Journal of Information Systems Engineering and Management
2025, 10 (31s)
e-ISSN: 2468-4376
https://jisem-journal.com/

Research Article

5 Stage Generative Artificial Intelligence Maturity Model in Human Capital Management

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ARTICLE INFO

Received: 27 Dec 2024

Revised: 12 Feb 2025

Accepted: 22 Feb 2025

ABSTRACT

Generative Artificial Intelligence is making a significant impact on Human Resources, transforming processes, and setting new standards for efficiency. This discussion delves into its applications in HR, highlighting key benefits and highlighting stories of early adopters who are shaping a steep learning curve for others. We will explore how Generative AI is enhancing everyday HR operations and examine its real-world applications. With advancements in natural language processing, chatbots, and virtual assistants powered by GPT-3 & GPT-4 are becoming essential tools across industries. While these innovations have the potential to revolutionize workplace interactions and automate routine tasks, they also raise important questions about the future of employment. This paper presents insights from Information Technology industry leaders and comprehensive literature study on the evolution of Generative Artificial Intelligence. Through case studies and practical applications, we aim to shed light on the technology's future trajectory. Furthermore, we introduce a five-stage Maturity Model that assesses companies on a structured 5-point scale, ranging from initial adoption (Level 1) to advanced integration (Level 5). The idea is to measure the maturity model of a Company which uses Generative AI in HR in this maturity model and enable them to get to next level in their journey of Use of Generative AI.

Keywords: Technology, Innovation, Business, ChatGPT, Open AI, GPT-3, GPT-4, Human Resources Virtual Assistant and Generative AI.

INTRODUCTION

Generative AI is a specialized field of artificial intelligence designed to enable new and original content, going beyond simply analysing and managing existing data. Its core objective is to produce human-like content that closely mirrors and is often indistinguishable from that created by people.

The term **"GPT"** stands for **"Generative Pre-trained Transformer,"** in ChatGPT representing the model's underlying architecture and training approach for generating human-like text. The **"Chat"** in ChatGPT highlights its specialization for conversational interactions, making it highly effective for chatbot-style engagements. Together, **ChatGPT** expands to **"Chat-Generative Pre-trained Transformer,"** reflecting its ability to facilitate natural, context-aware dialogues.

ChatGPT is a powerful application of Generative AI, specifically designed to generate text-based conversational responses. Leveraging transformer architecture—a sophisticated generative model—it processes and constructs sequences of words to produce fluent, contextually relevant, and human-like interactions. This seamless integration of Generative AI enables ChatGPT to understand, adapt, and respond with remarkable coherence and depth. The core principles of Generative AI—pattern recognition, data-driven learning, and content generation—form the foundation of ChatGPT's capabilities. Trained on vast datasets, it develops a deep understanding of language structure, context, and semantics, allowing it to generate text that is remarkably human-like, coherent, and contextually relevant.

While ChatGPT does not inherently retain long-term context, it excels at generating responses based on immediate input. This makes it highly effective for various conversational applications, such as customer support, virtual assistants, and other text-based interactions where real-time engagement and contextual relevance are crucial.

ChatGPT, an advanced AI language model developed by OpenAI, marks a significant milestone in conversational artificial intelligence. To understand its origins, it is essential to explore the evolution of OpenAI's Generative Pre-Trained Transformer (GPT) models, which have continually redefined AI-driven text generation.

GPT-1: The Foundation of AI-Generated Text

In June 2018, OpenAI unveiled GPT-1, the first iteration of its pioneering language model. Trained on extensive internet text datasets, GPT-1 showcased the potential of transformer-based architectures in natural language understanding and generation. Despite its modest scale, it demonstrated the ability to produce coherent and contextually relevant text, laying the foundation for future advancements in AI-driven content creation.

GPT-2: A Giant Leap Forward

Building on the success of GPT-1, OpenAI introduced GPT-2 in February 2019, a significantly larger and more powerful model with 1.5 billion parameters—ten times the size of its predecessor. GPT-2 demonstrated exceptional fluency in text generation, producing highly realistic and contextually aware responses. However, concerns over potential misuse, such as generating misinformation, impersonating individuals, or automating deceptive content, led OpenAI to initially withhold its full release. Fearing its exploitation for malicious purposes, the organization opted for a cautious approach. In November 2019, OpenAI released a research preview of GPT-2, allowing researchers and developers to explore its capabilities in a controlled environment.

GPT-3: Redefining AI's Linguistic Capabilities

In June 2020, OpenAI introduced GPT-3, a game-changing advancement in AI language models. With 175 billion parameters, it became the largest and most sophisticated AI language model at the time. GPT-3 demonstrated unparalleled text generation abilities, excelling in a wide range of applications—from answering complex queries and composing essays to translating languages and even generating functional code. GPT-3's ability to produce human-like text revolutionized AI applications, making it a powerful tool for businesses, researchers, and developers. This breakthrough marked a turning point in AI's role in content creation, automation, and interactive communication.

ChatGPT: A Specialized AI for Conversations

To meet the growing demand for AI-driven conversational agents, OpenAI developed ChatGPT, a fine-tuned version of GPT-3 optimized for dialogue-based interactions. Unlike its predecessors, which focused on broad text generation, ChatGPT was specifically designed for chatbots, customer support interfaces, and AI-powered virtual assistants. In November 2020, OpenAI released a research preview, enabling users to engage with the model through a web-based interface. This public interaction provided valuable insights into real-world applications, helping OpenAI further refine its conversational AI technology.

Looking Ahead: The Future of AI-Powered Conversations

The development of ChatGPT represents a pivotal moment in AI evolution, bridging the gap between generative AI and human-like conversational experiences. With ongoing advancements, such as GPT-4 and beyond, OpenAI continues to push the boundaries of AI-driven communication, paving the way for more intelligent, context-aware, and ethically responsible AI applications.

LITERATURE REVIEW

OpenAI has consistently refined its language models, addressing biases, strengthening safety measures, and expanding accessibility to maximize AI's societal benefits. ChatGPT, a prime example of these advancements, is designed to generate human-like text responses, providing conversational support and information across diverse topics.

ChatGPT and the Generative AI Revolution

John V. Pavlic (2023) emphasizes that ChatGPT enables users to input prompts and receive rapid, AI-generated responses, leveraging extensive training on internet-sourced machine learning data. This capability has placed ChatGPT at the forefront of the Generative AI (GAI) revolution.

David Gefen (2023) highlights that the growing interest in Generative AI, particularly following ChatGPT's release in November 2022, marks a transformative shift for both industry (Chui et al., 2022; McKinsey, 2023) and academia (Stokel-Walker & Noorden, 2023). However, this shift also raises concerns, especially regarding potential job displacement.

The Technological Landscape: ChatGPT and Its Competitors

Pawel Korzynski et al. (2023) classify ChatGPT as a generative AI system capable of creating diverse content, including text, code, audio, images, and video. This is powered by transformer technology, a neural network architecture optimized for predictive modeling. Notably, Google's Bard, a direct competitor to ChatGPT, also leverages transformer-based AI.

Pawan Budhwar et al. (2023) highlight ChatGPT's rapid rise to prominence following its public release in November 2022, with ChatGPT-4 launching in March 2023 (OpenAI Blog, 2022). Its ability to generate contextually relevant, human-like responses has fueled widespread adoption across various sectors.

ChatGPT's Impact on the Future of Employment

Lan Chen et al. (2023) report that 28% of current job roles now require ChatGPT-related skills from a future hiring perspective. Using a large-scale occupation-centered knowledge graph, they forecast a significant transformation in the hiring landscape over time.

ChatGPT in Human Resource Management

Recruitment and Talent Acquisition - Glorin Sebastian (2023) highlights ChatGPT's role in automating the initial screening phase of hiring, allowing organizations to evaluate candidates efficiently. ChatGPT enhances candidate engagement by answering queries, offering insights into company culture, and streamlining communication, thereby reducing HR workloads.

ChatGPT serves as a virtual HR assistant, efficiently handling routine inquiries on benefits enrollment, leave requests, and company policies. By automating these administrative tasks, it streamlines HR operations, allowing professionals to focus on strategic workforce initiatives that drive employee engagement and organizational growth.

Decision Making in Human Resources and Productivity- Jinbo Zhou and Weiren Cen (2023) demonstrate that ChatGPT-powered HR platforms outperform traditional HR management systems, offering personalized employee experiences, data-driven decision-making, and improved productivity.

Generative AI's Expanding Reach Beyond HR

Renana Peres et al. (2023) discuss the broader implications of Generative AI beyond ChatGPT. Various AI models are now capable of generating intelligent outputs across diverse fields, including text, simulations, 3D objects, and video production.

Lingjiao Chen et al. (2023) examine the evolution of GPT-3.5 and GPT-4, highlighting how large language model (LLM) behaviour has shifted over time, leading to improved AI performance and adaptability.

ChatGPT's Role in Career Development

Ifta Firdausa Nuzula and Muhammad Miftahul Amri (2023) observe that ChatGPT can be a valuable tool for professionals, aiding in the drafting of cover letters, job applications, and motivational letters, while also helping to identify ideal job opportunities. Furthermore, it supports the creation of policies and the management of regulatory compliance, enhancing operational efficiency and accuracy.

The Future of AI in HR and Business Strategy

Marlene Silva and Daniela Costa (2023) highlight the growing integration of ChatGPT into human resource operations, where it offers AI-driven solutions tailored to meet the unique needs of organizations. They underscore

its ability to automate HR policies, enhance employee support systems, and deliver swift, accurate responses to inquiries, thereby streamlining HR processes and improving overall efficiency.

Artificial Intelligence Self-Efficacy and Business Applications

Wang & Chuang (2024) introduce the concept of Artificial Intelligence Self-Efficacy (AISE)—an individual's belief in their ability to effectively use AI tools. As AI integration grows, AISE becomes critical for educators, researchers, and business leaders.

The study "Leveraging AI to Drive Business Success in HR" by Bhatia & Patel (2023) provides a systematic review of how AI enhances recruitment, performance management, and employee engagement. They explore the challenges HR teams face, including ethical considerations and data privacy, while recommending best practices for responsible AI adoption.

Similarly, Chen & Zuo (2024) explore AI-driven predictive analytics, demonstrating how AI forecasts workforce needs, identifies skill gaps, and predicts employee turnover. These insights are critical for talent management, personalized training programs, and long-term workforce planning.

Global Leader's Views on Generative AI and ChatGPT

Sam Altman- OpenAI, an artificial intelligence research organization, developed ChatGPT. Originally established as a nonprofit entity in 2015, it transitioned to a for-profit model in 2019. The CEO, Sam Altman, a co-founder of the company, holds the perspective that artificial intelligence has the potential to reshape society significantly. Altman acknowledges the real dangers associated with this technology but also sees it as possibly "the greatest technology humanity has yet developed," capable of enhancing our lives.

Satya Nadella, during his address at the World Economic Forum's Annual Meeting in Davos, underscored his steadfast commitment to the transformative potential of Artificial Intelligence (AI). He highlighted a compelling real-world example of AI's impact, sharing the story of a farmer in rural India who, despite speaking only a regional dialect, was able to successfully access a government program with the assistance of ChatGPT. This instance exemplifies AI's ability to bridge language barriers, enhance accessibility, and empower individuals, reinforcing its role as a catalyst for inclusive digital transformation on a global scale.

Sundar Pichai remarked that Google's Bard chatbot excels in certain aspects while falling behind in others. He characterized the current stage as an early phase, stating, "I view this as a very, very early time." Pichai dismissed the notion of existential competition, describing the situation as a "competitive moment." He anticipates that tools like Bard and ChatGPT will enhance the accessibility of programming and empower users to create novel entities, consequently giving rise to new roles.

AI Applications in Recruitment: A Focused Exploration

Artificial Intelligence (AI) is revolutionizing the recruitment landscape, offering solutions to challenges across various hiring stages. While AI's influence extends to Workforce Analytics, Employee Lifecycle Management, and broader HR functions, this discussion will remain focused on its direct applications in recruitment. Additionally, we will not define widely understood concepts such as Automation, Data Analytics, and AI, as they are extensively documented elsewhere.

Building Blocks of AI in Recruitment

AI's transformative impact on recruitment is built on several core technologies, each playing a unique role in enhancing efficiency, accuracy, and decision-making. These foundational components include:

1. Machine Learning (ML)

A cornerstone of AI, machine learning enables systems to analyse vast datasets, identify patterns, and improve hiring predictions without explicit programming. It is instrumental in resume screening, candidate matching, and talent forecasting.

2. Natural Language Processing (NLP)

NLP allows AI to comprehend, interpret, and generate human language, facilitating applications such as:

- Chatbots & Virtual Assistants – Engaging with candidates, answering queries, and guiding them through the hiring process.
- Sentiment Analysis – Assessing candidate tone and engagement from interactions.
- Automated Resume Parsing – Extracting key information from CVs to streamline shortlisting.

3. Neural Networks

Inspired by the human brain, neural networks enhance AI's ability to recognize complex patterns and relationships within recruitment data, leading to more accurate candidate assessments and skill matching.

4. Robotics & Automation

While robotics primarily applies to physical tasks, automation—driven by AI—optimizes repetitive processes in recruitment, such as scheduling interviews, sending follow-up emails, and conducting initial screenings.

5. Computer Vision

Though widely used in facial recognition and object detection, computer vision is gaining traction in recruitment by enabling video interview analysis, assessing candidate expressions, tone, and body language to enhance hiring insights.

6. Data Mining & Predictive Analytics

- Data Mining: Extracts valuable insights from vast datasets to refine hiring strategies.
- Predictive Analytics: Uses historical hiring data and statistical models to forecast candidate success, employee retention, and future workforce needs.

7. Reinforcement Learning

This advanced AI technique allows systems to continuously improve hiring models by learning from past recruitment outcomes—enhancing candidate recommendations and refining job fit predictions.

8. Expert Systems & Cognitive Computing

- Expert Systems: AI-driven decision-making models that assess candidate qualifications and suitability based on predefined rules.
- Cognitive Computing: Mimics human thought processes, enabling AI to reason, learn, and solve complex hiring challenges with contextual understanding.

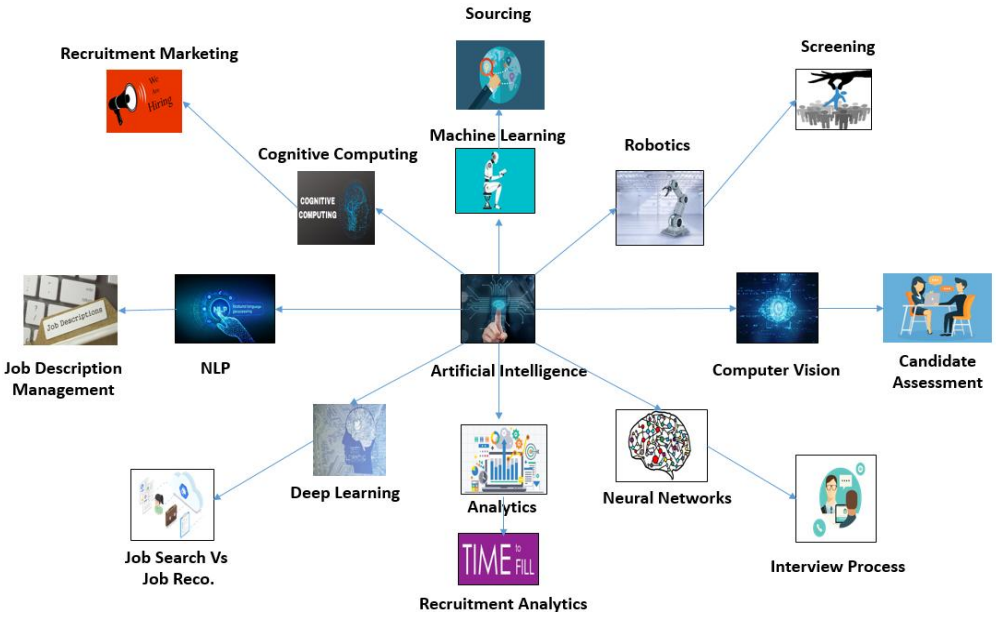


Figure 1. Recruitment Life Cycle Powered by AI-used cases- Self-Created Diagram

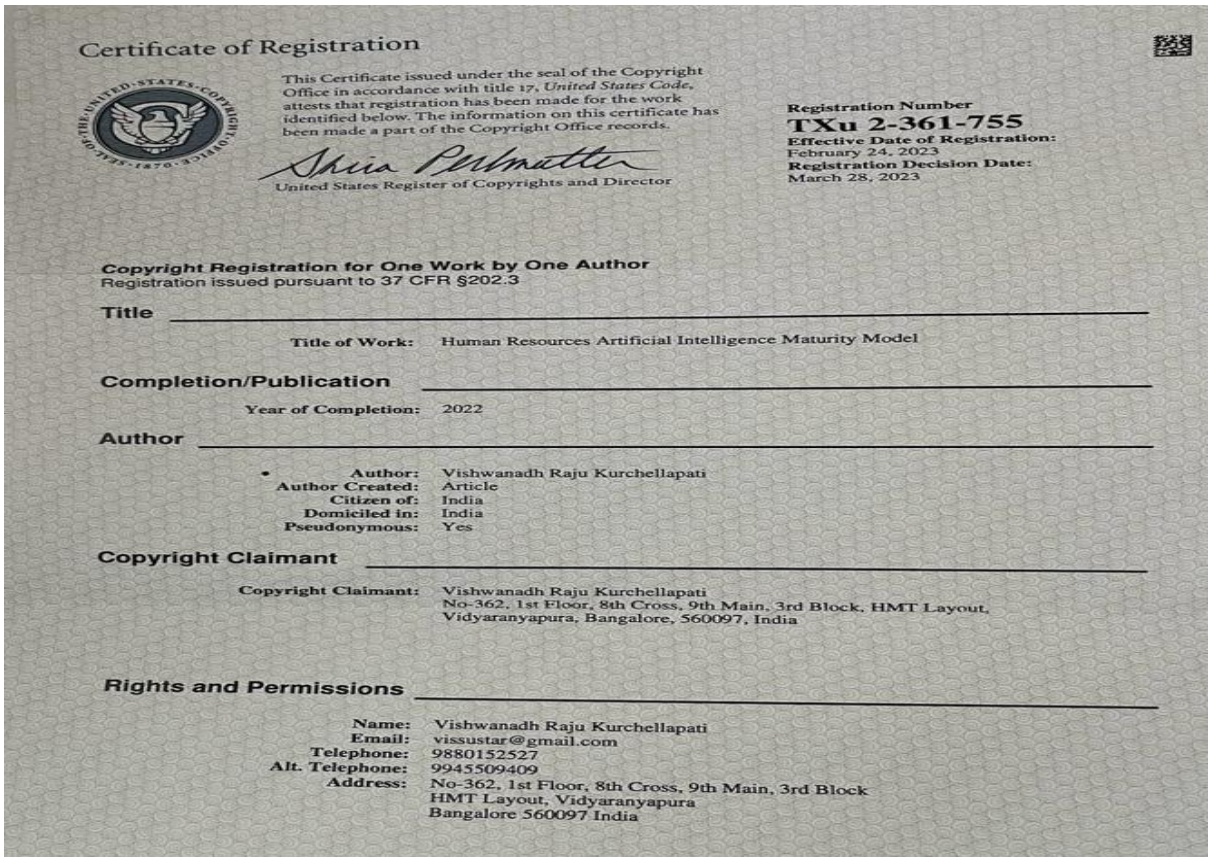
Name of the Maturity Model: **Human Resources Artificial Intelligence Maturity Model**

Model: Below

Stage	Name	Details
1	Enquiry and exploration	Ask Industry, finds out details, research, discuss in forums and strategy meetings and thinking to move in the Direction of Artificial intelligence.
2	Isolated experimentation	Use of Some parts of Artificial intelligence in some sub functions and that to in Pilot mode.
3	Coaction stage	Some sub functions of Talent acquisition function Integrated, and discussions are going on in the direction of Whole HR Integration with Artificial intelligence.
4	Harmony stage	AI/ML/Robotics and Gamification algorithms are used across HR function and almost 70% of HR is Integrated
5	Symbiosis stage	AI/ML/Robotics and Gamification algorithms are used across HR function. 100 percent integration,
6	Synergy stage	Slowly moving towards Prediction and Prescription Mode with Heavy use of AI
7	Leveraging stage	Artificial intelligence uses deep learning to recommend Human Resource activities.

Created by: Vishwanadh Raju

Figure 2. Artificial intelligence Human resources Maturity Model (HRAIMM)-7 Stage- Self Created



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United States Register of Copyrights and Director

Registration Number
TXu 2-361-755
Effective Date of Registration:
February 24, 2023
Registration Decision Date:
March 28, 2023

Copyright Registration for One Work by One Author
Registration issued pursuant to 37 CFR §202.3

Title

Title of Work: Human Resources Artificial Intelligence Maturity Model

Completion/Publication

Year of Completion: 2022

Author

- Author: Vishwanadh Raju Kurchellapati
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Figure 3. 7 Stage- HRAIMM- US Copyright Office- Copyright Received-

Building Blocks of Generative Artificial Intelligence

Generative Artificial Intelligence (AI), including models like ChatGPT, is built upon several fundamental components that enable it to learn, generate, and refine human-like text, images, and other forms of data. These core elements shape the model's ability to process language, understand context, and produce meaningful outputs.

Generative Models

Generative models represent a class of machine learning algorithms designed to create new data that closely resembles a given dataset. By analyzing patterns, structures, and relationships within the training data, these models generate realistic, novel samples. Key applications include text generation, image synthesis, data augmentation, style transfer, and anomaly detection.

Key Types of Generative Models

Generative Adversarial Networks (GANs): Introduced by Ian Goodfellow in 2014, GANs consist of two neural networks—the generator and the discriminator—that engage in a competitive learning process. The generator produces synthetic data, while the discriminator evaluates its authenticity. This adversarial dynamic allows the generator to refine its outputs, ultimately leading to the creation of high-quality, realistic synthetic data.

Variational Autoencoders (VAEs): VAEs utilize probabilistic modeling to map input data into a latent space, enabling the generation of diverse and realistic data. They are particularly effective in representation learning and the generation of structured data, offering a versatile approach to creating novel data samples.

1. **Sequence Generation with RNNs and LSTMs:** Recurrent Neural Networks (RNNs) and Long Short-Term Memory (LSTM) networks are designed to process sequential data, making them suitable for tasks like text, music, and speech generation.

RNNs: Capture temporal dependencies by maintaining hidden states across sequences, allowing the model to generate coherent sequences.

LSTMs: Address challenges like vanishing gradients in RNNs and are highly effective in capturing long-term dependencies in text generation tasks.

2. Transformer Models in Generative AI

Transformer models have revolutionized the field of generative AI by introducing self-attention mechanisms, allowing models to efficiently capture long-range dependencies in data. These innovations have significantly improved the performance and scalability of AI systems in tasks like natural language processing and beyond.

Key Innovations in Transformer Models:

- Self-Attention Mechanism: This mechanism enables the model to assign varying levels of importance to different parts of an input sequence, thereby enhancing its contextual understanding. By evaluating relationships between all tokens, the model captures complex patterns and dependencies across long-range data, which is crucial for generating coherent and contextually relevant outputs.
- Parallelization: Unlike traditional sequential models, transformers process all input tokens simultaneously, which significantly increases computational efficiency. This parallelization makes transformers highly scalable and capable of handling large datasets with ease, reducing training time and improving performance in real-time applications.
- Pre-Trained Transformer Models:
    - BERT (Bidirectional Encoder Representations from Transformers): BERT improves language understanding by reading text in both directions, allowing it to capture richer context and nuances in sentences.
    - GPT (Generative Pre-Trained Transformer): GPT excels in text generation by leveraging a unidirectional approach, making it highly effective for tasks requiring coherent, human-like responses.
    - T5 (Text-to-Text Transfer Transformer): T5 unifies a variety of language tasks into a text-to-text framework, simplifying the approach to different NLP tasks and achieving state-of-the-art performance across them.

4. Transformer Architecture: ChatGPT is built on the Transformer architecture, which consists of:

Encoders and Decoders: Multi-layer architectures that process input sequences using self-attention and feedforward layers.

Contextual Embeddings: Assigning meaning to words based on their surrounding context rather than treating them as isolated units.

Scalability and Adaptability: Applied across various domains, including language modeling, computer vision, and speech recognition.

5. Pre-Training and Fine-Tuning: Pre-Training: The model is trained on vast corpora of text data to develop a broad understanding of language, predicting the next word in a sentence based on prior context.

Fine-Tuning: After pre-training, the model undergoes supervised training on specialized datasets, refining its responses for specific applications. This step improves its ability to generate accurate, context-aware outputs.

6. Context Window: Generative AI models operate within a fixed context window, meaning they consider only a limited number of preceding tokens. This constraint ensures computational efficiency but also affects coherence over long conversations. For example, GPT-3 has a 2048-token context window.

7. Prompt Engineering: Prompt engineering is the practice of designing structured and specific inputs to guide AI models toward generating desired outputs. Well-crafted prompts can Enhance model accuracy and Reduce biases there in Optimize responses for applications.

8. Large-Scale Parameters: Generative models rely on billions of parameters to capture intricate patterns in language and data.

GPT-3: Boasts 175 billion parameters, significantly improving fluency and contextual understanding.

Scaling Challenges: While larger models demonstrate enhanced performance, they also require significant computational resources and optimization techniques to prevent overfitting.

9. Challenges and Future Directions: Despite its advancements, Generative AI faces limitations, including:

Biases in Training Data: AI models can inherit and amplify biases present in their training datasets.

Contextual Limitations: Fixed context windows can hinder coherence in extended conversations.

Ethical Considerations: Ensuring responsible AI development and deployment remains a critical focus.

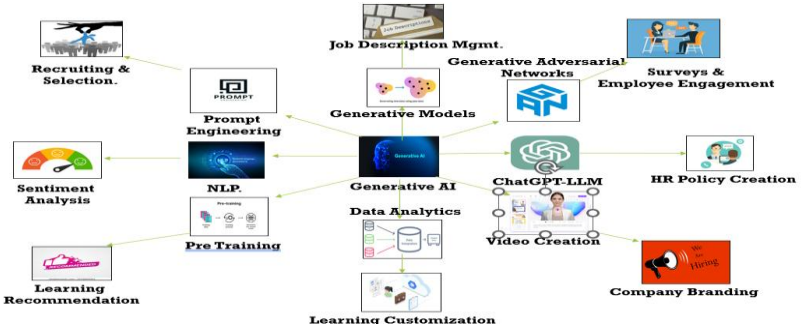


Figure 4. HR life cycle with GEN AI-used cases- Self-Created Diagram

STAGE MATURITY MODEL CREATION

The **Generative AI Maturity Model for HR** provides a structured framework for organizations to assess and advance their adoption of Generative AI across HR functions. As AI becomes integral to business operations, its role in HR is evolving—from enhancing efficiency and decision-making to optimizing workforce management. However, organizations vary in their level of AI adoption. This maturity model serves as a strategic guide, helping HR leaders navigate the journey from initial exploration to full-scale AI-driven transformation. It defines five distinct stages of maturity, each reflecting a progressively deeper integration of AI within HR processes.

Discovery Stage: Stage 1: In the first stage, AI Awareness, organizations recognize the potential of Generative AI but have yet to formally incorporate it into their HR practices. At this stage, AI tools may be used sporadically or informally, without a clear strategic approach.

Venture Stage: Stage 2: As organizations progress to the second stage, AI Experimentation, they begin exploring AI through small pilot projects in specific areas such as recruitment or employee onboarding. This phase involves testing AI's effectiveness in controlled environments to understand how it can complement existing HR processes.

AI Integration (Amplification Stage): At this stage, organizations make a significant leap by embedding AI across multiple HR functions, including performance management, employee engagement, and talent acquisition. AI moves beyond experimentation to become a core enabler of decision-making, enhancing efficiency, personalization, and strategic HR operations.

Enrichment Stage: Stage 4: Moving to the fourth stage, AI Optimization, companies focus on refining AI algorithms to enhance accuracy, deliver deeper insights, and automate HR processes more effectively. AI has become more sophisticated, providing predictive analytics that support strategic decisions related to talent management and employee performance.

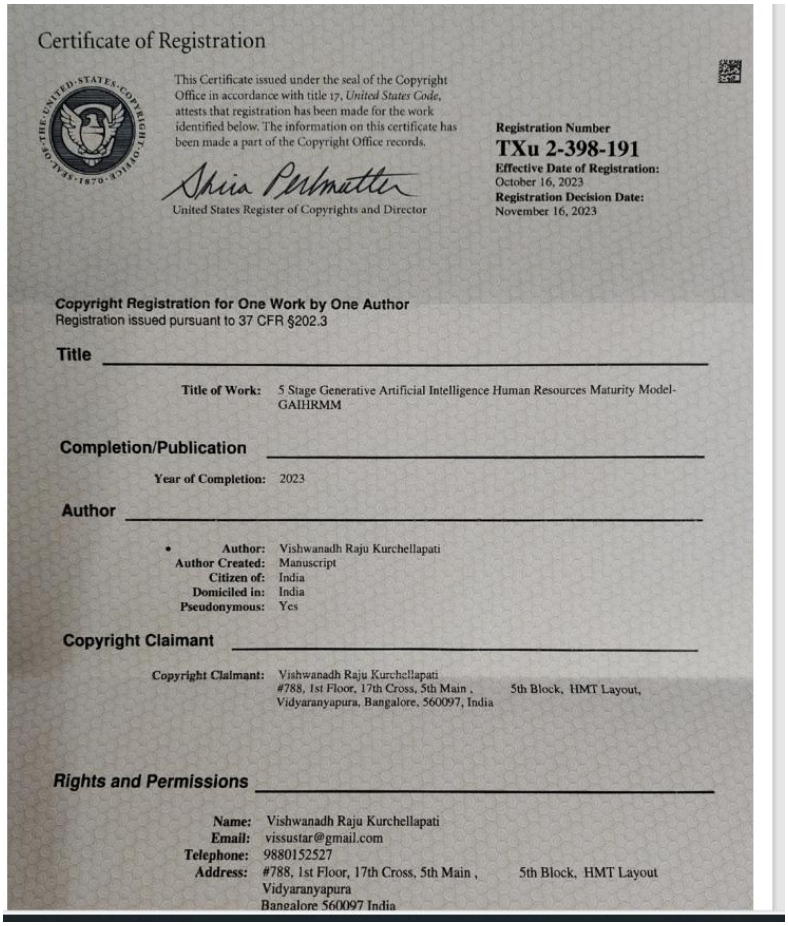
Metamorphosis Stage: Stage 5: Finally, in the fifth stage, AI Leadership, organizations fully integrate AI into their HR strategies, using it as a key driver of innovation, workforce planning, and decision-making. AI is no longer just a tool for improving efficiency; it plays a vital role in shaping the company's HR strategy and aligning with broader business goals. These organizations continuously innovate and optimize their AI systems to maintain a competitive edge in talent management and employee engagement.

This model provides several key benefits. First, it enables self-assessment, allowing organizations to evaluate their current AI capabilities and identify areas for improvement. Second, it offers a roadmap for progression, guiding organizations from basic awareness to advanced AI leadership by outlining the steps needed to enhance their AI adoption. Lastly, it provides strategic insights, helping companies align AI technologies with their HR goals, improve operational efficiency, and foster innovation. In summary, the Generative AI Maturity Model equips organizations with a clear framework for advancing their use of AI, transforming their HR functions into more data-driven, efficient, and strategically aligned operations.

5 Stage Generative Artificial Intelligence Human Resources Maturity Model- GAIHRMM

Stage	Name	Explanation	Details
1	Discovery	Awareness & Exploration	In this initial stage, Human Resources teams become aware of a wide range of generative AI technologies, including Large Language Models (LLMs), Neural Networks (NN), Variational Autoencoders (VAEs), Generative Adversarial Networks (GANs), Recurrent Neural Networks (RNNs), Transformers, Long-Short Term Memory (LSTM) networks for sequence modelling, natural language processing (NLP), deep learning, image generation models, and speech synthesis models. Key activities include attending HR tech conferences focusing on these technologies, exploring image indexing models for resume screening, and learning about the potential of vector databases for organizing HR data. HR teams also explore how VAEs can assist in generative tasks like resume generation and RNNs for sequence data analysis in HR contexts.
2	Venture	Experimentation	In the experimentation stage, HR departments experiment with various generative AI building blocks, including LLMs for text analysis, Neural Networks for image recognition and analysis, GANs for image generation, VAEs for generative tasks, RNNs for sequence analysis, Transformers for NLP, LSTM units for time series analysis, and speech synthesis models for personalized employee communication. They may pilot video creation models for onboarding or training purposes, utilizing GANs and Transformers for video and text content generation. HR teams explore the potential of RNNs for time series analysis of employee performance data.
3	Amplification	Integration & Scaling	HR departments start integrating a broader range of generative AI technologies into their HR processes. NNs and GANs are used for image classification and generation. LLMs and Transformers are applied to natural language understanding, sentiment analysis, and document summarization, complemented by RNNs for sequence data analysis. Speech synthesis models are integrated into HR chatbots for personalized employee communication, and speech comprehension models are used to analyse audio data from employee surveys.
4	Enrichment	Optimization & Experience Enhancement	Advanced generative AI technologies, including LLMs, NNs, GANs, VAEs, RNNs, Transformers, and speech comprehension models, are optimized to enhance employee experiences. LLMs are used for advanced text generation and analysis. Vector databases are used to create personalized employee profiles, and speech synthesis models, guided by LLMs, provide natural-sounding voice interfaces for HR services. RNNs are employed for time series forecasting of HR metrics, while VAEs contribute to generative tasks like creating customized training materials.
5	Metamorphosis	Transformation & Strategic HR	At the transformation stage, generative AI technologies, including LLMs, NNs, GANs, VAEs, RNNs, Transformers, and advanced speech comprehension models, play a pivotal role in reshaping HR strategies. LLMs and Transformers assist in document generation, policy development, and strategic decision-making. GANs and VAEs are used to create interactive training simulations. RNNs are employed for advanced HR analytics, including employee performance prediction, while LLMs and Transformers support personalized employee content generation and natural language understanding in strategic HR decisions.

Figure 5. GAIHRMM- 5 Stage Maturity Model –Self Created



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Registration Number
TXu 2-398-191
Effective Date of Registration: October 16, 2023
Registration Decision Date: November 16, 2023

Copyright Registration for One Work by One Author
Registration issued pursuant to 37 CFR §202.3

Title

Title of Work: 5 Stage Generative Artificial Intelligence Human Resources Maturity Model-GAIHRMM

Completion/Publication

Year of Completion: 2023

Author

- **Author:** Vishwanadh Raju Kurchellapati
Author Created: Manuscript
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Domiciled in: India
Pseudonymous: Yes

Copyright Claimant

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Figure 6. Copyright Received- 5 Stage Maturity Model -US Copyright Office

The Use of Generative AI in Human Resources

Generative AI is transforming Human Resources (HR) by automating processes, improving decision-making, and enhancing employee experiences. Below are key applications of Generative AI in HR:

1. Talent Acquisition & Recruitment: Candidate Screening: AI-powered tools analyse resumes using Natural Language Processing (NLP) to identify relevant skills, qualifications, and experience, matching candidates with job descriptions efficiently. Chatbots for Candidate Interactions: AI-driven chatbots handle candidate queries, schedule interviews, and provide real-time updates, freeing HR personnel for strategic activities. Diversity & Inclusion: AI helps reduce biases by anonymizing candidate details and suggesting inclusive language in job postings.

2. Employee Experience & Engagement: Employee Feedback & Sentiment Analysis: AI analyses feedback from surveys and reviews to provide actionable insights for HR teams. Enhanced Employee Experience: AI-powered assistants provide instant, accurate responses to employee inquiries, improving satisfaction and engagement. Employee Engagement Surveys: AI gathers and analyses anonymous feedback, identifying trends and areas for improvement. Remote Work Support: AI tools assess remote employees' well-being and productivity through email and collaboration tool usage, enabling HR teams to offer targeted support.

3. Onboarding & Employee Support: AI-Assisted Onboarding: AI-powered assistants guide new employees through policies, benefits, and procedures, creating a personalized onboarding experience. Employee Assistance & HR Support: AI-driven chatbots help employees with HR-related inquiries such as leave requests, benefits information, and compliance policies. HR Knowledge Base & Documentation: AI serves as an interactive knowledge base, offering quick access to HR policies, procedures, and guidelines.

4. Learning & Development: Personalized Training & Development: AI recommends learning resources based on employees' skills, career goals, and interests, fostering professional growth. Generative Content Creation: AI automates the creation of job descriptions, training materials, and policy documents, ensuring consistency and

saving time. Performance Management: AI assists in performance reviews by generating feedback insights, helping managers and employees set performance goals.

5. HR Analytics & Predictive Insights: HR Data Analytics: AI analyses HR data to provide predictive insights, such as identifying employees at risk of attrition and workforce planning recommendations. Process Optimization: AI streamlines HR functions such as compliance tracking, performance management, and employee surveys, ensuring efficiency. Ethical AI & Bias Mitigation: AI models undergo regular audits to ensure fairness, minimize biases, and maintain compliance with privacy regulations.

6. Scalability & Automation: Automation of Routine HR Tasks: AI automates repetitive tasks like resume screening, employee onboarding, and answering HR-related queries, increasing operational efficiency. Scalability & 24/7 Availability: AI-powered HR tools handle multiple interactions simultaneously, providing round-the-clock HR support. Generative AI is revolutionizing HR by enhancing efficiency, accessibility, and strategic decision-making. Organizations leveraging AI-driven HR solutions gain a competitive edge in talent management, employee experience, and process optimization**.**

The Role of Generative AI in Predicting Attrition

Generative AI is transforming the way organizations predict and manage employee attrition, also known as employee turnover. High attrition rates can be costly, affecting recruitment, training, and institutional knowledge. By leveraging generative AI alongside machine learning techniques, HR teams can gain deep insights into employee behaviour and implement proactive retention strategies.

How Generative AI Predicts Attrition:

1. **Data Collection and Integration**

   Generative AI models rely on large volumes of both structured and unstructured data. HR teams gather historical data, such as employee demographics, job roles, performance metrics, compensation, and tenure, to create robust predictive models. This data integration is essential for building accurate, comprehensive insights that drive effective HR decision-making.

2. **Feature Engineering**

   AI models analyse key factors influencing attrition, such as job satisfaction, engagement scores, promotion history, and workload. Feature engineering refines these variables to improve prediction accuracy.

3. **Natural Language Processing (NLP) for Sentiment Analysis**

   AI-powered NLP tools analyse employee feedback from surveys, performance reviews, and even social media interactions, enabling the assessment of sentiment and engagement. This analysis provides valuable insights into workforce morale, helping organizations understand employee sentiment and enhance overall engagement strategies.

4. **AI-Driven Risk Assessment**

   Advanced AI models, such as recurrent neural networks (RNNs) and transformers, assess historical trends and real-time data to estimate the probability of an employee leaving.

5. **Continuous Monitoring & Real-Time Alerts**

   Attrition prediction is a continuous process, with AI constantly monitoring shifts in employee behavior, performance, and engagement. It adjusts predictions in real-time and alerts HR teams when potential risks of attrition increase, enabling proactive intervention and retention strategies.

6. **Identifying Key Attrition Drivers**

   Generative AI helps pinpoint the primary reasons for attrition—whether compensation, career growth, workload, or leadership issues—allowing HR teams to implement targeted interventions.

7. **Early Warning Systems & Proactive Interventions**

   AI-driven predictive models function as early warning systems, enabling HR teams to intervene before an employee decides to leave. These interventions can include stay interviews, mentorship programs, or role adjustments.

8. **Personalized Retention Strategies**

   AI can generate customized retention strategies for at-risk employees, recommending professional development programs, flexible work arrangements, or salary adjustments to boost engagement and job satisfaction.

9. **Model Evaluation & Continuous Learning**

   Regular evaluation of AI models ensures their accuracy and relevance. HR professionals should refine models based on real-world feedback and evolving workforce trends.

10. **Ethical & Compliance Considerations**

    AI-powered attrition prediction must adhere to ethical and legal standards. Organizations must ensure data privacy, fairness, and unbiased decision-making to maintain trust and compliance.

11. **Transparency & Interpretability**

    AI models should be interpretable, providing clear insights into why an employee is at risk of leaving. Black-box models lacking transparency may not be suitable for HR decision-making.

The Role of Generative AI in Attracting Global Talent

In today's competitive job market, attracting top global talent is a strategic priority for organizations. Generative AI is revolutionizing talent acquisition by streamlining processes, enhancing candidate engagement, and optimizing recruitment strategies. By leveraging AI-driven automation, personalization, and data-driven insights, organizations can build a more diverse and skilled workforce.

How Generative AI Enhances Global Talent Attraction:

1. **Automated Candidate Sourcing**

   AI-powered tools can scan resumes, professional networks, and social media profiles to identify top global candidates with relevant skills and experience, saving recruiters considerable time.

2. **Multilingual Job Listings**

   Generative AI can automatically translate job descriptions into multiple languages, making opportunities accessible to a diverse international audience and eliminating language barriers.

3. **Cultural and Diversity Insights**

   AI analyses candidate data to help organizations tailor their recruitment strategies for diverse cultural backgrounds, promoting inclusivity and diversity in hiring.

4. **Personalized Job Recommendations**

   AI algorithms analyse candidate qualifications, experience, and career preferences to suggest job opportunities that align with their profiles, increasing the likelihood of a successful match.

5. **Optimized Job Descriptions with NLP**

   Natural Language Processing (NLP) enhances job postings by removing biased language, improving readability, and making them more appealing to diverse candidates.

6. **Resume Screening and Ranking**

   AI streamlines the initial screening process by ranking and filtering resumes based on job requirements, allowing recruiters to focus on the most qualified candidates.

7. **AI-Driven Candidate Engagement**

Chatbots and virtual assistants provide 24/7 support, answering candidate inquiries, guiding them through the application process, and delivering a seamless recruitment experience.

8. **Automated and Inclusive Job Description Generation**

   AI analyses trends in successful job postings and generates compelling, inclusive descriptions that attract a wider pool of candidates.

9. **Predictive Analytics for Workforce Planning**

   AI models analyse historical data to predict future hiring needs, helping HR teams proactively address skill gaps and plan recruitment strategies effectively.

10. **Bias Detection and Mitigation**

    AI detects and reduces unconscious bias in recruitment processes, ensuring fair and equitable hiring decisions.

11. **Personalized Learning & Development Plans**

    AI recommends customized learning paths and career development programs for employees, fostering continuous growth and increasing retention.

12. **AI-Powered Talent Pipelines**

    AI-driven CRM systems nurture relationships with potential candidates, keeping them engaged until relevant job opportunities arise.

13. **Enhanced Employee Well-Being Support**

    Virtual assistants provide employees with HR support, well-being resources, and company policy information, fostering a positive work environment.

14. **Skill Matching & Internal Mobility**

    AI identifies employees with skills suited for internal job openings, promoting career growth and maximizing workforce potential.

15. **Real-Time Performance Feedback**

    AI-powered tools enable continuous performance tracking and feedback, fostering a culture of growth and improvement.

16. **AI-Driven Onboarding Support**

    AI chatbots assist new hires with onboarding, answering FAQs, and familiarizing them with company culture and policies, ensuring a smooth transition.

17. **Predictive Analytics for Talent Attraction**

    AI analyses hiring trends and evaluates the effectiveness of various talent acquisition strategies, enabling data-driven decision-making.

18. **Cross-Border Compliance & Immigration Assistance**

    AI simplifies visa processing and legal compliance for international hires, ensuring organizations meet global hiring regulations.

19. **Data-Driven Decision-Making in Recruitment**

    AI provides insights into candidate behaviour, hiring trends, and engagement metrics, helping organizations refine their talent attraction strategies.

20. **Expanding Diverse Talent Pools**

AI identifies untapped talent, including candidates with unconventional backgrounds or from underrepresented groups, promoting workforce diversity.

Interesting Use Cases of Generative AI

1. **Market Mapping & Strategy Enablement** – A leading management consulting firm leverages Generative AI to refine business strategies following initial market research.
2. **Talent Intelligence & Business Strategy** – The largest beverage manufacturing company utilizes ChatGPT for job description creation, competency frameworks, and business strategy enablement.
3. **Policy Benchmarking & Employee Engagement** – A major internet company applies Generative AI for policy benchmarking and analysing employee engagement surveys.
4. **Talent Intelligence & Career Growth** – According to Eightfold AI, Generative AI within talent intelligence platforms uncovers hidden opportunities for candidates, employees, and contractors.
5. **Productivity & Innovation in Consulting** – A top consulting firm integrates ChatGPT to boost efficiency, productivity, and the pace of innovation.
6. **Content Summarization in Market Research** – Several market research firms utilize ChatGPT for summarizing extensive research reports and insights.
7. **AI-Driven Notetaking & Proofreading** – Internet companies deploy Generative AI for tasks such as active listening, summarizing discussions, structuring data, composing correspondence, and formatting documents.
8. **AI in Business Reviews & Goal Management** – Tech startups experiment with ChatGPT for structuring Quarterly Business Reviews (QBRs) and Management by Objectives (MBOs).
9. **AI-Powered Pre-Screening in Recruitment** – A fintech firm utilizes ChatGPT to craft pre-screening questions tailored to various job levels.
10. **Job Description Enhancement in Engineering Services** – A mid-sized engineering services company employs ChatGPT to optimize and elevate job descriptions.
11. **Policy & Compliance in Pharma Tech** – A pharmaceutical technology company applies ChatGPT for drafting policies, legal documentation, and industry-wide best practices.
12. **Learning & Development Customization** – A leading software services firm integrates ChatGPT to personalize learning experiences.
13. **HR & Administrative Use Cases** – ChatGPT is widely used for generating interview questions, meeting summaries, job descriptions, and employee surveys across industries.

Generative AI, especially ChatGPT, has the potential to significantly impact the employment landscape for language translators. While AI excels at handling routine translations, interpreting unfamiliar phrases, and assisting with machine translation—particularly for languages with a limited pool of human translators—it is unlikely to fully replace human expertise. Skilled translators provide cultural nuance, contextual understanding, and linguistic precision that AI models still struggle to replicate, ensuring their continued relevance in complex translation tasks.

To maximize the effectiveness of Generative AI, users should follow a structured approach:

Optimizing AI-Powered Translation and Text Generation

1. **Use Clear Prompts –** Precise and specific prompts yield more accurate responses.
2. **Iterate Questions –** If the response is unsatisfactory, reformulate the question for better clarity.
3. **Prompt Chaining –** Feed the output from one prompt into the next for continuous refinement.
4. **Limit Scope –** Keep the input focused on the exact requirement to improve accuracy.
5. **Establish Context –** Provide sufficient background information for a well-informed response.

6. **Verify Sensitivity –** AI models do not have access to personal data beyond what is provided in the prompt.
7. **Evaluate Responses –** Cross-check AI-generated content with reliable sources to ensure accuracy.
8. **Manage Expectations –** Understand the model's limitations and avoid tasks it cannot perform effectively.
9. **Utilize Reinforced Learning –** Over time, the model improves its responses based on repeated interactions.
10. **Analyse the Output –** Compare the AI-generated response with the expected outcome to assess accuracy.

The Role of Prompt Engineering

Understanding the desired outcome is key to obtaining high-quality AI-generated responses. Prompt engineering—a technique used to fine-tune language models—optimizes AI performance for specific tasks and desired outputs. Also known as prompt design, this process involves carefully structuring input prompts to maximize the AI's effectiveness in generating relevant and precise responses.

By refining input methods and leveraging prompt engineering techniques, users can enhance the capabilities of Generative AI, making it a valuable tool for language translation and other applications.

CONCLUSION

Generative AI is a great innovation with vast potential in the field of Human Resources (HR). Although still in its early stages, its advanced natural language processing (NLP) and conversational intelligence make it an invaluable tool for automating and enhancing a wide range of HR functions. These include talent acquisition, employee engagement, performance management, and learning & development. By leveraging Generative AI, organizations can significantly streamline processes such as resume screening, job description creation, interview scheduling, and even personalized career path recommendations for employees.

Moreover, AI-powered chatbots can offer real-time, accurate responses to employee queries, enhance the onboarding experience, and alleviate HR teams from routine administrative tasks. This integration of AI not only improves operational efficiency but also enriches the employee experience, allowing HR professionals to focus on more strategic, value-driven initiatives such as fostering workplace culture, employee development, and retention strategies. Generative AI is poised to redefine the HR landscape, offering opportunities for both automation and deeper insights into workforce management.

Despite the many advantages, Generative AI models like ChatGPT present certain limitations within the Human Resources (HR) domain. These models can occasionally generate incorrect or biased responses, be overly sensitive to input phrasing, and may lack the nuanced contextual understanding that human HR professionals bring to the table. This underscores the importance of ensuring the accuracy and fairness of AI-driven insights, while actively working to mitigate biases in decision-making processes.

Ethical considerations, including data privacy, transparency, and compliance with labor laws, must be carefully addressed when implementing AI solutions in HR. Organizations need to prioritize safeguarding sensitive employee information, ensuring AI outputs align with legal and ethical standards, and maintaining trust with the workforce.

To successfully integrate Generative AI in HR, organizations must develop a clear implementation strategy, continuously monitor the effectiveness of AI models, and regularly refine them to ensure they remain aligned with business objectives and the evolving needs of employees. By doing so, HR teams can harness the power of AI while maintaining a fair, transparent, and ethically sound approach to workforce management.

To prepare for AI readiness and plan for sustainable growth, organizations can leverage structured frameworks such as the Human Resources Artificial Intelligence Maturity Model (AIHRMM) and the Generative AI Human Resources Maturity Model (GAIHRMM). These models empower HR leaders to assess their current technological maturity, pinpoint gaps, and create strategic roadmaps for AI-driven transformation. As Generative AI evolves, organizations that commit to responsible AI adoption will gain a competitive advantage, enhancing operational efficiency, enriching employee experiences, and fostering innovation in human resource management.

Success in this transition requires a balanced approach—using AI to augment HR functions while ensuring human oversight remains central. Ethical AI governance must be a priority, ensuring transparency, fairness, and

accountability in every AI-driven decision. By thoughtfully integrating Generative AI into HR processes, organizations can unlock new potential while safeguarding the principles of equity and inclusivity, positioning themselves as leaders in a future where AI enhances both the workforce and organizational success.

RECOMMENDATIONS FOR ADVANCING AI MATURITY IN HR

1. Strengthen AI Awareness and Familiarity at Early Stages

Recommendation: Organizations in the initial stages of AI adoption (Discovery and Venture) should prioritize structured education programs to enhance AI awareness and understanding. This can be achieved through workshops, online training, internal knowledge-sharing sessions, and partnerships with educational institutions.

Justification: Familiarity with AI applications in HR is a key driver of maturity progression. Organizations with higher AI awareness are more likely to initiate exploratory projects, laying the foundation for broader AI adoption. As research indicates a strong correlation between AI familiarity and project execution, investing in education ensures a smoother transition to more advanced AI implementations.

2. Implement Pilot Projects and Targeted Experimentation

Recommendation: Organizations in the Venture stage should focus on small-scale pilot projects in key HR functions such as recruitment, onboarding, employee feedback collection, and learning & development. Leveraging external AI vendors or using off-the-shelf AI solutions can facilitate experimentation without significant upfront investment.

Justification: Pilot projects provide tangible insights into AI's effectiveness, helping organizations validate use cases and build confidence in AI-driven HR processes. Experimentation fosters a culture of innovation and readiness for AI integration, as findings indicate that organizations actively engaging in AI projects progress faster in maturity.

3. Standardize AI Integration Across HR Functions

Recommendation: For organizations in the Amplification stage, it is essential to standardize AI tools across core HR processes, including performance management, employee engagement, workforce analytics, and talent retention strategies. Establishing centralized AI governance frameworks ensures consistency in AI-driven decision-making.

Justification: Standardization enhances efficiency by streamlining data collection, improving analytical capabilities, and enabling data-driven decision-making. Organizations that adopt structured AI strategies are better positioned to scale AI adoption across HR functions, accelerating their progression in the AI maturity model.

4. Leverage Predictive Analytics for Strategic Decision-Making

Recommendation: Organizations in the Enrichment stage should integrate predictive analytics into workforce planning, talent forecasting, and retention strategies. Collaborating with AI vendors, research institutions, or academia can enhance the sophistication of predictive models.

Justification: Predictive analytics provide HR leaders with actionable insights, enabling proactive decision-making. As organizations reach higher maturity levels, dynamic and data-driven decision-making becomes essential. AI-powered forecasting allows companies to anticipate workforce trends, optimize resource allocation, and enhance overall HR strategy.

5. Embed AI into Long-Term HR Strategy and Foster Innovation

Recommendation: At the Metamorphosis stage, organizations should fully embed AI into their HR strategy, leveraging it as a core driver of workforce planning, talent development, and innovation. Engaging in industry collaborations, open-sourcing AI tools, or participating in AI-driven HR consortiums can accelerate continuous improvement and position the organization as a leader in AI adoption.

Justification: Organizations that strategically integrate AI into their HR functions gain a competitive advantage by fostering continuous innovation. Open collaboration enhances industry influence and promotes best practices, ensuring that AI remains a transformative force in HR. At this stage, AI is no longer an add-on but a fundamental component of HR strategy, reinforcing the organization's leadership in AI-driven human resource management.

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