THE EVOLUTION OF AI TECHNOLOGIES IN HRM WITH REFERENCE TO GLOBAL PERSPECTIVE AND UK PERSPECTIVE

I INTRODUCTION

The integration of Artificial Intelligence (AI) technologies in Human Resource Management (HRM) has garnered significant attention in recent years, reshaping traditional HR practices and processes. This chapter aims to provide a comprehensive exploration of the evolution of AI technologies in HRM, offering insights from both a global perspective and with a specific focus on the United Kingdom (UK). By examining historical developments, current trends, and outlook, this chapter seeks to elucidate the transformative impact of AI on HRM practices worldwide.

Historical Context

The journey towards integrating AI technologies in HRM can be traced back to the early adoption of computers and specialized software applications in HR processes. From the introduction of mainframe computers for payroll processing to the emergence of HR Information Systems (HRIS) in the 1980s and 1990s, technological advancements laid the foundation for the digitalization of HRM practices (Stone, 1987). This historical context provides a backdrop for understanding the trajectory of AI integration in HRM.

Current Trends

In the contemporary landscape, AI technologies are revolutionizing various facets of HRM, including recruitment, talent management, employee engagement, and workforce analytics. Globally, organizations are leveraging AI-powered tools and platforms to automate routine tasks, enhance decision-making processes, and optimize HR operations (Bersin, 2019). A comparative analysis of global trends and UK-specific practices offers valuable insights into the adoption and impact of AI technologies in different contexts.

Outlook

Looking ahead, the future of AI in HRM holds immense potential for further innovation and transformation. With advancements in machine learning, natural language processing, and predictive analytics, AI technologies are poised to play an increasingly integral role in shaping HRM practices. However, challenges such as ethical considerations, data privacy

concerns, and regulatory frameworks need to be addressed to realize the full benefits of AI in HRM.

As organizations navigate the evolving landscape of HRM, understanding the evolution of AI technologies and their implications becomes paramount. This chapter aims to contribute to the scholarly discourse by providing insights into the global evolution of AI in HRM, while also offering a nuanced perspective on the UK-specific context. By examining historical developments, current trends, and outlook, this chapter seeks to inform academics, practitioners, and policymakers about the transformative potential of AI in HRM practices.

I.A Definition Of AI In HRM

Artificial Intelligence in HRM refers to the utilization of advanced technologies, such as machine learning algorithms, natural language processing (NLP), and data analytics, to automate HR processes, enhance decision-making, and augment human capabilities within the realm of human resource management. According to Turchin and Bogdanova (2020), AI in HRM encompasses various applications, including recruitment and selection, performance management, employee engagement, learning and development, and predictive analytics.

I.B significance

The integration of AI technologies in HRM holds significant implications for organizations worldwide. Firstly, AI streamlines HR processes by automating repetitive tasks, thereby allowing HR professionals to focus on strategic initiatives and value-added activities (Davenport, 2018). Secondly, AI facilitates data-driven decision-making by providing insights derived from large volumes of data, enabling HR practitioners to make informed decisions related to talent acquisition, retention, and development (Bersin, 2019). Thirdly, AI enhances the candidate experience by personalizing interactions and improving communication throughout the recruitment process, leading to higher engagement and satisfaction levels (Elman et al., 2021).

Significance of AI in HRM

1. Enhanced Efficiency: AI automates repetitive tasks, allowing HR professionals to focus on strategic initiatives.

2. Data-Driven Decision-Making: AI provides insights from large datasets, facilitating informed HR decisions.

3. Improved Candidate Experience: AI personalizes interactions and improves communication throughout the recruitment process.

4. Enhanced Employee Engagement: AI enables tailored learning and development programs, enhancing employee satisfaction and retention.

I.C Purpose and Scope Of The Chapter

The purpose of this chapter is to explore the evolution of AI technologies in HRM, considering both global trends and the specific landscape within the UK. It aims to analyze the adoption of AI in various HR functions, assess its impact on organizational performance and employee experience, and identify challenges and opportunities associated with its implementation. Furthermore, the chapter will discuss the regulatory frameworks governing AI in HRM, ethical considerations, and future directions for research and practice in this domain.

The scope of the chapter encompasses:

a. Historical Development: Examining the early beginnings of AI in HRM, key milestones, and paradigm shifts in AI technologies.
b. Current Trends: Analyzing the adoption of AI in various HR functions globally and in the UK, including recruitment, performance management, and employee engagement.
c. Impact Assessment: Assessing the impact of AI on organizational performance, employee experience, and HR practices.
d. Regulatory Frameworks: Discussing regulatory frameworks governing AI in HRM, ethical considerations, and compliance requirements.
e. Future Directions: Identifying challenges, opportunities, and future trends in AI technologies and their implications for HRM.

Through a comprehensive review of literature, case studies, and expert insights, this chapter seeks to provide a holistic understanding of the evolution of AI technologies in HRM, offering valuable insights for academics, practitioners, and policymakers alike.

II HISTORIC DEVELOPMENTS OF AI IN HRM

The historical development of Artificial Intelligence (AI) in Human Resource Management (HRM) spans several decades, characterized by significant advancements in technology and changes in organizational practices. This section provides a detailed exploration of key

milestones in the integration of AI technologies in HRM, encompassing global perspectives and insights specific to the United Kingdom (UK).

II.A Early Beginnings Of AI in HRM

II.A.1 Introduction of Computers in HR Processes

The introduction of computers in HR processes marked a fundamental shift in the way organizations managed their human capital. Table 1 illustrates the evolution of computerization in HRM.

Decade	Key Milestones
1960s	Introduction of mainframe computers
	Adoption of computers for payroll processing
1970s	Implementation of HRIS for record-keeping
	Automation of basic administrative tasks

II.A.2 Initial Automation Efforts in HR Processes

During the 1980s and 1990s, efforts to automate HR processes intensified, leading to the development of specialized software applications tailored to HR functions. Table 2 outlines key developments during this period.

Decade	Key Milestones
1980s	Emergence of HR software for recruitment and payroll
	Implementation of database management systems (DBMS)
1990s	Introduction of HRIS with modules for training and performance management
	Automation of employee self-service functionalities

These early automation efforts laid the groundwork for the integration of more sophisticated AI technologies in HRM.

The utilization of computers in HR processes marked the initial foray into the integration of technology in human resource management. In the 1960s and 1970s, organizations began to adopt mainframe computers to automate basic administrative tasks such as payroll processing and record-keeping (DeSanctis & Poole, 1994). This marked the beginning of the

digitalization of HR functions, laying the groundwork for further advancements in AI technologies.

II.A.3 Initial Automation Efforts in HR Tasks

During the 1980s and 1990s, efforts to automate HR processes intensified with the development of specialized software applications designed to streamline tasks such as recruitment, performance appraisal, and training administration. These early automation efforts focused primarily on enhancing efficiency and reducing administrative burdens for HR practitioners (Stone, 1987).

II.B Key Milestones in AI Integration

The emergence of expert systems in the 1980s represented a significant milestone in the integration of AI technologies in HRM. Expert systems were designed to mimic the decision-making processes of human experts by encoding their knowledge into a computerized system (Davis, 1984). In the context of HRM, expert systems were employed for tasks such as job matching, career counselling, and skills assessment, thereby augmenting HR professionals' decision-making capabilities.

II.B.1Adoption of Decision Support Systems

The adoption of decision support systems (DSS) in the 1990s further propelled the integration of AI in HRM. Decision support systems utilized advanced algorithms to analyze large volumes of data and provide insights to support decision-making processes (Power, 2002). In HRM, DSS were employed for tasks such as workforce planning, succession planning, and strategic talent management, enabling organizations to make more informed and data-driven HR decisions.

II.C Paradigm Shifts in AI and HRM

II.C.1Transition from Rule-Based Systems to Machine Learning

In recent years, there has been a paradigm shift in AI technologies employed in HRM, moving away from traditional rule-based systems towards machine learning algorithms. Machine learning algorithms can analyze vast amounts of data and identify patterns, trends, and correlations without explicit programming (Kaplan & Haenlein, 2019). In the context of HRM, machine learning algorithms are being utilized for tasks such as resume screening,

candidate matching, and predictive analytics, enabling organizations to enhance the efficiency and effectiveness of their talent acquisition and management processes.

II.C.2 Impact of Natural Language Processing in HR

The advent of natural language processing (NLP) has also had a profound impact on HRM by enabling computers to understand, interpret, and generate human language. NLP technologies, powered by machine learning algorithms, are being employed in various HR applications such as chatbots for candidate engagement, sentiment analysis of employee feedback, and analysis of textual data for workforce planning (Mikolov et al., 2013). By leveraging NLP technologies, organizations can improve communication with candidates and employees, gain deeper insights into employee sentiments and preferences, and enhance overall HR decision-making processes.

Through these paradigm shifts and advancements in AI technologies, HRM has evolved from basic automation of administrative tasks to sophisticated data-driven decision-making processes, revolutionizing the way organizations manage their human capital.

III TECHNOLOGICAL ADVANCEMENTS SHAPING AI in HRM

III.A. Role Of Big Data in HRM

Big Data has become increasingly prevalent in Human Resource Management (HRM), offering valuable insights that enable data-driven decision making and enhancing talent management strategies.

1. Data-driven Decision Making

In HRM, Big Data plays a crucial role in informing decision-making processes. HR professionals are inundated with vast amounts of data pertaining to employee demographics, performance metrics, and engagement levels. By harnessing Big Data analytics, organizations can extract actionable insights from this wealth of information, facilitating evidence-based decision making (Pfeffer & Sutton, 2006).

Table 1: Examples of Data-driven Decision Making in HRM

Decision Making Area	Data Source	Outcome
Recruitment	Applicant Tracking System	Identification of top-performing recruitment channels
Training and Development	Learning Management System	Analysis of training effectiveness and ROI
Performance Management	Performance Appraisal Data	Identification of high-potential employees
Succession Planning	Employee Skills Inventory	Identification of potential successors for key roles

These examples illustrate how Big Data enables HR professionals to make informed decisions across various HR functions, leading to improved organizational outcomes.

2. Analytics for Talent Management

Big Data analytics provide HR professionals with powerful tools to optimize talent management strategies. By analyzing data on employee performance, engagement, and turnover, organizations can gain insights into workforce dynamics and identify opportunities for talent development and retention (Wang & Huang, 2016). Table 2 outlines the key applications of analytics for talent management.

Table 2: Applications of Analytics for Talent Management

Talent Management Area	Analytics Application	Outcome
Recruitment	Predictive Analytics	Prediction of candidate success and retention
Employee Engagement	Sentiment Analysis	Identification of drivers of employee satisfaction
Succession Planning	Skills Gap Analysis	Identification of skill deficiencies and training needs

These applications demonstrate how Big Data analytics enable HR professionals to proactively address talent management challenges and drive organizational success.

III.B. Cloud Computing and AI

Cloud computing and Artificial Intelligence (AI) have emerged as transformative technologies in HRM, offering scalability, flexibility, and advanced functionalities to organizations.

1. Scalability and Flexibility in HR Solutions

Cloud computing provides organizations with scalable and flexible HR solutions that can adapt to changing business needs. By leveraging cloud-based HR systems, organizations can easily scale their HR infrastructure without the need for significant upfront investment in hardware or software (Mell & Grance, 2011). Table 3 highlights the benefits of scalability and flexibility in HR solutions enabled by cloud computing.

Table 3: Benefits of Scalability and Flexibility in HR Solutions

Benefits	Description
Reduced IT Infrastructure Costs	Cloud-based solutions eliminate the need for on-premises hardware and maintenance costs.
Increased Agility	Organizations can quickly adapt HR systems to accommodate changes in business requirements.
Seamless Integration	Cloud-based HR solutions can easily integrate with other business applications and tools.

These benefits underscore the transformative impact of cloud computing on HRM, enabling organizations to enhance agility and efficiency in HR operations.

2. Cloud-based HR Platforms

Cloud-based HR platforms leverage AI technologies to deliver advanced functionalities and user experiences. These platforms offer a range of HR services, including recruitment, performance management, and employee engagement, all accessible through a centralized, cloud-based platform (LaValle et al., 2011). Table 4 outlines the key features of cloud-based HR platforms.

Table 4: Key Features of Cloud-based HR Platforms

HR Functionality	Cloud-based Platform Features
Recruitment	AI-powered candidate sourcing and screening
Performance Management	Real-time feedback and goal tracking
Employee Engagement	Recognition programs and feedback mechanisms

These features demonstrate how cloud-based HR platforms leverage AI to deliver comprehensive HR solutions that meet the diverse needs of organizations.

C. Integration of AI with HR Software

Integration of AI technologies with HR software enhances various HR functions, including recruitment, performance management, and predictive analytics.

1. Recruitment and Applicant Tracking Systems

AI-powered recruitment and Applicant Tracking Systems (ATS) streamline the recruitment process by automating candidate sourcing, screening, and matching. These systems leverage AI algorithms to analyse resumes, assess candidate suitability, and identify top talent efficiently (Dery et al., 2017). Table 5 highlights the benefits of AI integration in recruitment and ATS.

Benefits	Description

Reduced Time-to-Hire	AI algorithms accelerate the candidate screening process, reducing time-to-hire.
Improved Candidate Quality	AI-driven matching algorithms identify candidates with the best fit for job requirements.
Enhanced Candidate Experience	Automated communication and scheduling improve the candidate experience

Table 5: Benefits of AI Integration in Recruitment and ATS

These benefits underscore the value of AI integration in recruitment and ATS, enabling organizations to attract and retain top talent effectively.

2. Performance Management and Predictive Analytics

AI-powered performance management systems leverage predictive analytics to assess employee performance, identify trends, and forecast future outcomes. By analyzing data on employee productivity, engagement, and performance, these systems provide actionable insights for performance improvement and talent development (Zeng et al., 2019). Table 6 illustrates the benefits of AI integration in performance management and predictive analytics.

Table 6: Benefits of AI Integration in Performance Management and Predictive Analytics

Benefits	Description
Real-time Feedback	AI-powered systems enable continuous feedback and performance monitoring.
Identification of Trends	Predictive analytics identify performance trends and patterns.
Customized Development Plans	AI algorithms recommend personalized development plans and career pathways.

These benefits highlight the transformative impact of AI integration in performance management, enabling organizations to foster a culture of continuous improvement and talent development.

In summary, Big Data, cloud computing, and AI technologies are revolutionizing HRM practices, offering unprecedented opportunities for organizations to optimize HR processes, drive data-driven decision making, and enhance talent management strategies.

IV GLOBAL PERSPECTIVE ON AI IN HRM

IV.A Cross Cultural Adoption of AI in HRM

The cross-cultural adoption of Artificial Intelligence (AI) in Human Resource Management (HRM) is a multifaceted process that requires careful consideration of cultural differences, norms, and values across diverse organizational settings. Scholars and researchers have examined various aspects of cross-cultural adoption to understand how AI technologies can be effectively integrated into HRM practices while accounting for cultural nuances.

One significant area of focus in cross-cultural adoption is the design and development of AI algorithms and systems that are culturally sensitive and adaptable. Studies have emphasized the importance of incorporating cultural diversity considerations into the design process to ensure that AI technologies are effective and acceptable across different cultural contexts (Tarique & Schuler, 2010). For example, AI-driven recruitment systems may need to account for cultural differences in resume formats, communication styles, and job application processes to be successful in diverse global markets.

Additionally, research has explored the role of cultural competency and training in facilitating the adoption of AI in HRM across different cultural settings. Cultural competency training programs for HR professionals can help enhance their understanding of cultural norms and values, enabling them to effectively leverage AI technologies in HRM practices (Mendenhall & Oddou, 2016). By developing cultural awareness and sensitivity, HR professionals can navigate cross-cultural challenges and ensure that AI-driven HRM initiatives are aligned with organizational goals and values.

Furthermore, scholars have examined the impact of cross-cultural adoption on employee attitudes and perceptions toward AI technologies in HRM. Studies have found that cultural factors such as individualism-collectivism, power distance, and uncertainty avoidance influence employees' acceptance and usage of AI-driven HRM systems (Chuang et al., 2016). Understanding these cultural dynamics is essential for organizations to promote employee engagement and acceptance of AI technologies in HRM practices.

Overall, the cross-cultural adoption of AI in HRM requires a nuanced understanding of cultural differences and considerations at every stage of the adoption process. By integrating cultural sensitivity into the design of AI systems, providing cultural competency training for HR professionals, and considering employee attitudes and perceptions, organizations can effectively leverage AI technologies to enhance HRM practices in diverse global contexts.

IV.A.1 Challenges and Opportunities

The cross-cultural adoption of Artificial Intelligence (AI) in Human Resource Management (HRM) poses significant challenges and opportunities due to the varying cultural norms, practices, and regulatory environments across different regions. One of the primary challenges is the language and cultural barriers that may hinder effective communication and implementation of AI-driven HR practices (Tarique & Schuler, 2010). Additionally, there may be biases embedded in AI algorithms, leading to fairness issues in decision-making processes, especially in diverse cultural contexts (Dutta & Bose, 2019).

However, there are also notable opportunities associated with cross-cultural adoption of AI in HRM. For instance, organizations can leverage AI to enhance diversity and inclusion initiatives by reducing bias in recruitment and talent management processes (Braun et al., 2019). Furthermore, AI can facilitate improved decision-making by providing data-driven insights that transcend cultural boundaries, leading to more effective talent management practices (Zeng et al., 2020).

IV.A.2 Best practices from global Organizations

Global organizations have pioneered various best practices for successful cross-cultural adoption of AI in HRM. Google, for example, has implemented bias detection tools in its AI algorithms to mitigate potential biases in recruitment and performance evaluation processes (Google, n.d.). IBM provides cultural sensitivity training to HR professionals to ensure that AI-driven HR practices align with diverse cultural norms and values across different regions (IBM, n.d.). Unilever leverages AI for diversity and inclusion initiatives, using AI algorithms to identify and address biases in talent management processes (Unilever, n.d.).

These best practices highlight the importance of proactive measures to address cross-cultural challenges and leverage AI technologies effectively in HRM practices.

IV.B Regulatory Landscape

IV.B.1 Data privacy and compliance Issues

The regulatory landscape surrounding AI in HRM includes data privacy and compliance issues, with stringent regulations such as the General Data Protection Regulation (GDPR) in the European Union requiring organizations to ensure transparency and consent in AI-driven HR processes (European Union, 2018). Cross-border data transfer presents another challenge, as organizations must manage data transfer across jurisdictions while complying with data protection regulations (European Union, 2018).

IV.B.2 International standards and guidelines

International standards and guidelines provide frameworks for ethical AI development and deployment in HRM. Standards such as ISO 27001 for information security management and guidelines like the OECD AI Principles for responsible AI development and deployment offer valuable guidance for organizations seeking to ensure ethical and compliant AI adoption in HRM practices (ISO, 2013; OECD, 2019).

In summary, the global perspective on AI in HRM encompasses various challenges and opportunities related to cross-cultural adoption, as well as regulatory considerations regarding data privacy and compliance. By implementing best practices and adhering to international standards and guidelines, organizations can navigate these challenges and leverage AI technologies effectively to enhance HRM practices on a global scale.

V UK PERSPECTIVE ON AI IN HRM

The UK is not only the hub of innovation and investment in AI, but aims to globally enhance responsible governance of AI. In addition to ensuring national governance of AI technology, the UK government aims to work with global partners to promote the responsible development of AI internationally.

V. 1 HISTORICAL DEVELOPMENT OF AI IN HRM : UK CONTEXT

The application of AI in HRM has proliferated over the years. This has spurred academic interest in this field.

The global interest in AI research is burgeoning and the UK continues to be a leading contributor following the USA and China (Zhai, Zhang, & Yu, 2024). Besides being the largest contributor of research publications, the USA is the first country to study the application of AI

in HRM (Zhai, Zhang, & Yu, 2024). UKs position in AI research could potentially be impacted by its research collaborations which are currently limited to European countries. However, the USA and China have transcended national boundaries for research collaborations (Zhai, Zhang, & Yu, 2024).

According to academic research, AI in HRM has advanced in three stages: the nascent period (2012-2013) which gave way to the exploration period (2014-2018) and later the rapid development period (2018- present) aided by further rapid infiltration of AI into various fields (Zhai, Zhang, & Yu, 2024). The academic field has proliferated its focus across three aspects (1) the function of AI in management's information-acquisition processes, (2) the role of AI in management decision-making, and (3) the effect of AI on organizational climate and culture (Zhai, Zhang, & Yu, 2024). Contrary to academia, practitioners in the UK and OECD countries recognise a different timeline to track the historical development of AI (PWC, 2018).

'Smart automation' is predicted to overtake jobs in three overlapping waves: Algorithm wave, Augmentation wave and Autonomy wave (PWC, 2018). The Algorithmic wave (to early 2020s) focused on simple computational tasks and the analysis of structured data in areas such as finance, information and communications. The Augmentation wave which is expected to reach full maturity in the late 2020s focuses on the automation of repeatable tasks, communicating and exchanging information through dynamic technological support and statistical analysis of unstructured data in semi-controlled environments such as aerial drones and robots in warehouses. Although this stage will involve advances in robotics, they will not be fully autonomous during this period, requiring human assistance to augment their capabilities. Finally, the Autonomy wave involving autonomous AI and robotics, will further automate routine tasks. Although this stage is under development with various technologies being piloted now it is expected to reach maturity on an economy-wide scale in the mid-2030s. The Autonomy wave focuses on the automation of physical labour, manual dexterity, and problem-solving in real-world situations that require responsive actions (such as driverless cars). According to PWC (2018), 2% of the jobs in the UK will be affected by the Algorithm wave and will increase to 20% during the Augmentation wave and 30% during the Autonomy wave. Hence, further advancements in AI and its true impact on jobs and HRM can be expected in the coming future.

V. 2 Evolution of AI technologies in HRM: UK Context

AI technology has impacted a wide range of occupations and sectors within the UK. The Capital Economics report ***(2022)*** identified that professional occupations closely associated with clerical work across finance, law and business management roles are more exposed to AI. This includes jobs such as management consultants, business analysts, accountants and psychologists. The top six sectors which are exposed to LLM (large language models) are those with the highest exposure to AI: finance & insurance; information & communication; professional, scientific & technical; education; property; and public administration & defence. On the contrary, the sectors with the least exposure to LLM and AI are agriculture; forestry & fishing; transport& storage (including postal); motor trades; construction; and accommodation & food services ***(Capital Economics, 2022)***. Additionally, employees with advanced qualifications (equivalent to a degree) are more likely to work in a job with higher exposure to AI than employees with lower qualifications. However, employees with lower qualifications in building and construction, manufacturing technologies and transportation operations and maintenance are least exposed to AI. There is some indication that entry-level jobs for younger workers will be automated, though digital 'upskilling' will be important for all demographic groups ***(BEIS, 2021)***. Moreover, it is suggested that jobs which are only partly exposed to automation are likely to be complemented rather than substituted by generative AI like ChatGPT ***(Capital Economics, 2022)***.

Workers' view on the changing landscape of challenges due to automation

AI is expected to impact UK employment and demand for skills. Workers in the UK have a cautious view of automation in contrast to global attitudes. In the next 10 years, a third (30%) of UK workers expect significant impacts on their jobs due to automation. More UK respondents see risks (40%) rather than opportunities (21%) (BEIS, 2021). Unlike global respondents who saw opportunities (50%), the UK population is more aware of the ongoing transformations.

More men (40%) than women (33%) in the UK will find their jobs significantly affected by automation in the long term. However, in the short term, clerical positions which are heavily represented by women are affected and hence women are less optimistic than men about the impacts of AI on their careers (BEIS, 2021; PWC, 2018). Moreover, women consistently perceived lesser productivity, opportunities to learn new skills or new job opportunities for them in the next five years due to AI. AI is positively improving the recruitment process by

handling time-consuming processes that can be automated, allowing humans to focus on the more important aspects of recruitment.

Net job creation is estimated to occur in managerial occupations, and those requiring human touch (such as caring or leisure), due to it being difficult to automate. However, higher rates of job displacement are expected in manual occupations in the 2030s with greater numbers with the roll-out of driverless vehicles. Thus, the level of automation will determine the effect on job creation and displacement.

Wave	**Example of labour displacement**	**Example of labour augmentation**
Algorithm wave	Travel agents (online chatbots) Sales assistants (recommendation algorithms) Financial traders (high-speed trading algorithms)	Economist (machine learning forecasts) Marketers (behavioural analytics) Strategists (dynamic price optimisation)
Augmentation wave	Personal assistants (virtual assistants) Administrators (unstructured data classification) Postal workers (Aerial drones and robots in warehouse)	Doctor (medical diagnosis) Musicians (Human- AI collaboration) Police (face recognition)
Autonomy wave	Taxi, van, bus, train, crane, fork-lift drivers (autonomous vehicles)	Transport and logistics managers (autonomous vehicles)

	Waiters, waitresses and chefs ("robo chef")	Programmers (evolutionary algorithms)

AI regulations and breaches

The UK and the EU are making efforts to regulate AI albeit adopting differing approaches (Roberts, 2023). The Trade Union Congress (TUC) has highlighted the risks of AI in the workplace. "High risk", "intrusion" of AI at work, the legal right to be allowed to "switch off" from work, protection against discrimination by algorithms and have a human review decisions have been identified by TUC as major concerns. Thus, the use of AI at work stands at "a fork in the road" (BBC, 2021). Although AI could improve productivity, the use of AI in 'hiring and firing' is predicted to lead to widespread discrimination and unfair treatment. The gig economy is the first to be affected with Uber using AI to automatically assign driving jobs to drivers while Amazon uses AI monitoring systems in its warehouses to monitor its staff. The failure of the law to keep abreast of the fast- changing AI climate is another cause for concern.

Racial bias discrimination has been documented against algorithms (BBC, 2020). Facial recognition technology has been widely used for 'smart policing' and employed for mass surveillance, racial profiling and tracking of violations against basic human rights and freedoms. Facewatch operates in the UK while Amazon's Rekognition software is used by the police department in the US. However, a US government study has reported that facial recognition algorithms are less accurate at identifying African-American faces. This has raised significant concerns about ethical risks including enhancing existing bias and discrimination. Resultantly IBM abandoned the 'biased' facial recognition technology which had been offered for "mass surveillance or racial profiling". IBM's Chief Executive Arvind Krishna acknowledged that "the fight against racism is as urgent as ever" and called for "greater transparency" such as body cameras on police officers and data analytics instead. This calls for careful assessment of wider automated technologies and their biases.

Moreover, a data breach at Clearview -a face-collecting database used by the US law enforcement agencies- as a result of unauthorised access to its client list has escalated fears of data security (BBC, 2020). More recently, The Information Commissioner's Office (ICO) fined Clearview AI Inc more than GBP 7.5 million for collecting images of people in the UK and failing to use the information fairly and transparently resulting in a breach of UK data protection laws (ICO, 2022).

The proliferation of these biases and issues opens up opportunities for forward-thinking companies to leverage AI to drive inclusion, through strong leadership and commitment. Organisations should use AI to design people systems that reduce biases in the recruitment, promotion and talent management decisions. Organisations should offer reskilling and upskilling opportunities to each employee tailored to meet quantified skills gaps focused on enhancing representation of women and underrepresented groups in the workplace. A clear example of the use strong leadership and commitment along with the application of AI to tackle racial inequalities has been set by the UK Health sector when it recently announced numerous funded AI projects to tackle inequalities. Evidence suggests that black women in England are five times more likely to die from complications during childbirth than their white counterparts. Reports found "deep differences" in the prevalence and outcome of some healthcare conditions between and within ethnic groups in the UK. Hence the National Health Service aims to tackle racial inequalities using AI, supported by research to understand racial differences. The NHS will then train its workforce to look for different symptoms or complicating factors, diagnose faster and tailor treatments. Another initiative is to update UK health data to accurately reflect the population. Thus data-driven technology will support the development of sets of standards that are more diverse and inclusive and do not disadvantage anyone because of their race. Thus, AI is set to revolutionise the healthcare sector by accounting for the health needs of diverse communities.

AI is widely used in enabling recruitment, diversity, onboarding, employee engagement, company culture, talent management, performance management and training and development.

AI powered recruitment tools are being used by HR leaders for candidate screening. More precision and efficiency is achieved when analyzing resumes, applications for identifying candidates with the right skills for the job. Companies are implementing AI- powered ATS to streamline its HR practices. Significant reduction in time and effort while sifting through applications, faster hiring decisions and improved candidate experience are some of the benefits of leveraging the power of AI. Additionally, AI- based systems are used to make skills-based testing during the recruitment process seamless. Fastfood company JustEat was able to reduce recruitment time by 50% from 14 to 7 days by adopting HireVue for its recruitment (HireVue, 2024).

In addition to allowing for a structured and scientific recruitment approach, AI is also helping organizations in mitigating unconscious bias and ensuring social mobility. The Co-operative Bank's use of HireVue enabled a 50/50 gender split while hiring thus reducing bias by 90%. The use of video interviewing, assessment and gamification solutions ensured that candidates were assessed on job-relevant skills, allowing for a reduction in hiring time and best-in-class candidate experience. Moreover, the banks investment in working-from-technology afforded the modern workforce greater flexibility in their work life (HireVue, 2024).

AI based tools are enabling companies to reinforce a positive culture especially in the virtual workplace, where social connections are more challenging. Hypercontext has used Donut's Ai-backed chatbot tool to enhance culture through meaningful and productive conversations resulting in more productive work (donut, 2021). AI has enabled the firm to keep a positive work experience through a mix of synchronous and asynchronous communication and consistent recurring touchpoints or meetings that range in duration (15 minutes to 1.5 hours), scope (one-to-one meetings to company-wide Town Hall) and frequency (as needed, weekly, bi-weekly, monthly, annual).

The changing face of the workforce from baby boomers to Generation Z has brought dramatic transformations in demands and HR practices and demands over the past decades. Companies like Buffer are leveraging AI for workforce planning and creating unique pathways (Wiilde, 2017). Industry career paths, company career paths and individual career paths are created by capturing skills gaps identifying opportunities and transitioning talent (Bayireddi, 2020). Industry pathways help identify industry trends so that organizations are aware of pivotal shifts that can affect operations. Company career paths evaluate relevant sills with company goals and industry shifts, so that companies can fill critical roles now and in the future. Individual career paths enable employees to drive their ambitions leveraging their skills, drive, accomplishments and behaviour towards work. Thus, building a skills inventory and using AI to create personalized employee career trajectories is reaping benefits in terms of employee satisfaction and retention, succession planning, workforce planning and overall productivity and profitability (Bayireddi, 2020).

V.2.A Key milestone: UK Context

The UK government aims to maintain its position as the global leader in AI in the next decade. The increased public trust and responsible innovation in AI will have far-reaching impacts on human resource management in the UK. Building on the wider adoption of AI in industries and

regions and increased investment in UK AI companies, the country aims for long-term investment in building greater workforce diversity to reduce competition in AI skills and develop a growing UK supplier base.

Through supporting the development of AI and digital skills, the government aims to support a broader range of people to enter AI-related jobs to encourage opportunities.

These waves of advancement in AI and associated technologies are predicted to have a long-term impact on UK employment and demand for skills. According to the UK government AI is predicted to boost UK's GDP by as much as 10% by 2030. The mounting application of AI has enhanced productivity and innovation and transformed numerous sectors within the UK economy. However, this advancement invites concerns related to the large-scale displacement of human workers over the coming decades.

V.3 Breakthroughs and paradigm shifts: UK Context

UK was ranked third in the 2021 global AI Readiness Index and first in Europe (Forbes Advisor, 2023). However, the UK government remains committed to funding AI research and initiatives. Since 2014, the government has allocated £2.3 billion to various AI initiatives and the 2023 budget committed £ 1 billion towards AI research. Furthermore, the UK plans to invest £900m in a cutting-edge supercomputer and to build its own "BritGPT" (The Guardian, 2023). The Treasury expects that the exascale computer will be used for training complex AI models, used across science, industry and defence and aid researchers in modelling weather forecasts and climate projections.

The UK AI market is worth more than £16.9bn and is expected to grow to £803.7 bn by 2035 (Forbes Advisor, 2023). According to government research, one in six UK organisations totalling 432,000 have embraced at least one AI technology (Forbes Advisor, 2023). 68% of large companies, 33% of medium-sized companies and 15% of small companies have incorporated at least one AI technology (Forbes Advisor, 2023).

Data management and analysis is the most commonly adopted AI solution in UK, according to government data (Forbes Advisor, 2023). Moreover, across all sectors job listings which mention AI skills advertise 20% higher salaries compared to those which don't. While diverse skills, backgrounds and experience are key to designing and implementing AI services, the technology is widely accepted as an enabler for transforming economy and personal lives.

Moreover, it is projected that by 2025, self-driving vehicles will be on the UK roads supported by government funding worth £100 million (Forbes Advisor, 2023). However, 85% of those polled by Forbes Advisor research had reservations about AI technology in cars (Forbes Advisor, 2023).

V.4 Insights into the technological advancements

The UK government is funding numerous transformative R&D project aimed at AI research and technologies related to improving health and medical technologies, productivity, advancing manufacturing, space and precision medicine. The UK government also aims to be a world-leader in quantum technologies which will in turn generate high-quality jobs and attract new investment and fast-growing businesses to the UK (The Telegraph, 2023). In addition to development of new web technology, UK aims to embrace decentralisation, open-source applications and blockchain computing architecture.

V.5 Current AI dynamics in HRM

The UK's AI market is expected to grow exponentially over the next few years to add $1 trillion to the UK economy by 2035 (International Trade Administration, 2022). The swift evolution of AI systems has presented numerous opportunities and challenges for both academics and business practitioners. With an AI workforce of over 50,000, AI has contributed £3.7bn to the economy in 2022 (Forbes Advisor, 2023). The release of Generative AI such as ChatGPT and its superior versions for public use has seen significant popularity in adoption. A Forbes poll identified that 85% of Brits are aware of AI language models like Chat GPT, Google Bard and Bing Chat (Forbes Advisor, 2023). By stepping beyond the predictive ability of search engines like Google, the generative AI language models are able to generate output in various forms which cannot be matched by human contributions. Calls have been raised for UK to invest in large language models to not risk losing out to other countries and major corporations (The Guardian, 2023).

While HR and talent processes become automated, leaders are concerned about the role of "the human in the loop" The potential loss of jobs due to these AI tools is a big concern for people. Hence people are preparing for the changes that will be introduced with generative AI. The HR have a tremendous opportunity to enhance their workforce. AI can help consistently enhance the level of performance of leaders, increase efficiency in routine work and use technology to arrive at better solutions. Other concerns surrounding AI include transparency in employee communications. This involves policies detailing how AI will be used by employees and what

safeguards need to be put in place regarding their use. Employers also need to ensure data protection and privacy when employee data is fed into AI. In addition to legitimate processing of employee data, the employers need to be aware of data being used by third party for providing services to other employers.

V. 6 Jobs & AI in UK

AI is predicted to be a significant driver of productivity and GDP growth for the UK economy. However, the UK government estimates that 7% of existing UK jobs will be displaced over the next five years rising to 18% after 10 years and nearly 30% after 20 years which is equivalent to around 2.2 million jobs (Forbes Advisor, 2023).

The UK government has committed almost £1 bn towards AI research. However, fifty nine percent of Brits have highlighted numerous concerns about the use of AI (Forbes Advisor, 2023) (Figure 2). Major concerns revolve around human skills and decision making, job displacement, privacy and ethics.

Brits main concerns about AI	% of Brits with concerns
Dependence on IA and loss of human skills	42%
Autonomous AI systems making decisions without human intervention	39%
Job displacemnet and impact on employment	39%
Privacy and data security	38%
Ethical implications and potential misuse of AI	37%
Unintended consequences and unforeseen risks of AI deployment	36%
Technological vulnerabilities and potential for AI to be hacked or manipulated	34%
Uncertain long-term societal impacts of AI	33%
Potential for AI to be used for surveillance or control purposes	32%
Potential for AI to outperform or surpass human capabilities	26%

Source: Forbes Advisor, 2023

Figure 1 Brits concerns related to AU

According to PWC (2018), AI and associated technologies are predicted to create as many new jobs as would be displaced. It was expected that 7 million jobs would be displaced and created

jobs would result in a 0.2 million boost in net jobs. Manufacturing and Transportation and storage sectors were expected to be hard hit with a 25% and 22% reduction in jobs respectively (PWC, 2018). However, to counter job displacement, and to provide a safety net to those who find it hard to adjust to technological changes, PWC (AI will create as many jobs as it displaces by boosting economic growth, 2018) recommends an increased focus on 'STEAM' (science, technology, engineering. Art s and mathematics) skills development to complement what machines can do.

V.7 ADOPTION AND IMPLEMENTATION IN THE UK

The adoption rate of AI across UK businesses and sectors has revealed interesting insights (Capital Economics, 2022). At least one AI technology has been adopted by 432,000 companies, that is, around 15% of all businesses in the UK (Capital Economics, 2022). While 2% of businesses pilot AI, about 10% plan to adopt at least one AI technology. It is estimated that AI adoption will increase as businesses grow- 15% of small companies, 34% of medium-sized companies and 68% of large companies are expected to adopt at least one AI technology. Although large companies are most likely to adopt multiple AI technologies, innovative companies use multiple AI technologies irrespective of their size to assist in business activities. AI solutions are mostly sought for data management and analysis. Natural language processing and generation, machine learning, AI hardware, computer vision and image processing and generation are popular across UK firms. Globally the automotive and ICT sectors are leading in terms of AI adoption rate, However, within the UK, the Legal, IT and telecommunication sectors are leading, while the lowest adoption rate is seen in the hospitality, health and retail sectors (Capital Economics, 2022). However, the UK's health and social care sector is predicted to have the largest estimated net job gains from AI over the next 20 years (Forbes Advisor, 2023) (Figure 1).

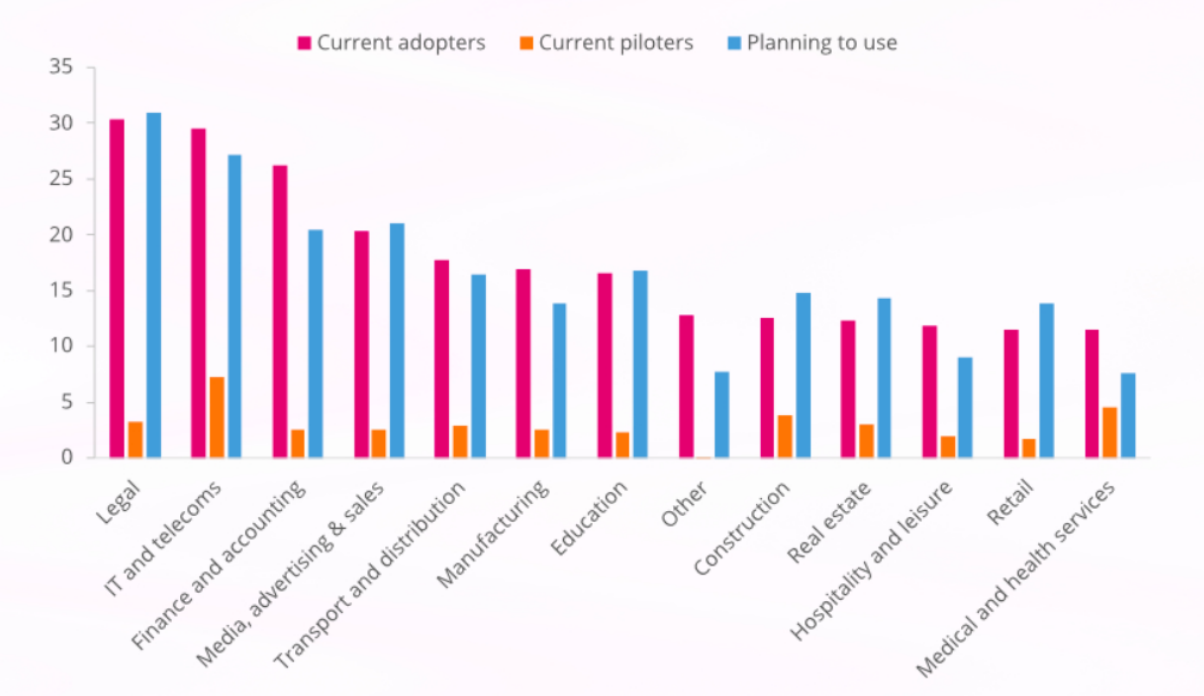

Figure 2 Share of UK business adopting AI by sector (percent) (Source: Forbes Advisor, 2023)

Businesses have increased spending and adopted various routes to source AI technologies. Larger companies in the UK have been found to spend more on AI technologies compared to medium and small businesses, and this expenditure is estimated to continue to increase. Similarly, UK businesses are projected to increase spending on labour related to AI to support the prevalence of AI technology. Most companies have adopted AI technologies that have been developed in-house (40%), while others have purchased 'off the shelf' ready-to-use systems from third parties (40%) or outsourced the AI application development to external providers (20%) (Capital Economics, 2022).

V.8 CASE STUDIES OF UK COMPANIES

The UK healthcare sector is eager to employ AI's potential to transform complex biological data into meaningful insights for drug development, medical technology and digital healthcare. GBP 123 million has been awarded to 86 projects to increase the impact of AI systems in UK health and social care (NHS, 2020). The AI Health and Care projects focused on varying stages of conceptualisation, testing, and implementation to enable rapid adoption and aim to help solve several clinical and operational challenges across the UK healthcare system. Several departments within the NHS have benefited from the funding including developing and trialling systems that reduce waiting time, improve early diagnosis and save staff time. AI (deep

learning) system has been used to distinguish benign skin lesions from common skin cancers with state-of-the-art accuracy. The SamurAI system uses AI to combine historical data on patients' antibiotic prescriptions with findings from specialists to help review prescriptions. The OxNNet toolkit will develop fully automated ultrasound tolls to screen fetal growth and identify women with high risk of fetal growth restriction, thus improving monitoring and deliver of babies before it is stillborn. The OCTAHEDRON project aims to use machine learning in OCT scans of the retina for early detection of neurodegenerative diseases such as Parkinson's, because early treatment can be most effective. Additionally, some of the award money will also be used to test and evaluate some AI technologies within clinical and operational pathways to determine accuracy and clinical and economic impact.

V.8.1CULTURAL FACTORS INFLUENCING AI IN HRM

The UK government is constantly working towards reducing AI related health inequalities. In order to reduce bias and improve better health outcomes for ethnic minority communities, **the National Health Services (NHS)** funded GBP 1.55 million to the AI and Racial and Ethnic Inequalities research projects in Health and Care (NHS, 2020). Recently the Equity in Medical Devices: Independent Review's (2023) study of equity in medical devices revealed that optical devices that use light to detect problems and AI-assisted machines that help detect cancers and interpret X-rays can be unintentionally biased against women and non-white ethnicities or poorer social groups. Additionally, genetic analysis devices that calculate genetic risk factors for common diseases don't predict as accurately for non-European backgrounds since they were developed mainly using people of European descent. Hence, the AI Ethics Initiative, funds will be invested in research and trial practice interventions that engage AI products in care settings to tackle health inequalities. The awarded projects will focus on AI innovation to improve response to the health needs of minority ethnic groups; develop AI models that improve the quality, availability and appropriateness of datasets used for ethnic minorities; and enhance the development, testing and deployment of AI models to reduce bias and improve performance and accuracy across patient populations.

V.9 LEGAL AND ETHICAL CONSIDERATION

The UK government aims to engage with other countries through international agreements and science partnerships to promote the wider development of AI governance to safeguard society's fundamental values and defend human rights. Standards that promote innovation, prosperity and security while upholding values such as fairness, openness, liberty, security, democracy,

rule of law and respect for human rights will be form the focus. The UK government also aims to establish an AI governance model and enhance it through contributions to the development of global AI technical standards which can operate globally while minimising the cost of regulatory compliance.

V.10 UK EMPLOYMENT LAW AND AI

In addition to numerous opportunities, AI presents significant challenges to UK businesses in relation to engagement and management of employees. According to KPMG UK (2023) *the lack of proper laws for governing the use of AI at work presents unique challenges .The regulations in this area are governed by existing employment legislation. However, where regulations are not revised to address rapid development in AI, employers need to keep themselves constantly informed of the opportunities and challenges posed by AI and consider them in the context of existing employment laws and their own ethical principles. This presents untoward challenges for employers in six key areas: discrimination and bias, transparency, data protection and privacy, job displacement and skills development, a new definition of employment, and the ethical use of AI.*

AI programs can help in hiring decisions, anticipating trends supporting performance reviews and other HR functions improving the efficiency of processes and enhancing productivity. However, the potential issue of bias in the programs can result in biased AI outputs, making the employers vulnerable to discrimination claims, damaged reputation and loss of trust from employees. This calls for robust testing and challenging of AI algorithms overseen by employees, to help identify and remove any indications of bias. Maintaining transparency in the AI-driven decision-making process is key to gaining employee's confidence in HR decisions. Employers need to introduce AI-specific policies, set safeguards and be accountable for decisions driven by AI. The employee pipeline has to be carefully managed including reskilling and upskilling of employees to adapt to AI and technological advancements. If junior-level roles are displaced by the impact of AI, companies would need to develop new ways to train the next generation of employees to ensure successful succession planning. The definition of employee and employee relationships will change with the introduction of AI in jobs under the supervision of human employees giving rise to unique challenges. Additionally, this could introduce changes such as a preference for ad hoc, flexible, informal employment rather than a dedicated role under one employer. The absence of clear AI Ethics and regulations poses significant risks for employers. Ensuring compliance with existing (or amending) policies and

procedures, the broader corporate values and ensuring the use of AI aligns will help UK companies address these pressing challenges faced by UK companies.

V.11 ETHICAL USE OF AI IN HR PRACTICES

AI needs to be values-driven, human-centric and trustworthy building on the attributes such as fairness, transparency, explainability, accountability and security. However, responsible use of AI at work is recommended to ensure the ethical use of AI in HR practices.

A survey of 814 UK senior decisionmakers without HR responsibilities acknowledged that AI can manifest in several forms such as search engines, GPS navigation systems, learning experience platforms, spreadsheet software and HR information systems (CIPD, 2023). While AI is currently used for advanced analytical techniques like machine learning to interpret events, support and automate decisions and take actions, many UK leaders do not agree with the automation of specific cognitive tasks such as firing AI-identified underperforming employees irrespective of whether the performance criteria was clear or not. UK bosses were uncomfortable doing tasks that might disadvantage people's job prospects and risk the organisation's reputation. Additionally, many bosses were uncomfortable with using AI for shortlisting interview candidates. While 38.6% of the respondents felt that AI can reduce bias in the recruitment process, 31.2% felt that AI has the same level of bias as a person in the recruitment process. On the contrary, the use of AI to improve performance and efficiency, scale tasks, improve efficiency through scheduling work shifts or show AI the optimal route for picking items in a warehouse was welcomed widely by the respondents. To mitigate bias while using AI, it was suggested that people be kept in charge of AI; rigorous training be provided to investigate discrepancies and trends indicating bias; identifying and reducing own biases to train the AI accordingly; auditing of the parameters employed by AI; and to give preference to humans rather than AI for nuanced judgements (CIPD, 2023).

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