Artificial Knowledge and its Challenges for Knowledge Management Systems

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Abstract: It is a paradox that literature exploded in the last years with papers on "artificial intelligence", but only a few of them dealt with "artificial knowledge". The purpose of this paper is to analyze the concept of "artificial knowledge" and to compare it with human knowledge. That helps us to bridge the gap between artificial knowledge and knowledge management. More specifically, we focus on Generative Artificial Intelligence (GenAI), which has the capacity to simulate a human-like dialogue using natural language. The relevance of the present research comes from the need to understand the similarities and dissimilarities between artificial knowledge and human knowledge, and how both of them can be integrated into knowledge management systems. It is a conceptual paper based on a systematic literature review and a critical thinking approach. We used the theory of knowledge fields and knowledge dynamics for human knowledge and a GenAI analysis for artificial knowledge. Findings show that ChatGPT can answer a human interrogator by formulating texts comparable to those written by people. However, the imitation of human knowledge is not in its nature but in its functionality. The generation of artificial knowledge is completely different than that of human knowledge. Human knowledge is created by our sensory system and the brain through several processes, like perception and reflection. Artificial knowledge is generated by GenAI based on syntactic rules without any correlation with semantics. Computers cannot think and have no cognitive processes. Knowledge managers should be able to integrate both artificial and human knowledge into knowledge management systems. The main contribution of this paper is that it analyzes artificial knowledge and its generation from a knowledge management perspective. The main limitation of the present research comes from the scarcity of papers on the subject of artificial knowledge.

Keywords: Human knowledge, Artificial knowledge, Artificial intelligence, Generative artificial intelligence, Knowledge management systems

1. Introduction

Knowledge Management Systems (KMS) are complex, integrated human and technology systems designed to create, transfer, transform, translate, store, retrieve, and efficiently use intangible resources within an organization. They can be considered a result of integrating information management systems within the organizational management systems (Becerra-Fernandez & Sabherwal, 2010; Liu, 2020; North & Kumta, 2018). In the first stage of this integration, information systems were centered on processing data and information, where *information* is the fundamental concept defined by Claude E. Shannon from a mathematical perspective, without any associated meaning (Bratianu & Bejinaru, 2019, 2023). In knowledge management, the focus is on processing information and knowledge, where the concept of *information* has always associated meanings (Davenport & Prusak, 2000; Massingham, 2020; Nonaka & Takeuchi, 2019). In the second stage of this integration, information systems using Generative Artificial Intelligence (GenAI) focus on *artificial knowledge*, a product of processing big data and information by the new artificial intelligence programs capable of creating humanlike dialogue (Baker, 2023, 2025; Russell & Norvig, 2022).

Artificial knowledge (AK) is an emergent concept, and although the literature is almost saturated with papers concerning AI, there are only a few papers addressing the concept of AK. Unfortunately, even these papers do not explain the meaning of AK and its main differences with respect to human knowledge (Di Vaio et al., 2024; Harfouche et al., 2017; Saviano, Del Prete & Caputo, 2023). The purpose of the present paper is to analyze the emergence of AK, its main features from a human perspective, and what are the challenges for its integration into KMS. We hope this way to bridge the knowledge gap in the literature and provide some useful recommendations to researchers and knowledge managers in dealing with the integration process of human and artificial knowledge. Therefore, we may consider the following research questions (RQ):

RQ1: What are the main features of artificial knowledge by comparison with human knowledge?

RQ2: What are the main challenges for integrating artificial knowledge into knowledge management systems?

The structure of the present paper is as follows. After this brief *Introduction*, there is a detailed section on *Literature review*, where we critically analyze the most significant papers and books published on this subject. Then, we present the *Methodology* used in the present research, followed by a section on *Results and discussions*. The paper ends with *Conclusions and limitations*, and *References*.

2. Literature Review

In his seminal book *The Science of the Artificial* (1996), Herbert Simon demonstrates how people live in a hybrid world composed of natural and artificial things, and each world is governed by specific laws and sciences. *Artificial knowledge* and *artificial intelligence* are powerful concepts that belong to *information science*, a science of the artificial. Based on Shannonian information, information entropy, and Boolean algebra, information science is defined as "a discipline that investigates the properties and behavior of information, the forces governing the flow of information, and the means of processing information for optimum accessibility and usability. It is concerned with that body of knowledge relating to the origination, collection, organization, storage, retrieval, interpretation, transmission, transformation, and utilization of information" (Borko, 1968, p. 3).

Artificial intelligence (AI) is a metaphor coined by John McCarthy at the international conference organized by Dartmouth College in 1956 (Baker, 2025; Lee & Qiufan, 2024; Russell & Norvig, 2022). The metaphor suggests that AI imitates natural intelligence from a computing perspective. However, computers do not think like people. They are working based on algorithms and huge datasets. After a slow and long incipient phase due to the limited power and computational speed, AI attracted scientists' attention when IBM's Deep Blue computer won against the chess champion Garry Kasparov in a chess competition (1997). The computer was not necessarily smarter than Gary Kasparov, but it could perform thousands more operations with incredible speed than the human chess player. In 2011, IBM Watson beat champions Ken Jennings and Brad Rutter at the game Jeopardy. The next surprise came in 2016 when DeepMind's AlphaGo program beat Lee Sedol, the World Go player (Hawkins & Blakeslee, 2004; Lee & Qiufan, 2024; Russell & Norving, 2022). Today, AI encompasses a multitude of programs from those having a general purpose to those focusing on natural language processing, knowledge representation, automated reasoning, machine learning, deep learning, computer vision, and robotics (Russell & Norvig, 2022).

More recently, researchers in AI invested their efforts in developing GenAI due to its capacity to generate texts, images, audio, video documents, or even new software in response to requests coming from users (Lee & Qiufan, 2024; Yu, 2023). GenAI uses *deep learning models* and, for text generation, *large language models (LLM)*. The most well-known application is ChatGPT (Generative Pretraining Transformer) produced by OpenAI, and launched in November 2022 (Baker, 2023, 2025). ChatGPT came as a disruptive force in all domains of human activity due to its capacity to generate a humanlike dialogue. In a very short time, it became almost a universal tool in research, education, medicine, publishing, arts, and many other areas. There is already a series of ChatGPT programs that have been developed by OpenAI. The program is *generative* because it is capable of generating text based on developed patterns and predictions. That is a significant shift from the previous AI applications with predefined sets of possible alternatives offered to the user. "LLMs use parameters to predict the next word in a sentence – meaning they predict the word most likely to follow the words in your prompt, and then the word that most likely follows its first predicted word, and so on until the model believes it has finished the most probable pattern" (Baker, 2025, p. 8). *Pretraining* is a process of training the program to construct patterns from huge data sets, which will be used then in predicting the outputs. For instance, the program is run with a huge number of images of different cats, such that the program can create patterns for meant possible "a cat". Then, when the program receives a new image, it should be able to recognize if that image also represents a cat or not. It is important to underline the fact that a good pattern can be created if and only if the dataset contains millions of images of cats, or any other targeted objects. Therefore, these patterns are a result of specific working algorithms and not of the person who performed their design. *Transformers* are the models used for language translation. They have the capacity to create humanlike dialogue. They are complex neural networks based on probabilistic algorithms that try to imitate the way the human brain works (Baker, 2023, 2025; Harfouche et al., 2017; Russell & Norvig, 2022).

The outcome of the ChatGPT or any similar program to a user's prompt represents artificial knowledge, that "is created through a recursive process that extracts, organizes, and aggregates tacit and explicit knowledge in order to articulate, automate, and amplify them" (Harfouche et al., 2017, p. 1). However, we should emphasize that GenAI applications cannot work on *tacit knowledge* and cannot aggregate it within the explicit knowledge.

That is a misunderstanding of the authors, who probably have a background in information systems. Tacit knowledge is experiential knowledge obtained directly from practice by the human body and processed mostly by the cognitive non-consciousness zone of the human brain (Nonaka, 1994; Nonaka & Takeuchi, 1995; Polanyi, 1983). Tacit knowledge is embodied knowledge, and GenAI cannot have access at it directly. It must be transformed into explicit knowledge through conversion according to the theory of Nonaka and Takeuchi (1995, 2019) through the SECI (Socialization, Externalization, Combination, Internalization) cycle, or by articulation according to the theory of Tsoukas (2011), supported by other researchers as well (Hadjimichael, Pyrco & Tsoukas, 2024; Hadjimichael, Ribeiro & Tsoukas, 2024). "Tacit knowledge cannot be 'captured', or 'converted' but displayed – manifested – in what we do. New knowledge comes about not when the tacit knowledge is converted to explicit, but when tacit knowledge is re-punctuated (articulated) through dialogical interaction" (Tsoukas, 2011, p. 473). It is important to explain this aspect to understand why GenAI cannot be involved in tacit knowledge processing. It is a specific human process.

Although GenAI applications create the impression of reasoning and judgment, they cannot perform such tasks because "Computers are unable to reflect on their own performance, to know that it knows as does a human person. Computers, as already noted, can never step outside the code, reflect on the code, and contribute their own observations" (Sangzoni, Guzman & Busch, 2017, p. 11). Using metaphorical thinking (Lakoff & Johnson, 1999) many authors consider that GenAI imitates the human brain in learning, reasoning, and making decisions, but in reality, computers don't think. They don't have the human values to develop wisdom, and therefore, they cannot be wise. Moreover, artificial knowledge does not reflect any truth. It is a simple result of an algorithm that works based on syntactic rules. For computers, artificial knowledge has no semantics or meaning. Users introduce artificial knowledge into a semantic field and give meaning to this artifact we call artificial knowledge (Baker, 2023, 2025; Lee & Qiufan, 2024; Russell & Norvig, 2022).

An emergent issue related to AI and especially to GenAI is the ethical dimension (Floridi, 2023). GenAI applications are very powerful tools, and they can be used with good or bad intentions by different people. Yet, the domain of using AI tools is not sufficiently regulated from an ethical perspective, and that may lead to many harmful consequences. For instance, many students have the temptation of using ChatGPT and similar products for writing their homework and dissertation theses. Many researchers have the temptation of using ChatGPT for writing academic papers or even books. As Yu (2023) remarks, "students using ChatGPT to complete assignments may lead to academic dishonesty and cheating behaviors, which have already sparked opposition and resistance from some universities, publications, and scholars. At the same time, the misuse of ChatGPT in scientific research has also aroused strong opposition and concerns within the academic communinity" (Yu, 2023, p. 3). However, the solution is not forbidden using GenAI in education or research, but to create an ethical framework of using those intelligent tools for the benefit of learning and knowledge creation. That means to create a new mindset of using AI tools within a new framework of digital governance, digital ethics, and digital regulation (Baker, 2023, 2025; Floridi, 2023; Yu, 2023).

3. Methodology

The present paper is a result of qualitative research (Booth, Sutton & Papaioannou, 2016; Maxwell, 2013; Tracy, 2020), based on a systematic literature review and a critical analysis of the concepts, ideas, and theories related to artificial knowledge and artificial intelligence. We considered a knowledge management framework and tried to find out the main features of artificial knowledge by comparison with human knowledge (Bratianu & Bejinaru, 2019, 2023; Davenport & Prusak, 2000) and the most significant challenges of integrating artificial knowledge and artificial intelligence within knowledge management systems. Also, we analyzed how artificial knowledge is generated and what is its compatibility with human knowledge creation at the individual and organizational levels. In other words, our research focused on the impact of artificial knowledge on the processes composing the knowledge creation dynamics cycle developed by Nonaka and Takeuchi (1995, 2019).

4. Results and Discussions

Artificial knowledge is an emergent concept associated with artificial intelligence (Di Vaio et al., 2024; Harfouche et al., 2017; Saviano, Del Prete & Caputo, 2023). It is an artifact produced by AI applications, especially by GenAI, like ChatGPT that has the capacity of generating a humanlike dialogue based on texts and images (Baker, 2023, 2025; Russell & Norvig, 2022). However, there is a scarcity of research concerning artificial knowledge and its impact on knowledge management systems. To understand the novelty brought by artificial knowledge to knowledge management systems, we need to analyze it by comparison with human knowledge and its dynamics.

From ancient times, *knowledge* has been considered *a justified true belief* (Audi, 2011; Nonaka & Takeuchi, 1995; Russell, 1972). Therefore, knowledge allows us to find and express the truth. Plato and other Greek philosophers considered that knowledge must be objective and free of any emotional influence. "It follows that we cannot know things through the senses alone, since through the senses alone we cannot know that things exist. Therefore, knowledge consists in reflection, not in impression, and perception is not knowledge" (Russell, 1972, p. 153). Developing further this paradigm, Descartes created the theory of dualism between mind and body, underscoring the fundamental role of thinking (Descartes, 1997). In contrast to the European philosophical approach to knowledge and knowing, the Japanese approach was to consider the oneness of mind and body, the oneness of humanity and nature, and the oneness of self and others (Kaufman, 1994; Nakagawara, 2004; Nonaka & Takeuchi, 1995).

Polanyi (1983) questioned the paradigm of objective knowledge resulting from Descartes' rationality and introduced the idea of *the tacit dimension* of knowing. "I shall reconsider human knowledge by starting from the fact that we can know more than we can tell" (Polanyi, 1983, p. 4; italics in original). Polanyi underlined the fact that perception is a component of our cognition and that knowledge incorporates emotional aspects beyond the rational ones. Kolb (2015) showed that the tacit dimension is characteristic of experiential learning, i.e. learning by doing. Finally, Nonaka (1994) formulated in a coherent way the new paradigm of tacit and explicit knowledge, which can be illustrated by the iceberg metaphor (Nonaka & Takeuchi, 1995). *Tacit knowledge* is acquired directly from practice and is processed by the cognitive unconscious zone of our brain, a fact of which we hardly are aware of that knowledge. "Subjective insights, intuitions, and hunches fall into this category of knowledge. Furthermore, tacit knowledge is deeply rooted in an individual's actions and experience, as well as in the ideals, values, or emotions he or she embraces" (Nonaka & Takeuchi, 1995, p. 8). *Explicit knowledge* is rational and can be expressed using natural or symbolic languages. It represents the visible part of an iceberg, while tacit knowledge represents the hidden part of that iceberg that is under the water. Within the same paradigm of tacit and explicit knowledge, many researchers consider knowledge as *a flow*, or *a stock-and-flow* (Nissen, 2006; Nonaka, Toyama & Hirata, 2008). However, the flow metaphor is limited by the tangibility and linearity of the fluid flow.

Using metaphorical thinking (Andriessen, 2008; Lakoff & Johnson, 1999), Bratianu and Bejinaru (2019, 2020) developed the theory of knowledge fields and knowledge dynamics. According to this theory, *knowledge* manifests as a field that is intangible, dynamic, and nonuniform. The authors consider three basic fields: rational knowledge, emotional knowledge, and spiritual knowledge. The *rational knowledge field* contains explicit knowledge. It is that knowledge resulting from rational learning that can be expressed using natural or symbolic languages. Rational knowledge is the dominant form of knowledge in any human activity due to its capacity to be codified and communicated. Science, technology, and education are based on rational knowledge. The *emotional knowledge field* contains that form of knowledge we acquire directly from experience. It is a form of tacit knowledge generated by human emotional states (Damasio, 1999, 2012; Kolb, 2015). It is wordless and highly embodied (Hadjimichael, Ribeiro & Tsoukas, 2024). It can be communicated using body language. Cognitive sciences show that emotional knowledge plays a critical role in decision-making (Hill, 2008; Kahneman, 2011). The *spiritual knowledge field* contains human values and ideals that drive our existence. Spiritual knowledge has its roots in Aristotle's *phronesis* or practical wisdom (Aristotle, 1999; Kaiser, 2024).

Knowledge dynamics reflects the variation of knowledge in time and space, as well as its transformation from one form into another (Bratianu & Bejinaru, 2020). The most used model for knowledge creation dynamics is that conceived by Nonaka (1994) and developed further by Nonaka and Takeuchi (1995, 2019). It is known as the SECI (Socialization, Externalization, Combination, Internalization) knowledge cycle. It contains four basic processes: two processes of knowledge transformations along the epistemological dimension and two processes of knowledge transfer along the ontological dimension. All of these processes are integrated into a continuous knowledge cycle that evolves like a spiral in time within an organizational framework. *Socialization* is a process of tacit knowledge transfer between people working together within a certain proximity. *Externalization* is a process of transforming tacit knowledge into explicit knowledge within the human brain, using natural or symbolic languages. *Combination* is a process of knowledge transfer within a social context, where individual knowledge can be amplified and integrated into organizational knowledge. *Internalization* is a process of transforming explicit knowledge into tacit knowledge through learning. From a thermodynamics perspective, knowledge dynamics is a process of transforming one form of knowledge field (rational, emotional, spiritual) into another.

After such a synthetic presentation of human knowledge, we can answer the first research question by showing the main features of artificial knowledge. It is an artifact, produced by GenAI as a result of a machine learning process and an interrogation coming from a human agent. Artificial knowledge is not created but generated by pretrained algorithms capable of learning and answering human agents' questions (Baker, 2023, 2025; Russell & Norvig, 2022). These algorithms create patterns from the input dataset and, based on them, make predictions for the possible answers using syntactic rules. Therefore, computers don't think based on the meanings of the questions but use syntactic rules to predict the most probable sequence of words in generating their texts. Artificial knowledge can be wrong from a semantic point of view, although it is coherent with the logic of the pretained algorithm. In such a situation, ChatGPT has hallucinations (Baker, 2023, 2025), increasing the vulnerabilities for knowledge risks (Bratianu, 2022; Bratianu et al., 2020). Figure 1 illustrates the main processes that contribute in generating artificial knowledge.

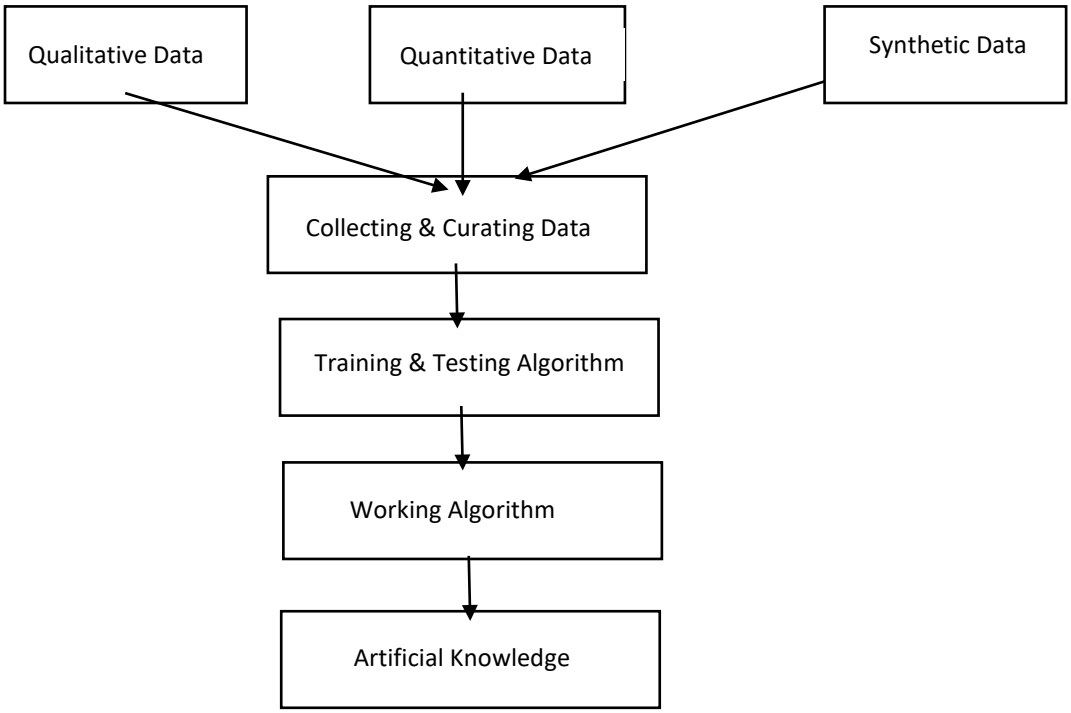

Figure 1: Generation of artificial knowledge (Source: Own research)

To answer the second research question, we need to analyze the integration process of artificial knowledge in the SECI model. Artificial knowledge cannot be aggregated with tacit knowledge, and artificial intelligence cannot act upon the transformation of tacit knowledge into explicit knowledge or the reverse. Therefore, artificial knowledge cannot be integrated into socialization, externalization, or internalization processes. The only process that is open to artificial intelligence and artificial knowledge is the combination. The main challenges for knowledge management systems focus on a new design of the combination process and of the system of decision-making, where artificial intelligence may increase its efficiency.

There are two other important challenges: enhancing knowledge sharing and organizational learning. These two processes can be amplified by creating dynamic databases and platforms for knowledge sharing. They can be useful, especially for large companies where proximity for knowledge sharing is not possible. Also, organizational learning can be enhanced using ChatGPT or similar programs that are able to stimulate individual learning and are capable of adaptation to specific organizational cultures and human capital. Artificial knowledge generation influences the distribution probability of organizational knowledge and increases knowledge entropy, with favorable consequences on innovation processes.

In Table 1, we present the main aspects of analysis concerning the comparison between human knowledge and artificial knowledge.

Table 1: A comparison between human knowledge and artificial knowledge

Features	Human knowledge	Artificial knowledge
Generic definition	A justified true belief	A prediction
Outcome of	Human learning	Machine learning
Linguistic dimensions	Semantic, Syntactic, and Pragmatic	Syntactic
Types of knowledge	Tacit and explicit	Explicit
Fields of knowledge	Rational, emotional, and Spiritual	Rational
Integration in the SECI model	Socialization, Externalization, Combination, and Internalization	Combination

5. Conclusions and Limitations

Artificial knowledge is an emerging concept that impacts knowledge management systems. Although using metaphorical thinking we call it *knowledge*, it is totally different than human knowledge. It has a different generation model (Russell & Norvig, 2022) and does not answer the generic request of being *a justified true belief* (Nonaka & Takeuchi, 1995, 2019). Artificial knowledge is a result of huge data processing by GenAI and a prompt interrogation from a user. It is produced based on specific algorithms that incorporate mechanisms of deep learning and large language models. Although artificial knowledge is coherent with the working algorithm, it might sometimes be wrong, displaying hallucinations. That is a new type of knowledge vulnerability that leads to new knowledge risks related to decision-making.

By comparison with human knowledge, artificial knowledge is only rational, lacking the capacity to incorporate emotional and spiritual knowledge fields. Therefore, it cannot evolve towards wisdom and wise decision-making. Artificial knowledge dynamics is limited to changes within the limits of the algorithm, and it cannot have any impact on human knowledge dynamics on the epistemological dimension. Only on the ontological dimension, artificial knowledge can influence the process of combination from the SECI model through enhancing knowledge sharing and organizational learning. However, artificial knowledge is useful in knowledge management systems because it generates humanlike dialogue with people in real-time.

The present research has some limitations coming from the scarcity of papers published on the subject of artificial intelligence. These limitations can be relaxed by enlarging qualitative research with in-depth interviews with experts, and by quantitative research. The aim will be to find out the best solutions for integrating artificial knowledge with human knowledge within knowledge management systems.

Ethics declaration: Ethical clearance was not required for the present research.

AI declaration: The authors have not used any of the AI tools for creating and writing this paper.

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