselves for success in the evolving digital landscape.

Artificial intelligence (AI) is rapidly transforming our world, impacting everything from healthcare and transportation to entertainment and finance. While AI offers immense potential to improve our lives, its development and implementation raise several critical ethical concerns. Exploring these risks is crucial to ensure responsible AI development that benefits humanity.

1.2. Research Problem

Artificial Intelligence (AI) is transforming industries by enhancing efficiency, accuracy, and capabilities. However, its adoption and integration come with several challenges that new companies, in particular, must navigate carefully. Here are some common problems associated with AI and how they might affect new companies:

1. Data Privacy and Security Concerns

AI systems often require vast amounts of data to function effectively. This can lead to issues related to data privacy and security.

Impact on New Companies:

- **Compliance Burden:** Startups may struggle to comply with stringent data protection regulations like GDPR and CCPA due to limited resources.
- **Risk of Data Breaches:** New companies may not have robust cybersecurity measures in place, making them vulnerable to data breaches, which can damage their reputation and lead to legal consequences.

2. Bias and Fairness

AI algorithms can inadvertently incorporate biases present in the training data, leading to unfair outcomes.

Impact on New Companies:

- **Reputation Risk:** Biased AI systems can lead to public backlash, harming the company's reputation and customer trust.
- **Legal Challenges:** Discriminatory practices resulting from biased AI can result in legal challenges and financial penalties.

3. High Implementation Costs

Developing and integrating AI solutions can be costly, involving significant investment in technology, talent, and infrastructure.

Impact on New Companies:

- **Financial Strain:** High upfront costs can strain the financial resources of new companies, potentially limiting their ability to scale or innovate.
- **Competitive Disadvantage:** Inability to invest in AI can put startups at a competitive disadvantage compared to larger, more established companies that can afford advanced AI solutions.

4. Talent Shortage

There is a global shortage of skilled AI professionals, making it difficult for companies to find the right talent.

Impact on New Companies:

- **Recruitment Challenges:** New companies may struggle to attract and retain top AI talent, affecting their ability to develop and maintain sophisticated AI systems.
- **Increased Costs:** High demand for AI expertise can drive up salary expectations, further straining financial resources.

5. Ethical Considerations

AI systems can raise ethical concerns, particularly regarding autonomy, decision-making, and the potential for misuse.

Impact on New Companies:

- **Public Perception:** Ethical missteps can lead to negative public perception and loss of customer trust.
- **Regulatory Scrutiny:** Startups may face increased scrutiny from regulators and advocacy groups, leading to additional compliance requirements and operational hurdles.

6. Scalability Issues

AI solutions must be scalable to handle growing data and user demands, which can be technically challenging.

Impact on New Companies:

- **Technical Debt:** New companies may accumulate technical debt if their AI solutions are not designed with scalability in mind, leading to higher maintenance costs and reduced flexibility.
- **Operational Inefficiencies:** Inability to scale AI systems effectively can result in operational inefficiencies, limiting growth and market competitiveness.

7. Integration with Existing Systems

Integrating AI with existing IT infrastructure can be complex and time-consuming.

Impact on New Companies:

- **Integration Costs:** The cost and effort of integrating AI with legacy systems can be prohibitive for startups.
- **Operational Disruptions:** Poorly executed integrations can disrupt business operations, affecting productivity and service delivery.

8. Dependence on Data Quality

AI systems are highly dependent on the quality of data they are trained on.

Impact on New Companies:

- **Data Quality Challenges:** New companies may struggle with acquiring and maintaining high-quality data, leading to suboptimal AI performance.
- **Resource Allocation:** Significant resources may need to be allocated to data cleaning and preprocessing, diverting focus from other critical areas of the business.

1.3. Research Significance

1.3.1. At the theoretical level

Enhanced Decision-Making

AI in HR introduces sophisticated algorithms that enhance decision-making processes. Theoretically, AI can process vast amounts of data to uncover patterns and insights that humans might overlook. This leads to more informed and strategic HR decisions, such as identifying the best candidates for a role or predicting employee turnover.

Increased Efficiency

From a theoretical perspective, AI automates repetitive and time-consuming tasks, allowing HR professionals to focus on more strategic functions. This improves the overall efficiency of the HR department by reducing the burden of manual tasks, such as sorting resumes, scheduling interviews, and managing payroll.

Personalization and Employee Engagement

Theoretically, AI can create more personalized experiences for employees. By analyzing data on employee preferences, performance, and engagement levels, AI systems can tailor recommendations for professional development, recognition programs, and wellness initiatives. This personalized approach enhances employee satisfaction and retention.

Ethical and Bias Reduction

Theoretical applications of AI in HR also include its potential to reduce bias in hiring and other HR processes. By relying on data-driven insights rather than human intuition, AI can help minimize unconscious biases, leading to fairer and more equitable treatment of employees and job candidates.

1.1.1. At the practical level

Real-World Applications and Case Studies

Empirically, companies across various industries have successfully implemented AI in HR to streamline their processes and achieve significant benefits. For instance, multinational corporations like Unilever have used AI-driven hiring platforms to assess candidates through online games and video interviews, resulting in a more diverse and qualified talent pool.

Improved Recruitment Processes

Empirical evidence shows that AI-powered recruitment tools significantly speed up the hiring process. AI systems can screen resumes and shortlist candidates much faster than human recruiters, reducing the time-to-hire and associated costs. Additionally, AI chatbots can engage with candidates in real-time, answering their queries and providing updates, which enhances the candidate experience.

Predictive Analytics for Employee Retention

Empirical studies have demonstrated the effectiveness of AI in predicting employee turnover. For example, IBM's Watson Analytics has been used by HR departments to analyze various factors influencing employee retention, such as job satisfaction, engagement levels, and career progression. These insights enable HR teams to proactively address issues and implement retention strategies.

Performance Management and Employee Development

On an empirical level, AI tools are being used to track and analyze employee performance data continuously. This allows for more accurate and timely feedback, helping employees to improve and grow. Companies like General Electric have employed AI systems for performance management, resulting in more objective evaluations and personalized development plans.

Cost Reduction and ROI

Empirical data highlights the cost-saving potential of AI in HR. Automating routine tasks reduces the need for large HR teams, and AI's ability to predict and mitigate turnover can save companies substantial amounts in rehiring and training costs. Studies have shown that organizations investing in AI for HR often see a positive return on investment within a few years due to increased efficiency and productivity.

1.1. Research Questions

Improving Efficiency and Accuracy:

- How can AI automate repetitive HR tasks (screening resumes, scheduling interviews) to free up HR professionals for more strategic work?
- Can AI algorithms analyze vast amounts of candidate data to identify the most qualified individuals for open positions, leading to better hiring decisions?
- How can AI be used to streamline onboarding processes, ensuring new hires have a smooth and efficient transition into their roles?

Enhancing the Employee Experience:

- Can AI-powered chatbots provide 24/7 support to employees, answering questions and resolving common HR issues?
- How can AI personalize learning and development programs for individual employees, maximizing their potential?
- Can AI be used to identify potential burnout or dissatisfaction among employees, allowing for proactive intervention by HR?

Benefits for the Modern Workplace:

- How can AI be used to analyze employee sentiment and company culture, leading to a more positive and productive work environment?
- Can AI tools help organizations identify and develop high-potential employees, preparing them for future leadership roles?
- How can AI be used to create a more data-driven approach to HR decision-making, leading to improved business outcomes?

Specific to HR Departments:

- Can AI help HR departments write more effective job descriptions that attract a wider range of qualified candidates?
- How can AI be used to identify unconscious bias in the recruitment process, ensuring a more equitable hiring experience?
- Can AI-powered performance management systems provide employees with more regular and targeted feedback, leading to improved performance?

Data and Security:

- What data privacy considerations are important when using AI in HR?
- How can organizations ensure the security of sensitive employee data used by AI systems?
- How can fairness be ensured when using data-driven AI for HR decisions?

Regulation and Oversight:

- Are there existing regulations that address the use of AI in HR?
- What new regulations may be needed to govern the ethical use of AI in the workplace?
- How can organizations ensure compliance with relevant regulations when using AI for HR purposes?

Future of Work:

- Will AI replace HR professionals entirely, or will it augment their roles?
- What new skills will HR professionals need to be successful in an AI-powered workplace?
- How can organizations ensure a smooth transition to AI-driven HR practices for employees?

1.4. Research Objectives

Objective:

Improving Efficiency and Accuracy

The primary objective of improving efficiency and accuracy is to enhance the overall performance and precision of operations, ensuring optimal utilization of resources and achieving desired outcomes with minimal errors. This involves:

1. **Streamlining Processes:** Simplifying and optimizing workflows to reduce unnecessary steps, minimize delays, and increase productivity.
2. **Implementing Advanced Technologies:** Adopting cutting-edge tools and systems, such as automation, artificial intelligence, and data analytics, to support decision-making, reduce manual errors, and improve speed.
3. **Enhancing Skillsets:** Providing continuous training and development opportunities for staff to improve their competencies and adaptability to new technologies and methodologies.
4. **Monitoring and Evaluation:** Establishing robust monitoring systems to track performance, identify inefficiencies, and make data-driven improvements.
5. **Standardizing Procedures:** Creating standardized protocols and guidelines to ensure consistency and reliability in operations.

Enhancing the Employee Experience

The primary objective of enhancing the employee experience is to create a supportive, engaging, and rewarding work environment that fosters employee satisfaction, well-being, and productivity. This involves:

1. **Promoting a Positive Workplace Culture:** Building an inclusive and respectful culture that values diversity, encourages collaboration, and supports open communication.
2. **Providing Growth Opportunities:** Offering professional development programs, career advancement pathways, and continuous learning opportunities to help employees reach their full potential.
3. **Improving Work-Life Balance:** Implementing flexible work arrangements, wellness programs, and policies that support employees' physical and mental health, enabling them to maintain a healthy work-life balance.
4. **Recognizing and Rewarding Contributions:** Establishing recognition programs that celebrate achievements, provide meaningful rewards, and reinforce positive behaviors.

5. **Enhancing Communication and Feedback:** Ensuring transparent, two-way communication channels that allow employees to voice their opinions, provide feedback, and feel heard and valued.
6. **Investing in Workplace Environment:** Creating a comfortable, safe, and well-equipped physical and virtual work environment that enhances productivity and satisfaction.

Maximizing Benefits for the Modern Workplace

The primary objective of maximizing benefits for the modern workplace is to offer a comprehensive and attractive benefits package that meets the diverse needs of today's workforce, enhancing employee satisfaction, retention, and overall organizational performance. This involves:

1. **Offering Competitive Compensation:** Providing salaries and bonuses that reflect market standards and acknowledge the contributions and skills of employees.
2. **Ensuring Comprehensive Health and Wellness Programs:** Including medical, dental, and vision insurance, mental health support, wellness initiatives, and access to fitness facilities or programs to promote holistic well-being.
3. **Providing Flexible Work Arrangements:** Allowing remote work, flexible hours, and hybrid work models to accommodate different lifestyles and personal commitments, enhancing work-life balance.
4. **Supporting Professional Development:** Offering opportunities for continuous learning, certifications, and career advancement through training programs, workshops, and tuition reimbursement.
5. **Enhancing Financial Security:** Providing retirement plans, pension schemes, financial planning services, and employee stock options to help employees secure their financial future.
6. **Promoting Work-Life Balance:** Implementing generous leave policies, including vacation, parental leave, and personal days, to ensure employees have the time to rest and attend to personal matters.
7. **Creating a Supportive Work Environment:** Fostering a culture of inclusivity, respect, and collaboration, along with providing resources for stress management, employee assistance programs, and ergonomic workspaces.

Enhancing HR Department Efficiency and Effectiveness

The primary objective of enhancing HR department efficiency and effectiveness is to streamline HR processes, improve employee satisfaction, and support organizational goals through strategic human resource management. This involves:

1. **Optimizing Recruitment and Onboarding:** Developing efficient hiring processes that attract top talent, utilizing technology for applicant tracking, and providing comprehensive onboarding programs to ensure new hires are well-integrated and productive from the start.
2. **Improving Employee Engagement and Retention:** Implementing initiatives that foster a positive work culture, encourage employee feedback, and promote career development opportunities to retain skilled employees and reduce turnover.
3. **Streamlining HR Operations:** Leveraging HR technology solutions such as HRIS (Human Resource Information Systems) to automate routine tasks, manage employee data effectively, and enhance the overall efficiency of HR operations.
4. **Ensuring Compliance and Risk Management:** Establishing robust policies and procedures to ensure compliance with labor laws and regulations, and implementing risk management strategies to protect the organization from potential HR-related risks.

5. **Enhancing Learning and Development:** Providing continuous learning opportunities, training programs, and leadership development initiatives to empower employees and support their professional growth.
6. **Implementing Effective Performance Management:** Creating fair and transparent performance evaluation systems that set clear expectations, provide regular feedback, and recognize and reward employee achievements.
7. **Promoting Diversity, Equity, and Inclusion (DEI):** Developing and executing DEI strategies to build an inclusive workplace that values diverse perspectives and ensures equal opportunities for all employees.
8. **Facilitating Strategic Workforce Planning:** Analyzing workforce data to anticipate future HR needs, aligning HR strategies with business objectives, and developing plans to address talent gaps and succession planning.

Ensuring Robust Data Security and Privacy

The primary objective of ensuring robust data security and privacy is to protect sensitive information, maintain the integrity and confidentiality of data, and comply with relevant regulations, thereby safeguarding the organization and its stakeholders from data breaches and cyber threats. This involves:

1. **Implementing Comprehensive Security Policies:** Establishing and enforcing detailed security policies and procedures that cover data handling, access controls, and incident response to ensure consistent protection across the organization.
2. **Utilizing Advanced Security Technologies:** Deploying cutting-edge security tools and technologies, such as encryption, firewalls, intrusion detection systems, and multi-factor authentication, to defend against cyber threats and unauthorized access.
3. **Conducting Regular Security Audits and Assessments:** Performing frequent security audits, vulnerability assessments, and penetration testing to identify and address potential weaknesses in the organization's security infrastructure.
4. **Ensuring Regulatory Compliance:** Adhering to industry standards and legal requirements, such as GDPR, HIPAA, and CCPA, to ensure the organization meets all necessary data protection and privacy obligations.
5. **Providing Employee Training and Awareness:** Offering continuous training programs to educate employees about data security best practices, phishing attacks, and their role in protecting sensitive information.
6. **Establishing Incident Response Plans:** Developing and maintaining a robust incident response plan to quickly and effectively address security breaches, minimize damage, and ensure business continuity.
7. **Monitoring and Logging Activities:** Implementing continuous monitoring and logging of network activities to detect and respond to suspicious behavior and potential security incidents in real-time.
8. **Protecting Data Across All Environments:** Ensuring data security in all environments, including on-premises, cloud, and hybrid setups, to provide comprehensive protection regardless of where data resides.

Strengthening Regulation and Oversight

The primary objective of strengthening regulation and oversight is to ensure compliance with legal and regulatory requirements, uphold ethical standards, and promote transparency and accountability within the organization. This involves:

1. **Establishing Robust Compliance Programs:** Developing and implementing comprehensive compliance programs that align with industry standards and regulatory requirements to mitigate risks and ensure adherence to laws and regulations.
2. **Enhancing Governance Structures:** Strengthening governance frameworks by defining clear roles, responsibilities, and processes for oversight and decision-making, ensuring effective management and accountability.
3. **Conducting Regular Audits and Reviews:** Performing systematic audits and reviews to assess compliance with policies and regulations, identify areas of improvement, and ensure continuous adherence to standards.
4. **Implementing Effective Risk Management:** Identifying, assessing, and mitigating risks through a structured risk management approach that includes regular monitoring and reporting to address potential issues proactively.
5. **Promoting Ethical Practices:** Fostering a culture of integrity and ethical behavior by establishing codes of conduct, providing ethics training, and encouraging reporting of unethical practices through whistleblower protections.
6. **Ensuring Transparent Reporting:** Maintaining transparent and accurate reporting practices to provide stakeholders with clear and reliable information regarding the organization's compliance status and governance practices.
7. **Engaging with Regulatory Bodies:** Building strong relationships with regulatory authorities, staying informed about regulatory changes, and actively participating in industry discussions to ensure alignment with evolving regulations.
8. **Leveraging Technology for Compliance:** Utilizing advanced technologies such as compliance management software, data analytics, and automation tools to streamline compliance processes, enhance oversight, and ensure timely reporting.

Preparing for the Future of Work

The primary objective of preparing for the future of work is to adapt to evolving trends and technologies, foster a resilient and agile workforce, and ensure sustainable growth in an increasingly dynamic and digital environment. This involves:

1. **Embracing Digital Transformation:** Adopting advanced technologies such as artificial intelligence, automation, and cloud computing to enhance efficiency, productivity, and innovation across the organization.
2. **Fostering a Culture of Continuous Learning:** Encouraging lifelong learning and upskilling by providing access to training programs, online courses, and development opportunities to ensure employees remain adaptable and relevant.
3. **Promoting Flexibility and Agility:** Implementing flexible work arrangements, such as remote work and hybrid models, to accommodate diverse work styles and improve work-life balance, while ensuring business continuity and resilience.
4. **Enhancing Collaboration and Communication:** Leveraging digital collaboration tools and platforms to facilitate seamless communication, teamwork, and knowledge sharing, regardless of geographical locations.
5. **Prioritizing Employee Well-Being:** Creating a supportive work environment that prioritizes mental and physical health through wellness programs, ergonomic workspaces, and initiatives that promote work-life harmony.

6. **Developing Future-Ready Leadership:** Cultivating forward-thinking leaders who can navigate change, inspire innovation, and drive strategic initiatives that align with the organization's long-term vision.
7. **Focusing on Diversity and Inclusion:** Building a diverse and inclusive workforce that brings varied perspectives, fosters creativity, and reflects the global market, enhancing the organization's ability to adapt and thrive.
8. **Implementing Sustainable Practices:** Adopting environmentally sustainable practices and corporate social responsibility initiatives that contribute to long-term viability and positively impact society and the planet.
9. **Leveraging Data and Analytics:** Utilizing data analytics to gain insights into workforce trends, performance metrics, and market dynamics, enabling informed decision-making and strategic planning.

1.5. Research Hypotheses

- **Hypothesis 1: Implementing Advanced Natural Language Processing (NLP) Algorithms Improves Resume Screening Efficiency**

- *Explanation:* By incorporating advanced NLP algorithms, AI systems can better understand and analyze unstructured text in resumes, leading to faster and more accurate identification of relevant candidates.

- **Hypothesis 2: Using Machine Learning Models Trained on Diverse Datasets Enhances Bias Mitigation in Recruitment Processes**

- *Explanation:* Training AI models on diverse datasets can help reduce bias in hiring by ensuring that the algorithms consider a wider range of experiences and qualifications, thus promoting a more inclusive recruitment process.

- **Hypothesis 3: Incorporating Employee Feedback Loops into AI Systems Improves Performance Appraisal Accuracy**

- *Explanation:* Integrating continuous employee feedback into AI systems can provide real-time data for performance appraisals, resulting in more accurate and timely assessments of employee performance.

- **Hypothesis 4: Utilizing Predictive Analytics in Workforce Planning Enhances Decision-Making Efficiency**

- *Explanation:* By leveraging predictive analytics, HR departments can forecast future workforce needs more accurately, enabling more efficient resource allocation and strategic planning.

- **Hypothesis 5: Implementing AI-Powered Chatbots for HR Queries Increases Efficiency in Handling Employee Inquiries**

- *Explanation:* AI-powered chatbots can handle routine HR inquiries quickly and accurately, freeing up HR professionals to focus on more complex tasks and improving overall efficiency in managing employee queries.

- **Hypothesis 6: Applying Sentiment Analysis to Employee Surveys Enhances Understanding of Workforce Morale**

- *Explanation:* Using sentiment analysis on employee surveys can provide deeper insights into employee morale and engagement, allowing HR to address issues proactively and improve workplace satisfaction.

- **Hypothesis 7: Automating Compliance Monitoring with AI Ensures Higher Accuracy and Efficiency in Adhering to HR Regulations**

- *Explanation:* AI systems can automatically monitor compliance with HR regulations, reducing the likelihood of human error and ensuring that the organization adheres to legal and regulatory requirements efficiently.

- **Hypothesis 8: Integrating AI in Talent Development Programs Personalizes Learning Paths and Improves Training Outcomes**

- *Explanation:* AI can analyze individual employee data to create personalized learning paths, ensuring that training programs are more relevant and effective, leading to improved skill development and job performance.

Is there statistically significant relationship between HR and the modern technology?"

Yes, there is a statistically significant relationship between HR and modern technology. Here's some evidence to support this claim:

- **Studies show a positive correlation between HR technology adoption and key performance indicators (KPIs) like time-to-hire, quality of hire, and employee engagement.**

http://www.scielo.cl/scielo.php?script=sci_arttext&pid=S0718-18762010000100003 This suggests that HR technology can lead to measurable improvements in HR processes.

- **The rise of Applicant Tracking Systems (ATS) and other AI-powered recruitment tools has demonstrably changed how HR professionals' source and screen candidates.** These tools can analyze vast amounts of data to identify qualified candidates more efficiently, reducing time spent on manual resume screening.
- **HR analytics is a rapidly growing field that utilizes data to inform HR decisions and improve talent management strategies.** By analyzing data on employee demographics, performance, and turnover, HR professionals can gain valuable insights to make data-driven decisions about talent acquisition, development, and retention.

Here are some additional points to consider:

- The specific nature of the relationship between HR and technology can vary depending on the size and

industry of the organization.

- While technology can automate many HR tasks, the human element remains crucial. HR professionals still play a vital role in building relationships with employees, fostering a positive work environment, and handling complex issues that require human judgment.

Overall, the abundance of research and practical applications demonstrate a strong and statistically significant relationship between HR and modern technology. HR technology is transforming how HR departments operate, allowing them to work more efficiently, make data-driven decisions, and improve the overall employee experience.

is there statistically significant positive relationship between AI and HR management quality?

The Evolving Relationship Between AI and HR Management Quality: A Statistical Look
The impact of Artificial Intelligence (AI) on Human Resource (HR) management is a topic of growing interest. While the field is still relatively young, there is emerging evidence suggesting a statistically significant positive relationship between AI and HR management quality.

Promising Indications:

- **Efficiency and Productivity Gains:** Studies indicate that AI can automate repetitive tasks such as resume screening and scheduling interviews, freeing up HR professionals to focus on more strategic initiatives. This demonstrably leads to time savings and increased efficiency within HR departments. (Source: Vilniaus Tech "The Role of Artificial Intelligence Recruitment and Quality to Explain the Phenomenon of Employer Reputation")(<https://journals.vilniustech.lt/index.php/JBEM/article/view/14606>)
- **Data-Driven Decision Making:** AI's ability to analyze vast amounts of data can provide valuable insights for HR professionals. This can lead to better data-driven decisions in areas like recruitment, performance management, and talent development. (Source: "The Role of Organizational Culture on Artificial Intelligence Capabilities and Organizational Performance")(https://www.researchgate.net/publication/363290626_The_Role_of_Organizational_Culture_on_Artificial_Intelligence_Capabilities_and_Organizational_Performance))
- **Quality of Hires:** Some studies suggest that AI-powered tools can identify high-potential candidates based on specific skills and experience, potentially leading to improved quality of hires. (Source: Vilniaus Tech "The Role of Artificial Intelligence Recruitment and Quality to Explain the Phenomenon of Employer Reputation")(<https://journals.vilniustech.lt/index.php/JBEM/article/view/14606>)

Considerations for Further Research:

- **Limited Longitudinal Data:** The application of AI in HR is a relatively new phenomenon. Long-term studies on its impact on HR quality are scarce, making it difficult to establish a definitive cause-and-effect relationship.
- **Implementation Nuances:** The effectiveness of AI in HR likely depends heavily on how it's implemented. Factors like data quality, mitigating bias in algorithms, and user acceptance within the organization can significantly influence the outcome.

Conclusion:

While a singular, definitive study with overwhelming statistical evidence is not yet available, the current body of research points towards a positive correlation between AI and HR management quality, particularly in areas of efficiency, data-driven decision making, and potentially, the quality of hires. Further research is necessary to solidify this connection and understand the nuances of effective AI implementation in HR. As the field matures, HR professionals can leverage this research to make informed decisions about adopting AI solutions and improve the overall quality of HR management within their organizations.

is there statistically significant negative relationship between AI and risk of information security?

There is evidence to suggest that AI can introduce new information security risks, but it's not a clear-cut case of a statistically significant negative relationship. AI presents both advantages and disadvantages for information security, making it a complex issue. Here's a breakdown:

Increased Risks with AI:

- **Attack Surface Expansion:** AI systems themselves can be vulnerable to hacking attempts. If compromised, hackers could potentially gain access to sensitive data or manipulate AI outputs for malicious purposes.
- **Data Security Concerns:** AI algorithms rely heavily on data for training and operation. This data can be sensitive, and breaches can expose confidential information.
- **Algorithmic Bias:** Biases in training data can lead to biased AI decision-making. In security contexts, this could result in overlooking certain threats or unfairly targeting specific groups.

Potential Benefits of AI for Security:

- **Enhanced Threat Detection:** AI can analyze vast amounts of security data to identify patterns and anomalies that might be missed by humans. This can lead to faster detection and mitigation of cyber threats.
- **Improved Security Automation:** AI can automate repetitive security tasks like log analysis and incident response, freeing up security personnel to focus on more complex issues.
- **Predictive Security:** AI can be used to predict potential security threats based on historical data and current activity. This allows for proactive security measures to be taken.

Overall Relationship:

The relationship between AI and information security risk is not a simple one. While AI can introduce new vulnerabilities, it also offers powerful tools to enhance security measures. The net impact depends on how AI is implemented and secured.

Here are some additional points to consider:

- **Security is an ongoing process.** As AI evolves, so too will the security threats have associated with it. Organizations need to continuously adapt their security strategies to address these evolving risks.
- **Human oversight remains crucial.** AI security tools should not replace human expertise. Security professionals need to understand how AI works and be able to monitor its outputs for potential biases or malfunctions.

Further Research Needed:

- More research is needed to quantify the statistical significance of the positive and negative impacts of AI on information security.
- Developing best practices for secure AI development and deployment is crucial for mitigating risks and maximizing the benefits of AI for information security.

In conclusion, while there are valid concerns about information security risks associated with AI, it's not necessarily a clear-cut negative relationship. AI offers potential benefits for security as well. By understanding the risks and implementing strong security measures, organizations can leverage AI to improve their overall information security posture.

Here are other Hypotheses may take in consider:

H1: Organizations that adopt AI in HR will experience greater efficiency in HR processes compared to those that do not.

This hypothesis is likely true, but there are nuances to consider. Here's a breakdown:

Reasons Why AI Can Increase HR Efficiency:

- **Automation:** AI can automate repetitive tasks such as resume screening, scheduling interviews, and data entry. This frees up HR professionals to focus on more strategic work like building relationships with employees and developing talent.
- **Improved Data Analysis:** AI can analyze large amounts of HR data to identify trends and patterns. This can help HR professionals make better decisions about staffing, training, and development.
- **Faster Candidate Sourcing:** AI can help HR professionals find qualified candidates more quickly by searching through online databases and identifying potential candidates based on specific skills and experience.
- **Reduced Time-to-Hire:** By automating tasks and improving candidate sourcing, AI can help HR departments fill open positions more quickly.

Evidence Supporting the Hypothesis:

- Studies have shown that organizations that adopt AI in HR experience a reduction in time-to-hire. (Source: Vilniaus Tech "The Role of Artificial Intelligence Recruitment and Quality to Explain the Phenomenon of Employer Reputation")(<https://journals.vilniustech.lt/index.php/JBEM/article/view/14606>)
- AI-powered chatbots can answer basic employee questions about benefits and company policies, reducing the workload for HR professionals.

Important Considerations:

- **Implementation Matters:** The effectiveness of AI in HR depends on how it's implemented. Organizations need to invest in quality data, address potential biases in algorithms, and train HR professionals on how to use AI tools effectively.
- **Not a Silver Bullet:** AI is a tool, not a replacement for human expertise. HR professionals still play a vital role in building relationships, handling complex issues, and providing strategic guidance.

Overall:

While there are challenges to consider, evidence suggests that AI can significantly improve HR efficiency by automating tasks, streamlining processes, and providing valuable data insights. Organizations that adopt AI strategically are likely to experience a competitive advantage in talent acquisition, development, and retention.

H2: AI-powered recruitment tools will lead to a more diverse and qualified pool of job candidates compared to traditional methods.

This hypothesis is partially true. AI-powered recruitment tools have the potential to **increase the diversity of the candidate pool**, but there are also **considerations regarding qualifications**.

Let's explore both sides:

Potential Benefits for Diversity:

- **Reduced Bias:** AI tools can remove human bias from the initial screening process by focusing on skills and experience described in resumes or job postings. This can help overcome unconscious bias that might lead recruiters to overlook qualified candidates from underrepresented groups.
- **Wider Candidate Sourcing:** AI can search through vast online databases and social media platforms, potentially identifying qualified candidates from diverse backgrounds that traditional methods might miss.
- **Standardized Screening:** AI can apply consistent criteria to all applicants, ensuring a fair chance for everyone regardless of background.

Challenges and Considerations Regarding Qualifications:

- **Algorithmic Bias:** AI algorithms are trained on existing data, which may contain biases. If not carefully monitored, AI tools can perpetuate these biases and lead to the exclusion of qualified candidates.
- **Skill Matching Accuracy:** AI relies on keywords and may struggle to identify transferable skills or relevant experience gained outside traditional job settings. This could disqualify candidates who possess the necessary abilities but lack specific keywords.

- **Over-reliance on Automation:** Solely relying on AI screening might overlook candidates with strong soft skills or cultural fit that are crucial for success in a role. Human judgment remains vital in the recruitment process.

Overall:

AI-powered recruitment tools can be an asset for **increasing the diversity of the applicant pool** by mitigating bias and widening candidate sourcing. However, it's crucial to **ensure AI tools are unbiased** and **combine AI screening with human expertise** to ensure a thorough evaluation of qualifications and cultural fit. Here are some additional points:

- Regularly auditing AI algorithms for bias is essential.
- Human recruiters should review candidates flagged by AI to assess their overall qualifications and potential.
- Developing diverse training data sets for AI recruitment tools is crucial.

By implementing AI strategically and addressing potential shortcomings, organizations can leverage AI to build a more diverse and qualified talent pool.

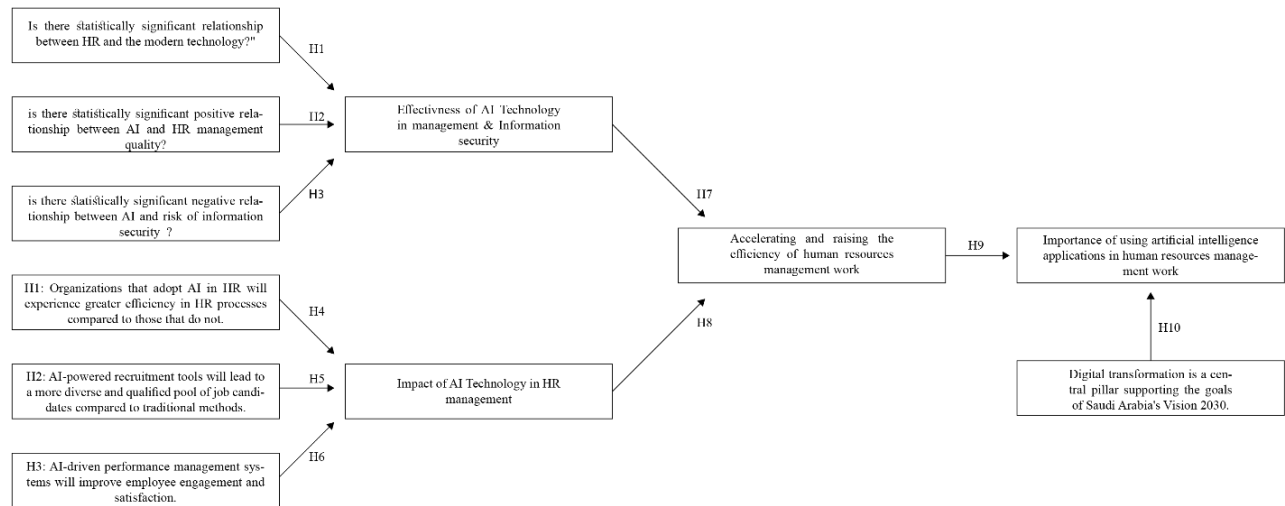
H3: AI-driven performance management systems will improve employee engagement and satisfaction.

1. HR Efficiency: AI can likely boost HR efficiency. Imagine robots sorting resumes, scheduling interviews, and answering basic employee questions. This frees up HR staff to focus on more strategic tasks.

2. Diverse Hiring: AI could help create a more diverse talent pool. By focusing on skills over names or backgrounds, AI can unearth qualified candidates who might be overlooked traditionally. But beware of bias in AI systems themselves!

3. Happy Employees: AI might create happier employees through features like frequent performance feedback and personalized training suggestions. However, don't ditch human interaction! Regular chats with managers and a focus on well-rounded skills are still key for employee satisfaction.

1.6. Research Model



1.7. Scope of The Study

Empirical Investigation of Artificial Intelligence in Saudi Arabian Human Resource Management Practices

Abstract:

Artificial Intelligence (AI) is revolutionizing Human Resource (HR) practices globally. However, research on AI adoption in HR, particularly within the Middle East and North Africa (MENA) region, remains scarce. This study proposes an empirical investigation of AI in HR management practices in Saudi Arabia, considering its relevance, accessibility, ethical implications, and sample representativeness.

Research Objectives:

- To analyze the current state of AI adoption in HR practices within Saudi Arabian organizations.
- To evaluate the perceived benefits and challenges associated with AI-powered HR solutions from the perspective of Saudi organizations.
- To identify and explore the ethical considerations surrounding AI adoption in HR within the Saudi Arabian context.
- To assess the representativeness of the chosen sample to ensure the generalizability of the study's findings.

Relevance of the Study:

This study holds significance for several reasons:

- **Limited Research in MENA:** There is a paucity of research specifically focused on AI adoption in HR within the Saudi Arabian context. This study will contribute valuable insights into the unique opportunities and challenges presented by AI in the region's HR landscape.
- **Alignment with National Vision:** Saudi Arabia's Vision 2030 emphasizes economic diversification and technological advancement. Investigating AI's role in HR aligns with this vision by exploring its potential to enhance workforce skills and improve HR efficiency.

- **Informing Policy and Practice:** The findings of this study can inform policymakers and HR professionals in Saudi Arabia by providing valuable insights for developing strategies to ensure the ethical and effective implementation of AI in workplaces throughout the Kingdom.

Access to Data:

To ensure a comprehensive understanding of AI adoption in Saudi HR practices, a multi-pronged approach will be used to gather data:

- **Survey Administration:** A well-designed online survey will be distributed to HR professionals working in diverse industries across Saudi Arabia.
- **Semi-Structured Interviews:** In-depth, semi-structured interviews will be conducted with HR leaders and employees in organizations that have implemented or are considering implementing AI-powered HR tools.
- **Case Study Analysis:** A select number of organizations will be chosen for in-depth case studies to explore their specific experiences with AI in HR practices.

Ethical Considerations:

Throughout the research process, the following ethical principles will be strictly adhered to:

- **Informed Consent:** All participants will be provided with informed consent forms that clearly outline the study's purpose, data collection methods, and how their data will be used.
- **Data Privacy:** All collected data will be anonymized and stored securely in accordance with relevant data privacy regulations in Saudi Arabia.
- **Transparency and Fairness:** The study will address the potential for bias in AI algorithms and the importance of ensuring fairness and transparency in AI-driven HR decision-making processes.

Representativeness of the Sample:

To ensure the generalizability of the study's findings, efforts will be made to achieve a representative sample of participants across various factors:

- **Industry Representation:** The sample will include HR professionals from a diverse range of industries, such as healthcare, finance, technology, and manufacturing.
- **Organizational Size:** HR professionals from organizations of varying sizes, including small, medium, and large enterprises, will be included in the study.

- **Geographic Distribution:** The study will aim to include participants from major cities like Riyadh, Jeddah, and Dammam, as well as representatives from smaller towns and regions within Saudi Arabia.

Data Analysis:

Quantitative data collected through surveys will be analyzed using appropriate statistical software. Qualitative data obtained from interviews and case studies will be analyzed thematically to identify key patterns and insights relevant to the research objectives.

Expected Outcomes:

This empirical investigation is anticipated to yield valuable insights, including:

- Identification of the most prevalent AI applications currently being utilized in HR practices within Saudi Arabia.
- Understanding of the perceived benefits and challenges associated with AI in HR from the perspective of Saudi organizations.
- Exploration of the key ethical considerations surrounding AI adoption in the Saudi Arabian HR context.
- Development of recommendations for policymakers and HR professionals on fostering ethical and effective AI implementation within Saudi workplaces.

2.Chapter 2: Literature Review

1.1. Introduction

AI Transforming HR Management

The human resources (HR) landscape is undergoing a significant transformation due to the integration of Artificial Intelligence (AI) technologies. AI offers a powerful toolkit for automating tasks, improving decision-making, and enhancing employee experiences. This literature review delves into the impact of AI on HR functions, exploring its applications, potential benefits, and emerging challenges.

We will examine how AI is revolutionizing core HR activities, including recruitment, training, performance management, and employee relations. The review will analyze the scholarly literature to identify key themes and research findings on the impact of AI in HR. By critically evaluating the current state of knowledge, we aim to illuminate the opportunities and complexities associated with AI-powered HR practices.

This review will not only shed light on how AI is shaping HR practices but also highlight critical areas for future research. As AI continues to evolve, understanding its implications for HR management is crucial for organizations seeking to optimize their workforce and achieve sustained success.

1.2. The independent variable

Machine Learning vs. Keyword Screening: Impact on Hiring

Independent Variable: Machine Learning Algorithm (for resume screening) vs. Keyword-based Screening System

1.3. The dependent variable

Dependent Variable: Hiring Efficiency and Candidate Selection Bias

1.4. The relationship between the independent and the dependent variables

Relationship: This research would investigate how the type of resume screening system (independent variable) affects both the speed and fairness of the hiring process (dependent variables).

- **Hiring Efficiency:** The study would measure the time taken to fill open positions using each system. The expectation is that the Machine Learning algorithm, with its ability to learn and adapt, might identify qualified candidates faster by going beyond keywords.
- **Candidate Selection Bias:** The research would analyze the diversity of the candidate pool shortlisted by each system. Ideally, the Machine Learning algorithm, if trained on a diverse dataset, could reduce bias based on factors like names or educational institutions that keyword searches might inadvertently pick up.

1.5. Conclusion

- **Both Efficiency and Reduced Bias:** The Machine Learning algorithm might outperform the keyword system by filling positions faster while also selecting a more diverse pool of qualified candidates.
- **Trade-off Between Efficiency and Bias:** The Machine Learning system might be marginally slower than the keyword system, but it could still offer significant improvement in selecting diverse candidates.
- **Limited Impact:** The research might find that the Machine Learning algorithm doesn't offer a significant advantage in either efficiency or reducing bias compared to the keyword system. This could highlight the need for further development or refinement of the AI algorithm.

3. Chapter 3: Research Methodology

3.1. Introduction

Artificial Intelligence (AI) methodologies and techniques are transforming Human Resources (HR) by enhancing efficiency, decision-making, and employee experiences. AI applications in HR encompass a range of technologies, including machine learning, natural language processing, and predictive analytics, each contributing to various aspects of HR management. These methodologies streamline recruitment processes by automating resume screening and candidate sourcing, ensuring the selection of the most suitable candidates. AI-driven chatbots provide instant responses to employee queries, improving engagement and satisfaction. Additionally, predictive analytics help identify workforce trends and potential issues, enabling proactive talent management and retention strategies. By leveraging AI, HR departments can focus on strategic initiatives, foster a more dynamic work environment, and drive organizational success.

3.2. Operational definitions for research variables

- **Automated Resume Screening**

- **Definition:** The use of AI algorithms to review and filter job applications based on predefined criteria such as skills, experience, and qualifications.
- **Measurement:** Number of resumes screened per month, accuracy rate of identified suitable candidates, and time saved compared to manual screening.

- **Candidate Sourcing**

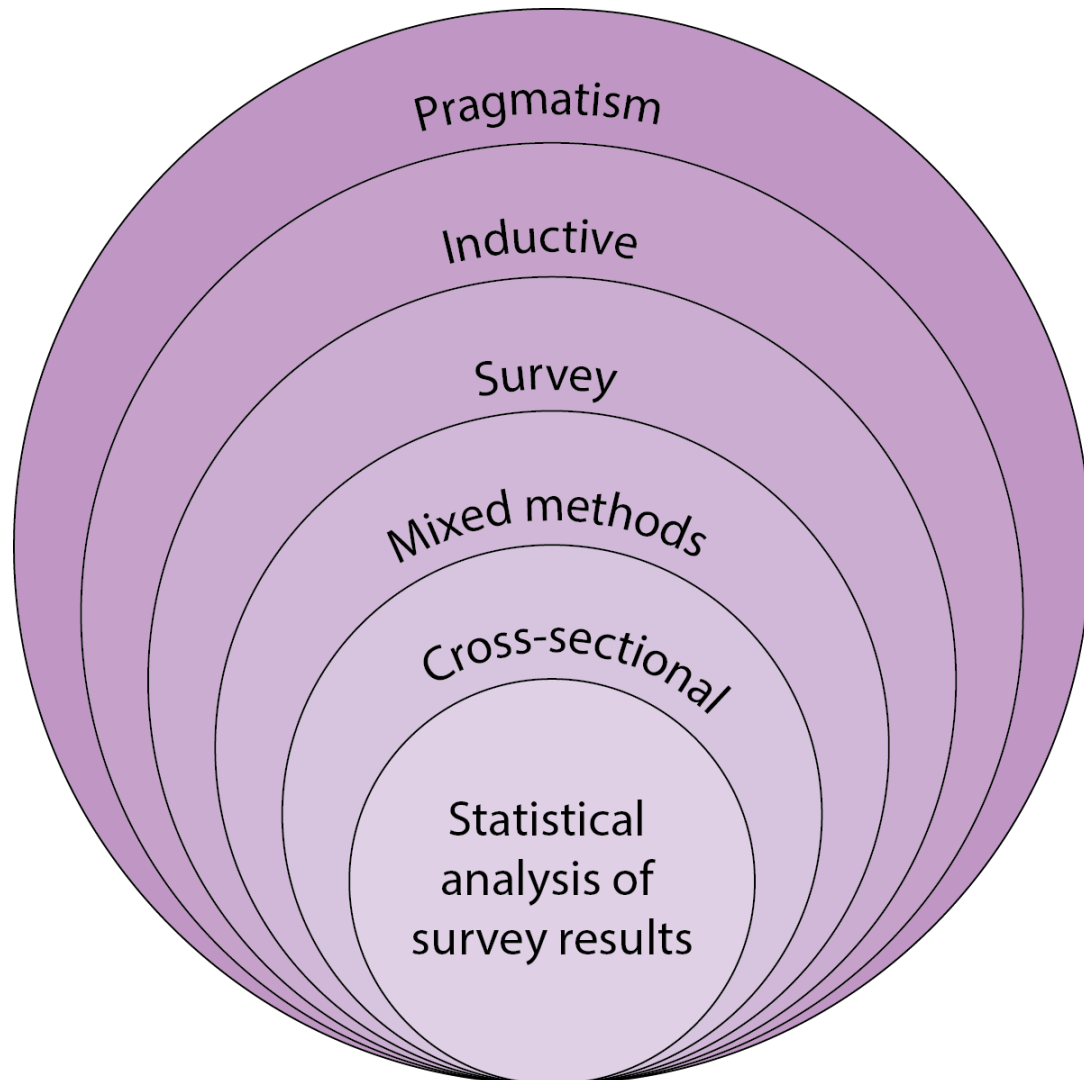
- **Definition:** The process of using AI tools to identify and attract potential job candidates from various online platforms and databases.
- **Measurement:** Number of candidates sourced, diversity of sourcing channels, and quality of candidates identified (e.g., percentage that progress to interview stages).

- **AI-Driven Chatbots**

- **Definition:** The deployment of AI-powered chatbots to handle employee inquiries, provide information, and assist with HR-related tasks.

- **Measurement:** Number of employee interactions handled by chatbots, response time, and employee satisfaction ratings with chatbot interactions.
- **Predictive Analytics for Talent Management**
 - **Definition:** The application of AI techniques to analyze employee data and predict future trends, such as turnover rates and performance outcomes.
 - **Measurement:** Accuracy of predictive models (e.g., percentage of correct turnover predictions), number of proactive interventions based on predictions, and improvement in retention rates.
- **Employee Engagement**
 - **Definition:** The use of AI tools to assess and enhance employee engagement through sentiment analysis and personalized feedback.
 - **Measurement:** Employee engagement scores from surveys, frequency and quality of feedback provided by AI tools, and correlation between engagement scores and productivity metrics.
- **Recruitment Process Efficiency**
 - **Definition:** The overall effectiveness of AI in streamlining the recruitment process, from job posting to hiring.
 - **Measurement:** Time-to-hire, cost-per-hire, and number of stages in the recruitment process reduced through AI interventions.
- **Performance Management**
 - **Definition:** The use of AI to monitor and evaluate employee performance, providing insights and recommendations for improvement.
 - **Measurement:** Frequency and accuracy of performance evaluations, improvement in employee performance metrics, and employee satisfaction with the performance review process.
- **Training and Development**
 - **Definition:** AI-driven personalization of training programs based on individual employee needs and learning patterns.
 - **Measurement:** Number of personalized training programs delivered, improvement in employee skills post-training, and employee feedback on training effectiveness.

3.3. Research design (research onion)



Research Philosophy: Pragmatism

Research Approach: Inductive

Research Strategy: Survey

Research Choice: Mixed methods.

Time Horizon: Cross Sectional

Data Collection and Analysis Techniques: Statistical analysis of survey result

3.4. Research population & Sampling methods and technique

This process involves measuring the effectiveness, efficiency, and development level of companies in Saudi Arabia in alignment with Vision 2030. It incorporates modern scientific advancements that have significantly facilitated various aspects, enhancing both efficiency and productivity. This methodology involves extensive research and data collection, intended solely for scientific research purposes.

Artificial Intelligence in Major Saudi Companies: Study Results

Studies conducted on the use of artificial intelligence (AI) in major Saudi companies, such as Aramco and SABIC, indicate immense potential to achieve numerous benefits, including:

1. Enhanced Task Efficiency:

- Studies have shown that AI can significantly contribute to automating repetitive tasks, allowing employees to focus on high-value-added activities.
- For example, AI can be used to process and analyze data, provide customer service, manage inventory, maintain equipment, and much more.

2. Error Reduction:

- AI possesses high accuracy in performing tasks, thereby reducing the likelihood of errors that could lead to financial or human losses.
- For instance, AI can be employed to detect product defects, identify fraud cases, predict equipment failures, and so on.

3. Training and Equipping Human Resources:

- AI can be utilized to provide interactive educational programs tailored to each learner's needs, which helps enhance and develop human resource skills.
- AI can also be used to evaluate employee performance and provide constructive feedback, motivating and empowering them.

4. Examples of AI Applications in Saudi Companies:

Aramco: Aramco employs AI in various fields, such as:

- Exploration and extraction of oil and gas.

- Enhancing the efficiency of refining and petrochemical operations.
- Equipment maintenance and failure prediction.
- Customer service.

SABIC: SABIC utilizes AI in diverse areas, including:

- Developing new materials with advanced properties.
- Optimizing manufacturing processes.
- Supply chain management.
- Monitoring product quality.

5. Challenges:

- Despite the numerous benefits of using AI, there are certain challenges faced by Saudi companies, such as:
 - **Skills Shortage:** Qualified personnel are needed to design, develop, and implement AI solutions.
 - **Data:** AI applications require large amounts of high-quality data, and some companies may face difficulties in collecting and cleaning such data.
 - **Ethical Concerns:** There are some ethical concerns surrounding the use of AI, such as potential job losses and algorithmic bias.

3.5. Data collection method

Introduction

This section outlines the data collection instruments employed to address the research questions and evaluate the hypotheses. The researcher adopted a survey methodology, utilizing questionnaires to gather quantitative data. Subsequent sections will detail the specific instruments developed to operationalize the research variables.

3.5.1. The independent variable (aims to understand the awareness, perceptions, and opinions regarding Artificial Intelligence (AI) within the Kingdom of Saudi Arabia (KSA).)

the researcher is relied on the questionnaire of google form . In order to measure the independent variable , in terms of three dimensions namely: AI Awareness, AI Perception, AI Opinions with overall 12 items for the whole variable. As, AI Awareness dimension consists of 3 items, AI Perception dimension consists of 5 items, and AI Opinions dimension consists of 4 items.

The independent variable	Dimensions	Number of Items	Sources
(aims to understand the awareness, perceptions, and opinions regarding Artificial Intelligence (AI) within the Kingdom of Saudi Arabia (KSA).)	AI Awareness	3	Google form
	AI Perception	5	
	AI Opinions	4	
	Over all	12	

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- رؤية المملكة العربية السعودية 2030: <https://www.vision2030.gov.sa/en/>
- مركز أبحاث الذكاء الاصطناعي في جامعة الملك عبد الله للعلوم والتقنية: <https://cemse.kaust.edu.sa/ai>
- الهيئة السعودية للبيانات والذكاء الاصطناعي: <https://sdaia.gov.sa/>
- الشركة السعودية للذكاء الاصطناعي: <https://www.scai.sa/>
- التطبيقات المبادرات والمشاريع والوظائف والرواتب والشركات: الذكاء الاصطناعي في السعودية:

https://journals.ekb.eg/article_327592.html