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Abstract

Emerging artificial intelligence capabilities are predicted to have a significant impact on practically all aspects of organizational activities, including knowledge management. This article investigates the opportunities that result from incorporating AI-powered technologies into knowledge management. It investigates how AI may help with important knowledge management operations such as knowledge production, storage and retrieval, sharing, and applications. The essay also provides practical techniques for increasing collaboration between humans and AI to improve knowledge management activities within enterprises. It also provides insights on the development and management of AI systems, with an emphasis on people, infrastructure, and processes. (KM - Knowledge Management, AI – Artificial Intelligence)

Keyword: Organizational Activities, AI-Powered Systems, Human-AI Collaboration, AI System Management, Infrastructure and Processes.

1. INTRODUCTION

Information technology (IT) advancements are commonly recognized as essential drivers of organizational change in the field of knowledge management. The ability of algorithms to simulate human tasks integrating audio recognition, picture recognition, natural language processing, and analytical decision-making has significantly increased recently because to advances in deep learning. These artificial intelligence (AI) tools are finding more and more uses in commercial applications as large amounts of data and processing power become available. Artificial intelligence (AI) systems use methods like supervised neural networks, machine learning, and deep learning to mimic human intellect. Of them, deep-learning algorithms—especially those that use a supervised methodology—have shown to be incredibly successful. They can recognize patterns and make precise predictions on fresh, unseen data because they have been trained on enormous datasets of labelled information. This is different from expert systems and other conventional knowledge management systems that depended on human rules and symbolic logic.

Given the inherent connection between AI and knowledge management, recent AI advancements present new possibilities for transforming knowledge management within organizations. There are two complementary approaches in this field: knowledge management, which focuses on managing organizational knowledge, and AI, which aims to develop systems that can replicate human learning and cognitive processes. The potential

contributions of modern AI systems to knowledge management activities are substantial, given the natural alignment between these two domains. Though the insights provided by classic rule-based knowledge management systems are valuable, new insights into the link between AI and knowledge management are required due to the distinctivefeatures of modern deep learning. In this talk, possible synergies between AI and knowledge management are discussed, with an emphasis on a cooperative rather than competing interaction between humans and AI. The focus is on how AI, particularly deep learning, can augment human experience in knowledge management rather than replace or surpass human intelligence.

The goal is to examine the impact of AI in improving knowledge management by utilizing a framework that identifies essential processes in organizational knowledge management, such as knowledge production, storage, retrieval, sharing, and application. These activities are critical for firms to learn, reflect, and improve core capabilities, hence maintaining their competitive advantage in a knowledge-driven economy.

Prospective Applications of AI in Knowledge Management

The possible uses of AI in Knowledge Management are vast. In this section, we delve into these implications (Table 1) and examine strategies to foster a collaborative partnership between humans and AI within organizational KM. **Knowledge Acquisition**

The process of knowledge creation often involves reconfiguring and recombining existing knowledge to adapt to new situations, though it can also lead to entirely new ideas and solutions. Organizations may acquire knowledge from external sources, adding to their existing knowledge base by seeking out or sourcing new information.

Deep-learning AI offers significant potential in knowledge creation, particularly through its predictive capabilities, such as forecasting outcomes. This can be described as the ability to use existing information to generate new insights or information. By analyzing data patterns, deep-learning AI can reveal previously unknown patterns and connections. For example, AI can unearth new insights and develop fresh declarative knowledge inside specified domains by detecting and connecting variables in novel ways. This is made feasible by AI's advanced self-learning algorithms and sophisticated pattern detection, which allow enterprises to use massive data in previously unattainable ways.

A notable example of AI's application in this field is a deep-learning approach used to analyse millions of abstracts from research articles in materials science, spanning almost a century. Not only did the system automatically identify complicated ideas like the structure of the periodic table, yet it also disclosed connections between materials that were previously undiscovered with possible practical uses. Similar techniques could be applied to organizational knowledge management, where many companies amass and accumulate more knowledge than they can ever put to use. Studies show that a large portion of data collected by enterprises remains untapped. AI may assist firms in identifying hidden and unexpected patterns and insights inside large datasets such as customer interactions, enterprise chat systems, email exchanges, social media debates, and CRM records.

Knowledge Organization Knowledge Storage and Retrieval

Knowledge storage and retrieval are vital aspects of knowledge management, playing a key role in building and maintaining an organization's memory, which captures and preserves created and acquired knowledge. Effective strategies for storing and retrieving this knowledge are essential to ensure that organizational memory is preserved. These strategies often involve utilizing knowledge repositories to systematically extract, document, and organize knowledge for future access and use.

Table: 1
Prospective AI application in various knowledge management processes

Knowledge Management Processes	Possibilities developed utilizing AI systems	Use case examples

Knowledge Acquisition	• Advancing predictive analytics through autonomous learning capabilities • Identifying patterns that were previously undiscovered • Analysing organizational data to uncover hidden connections • Generating new explicit knowledge	• Predict sales outcomes • Identify organizational inefficiencies by examining CRM records
Knowledge Capture	• Automated Extraction of Critical Insights. • Real-Time Documentation and Archiving. • Advanced Categorization and Tagging.	• AI organizes customer inquiries by content, streamlining retrieval for service agents. • AI scans academic papers, automatically summarizing key findings for quick researcher access.
Knowledge Organization	• Collecting, categorizing, structuring, storing, and accessing explicit knowledge • Evaluating and sorting information from various content and communication channels • facilitating teams' and individuals' reuse of knowledge	• Arrange and condense the legal precedents that are pertinent to a new case. • Get scattered bits of knowledge about a troubleshooting scenario.
Knowledge Dissemination	• bringing people working on related problems together by encouraging knowledge networks and weak connections • encouraging a common organizational memory and collective intelligence • presenting a comprehensive analysis of the sources of knowledge and locating bottlenecks • constructing systems that are more cohesive and integrated across organizational boundaries	• Allow peer review and input on communication systems (like Slack). • Encourage intelligent, real-time sharing between sales pipelines and marketing channels.
Knowledge Utilization	• Finding and arranging information resources to enhance the application of context-specific knowledge • supplying system interfaces that are easier to use and more intuitive, including voice-activated assistants • ensuring equitable access to information without worrying about consequences or social costs	• Locate and apply question-and-answer pairs from internet guides to address knowledge of services. • Make information apps more approachable and user-friendly by using chatbots.

AI's Role in Enhancing Knowledge Storage and Retrieval

AI significantly enhances the storage and retrieval of explicit knowledge by tapping into its deep integration with big data. These self-learning, data-driven algorithms introduce new ways to manage, categorize, organize, store, and retrieve the immense volumes of data produced by organizations, including data that was once deemed too complex to manage effectively.For instance, AI can sift through, organize, and summarize legal precedents pertinent to new cases. It may also assess various content and communication channels, provide summaries, identify developing patterns, isolate sensitive and confidential data, and provide reusable insights for future scenarios. Google's Gmail is a practical illustration of this, with algorithms identifying implicit social groups and suggesting prospective email recipients as you write your messages. Deep-learning AI also adapts by learning from recurring knowledge management and communication patterns, such as email histories, to offer tailored solutions. With time, it will be able to decide which messages or documents to retain or prioritize, as well as which supply chain problems and client purchase histories to bring up at particular meetings. Knowledge workers, who frequently spend a significant amount of time accessing information from many documents and spreadsheets or going between

folders during their regular responsibilities, might benefit substantially from this ability to increase efficiency.

Knowledge Dissemination

Disseminating knowledge throughout a company is critical for effective issue problem-solving and judgment. But information exchange frequently faces barriers due to time limitations, geographical distance, and functional silos, resulting in fragmented and localized exchanges. AI can address these challenges in two primary ways: (1) by linking individuals working on similar issues but separated by geographical or organizational boundaries, and (2) by developing more cohesive coordination systems that provide managers with a clearer insight into knowledge gaps.

Breaking down silos to link people with the tools and information they need is a major issue in knowledge sharing. AI can support community-based learning by identifying and bolstering weak linkages. Intelligent knowledge management systems, for instance, such as those employed by Accenture, evaluate data on employee responsibilities, project timeframes, and areas of expertise, proactively connecting individuals working on similar projects or technical issues. AI's most impactful contribution to knowledge sharing lies in enhancing collaborative intelligence, something traditional databases cannot achieve. AI may encourage innovative thinking, build a collective These advanced capabilities, which promote memory retention among team members and enable peer review and feedback, are being quickly included into communication platforms like Microsoft Teams and Trello.

Furthermore, AI systems may produce dynamic social graphs that depict the relationships between individuals and teams, providing a thorough picture of the organization's knowledge sources and bottlenecks. As an example, Salesforce's Einstein AI Soffers businesses real-time insights into customer interactions, improving collaboration and knowledge sharing across customer service and sales teams. Additionally, enterprise social graphs enable organizations to more accurately and fairly acknowledge those who contribute expertise and knowledge.

Knowledge Utilization

Knowledge application is the practical application of retrieved or shared knowledge, which is generally achieved by transforming existing resources, such as best practices into fixes or launching new services and goods in diverse contexts. This process typically involves reinvention, which entails more than merely adapting others' ideas; it necessitates the careful choosing, evaluating, and using the relevant outside knowledge to meet particular local needs when they arise. By enabling quicker and more effective access to information resources and by codifying and automating tasks that support employees in applying and integrating specialized knowledge, information technology (IT) contributes to the facilitation of knowledge application.

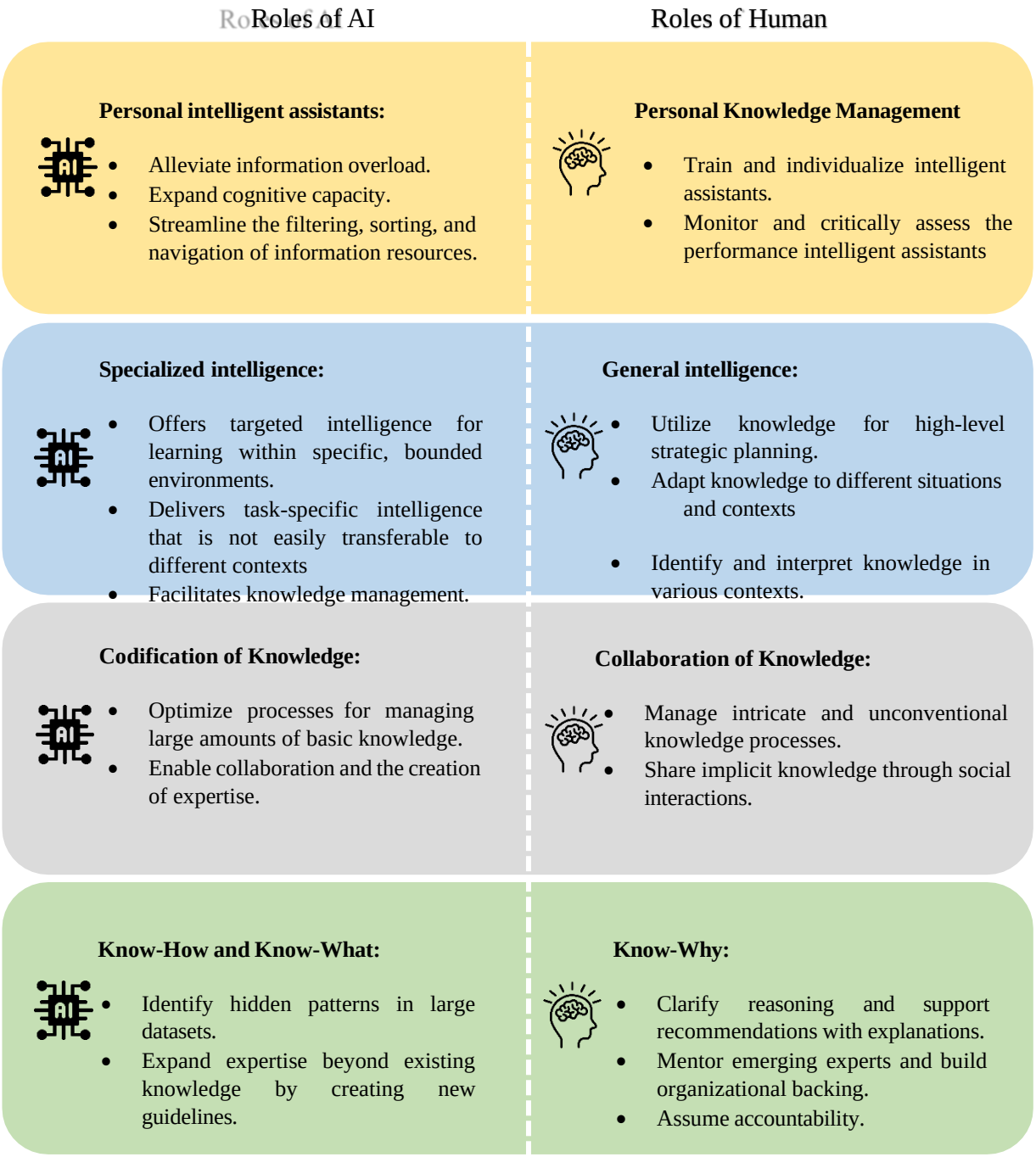
AI-powered situational awareness is particularly useful in customer support, where employees require fast access to previous cases and issue descriptions. Talla, for example, is an AI-powered service knowledge automation platform that collects, sorts, and organizes online and manual document questions and answers for service knowledge management. Additionally, AI systems offer more user-friendly and engaging interfaces, such as chatbots powered by natural language processing that can hold human-like conversations. These AI-driven interactions improve information retrieval and application accessibility and usability. Chatbots, for example, let students gain access to institutional information and assistance by allowing them to ask questions in a casual, conversational tone without fear of social stigma, particularly about sensitive matters such as financial and mental health.

Human AI Synergy in Knowledge Management

As previously said, AI systems are poised to become critical components of knowledge management frameworks within enterprises. However, it is critical to understand that knowledge creation and management are fundamentally human- cantered processes. The most effective role for AI in this context is to augment and enhance human capabilities rather than replace them. This approach fosters what can be described as "Human-AI symbiosis," where AI and humans work together, each leveraging the other's strengths in a complementary and collaborative manner.

In the following sections, we will explore various scenarios and practical strategies for nurturing this partnership in knowledge management (refer to Figure 1). For instance, personal intelligent assistants in knowledge management are primarily focused on improving knowledge storage and retrieval. In contrast, discusses specific or broad AI intelligence focus on knowledge generation. Codification and collaboration efforts are inextricably connected to processes for exchanging knowledge, and the notions of know-what, know-how and know-why are especially important for knowledge application.

Fig- 1 A collaborative relationship between humans and AI in handling knowledge.



This mutually beneficial interaction between AI and humans in knowledge management not only gets better organizational effectiveness, but additionally ensures that the human element—creativity, intuition, and contextual understanding—remains at the forefront of knowledge-related operations.

Personal intelligent assistants and individual knowledge management

Knowledge management within organizations places a strong emphasis on personalization, particularly focusing on individual employees and their unique approaches to inquiry. Various conceptualizations of knowledge highlight the crucial role each worker plays in defining what constitute knowledge. Knowledge is sometimes described as a dynamic blend of framed experience, values, contextual knowledge, and expert insight serve as a framework for analysing and digesting new experiences and information.

Personal intelligent assistants (PIAs) are a new type of AI system that is becoming an important part of personal knowledge management. One of the most significant issues knowledge workers confront in today's information-rich workplace is information overload. Personal intelligent assistants solve this issue by increasing knowledge workers' cognitive ability and providing enhanced tools for processing, filtering, sorting, and navigating massive information resources.

Personal intelligent assistants are adaptable systems that learn from user interactions and provide more personalized solutions. In financial organizations, they help traders manage information overload and make better decisions by providing real-time insights based on data trends. These systems rely on continuous human feedback to work properly, enabling a cooperative learning process in which both the AI and the user evolve together. However, over-reliance on digital assistants without critical engagement might lead to cognitive complacency, causing users to fail to properly analyze AI-generated outputs.

Focused intelligence vs. broad intelligence

AI provides specialized intelligence, allowing it to sense the environment, learn from past experiences, and generate behaviors within specific task settings. For example, AI can quickly store, retrieve, and analyze explicit knowledge like as text data or photos, as well as react to client requests regarding specific items (e.g., the compatibility of smart thermostats like Google Nest with heating systems). However, AI's utility in knowledge management and other fields is often task-specific and lacks the ability to adapt to changing situations.

On the other hand, general intelligence, which encompasses strategic-level thinking and decision-making, remains a distinctively human trait. Unlike AI, which excels at data-driven, repetitive tasks, humans possess holistic intelligence that involves foresight, emotional and social awareness, imagination, curiosity, and the ability to make judgments. This judgment is essential in knowledge management, where decisions must consider the broader social and organizational implications.

While AI systems excel at handling knowledge content, humans are crucial for understanding the context in which knowledge is applied. Knowledge application requires an appreciation of the new context's peculiarities and its relationship to previous contexts. This process of contextualization relies on human general intelligence. Additionally, self-reflection—a key attribute of general intelligence—is critical for learning and reinventing, ensuring that knowledge application is adaptive and relevant. Unlike AI, humans can reflect on past experiences, develop corrective strategies, and identify problems that deserve attention.

Codification versus Collaboration

Previous study suggests that Information Technology (IT) can enhance information Management (KM) in two ways: codifying information and enhancing human collaboration (personalization).

Codification focuses on managing explicit knowledge, whereas collaboration addresses the tacit parts of functional knowledge management. This section revisits the possibilities of future AI technology in terms of these factors.

Codification

The codification technique entails archiving and preserving specific information stored in repositories or databases so that it can be used to solve new challenges. AI systems offer several potential to automate routine, high-volume operations such as collecting, classifying, evaluating, and presenting content—tasks that human cognition cannot handle alone. By automating these operations, AI frees up knowledge employees to concentrate on more challenging, high-value tasks, like the strategic analysis of explicit data, which is essential for handling more significant business issues.

Collaboration

Tacit information is strongly established in human behaviour and is frequently transmitted through social encounters. AI's most valuable contributions may be not only its intellect, but also its potential to improve connectedness, allowing for richer human interactions. AI technology may locate and connect sources ofknowledge both inside and outside of organizations, thereby enhancing social networks and facilitating information transfer. However, the transfer of tacit knowledge is fundamentally human-centered, necessitating direct social exchanges and unofficial relationships, such apprenticeships, in which knowledge is transmitted through experience. Efforts to use technology to transform essentially implicit knowledge into explicit knowledge have often failed.

Know-how and Know-what V/S Know-why

Emerging AI technologies outperform traditional Knowledge Management (KM) solutions. Unlike older KM systems, which relied on predetermined human rules to translate standard inputs into standardized outputs, modern AI systems can learn on their own. These advanced systems may learn and improve their know- how and know-what, producing increasingly effective solutions as they process fresh data.

In contrast to the rule-based systems of the past, today's AI systems, powered by deep learning, are extremely complex and frequently opaque. This complication can conceal the reasoning behind their outputs, resulting in a "black box" effect that can lead to incorrect or opaque conclusions. As a result, thoroughly validate AI-generated inferences. However, AI systems are unable to contextualize their judgments or provide meaningful explanations.

Practical Implications

Recent surveys reveal that many AI investments often result in minimal or no impact. Research over the years has consistently shown that successful IT implementation necessitates corresponding organizational changes, referred to as organizational complements. Consequently, the value of AI in Knowledge Management (KM) hinges not just on the technology itself but also on thedevelopment of new infrastructures, the training of personnel, and the restructuring of processes. The practical benefits of AI in KM are best understood through three essential complements: people, infrastructure, and processes.

People

Elevating Humans in KM

Terms such as "human-in-the-loop" AI or "the last mile problem" frequently fail to recognize the critical role that workers play in AI-driven automation. These notions often regard humans as secondary to technology or as impediments to perfect automation. Instead, a symbiotic partnership is required—one that acknowledges humans' irreplaceable contributions to knowledge work while striving to improve and evolve their responsibilities. AI projects depend heavily on employees that integrate AI into their daily tasks.

By reskilling and upskilling knowledge workers, AI may greatly enhance their skill sets. As AI systems get a better understanding of human abilities and actions, businesses can use this information to offer specialized instruction and growth. As an illustration, AI-powered platforms can tailor training programs to an individual's existing abilities and future job market demands. Accepting AI's potential is expected to drive knowledge workers to take on new jobs and responsibilities. The parts that follow will look at the changing responsibilities of knowledge scientists and AI enthusiasts in this transformational context.

Train Knowledge Scientists

Advances in explicable AI (XAI) and brain-symbolic education have created new jobs like data scientists and knowledge scientists, they are in charge of organizing and maintaining machine learning algorithms' training datasets. Knowledge scientists contribute significantly to closing the gap between conventional symbolic AI and modern statistical AI, which is based on neural networks. They contribute by creating knowledge graphs that contain background information, which supplement training data and improve the transparency and explainability of AI choices. This collaboration between knowledge scientists and machine learning algorithms is critical to making AI conclusions more intelligible.

Given their expertise in knowledge management (KM) and Knowledge scientists' interactions with AI systems are crucial for clarifying the "know-why" behind AI decisions. This explanation is vital for gaining support from stakeholders, whose backing is essential for successful AI implementation in KM systems. Persuading stakeholders remains a fundamentally human skill.

Seek AI Champions

AI champions are crucial for promoting the narrative of augmenting rather than replacing knowledge workers. These individuals serve as connectors, aligning AI capabilities with KM needs and functions. AI champions possess deep domain expertise, strong business acumen, and excellent communication skills, enabling them to effectively demonstrate how AI can enhance knowledge processes and leverage worker strengths.

While hiring new talent with the right cognitive and analytical skills may be necessary, existing employees also need training and retraining for new roles. These professions necessitate a combination of data, technology, and business analysis abilities in order to outline business problems and identify viable technological solutions. Furthermore, all knowledge workers will need to learn AI jobs, as it is a prerequisite for success in knowledge-intensive industries.

Foster AI Literacy

As AI automates more monotonous jobs, workers must learn to connect with intelligent systems rather than depending entirely on human interactions. AI literacy is critical for managers and employees that work with AI systems. This entails gaining a deeper understanding of AI, computational abilities, and analytical skills in order to analyze AI-driven judgments. Understanding the "know-why" entails rationalizing decisions and having a critical mindset.

Modern professionals must question algorithmic results rather than take them at face value. To improve AI systems, decision-makers should cultivate a curious mentality, ask probing questions, engage critically with algorithmic outcomes, and offer feedback.

Infrastructure Prepare Data

The effectiveness of AI systems largely depends on the quality and quantity of data available. Deep learning, for instance, requires substantial datasets to produce reliable results. Effective AI implementation involves overcoming data silos and integrating diverse data sources to enhance KM processes. High-quality data comes from a well-managed data value chain that includes harvesting, cleaning, storing, governing, analyzing, and securing data. Combining internal data with external sources related to the competitive landscape creates a robust environment for AI-driven analysis.

Facilitate Interpretability and Accountability

For AI to be effectively integrated into organizations, ensuring interpretability and accountability is essential. Many AI capabilities developed in research and industry are not immediately deployable in knowledge management (KM) due to these challenges. Supervised learning models, which are common in business applications, gain interpretability and accountability through the labeling of training data, clarifying decision-making processes. However, developing these models incurs enormous costs, notably in the labor-intensive processes of data cleansing and preparation necessary to build a working AI product based on private data. Tagging data with fine granularity necessitates coordinated, cross- functional initiatives across the company.

Develop Knowledge Graphs

Managing unstructured data in real time is a major challenge in leveraging knowledge effectively within organizations. Knowledge graphs can address this issue by organizing key concepts, terms, entities, and their relationships, providing a framework for understanding how different data points are interconnected. For instance, a knowledge graph might illustrate how weather patterns in Texas impact the cost of specific components, enhancing the ability to analyze complex relationships.

Processes

Aligning organizational processes with AI capabilities is crucial for successful AI deployment. This involves viewing AI not just as a tool for automation but as an opportunity to enhance or reinvent processes.

Pursue Mutual Learning

Redesigning procedures should encourage reciprocal education between AI and humans. While datafication and digitalization can give the illusion of legitimate knowledge, relying too heavily on AI might erode these systems' real usefulness. For example, AI systems may perpetuate or exaggerate pre-existing biases in organizational data. Continuous audits of AI systems are needed to assure the impartiality and accuracy of knowledge produced by AI.

Form Cross-Functional Teams

Effective AI implementation necessitates cross-functional teams that include expertise in AI and analytics, topic experts, front-line employees, and operational staff.

These teams can connect business expertise with algorithmic capabilities, facilitating the integration of comprehensive data from multiple units. Redesigning

workflows, such as through digitalization and datafication, should involve ongoing dialogue between technology and domain experts. Knowledge workers' perspectives on their main tasks are critical in establishing how to develop trust in AI apps and integrate algorithms.

Redesign for Automation and Augmentation

Automation and human augmentation are complementary rather than mutually exclusive. Identifying opportunities for automation can free knowledge workers from repetitive tasks, allowing intelligent assistants to handle routine work and exception management. For example, AI can process invoices, identifying discrepancies and allowing financial staff to focus on strategic tasks. When rethinking processes, firms should look for ways to automate and augment. AI and humans can make judgments concurrently or sequentially, allowing for comparison and mutual learning. Such approaches, which include approaches for interactive machine learning and explainable AI, promote a better grasp of decision-making reasoning.

CONCLUSION

The basic goal of Knowledge Management is to empower workers with knowledge by giving them the correct resources or connections at the right moment, resulting in improved decisions. The advent of AI provides new capabilities that can considerably improve knowledge management, but it also necessitates a reconsideration of the conventional division of labor between humans and computers. The new positions that are emerging in this landscape require a new set of human skills and capabilities, as well as unique design techniques for intelligent machines. To fully realize AI's promise in knowledge management, humans must develop new attitudes, abilities, and work habits. This entails not just learning how to collaborate with AI systems but also avoiding the risks of over-reliance on automation, such as cognitive complacency. By supporting these preparations, firms can capitalize on AI's unique strengths in knowledge management, resulting in a truly mutually advantageous relationship between intelligent systems and knowledge workers. This collaboration is critical to reaching AI's full potential in improving organizational decision-making and knowledge processes.

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