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# Creating New Knowledge Fast-the Partnership Role of Artificial Intelligence (AI) in the Human World

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**Abstract**

Recent artificial intelligence (AI) developments provide the means to create new knowledge to enhance existing knowledge at individual, business, and societal levels much faster and more efficiently than ever before. There appears to be a widening gap between AI capabilities and people's abilities to adopt/adapt technologies. This research investigated how this extending gap could be closed. Appropriate AI training needs to be provided to those working in industries such as education and manufacturing, with a rollout into other sectors. The main emphasis needs to be on improving the understanding of this technology's capabilities and what this technology encompasses. The public needs to be better educated on the benefits of this modern technology. More international open, honest, and constructive sharing of the AI technologies employed/deployed must be implemented to reduce the likelihood of increased multi-directional diversion. More industries need to be encouraged to adopt/adapt the application of AI optimally. Teachers and students need to be trained appropriately to employ applications such as ChatGPT to create new knowledge and insights.

**Keywords:** knowledge management, AI partnership, content creation, knowledge reformatting, predictive learning power, trend creation, relevant information streamlining

## 1. Introduction

### *1.1 Introduction*

Artificial Intelligence (AI) continues to develop at a phenomenal rate. Generative AI (Gen AI), for example, being the forerunner of what is generally referred to as superior AI (superior to the human brain), can create added content and ideas based on inputs from conversations, images, videos, music, or stored historical data. It appears that its capability to create new knowledge is infinitesimal. Whilst the creation of new knowledge can now be taken to new and higher levels, working with the unknown requires some demystification so that the endless possibilities become clear and obvious to the community of practice. Entering uncharted territory carries risks. The quest for new knowledge must be approached with an open but educated mind. This research investigates how current knowledge can be enhanced through the engagement of Gen AI technology. This investigation is considered urgent due to the fast global development of AI software. People involved in such endeavors must have been fully trained and instructed on how to work alongside this modern technology in harmony and partnership. The research aims of this research are:

- To confirm how conventional knowledge can be strengthened, enhanced, and improved through guided onboarding of AI technology
- To give new insights to the community of practice on how Gen AI needs to be integrated to improve current best knowledge creation practice
- To suggest some practical recommendations on how to resolve the identified shortfalls of this research
- To encourage people, businesses, and society to adopt AI technologies mindfully and with an open/investigative approach
- To stimulate more industries to choose AI technologies as a preferred partner to develop, for example, their customer relationship management to improve their interactions with customers

This research has adopted the following definitions of knowledge and knowledge management:

Knowledge (ChatGPT, 2024): Knowledge is the understanding, awareness, or familiarity gained through experience or education. It encompasses facts, information, and skills acquired over time.

Knowledge Management (Getgum.com, 2014): It is a process of organizing, creating, using, and sharing knowledge within an organization. It keeps all information in a single location that is easy to find and access (for example, an employee intranet).

Next, the literature review is presented, followed by the research questions and the identified

knowledge gap. The research method, results, discussion, and conclusions/recommendations sections follow. Table 1 is a summary of the main abbreviations.

Table 1. Abbreviations Used in this Article

| | |
|---|---|
| AI | Artificial Intelligence |
| AGI | Artificial General Intelligence |
| ChatGPT | Chat Generative Pretrained Transformer |
| DL | Deep Learning |
| Gen AI | Generative Artificial Intelligence |
| KM | Knowledge Management |
| LLM | Large Language Model |
| NLP | Natural Language Processing |
| KPI | Key Performance Indicator |
| NLP | Natural Language Processing |

### *1.2 Literature Review*

#### 1.2.1 AI Knowledge Management and Its Impact on People/Society/Work

Jarrahi et al. (2023) report that recent developments in AI have made it possible to imitate human capabilities, including improved image and voice recognition and decision-making due to enhanced analytical processing capabilities. This has had a major impact on knowledge management (KM) caused by improved deep learning capabilities (DL, closer alignment of humans with artificial capabilities). In the past, such knowledge management systems applied a symbolic logic driven by humans (Pushpa, 2019). Both AI and KM are actively involved with knowledge and learning. AI advancements can change how knowledge management is used in organizations. KM and AI have the potential to work together side by side in a complementary ability. In this context, KM's primary role is to manage knowledge within organizations while AI can copy human knowledge and learning abilities. Contemporary knowledge management has been driven by rules.

Innovative approaches are needed to integrate fresh thinking into how AI and KM can co-exist in partnership to improve and create what is known (knowledge) for the benefit of humankind. Improving lived experiences without adverse effects on the human intellect is a main target. Davenport & Prusak (1998) suggest that such an approach supports, for example, businesses in product and service delivery. It is achieved by learning, reflecting, and developing resources and capabilities made up of strategic advantages to any business. Jaharri et al. argue that AI has the advantage to build AI applications in terms of new knowledge creation which lies in its capabilities to divulge knowledge and apply predictive power, creating new knowledge that did not exist previously. This will enable businesses to forecast potential sales opportunities. AI can connect the knowledge organizations have in

such a way that new knowledge, through the connections of all existing knowledge, creates previously unknown trends (creating variables in new ways, Fig. 1).


Fig. 1. Knowledge Management-Empowering Intelligent Systems (Google.com, 2024)

The advantage of such an approach lies in its ability to assess, scan, and review all business data, including unused stored data. This will enable businesses to discover unused, unknown, and unexpected connections and insights, for example, from detailed customer call records and messages. AI can improve the storage of all knowledge. Deep learning approaches enable AI to harvest, clarify, organize, store, and retrieve substantial amounts of data within organizations. The advantage of such an approach on people (workers) is enormous. Lavenda (2019) reports that many knowledgeable workers spend 32 working days per annum retrieving relevant information during daily work activities. Knowledge-sharing in organizations is applied to solve problems and to make decisions more effectively. AI can, for example, break down so-called organizational silos by connecting people working on the same or similar issues and improving coordination between people through knowledge sharing. Another advantage of AI is the power to streamline relevant information, thus reducing the time it takes to retrieve relevant information, by getting the right information to the right people at the right time. In addition, AI can communicate with human beings using a process known as natural language processing (NLP). It enables AI to understand and imitate human conversation. In turn, this can ease improved knowledge applications. AI can reduce so-called information overload by providing the means to process, filter, sort, and navigate information resources (Maedche et al., 2019).

Smith & Farquhar (2000) report in the early years of AI evolution that knowledge management became a popular approach to capture, share, and apply people at work experiences and their ability to help organizations to compete more effectively in the ever-changing business environments. It appears that a combination of resolving technology

issues and managing processes and content is needed to make this work. Applied business technology must be fit for their intended purpose, making the best use of their community of practice (people). Knowledge management happens in real-time. It is a daily occurrence emanating from every part of the organization. It depends on people obtaining the data, information, and knowledge they need to work effectively. As a result, companies can improve their efficiency, productivity, and service quality. The collective knowledge of people has been the central enabler. Such an approach ensures that the right people, at the right time, have access to the right information. Early developments in AI provided the technological requirements to set up some basic AI-driven knowledge management systems. This included concepts such as a knowledge base that applied different words, including a corporate memory and a knowledge repository. In addition, a search engine was developed that made it possible for people to find and apply relevant knowledge, for example, to aid decision-making. To make this all work, it was necessary to ensure that people became familiar with emerging AI technologies. It was thus possible to bring knowledge to people so they could make better and more informed decisions. People, at times, developed a negative relationship with AI. This was due to hyperinflated visions and conclusions of what the new AI technology was expected to achieve. There was often a mismatch between human expectations and what the artificial intelligence system could deliver at that time. Early ‘lessons learned’ confirmed that it is vital for the success of any knowledge management system to keep information on company databases and repositories up to date. In addition, a knowledge-sharing culture must be developed that encourages people to learn willingly from each other. There is an early recognition that effective knowledge management is one of the key drivers to move any business forward, particularly if customers can see the same information as staff (closer customer alignment).

Ramaul et al. (2024) consider that new AI capabilities enabled the creation of new knowledge outside of human ability. It is possible now to create new outputs and automate routine work. In addition, interactions between AI and human systems have improved conversational activities between AI and humans. Large language models (LLM) enable users to set up innovative business applications across advertising, marketing, and education industries. It is not clear yet how end-users of this modern technology can apply this within their current and organizational work environments and how it can improve competitive business advantage. The number of competing tools and capabilities has increased since the arrival of Chat GPT (Chat Generative Pretrained Transformer). According to Leonardi (2011), people will change applied technology if they feel it hinders them. When technologies provide opportunities to do things differently, people are more likely to change their routines. It is vital to understand how technology users interact with that technology to meet personal targets, for example, how to use natural language processing (NLP) to generate human-like language. Appearing innovative technologies have allowed individuals and organizations to search for and create new knowledge. The arrival of both LLM and Generative AI (GEN AI) has made this possible. For example, so-called chatbots (AI that simulates human conversation) are no

longer driven by domain-specific knowledge limitations that previously prevented chatbots from creating and understanding new and unlikely scenarios (Paschen et al., 2019). In addition, recent developments include software improvements that allow chatbots to express human-like emotions and to better understand contextual relevance. As a result, human qualities such as being more flexible and showing empathy, have been mimicked, in contrast to earlier static responses (Adam et al., 2021). Previously, supervised, unsupervised and reinforced learning (or any combination of these) limited what AI systems were able to do. In contrast, new Gen AI systems (Table 2) provide capabilities to create added content and thereby enlarge human capabilities significantly. Ramaul at al quote Jaharri et al. who report that applications such as deep learning, natural networks and natural language processing have been applied to outline and generate new knowledge.

Table 2. Creational and conversational AI affordances (Ramaul et al., 2024)

| Aggregate Dimensions | Main Themes | Detailed Categories |
|---|---|---|
| **Creational Affordances:** Complementing human creativity and productivity with AI-generated outputs | Content creation and enhancement | -Creating added content<br>-Summarizing and changing content |
| | Knowledge acquisition and creativity augmentation | -Knowledge base acquisition<br>-Creative search facilitation |
| | Task automation | -Accelerating knowledge work<br>-Elimination of unnecessary work |
| **Conversational Affordances:** Fluent, continuous, and cumulative chat-like human-machine-interaction in natural language | Contextual sensitivity | -Maintaining conversational context<br>-User-driven fine tuning |
| | Interactive engagement | -Improved responsiveness<br>-Inclusive and user-friendly interface |
| | Human AI workflow constructive collaboration | -Pervasive adoption<br>-Acting as a sparring partner<br>-Emergent team roles |

Ramaul et al. suggest that chatbots with higher levels of human-like characteristics are more likely to be adopted by human users. The higher the level of ‘like a human being’ is, the more likely users will change their attitude towards adopting chatbots as the de facto standard for creating new knowledge (Hu & Lu, 2021). Based on the outcome of some research by Ramaul et al., it appears that an increasing number of organizations adopted AI technologies into their teams and businesses to enable desired business transformations. Some associated constraints and concerns have been resolved (information security) whilst some fundamental features (hallucination potential) still require further addressing (Hannigan et al., 2024. To be

successful, organizations need to make the use of AI technologies an integral part of their strategic intents and competitive edge. AI needs to be embedded into core business operations, company culture, and other areas such as management, marketing, and finance. The company board and management teams must be engaged constructively to put this into practice.

Damioli et al. (2024) report that developments in AI technology have had a major impact across companies, industries, and societies. It appears that potential AI applications (automation) have created concerns and heated debates as to whether the adoption of AI will lead to technological unemployment. This is driven by the arrival of self-driving cars and widely used AI applications. The modern technology can perform tasks that used to require human beings' intelligence and dexterity such as speech recognition and decision-making. In contrast, the arrival of AI can also be viewed positively. Labor-saving processes generated by AI have provided opportunities to expand production and create new job opportunities. Not many studies have addressed the bright side of this labor-friendly development (Alderucci et al., 2020; Yang, 2022). Damioli et al. focus on the labor-friendly nature of AI technologies, thus offering new insights into why the adoption of AI enables businesses across industries to take advantage of the innovative technology for the benefit of business development. The research outcome suggests that organizations that adopt AI technologies more willingly experience greater levels of job evaluation than those companies who do not. These companies are at the forefront of exploiting the adoption of innovative technologies and are more likely to succeed in their quest to improve employment benefits. It is still necessary to consider putting proper safety nets and labor policies in place to manage AI impacts as effectively as possible. Companies not currently engaged in AI technologies may need to choose a different approach if they wish to improve their employment status. The adoption of AI technologies may not be suitable for every business until positive attitudes towards modern technology have been developed to aid its rollout.

Weaver (2024) considers that AI has already been proved as part of how businesses across the world run and function. Companies can receive help from this development in ways that have never been workable before. The adoption of fit for purpose generative AI technology must be aligned to any business's goals and values. The modern technology must integrate seamlessly with existing systems and cover the whole enterprise. In addition, there needs to be full transparency in how modern technology thinks and runs. Many businesses have realized how AI technology can help to solve the many problems and challenges they meet. This is the reality of today. Weaver suggests that a suitable adoption of generative AI can make a major impact on business operations in areas such as 'production bottlenecks, tedious tasks, inconsistencies and non-compliance, training hurdles, customer satisfaction and burn-out' (page 6). AI technology can aid employees by upskilling and reskilling the existing workforce in more value-adding work. As a result, AI does not provide any threat to jobs but enhances them for employees' benefit. Just like human beings, an AI system is based on a large language model (LLM). It takes time for any AI system to learn and adjust itself. This is why it is essential that any data is current and correct. For example, if the data that an AI

system has access to is not up to date, any resulting content creation will reflect these shortfalls, including generating inaccurate data. Under these circumstances, AI systems could amplify biases and stereotypes and provoke ethical issues, damage legal risks and to understand how these can be controlled. For example, many cars already receive help from AI technology and the human driver makes effective use of this technology to mitigate risks. The final decision rests with the human being. 'AI is a tool rather than a replacement for humans and their ability to make decisions' (page 15). For employees to improve informed decision-making with the help of AI, Weaver suggests that organizations need to take the following action:

1. Define the purpose
2. Write down objectives
3. Establish measurable goals
4. Engage people
5. Set achievable key performance indicators (KPIs)
6. Apply prompts that answer important questions

Yekta (2024) claims that recent AI developments have been influenced, and driven, by improvements in associated artificial intelligence areas such as natural language processing (NLP) and much enhanced generative pre-trained transformer (GPT) approaches. The Open AI-GPT-4 version appears to have shown astonishing intelligence across various domains, getting remarkably close to the capabilities of human intelligence. It is generally called artificial general intelligence (AGI). This level of AI has levels of intelligence close to that of human beings. It is considered to have a major impact across industries and all aspects of societies. AGI is still a concept, but developers are working on improved solutions. The current AGI limitations include a lack of understanding of the world, a lack of common sense, reasoning, and an inability to generalize knowledge. Important abilities such as self-awareness, consciousness, and the ability to learn are still missing. In medicine, AGI is applied in image analysis (abnormity diagnosis) and medical report accuracy improvements.

### 1.2.2 Future Approach to Conventional and Artificial Knowledge Creation's Co-existence

Celik (2023) reports that recent AI developments have had a major impact not only on business and health but also on education, in areas such as teaching and associated grading. It appears that the potential use of AI in education is still an underexplored area (Luckin et al., 2022). AI can show any cognitive and emotional learning requirements of students. This makes it possible to personalize support for those students. The prompt response to the students' learning needs can increase the learning performance and decrease student class dropout. Teachers can connect with several students simultaneously to address their learning needs at the same time. AI can help teachers to evaluate the knowledge of students more

effectively. Another advantage is an improvement in evaluating the current teaching process and how lessons are planned and implemented. The arrival of AI in education has made a profound difference to pedagogy. Teachers who have certain AI application knowledge are more likely to integrate this technology into their learning and feedback approaches. There is an interrelationship between the use of technology in pedagogical knowledge and how successful innovative technology is integrated in education (Mishra & Koehler, 2006). Celik suggests that AI will not replace teachers in future. The interaction between teachers and students is vital for the learning progress and students' development (Cheng & Tsai, 2019). Ethical concerns about the application of AI in education include making decisions that are based on repetitive errors. This could cause discrimination against people from diverse cultural and racial backgrounds. In language learning, there could be failures to recognize different gender voices. In addition, the scoring of results could be unfair in some cases due to automated scoring. It is therefore essential that teachers can evaluate, interpret, and ethically assess results from AI integration. The use of AI in education has become widely popular. For this to work well, teachers need to get sufficient and relevant ethical knowledge about the use of AI-based technologies in teaching. Pedagogical and technological ability are both needed to ensure that AI integration works effectively.

Balbaa & Aburashidova (2024) argue that AI technology can be applied effectively to automate intelligent learning and decision-making in business environments. In turn, this has a major impact on knowledge management within organizations, using AI-based knowledge management platforms (Fallman, 2021; Sanzogni et al., 2017; Taherdoost & Madanchian, 2023). The use of AI enables the capturing of tacit experiential knowledge. This information can then be stored and made available. As a result, it is possible to reduce any shortage of skilled workers and to address the rising complexity of jobs, for example, in manufacturing. Although modern technologies are often associated with ethical, legal, and social implications, they can be addressed constructively. People fear being seen, losing their jobs, and a lack of protection for personal data. Any AI system design, to be successful, must include the above-mentioned concerns. Capturing the knowledge of existing workers and sharing this with new employees is of paramount importance. This approach enables tacit knowledge to be transferred quickly and efficiently, for the benefit of new employees. The application of AI technology speeds up this process and ensures that the right information is available to the right people at the right time. Advantages of this approach include higher levels of use acceptance, including security and privacy. Engaging people at the beginning in the development of innovative technology makes a substantial difference to the successful rollout of AI technology at work. Modern technology raises questions that need to be addressed in the right way to achieve a positive outcome and to avoid negative impacts. By taking ethical, social, and legal concerns into consideration when developing and designing AI-related technological innovations, it is more likely that people, and society as such, engage in and accept modern technology more willingly. Opinion-sharing amongst users of the new AI technology makes it possible for developers of AI systems to react to user needs

and requirements, leading to operational improvements of the modern technology. Such an approach creates more confidence in the end user, and it is therefore more likely that users will adopt and welcome new AI-based system technology (Kelly et al., 2022); Dillon & Morris, 1996).

Chen et al. (2023) consider that recent AI developments affected industries such as education and society substantially. AI can perform tasks usually conducted by humans, using intelligence such as visual perception, speed recognition, making decisions and language comprehension (Russell & Norvig, 1995). The impact of AI on society has raised some concerns including political polarization and algorithm bias. This is not surprising as AI affects society more broadly than before. This can be attributed to recent developments in generative AI (Leander & Burriss, 2020). The arrival of ChatGPT has received some mixed reviews. For example, in business, concerns have been raised about its effect on the quality of customer interaction; in journalism, there are concerns about the quality of news and misinterpretation; and in education, concerns have developed about academic integrity and plagiarism. Societal concerns have driven the need to develop improved safeguarding mechanisms to protect the best interests of people. It appears that people need to understand more about how AI can help them to thrive in this ever-changing world. It is imperative for people to learn more about AI capabilities early in their lives as AI becomes increasingly present in everyday life. This approach lays the foundation for people to become AI-literate (Leander & Burriss). Generative AI affects human endeavors in many areas such as writing, painting and music creation. As such, it touches on traditional paradigms that were considered untouchable until recently (Vinchon et al., 2023). In education, students need to be engaged proactively so they can explore and integrate AI into their daily learning routines. This approach has potential to increase student thinking creativity substantially. It will be necessary for AI learning to be integrated with conventional learning for the benefits of all learners. AI assessment tools need to be developed to measure AI student literacy and its impact on society. In addition, it will be necessary to ensure that people understand what AI is, what it can do, how it works, how it should be used and how others perceive AI. A vital approach is for the users of AI technology to reflect on their experiences and share these with others. Any mindful partnership between humans and AI needs to be reflective and enduring. New competencies will be required by humans and safeguards need to be in place to manage any adverse consequences. Society would receive help from such approaches, for the benefit of the greatest number of people.

According to Clark (2024), the arrival of ever-improving AI technology has enabled human beings to move from the conventional search and retrieve knowledge model to an approach that provides faster, more relevant, and more human-like means of developing/generating knowledge. Gone are the days of extracting limited knowledge from entities such as textbooks, PC screens and lectures/videos. AI has the potential to change how human beings create knowledge and how they work. It will have a serious impact on why people learn, what they learn and how they learn. Of all the species on planet Earth, human beings have learned

faster than anybody else. Evolution has been based on learning to adapt. This is what has created global dominance over other species such as being able to fly to the moon and back. The evolving AI technology sometimes exceeds human competence levels. In the absence of all AI technology, human beings are exposed to further technological changes. This modern technology must be controlled in such a way that it ends applications for misuse and personal gain. As such, generative AI must define what must be learned and how it will be learned. It appears that, from a knowledge creation and learning perspective, AI has been accepted more at both cultural and critique levels. AI helps human beings to not only learn new knowledge but also improve the process and speed of learning. Russell (2019) suggests that it is possible to maximize the potential of people much better and more effectively, leading to people living a better and more productive life. Clark reports that the online learning market is now mature enough to adopt AI-delivered teaching and learning, for the benefit of everyone. Smart AI is likely to produce smart people. This modern technology provides the means for human beings to alter their relationship with knowledge and learning. The fundamental difference will be how people need to learn to apply this modern technology to their best advantage. It is not content itself that is most important but access to that content. Using so-called language models has made it possible to obtain higher quality answers by applying relevant prompts such as explaining the context, clear/specific demanding prompts and refine, refine, and refine, leading to more natural dialogues. The clearer and more precise the prompts are, the better the quality of the sought information will be. For this to work well, users need to be educated in the correct use of language models. This is essential to making enquiries and the associated critical thinking. Applications such as ChatGPT (Chat Generative Pretrained Transformer) are multi-media applications. It is possible to listen, speak, create text/images/videos. The modern technology teaches and learns. It teaches human beings, and it can also be taught by human beings. As a result, new learning and knowledge opportunities have been created to move humanity forward to a new dimension of knowledge and learning. In summary, human beings need to define what the new relationship is between minds and machines. Current technology at home and at work provides the means to learn faster and to create new knowledge more effectively. Human beings are already a kind of cognitive cyborgs, with access to beyond imagination knowledge and learning (Fig. 2).

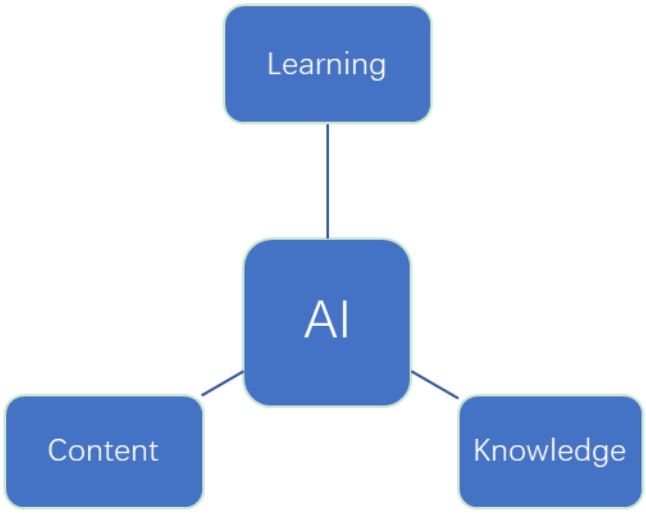


Fig. 2. The AI Content-Learning-Knowledge Cycle

1.2.3 The Role of AI in Human (Joint) Informed Decision-Making

Robertson et al. (2024) purport that recent developments in AI capabilities have created an interest in business people. Their attention has been drawn to the potential possibility that AI could be applied to improve how people work (Fig.3). It is possible for Gen AI to copy human language and predict which word (s) comes (come) next. This technology lacks contextual understanding. Its primary focus, for now, is on providing textual results that are best suited for conversations. To be able to use Gen AI effectively in, for example, business operations, it will be necessary to put together the right questions so that an AI system can produce appropriate and fit for purpose content that can then be finalized by human beings, ready for practical application (De Cramer et al., 2013). At work, Gen AI can be used to improve human creativity, make some tasks easier to complete and create valuable outputs for the benefit of cross-functional working in areas such as productivity and creative experiences (Ramaul et al.). Missing is some user knowledge of how to best work together with modern technology. This problem can be overcome by putting in place more productive interactions between humans and AI (Frey, 2018). Key here is to integrate new knowledge with what is already known. For this to work, users need to be provided with relevant support and expert guidance. The production of any business model to aid human /AI interaction must be based on the business context to ensure it is relevant. The integration of collaborative knowledge between human and AI technology can enhance human-AI interactions and lead to improved AI-prompting effectiveness. The selection of a suitable business model must be driven by the users' needs and show specific training requirements/methods. This approach enables the user to engage with AI technology iteratively, experience complex problems together in a learning environment before acting alone. When knowledge is constructed by a human/AI partnership, this should be considered a partnership. A key approach in this context is to apply structured prompts that clearly define expectations. As a result, AI technology will

focus on producing responses aligned with desired outcomes. It will be necessary to analyze and assess all created knowledge and to assess its validity. Outputs are based on the pre-existing knowledge the AI system was trained on and the details provided to the user in the prompt (s). If an AI system's response does not meet use expectations, it may be necessary to go back in the iterative process and confirm/refine inputs again. This process promotes human learning. In this respect, AI technology can increase team productivity and operational efficiency of the business. Improved decision-making and more effective human capabilities are the key outputs of the human /AI collaboration. Robertson et al. point out that so-called AI hallucinations (Metze et al.2023) can lead to the production of factually incorrect information.

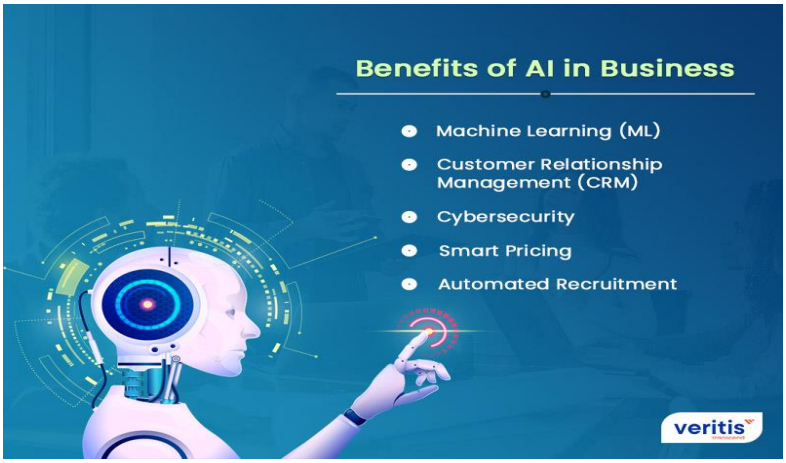


Fig.3. AI Advantage in Business (Veritis.com, 2024)

Gomez et al. (2023) suggest that there are situations when total AI automation may not be needed, for example, in clinical environments. AI systems can be applied to provide suggestions, but it is up to humans to decide whether to adopt the recommendations. This is known as AI-advised human decision-making (Bansal et al., 2019a). Typical application areas include clinical trials, the criminal justice system, credit assessments and retail /streaming, social media systems. The general requirement is that any such employed AI-driven technology must be trustworthy to end possibilities of making unfair or unreliable decisions. Human interaction with such technology is important. It is a vital part of this AI-human partnership to understand how humans trust AI systems and the recommendations these systems make. Another success factor to make this work includes how humans evaluate recommendations by AI systems and then incorporate these at work to try and achieve best working-together performance, improved customer satisfaction and a general positive attitude towards the applied AI systems (Smith-Renner et al., 2020). Gomez et al. suggest some reasons that affect the success of human-AI collaboration (Table 3). Engaging users early during the AI recommendation process can improve the identified collaboration factors, such as encouraging users to provide inputs to develop the AI's model prediction. As a result, knowledge imbalance can be reduced/mitigated.

Table 3. Human-AI Collaboration Factors that affect joint decision-making

| Factors | Impact | Author |
|---|---|---|
| Timing of AI recommendations | Affects joint decision-making (AI before people) | Bucinca et al., 2021 |
| Users' first impression | Affects trust in system | Nourani et al., 2020 |
| Level of user task ability | Affects how people interact with AI | Wang & Yin, 2021; Lai et al., 2021 |
| Inexperienced users' application of AI | Automation bias | Nourami et al., 2020 |
| Machine-learning models | Vulnerable to poor decision-making during data variations | Bansal et al., 2021 |
| Unexpected data variation | Assessments of model outcomes | Holzinger, 2012 |

Lee et al. (2024) suggest that human beings, in the past, developed a system to control the creation and management of all knowledge, for decision-making within businesses, in the form of manuals/standards. This knowledge acted as a kind of 'co-pilot' alongside people's intellectual abilities. With the arrival of AI, a new, so-called 'novel co-pilot' appeared to support humans within businesses. The arrival of the new AI-based 'novel co-pilot' does not negate the need to make the old 'co-pilot' obsolete (Keyser, 2023). Lee et al argue that there is a need for both to collaborate and to complement each other to keep effective and right decision-making. The role of AI and AI-based robotics has changed dramatically, from simply being machines that are physical assets to becoming intellectual partners to humans. It appears that non-human support such as manuals/procedures, together with diverse AI-based support and interventions, is not adequate. There is a need for the trio (humans, AI, and manuals/standards) to co-operate and collaborate for the benefit of business and employees decision-making capability improvements. It should include contingency plans for any potential failures. In addition, any such system must allow for human intervention capabilities to ensure that tasks are performed effectively by the trio (Wilson & Daugherty, 2018). Although AI-based support will aid human beings to perform tasks, the ultimate accountability should always rest with humans. It is imperative that human beings keep control over how tasks are performed effectively. Lee et al. consider that traditional standards/manuals in business are not obsolete due to the arrival of AI. On the contrary, AI has provided the means to enhance the 'conventional co-pilot' approach by complementing an AI-based approach with existing manuals/standards approaches. Irrespective of any future AI developments, the trio will continue to work together in ever-changing work situations. For this to work well, it is imperative that humans continue to work independently (overseeing non-human help) and dependently (acting as better performers helped by non-human support), ensuring that the trio's accountabilities are maintained.

Monach (2021) reports that it is imperative that human beings do not consider and apply AI

operations in isolation. Any AI application must be centered on the human being who uses it. It is therefore necessary to construct AI technology in such a way that it can co-operate and collaborate with humans and not become a stand-alone system only concerned with its own non-human interests. A potential solution to fix this problem is to make beneficial use of machine-learning and human-computer interaction techniques to strengthen the speed and accuracy of manually reviewed, labelled, and classified data. These concepts are driven by the desire to make humans and machines work together better and more effectively to solve problems. Monach proposes to apply the basic principles of a so-called human-in-the-loop machine learning process. This approach is based on 'combining human and machine intelligence in applications that use AI' (p.4). The aim is to achieve any of the following:

- Accuracy improvement of a machine-learning model
- Shorten the target accuracy achievement time
- Merge human and AI intelligence to achieve higher levels of accuracy
- Support human tasks with machine-learning to enhance productivity

Human-computer interaction is vital for machine-learning. This approach converges areas such cognitive science, social sciences, psychology, and user-experience design.

Sundberg & Holmstroem (2024) recommend that Gen AI has its limitations. This includes applications such as ChatGPT and chatbots. Although these appear to make major contributions in areas such as healthcare, business, and education, they are prone to present inaccurate information. (hallucinations). Applications such as these are not always aware of the limits of their own knowledge (Azamfirei et al., 2023; Chen et al., 2023). Producing creative content using Gen AI is not innovative. It is much better to develop a more creative and systematic approach that provides value by prompting and ending hallucinations. Prompting is an iterative process that allows large language models such as ChatGPT to improve their outputs. Further advances in Gen AI have made it possible to address some of these issues, for example, the classification of content such as images and text, the use of neural networks to create these. It is of paramount importance to be aware of what current AI technologies can and cannot do, in the context of human AI working together. This will enable businesses and societies to guide AI towards responsible innovation that makes sense. When applied sensibly and mindfully, Gen AI can support and drive organizations towards innovative business solutions. Content and context awareness seem to be the main AI enablers that help innovative thinking. For this to be successful, AI needs to be incorporated into organizational and societal processes.

### *1.3 Main Research Questions*

The main research questions for this research are:

1. What is the potential role of AI to strengthen existing knowledge and to create new

knowledge?

2. How can AI-generated and conventional knowledge co-exist?
3. What is known about AI-generated knowledge transfer to humans?
4. How can AI help to mitigate knowledge imbalance to improve decision-making?

### *1.4 Knowledge Gap*

There appears to be a lack of understanding how the effective application of AI technology could be used to not only create new knowledge much faster but also enhance existing knowledge. In collaboration with humans, AI can strengthen human creativity and scientific enquiry. In turn, this can show and confirm new knowledge. Missing is a clear understanding of how innovative technology needs to be applied by human beings to improve collaboration, such as aligning AI's data analysis capability with human beings' creative and critical thinking abilities more effectively.

## 2. Research Methodology

### *2.1 Method*

This research's primary focus was on the development of theory on how to apply AI in the human world to create new knowledge faster and more effectively. The researcher adopted a phenomenological research approach for this research. It was important to get close to the subject matter under investigation. A structured literature review was considered most appropriate for this research. The target was to arrange, analyze, and interpret any practical and theoretical application of AI in the creation of new knowledge, considering the impacts on people, business, and society, applying non-numeric but conceptual information. It was thus possible to answer the research questions from 1.3 and to evaluate the contemporary theory and any supportive evidence from the reviewed literature. Of the 15 reviewed publications, 60% were published in 2024 and 27 % were published in 2023. The rest was made up of two publications from 2000 and 2021. A ranking of the AI impact on the creation of new knowledge (0=not important to 3=particularly important) suggests that AI plays a vital role in the creation of new knowledge (mean average 2.25, Table 4).

Table 4. Ranking of AI Impact on the Creation of New Knowledge

| AI Impact on Knowledge Creation | Ranking: 0=not important, 1=neutral, 2=important, 3=particularly important |
|---|---|
| Application of AI in Education | 3 |
| Improved productive relationships between teachers and students | 3 |
| Fast transfer of tacit knowledge to new employees | 3 |
| Acceptance of new knowledge | 2 |
| Integration of AI by students to aid learning | 2 |
| AI analytical processing capabilities leading to improved knowledge | 2 |
| AI has the potential to change how human beings create knowledge | 3 |
| AI has the potential how humans create knowledge and learn | 3 |

### *2.2 Data Collection and Interpretation*

The applied quasi-thematic analysis of the three sub-domains (1.2.1 AI Knowledge Management and its impact on people/society/work; 1.2.2 Future Approach to conventional and artificial knowledge creation's co-existence and 1.2.3 The role of AI in human (joint) informed decision-making) confirmed the current thinking and approaches associated with the reviewed theories and competing theories. The research scope was limited, and coding of the data was not applied due to the limited amount of collected data. All data was analyzed by theme/topic to generate data meaning to enable the drawing of relevant conclusions. The adoption of a quasi-thematic analytical approach enabled the researcher to collect data and to develop findings, conclusions, and recommendations. The researcher applied predictive analysis to aid with the suggestion of potential and likely future AI and human interactions to create new knowledge. Although this touched on uncharted territory, it enhanced the development of correct predictions. This enabled the researcher to critically review the validity and accuracy of the reviewed literature. The lived experiences of selected and considered subject matter experts in the chosen research field were of paramount importance to this research. The outcome presented innovative ways of thinking and previously unknown approaches, with the focus on their validity and accuracy. The researcher was thus able to provide a clear and undistorted description of how things appear to be (Husserl, 1982, sec.75).

## 3. Results

The research outcomes from this investigation confirm that current developments in Artificial Intelligence (AI) can create new knowledge faster, more efficiently and effectively, in close co-operation with humans (Appendix). New beliefs of the actual value and benefits AI

technologies can aid humans in the creation of new knowledge. These emerged due to an improved understanding of the actual and true value of AI to create new knowledge. Engaging people early has the advantage of improving the existing negative relationships between AI and humans. It reduces sceptic criticism that appears to emanate from the application of that technology. In the area of education, AI is unlikely to replace the need for good teachers. Interactions between students and teachers will become more productive. In manufacturing, for example, so-called tacit knowledge can be transferred faster and more effectively to new employees. Newly created knowledge will be accepted much faster, provided that social, ethical, and legal impacts are considered. Any partnership between AI and humans must be mindful and reflective. Learning from each other is essential. In turn, humans will be able to lead improved and more productive lives. It is of paramount importance to understand how humans trust AI technology and how they integrate this technology into their day-to-day activities and existing work processes, for example. Generative AI technology needs to be integrated by being consciously aware of its implications, particularly towards business solutions. Irrespective, human beings need to stay in control. AI technology has the potential to influence and control how humans create knowledge and learn. A short but effective ranking analysis (Table 4) established that many considered AI impacts on the creation of new knowledge carried rankings of very important and important. This is a clear understanding of how AI, if applied sensibly and responsibly, can assist in the creation of new knowledge to aid humankind in ways that have not been able to be applied before the arrival of this new technology.

## 4. Discussion

It appears that recent developments in AI technology (GenAI) have been the driving force behind improved relationships between AI and the community of practice. To make the best use of these technological advances, human beings need to gain a better understanding of how these innovative technologies can aid with the creation of new knowledge. GenAI acts as the springboard to create new knowledge. Newly created knowledge in the manufacturing industry, for example, has produced more jobs. Provided human beings adopt AI as the new modus operandi to create knowledge, such an approach has the potential to change how humans create knowledge. As part of this process, AI can help humans to lead better and more productive lives. Any business will receive help from applying AI to create the right content (knowledge), for example, customer relationship management and customer behavior (scanning available customer data and producing a trend analysis/historical interaction data, for example). Similar opportunities exist for other professions such as teaching. With the help of AI, fresh thinking, and alternative ways of presenting new and existing knowledge to students can be the path to innovative learning, for example, to generate trend and relationship analyses within hours rather than months of manual research work by academic staff. The teacher-student relationship can improve applying AI technologies such as ChatGPT productively. Equally, students need to integrate AI into their learning activities such as research to create new knowledge. There is currently a shortfall of the right training

and guidance for all users of the technology and the technology itself. This explains why new knowledge cannot be created any faster at present. In addition, there appears to be a lack of right AI prompting to get the best possible results. Improvements in this area would reduce so-called hallucinations and adverse data creations to ensure that only relevant knowledge is produced that is of real benefit to humans. Thoughtful consideration needs to be given to who needs to control this process: AI or humans.

## 5. Conclusions and Recommendations

Recent developments in AI technology such as GenAI have made it possible for AI to become the de facto standard for the creation of new knowledge. This is dependent on some factors such as applying right prompts to find desired information or knowledge, and user acceptance/integration of the innovative technology. The close co-operation and collaboration of AI and humans is a powerful partnership that would have been unthinkable a few years ago. More work needs to be done to integrate modern technology into societal, legal, and business processes to create reliable, valid, and relevant new knowledge that can be accepted faster by all involved and concerned parties. For this to work well, it will be vital to keep the AI adoption momentum going, taking social, ethical, human, and legal concerns into consideration. AI is not an exact match compared to human capabilities, but the software is improving continuously. For example, human beings have the advantage to look at things from a ‘grey’ point of view (not just ‘black’ or ‘white’ as is the case with AI). More training investment is needed to ensure that people are brought closer to innovative technology to understand its capability to create new knowledge and then adopt this new knowledge for use in their daily lives. For modern technology to work at its best, people need to become more mindful of the technology. It will also be necessary to make the technology mindful of human beings. It needs to work both ways. When business, AI, and the right questions are combined, it is highly likely that the right content will be produced. In addition, AI limitations must be improved to reduce/cut AI hallucinations such as incorrect or misleading details generated by AI models).

Recommended actions (in no order of priority) include:

1. Improve public education about the actual benefits of creating new knowledge through AI applications. This must include the right training courses to be offered to those who work, for example, in the manufacturing industry. The main emphasis should be on applying AI optimally to create new knowledge that will support the industry.
2. More international open and constructive AI knowledge/application sharing and collaboration is needed to avoid progressing in different directions. In addition, the identified social/ethical/human/legal concerns need to be addressed irrespective of geography or cultural diversity.
3. Produce realistic and achievable short- and medium- term new knowledge creation

plans (including KPIs) that address the currently associated negative impact issues, including social, legal, human, and ethical challenges. Understanding modern technology on its own is not sufficient. More efforts need to be put in for AI to be more acceptable, addressing the previously mentioned concerns.

4. In the education industry, compulsory teacher and student AI training needs to be rolled out to improve the creation of new knowledge through the right application of innovative technology such as ChatGPT.

   Future research should consider interviewing at least 8 members of the community of practice from across different industries who work in AI knowledge creation. The top 2-3 interviewees from the face- to- face interviews should be considered to form a focus group to generate further insights and to confirm that the outcomes from the face- to- face interviews were valid, relevant, and reliable. The research scope of the original research (education and manufacturing) should be widened to produce stronger representative evidence that AI knowledge can be created irrespective of the industry it is employed in. The researcher confirms that the research questions from 1.3 have been answered.

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**Appendix A: The application of AI to automate Knowledge Management (Leeway Hertz,** 2024)

| | |
|---|---|
| 1. Creating new Knowledge (from zero) | AI to generate content such as articles, reports, and training materials for specific topics. Speedy content creation plus influx of regular new knowledge. |
| 2. Converting complicated concepts into simple and easy to understand content | Create sufficient detail available to a wider audience. Helps learning and understanding within the organization. |
| 3. Existing knowledge can be re-formatted for different purposes | Create new formats of information such as videos, interactive tutorials, or infographics. This makes company knowledge more engaging and accessible across all platforms/systems. |
| 4. Improve search experience for operational efficiency | Foster retrieval of relevant information. Knowledge can be discovered much faster such as user queries, customer enquiries and answers to earlier questions. |
| 5. Enhancing knowledge sharing | Increased collaboration between employees through discussion and simulating conversations. |

Appendix B: Quasi-thematic Analysis: Results by Domain

| 1.2.1 AI-driven Knowledge and impact on people, society, and work | 1.2.2 The future of conventional and AI-created Knowledge | 1.2.3 The role of AI in decision-making |
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| Analytical processing capabilities enables deeper learning, closer alignment of AI and human capabilities, innovative approaches needed to bond this relationship, improved knowledge trend analysis, improved natural language processing<br><br>Emerging AI technology appears to make progress to improve the early negative relationship between AI and human beings<br><br>The creation of new knowledge outputs and the automation of routine work using AI is now possible<br><br>Improved understanding needed between users of the innovative technology and the technology<br><br>Chatbots can express human-like emotions<br><br>Closer integration of AI systems across businesses. AI developments have had a major impact on people/business/society.<br><br>AI is viewed as the driver behind technological | AI has had a major impact on education. Teachers with AI knowledge are more likely to apply AI in learning and feedback processes<br><br>AI will not replace teachers but make interactions between students and teachers more productive. Bringing together pedagogy and technology using AI is a recipe for success<br><br>It has the potential to increase the number of skilled workers, for example, in manufacturing<br><br>Tacit knowledge can quickly and easily be transferred to new employees.<br><br>Newly created knowledge will be accepted faster, provided social, ethical, and legal concerns are addressed<br><br>AI can perform more tasks previously completed by humans<br><br>Concerns have been raised about the use of ChatGPT in terms of plagiarism, academic integrity, and misinformation | GAI has the potential to improve how people work.<br><br>Developing right questions will help business to apply AI to create the right content<br><br>Users' needs and AI training requirements are of paramount importance<br><br>AI hallucinations can lead to factually incorrect information<br><br>The human interactions with AI technology are particularly important<br><br>Understanding now humans trust AI system is key, including how humans evaluate AI recommendations and then integrate these into existing processes and procedures<br><br>Needed is a positive attitude towards AI systems<br><br>AI applications have limitations that could lead to 'hallucinations'<br><br>Better prompting leads to a reduction in 'hallucinations'<br><br>Mindful generative AI can guide towards responsible |

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| unemployment. In contrast, AI technologies create new job opportunities and expand production.<br><br>Adoption of AI leading to greater job opportunities<br><br>A positive AI attitude is likely to lead to business improvements<br><br>AI must be aligned to business goals and aims for greatest benefit<br><br>Full AI transparency across the business (how AI thinks and works) is essential<br><br>AI concerns, risks, and constraints must be understood for the collaboration between AI and humans at work<br><br>Artificial General Intelligence (AGI) has the potential to affect industries and societies due to its similarity to human beings' intelligence levels. Missing are abilities that include self-awareness, consciousness, and the ability to learn<br><br>Job enhancement of employees. Upskilling and reskilling of employees. | Students need to learn how to integrate AI into their learning routines (more thinking and creativity)<br><br>AI partnerships need to be mindful and reflective<br><br>AI has the potential to change how human beings create knowledge and how they work. Misuse and abuse of newly created knowledge must be controlled. This helps humans to maximize the benefits to lead better and more productive lives<br><br>Human beings have an opportunity to change how they learn and create new business knowledge<br><br>The new AI technology teaches and learns. This has led to the creation of new knowledge and learning opportunities | business solutions<br><br>AI integration business and societal processes is essential<br><br>AI and human beings need to collaborate and work together to improve decision-making within business. Optimum working together includes AI, humans, manuals, and standards to complement each other. Humans need to stay in control. This trio has the potential to work most effectively together.<br><br>AI technology must have the capability to co-operate and collaborate with human beings. Machines and humans must work together well to make best use of the associated benefits. Combining human and AI intelligence is a potential solution. New knowledge can be created (theoretical) by exploring situations not possible in the real world |