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How Technology Affects The Knowledge Management Cycles: A Study Of The Past, Present, And Future Impacts

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Abstract
Artificial intelligence (AI) and Big Data are fundamentally transforming the way we live, impacting not only daily life but also the manner in which organizations acquire, communicate, and generate knowledge. This transformation is deeply embedded in contemporary society and carries significant implications for knowledge management (KM). In recent years, a dominant knowledge management framework has been widely recognized as an effective approach for mapping the knowledge management cycle. This is exemplified by Dalkir's model, elaborated in his work "A Holistic Vision of the Knowledge Management Cycle". The emergence of AI and Big Data raises critical questions about the traditional paradigms of the knowledge management cycle. How does the integration of these technologies reshape our understanding of knowledge acquisition, dissemination, and creation within the framework of the knowledge management cycle? Further exploration is required to assess how AI-driven automation and data analytics alter the processes outlined in Dalkir's model, particularly in the context of organizational decision-making and innovation.

Keywords*: Technology; Processes; Evolution; Impact.*

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I. Introdução

Within the last two decades we have seen knowledge management migrate from an academic research area, to an integral part of most companies. The growth has been quick, and the number of articles written has been constantly on the rise. This growth means that there has been a demand side growth, where the discipline needed to evolve quickly in order to meet the demand needs of the market. That growth meant that there was a difficulty in its ability to look to the future, nor reflect on its past.

While Knowledge Management as a discipline was establishing itself, technology that aided, and helped with knowledge management was also in ample development. The rate of change in technology within the last decades has been far greater than what we have seen previously in human history.

Within this paper we will try to understand how Knowledge Management was applied even prior to the existence of the academic discipline. We will attempt to understand how knowledge was disseminated within different times of human existence, in order to understand how different technologies had an impact in the process. We will also look forward to how emerging technologies will impact the future of knowledge management, specifically how Big Data and I.A will change the way in which create, store, distribute and learn from knowledge.

II. A Briefing Of Knowledge Management Cycle History

The concept of the Knowledge Management Cycle (KM cycles) was first introduced in the late 1980's in an attempt to make sense of the process of knowledge creation. The idea was that, if we can map out the cycle, we can analyze it, verify each step, and make it more efficient. Throughout the 90's and early 2000's the KM cycle gained diversity, with different authors applying their own lens to the idea, all fairly similar, but without creating a prominent cohesive cycle from which the literature could be based upon. In order to solve that problem Dalkir (2005) wrote a comprehensive paper, that took into account most authors in KM cycle, mapped out their contributions, their cycle, their similarities and differences, and created the prominent cycle at this point.

Evans, Dalkir, and Badian (2014) cycle revolved around the following phases i) to create or identify, ii) to learn, iii) to distribute, iv) to apply, and, once again, v) to learn. This model was derivatives and synthesis of all the prominent KM cycles that had been previously created and began to be adopted through the literature to analyze knowledge management cycles in organizations. This was an important step for KM literature, once it gave a common point of observation for most professionals. In order to highlight its importance is necessary to understand that that work has been cited 118 times in research papers since 2014.

To look at KM cycle in a cohesive matter meant that researchers were now given the tools to identify the difficulties, errors, and points of restriction for the adoption of new knowledge in organizations. That meant a more effective and hands on approach to the creation of KM. Researchers could now point to where exactly in the process that must be changed, morphed or improved.

Within all of the cycle, we saw exponential jumps in efficiency due to technology due to how they change the way in which we stored or communicated knowledge. We can see that in our ability to transfer information from/to telephones, television, and internet, for instance, in the way we can store data and make it more easily available with digital archives rather than physical ones. These changes had significant leaps in magnitude as technology progressed.

Within Dalkir's model technology most impacted the way which we stored or shared knowledge. We began to store knowledge by writing or sharing knowledge over the various mediums of electronic communication, but the source of the change most times was not the way in which applied knowledge, or the way in which we created knowledge. Knowledge creation remained primarily human dominated, aided often by techniques, but hardly ever by the presence of technology in an effective manner.

The rise of Artificial Intelligence (AI), powered by Big Data brings into question the role of the human being within the process of knowledge creation, and therefore the applicability of Dalkir's model. The magnitude of the changes that are presented by AI and Big Data also bring into question the potential for Dalkir's model to absorb the changes that will occur and remain relevant. How do we deal with the concept of knowledge creation by an entity outside of a human being? How do we deal with the concept that some of the knowledge will never be truly understood by human beings? How do we create such a model that will understand that at times, the knowledge created by machines with be stored, utilized and applied by them before it even entering human consciousness?

Dalkir´s Model

Dalkir's model was designed based on an analysis of the most important existing models. Dalkir synthesized and built upon the literature aiming to create a unified and complete model. The best way to understand Dalkir's model is to observe que Figure 01 that is stated in her article "Holistic View of Knowledge Management Cycle" (Dalkir, 2014).

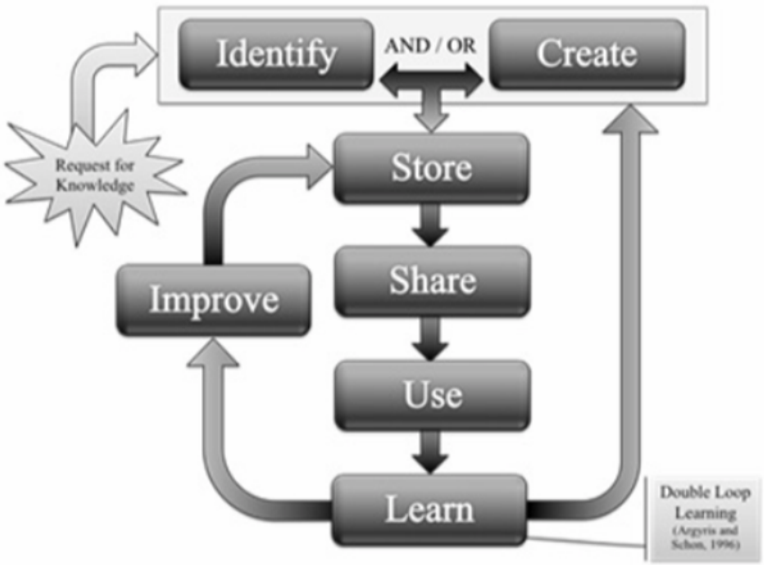

Figure 1 - Knowledge Management Cycles. Source: Dalkir, 2011.

The model has essentially five distinct phases, in a closed loop, in which new acquired knowledge builds upon the next discovery. Those phases are Identify/Create, Store, Share, Use, Learn/Improve, and this model has been adopted and cited by a large part of the Knowledge Management Community. Table 1 describes in detail all phases of Dalkir's model.

Phase	Description
Identify	Identifying stage means that the organization understanding codified and

	encapsulated knowledge, that is often reserved in documents, people, and processes within the company or outside of it.
Create	If the knowledge does not exist, it is necessary to create knowledge, where research and ideation and design thinking is essential for the creation of new knowledge. Important to note, that this is the area that will be most impacted by future technologies.
Store	Once knowledge is created or identified it is necessary to organize and store this information in a way that easily accessible for members of the organization. This area was impacted by early technologies such as language, paper, computers, and other things.
Share	Sharing knowledge is how knowledge is communicated or disseminated within and outside of the organization. This step has been severely impacted by new technologies such as video, television, radio, and the internet.
Use	How the organization applies the knowledge to its full potential.
Learn	Knowledge that was shared and utilized now can serve as the base of knowledge to create new knowledge. This process of learning usually was contained with human behavior. New technologies might challenge that potential.

Table 1 - The description of the phases of Dalkir's model. Source: Authors.

In order to better understand how the process of knowledge management occurs it is necessary to flip Dalkir's model on its side.

III. Dalkir Model From The Perspective Of The Theory Of Constraints.

The Theory of Constraint created by Eliyahu M. Goldratt (1984), looks at any system and attempts to find the bottleneck within any task. Essentially any task has different steps to it, and the goal of the theory is to understand which step is most ineffective, in order to release the bottleneck. The best to understand that theory is the think of a chain with links. For instance, if one person has a chain with five links, four of them can withstand a weight of 100 kilograms, however one link can only withstand 80 kilograms, how much weight can that chain hold? The answer is only 80 kilograms, because at any value above that would break the chain at its weakest link.

Allow us to think of that as it applies to Dalkir's model. Allow to consider each step within Dalkir's model as one of the links in each chain. If the organization can create a lot of knowledge, but not store it, it is useless. If you can store it but can't share it effectively, the potential for knowledge in that organization is precisely in knowledge. Allow us to flip Dalkir model in order to understand how that model is impacted by different technologies.

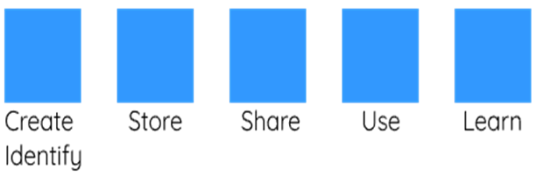

Figure 2 - Items area leveled. Source: Authors.

In the Figure 2 all items area leveled. That means the knowledge is being created, stored, shared, utilized and learned at the same level. If we increased our ability to share knowledge, however, did not change our ability to use, learn, create, or store knowledge, it would not be efficient. In general, when capacity is raised in one area it will have residual effects on the rest of the phases of knowledge management.

IV. Methodology

The research is theoretical by nature, because it aims to create knowledge and understanding, not a solution applicable to some specific problem. It will be done through a survey of theoretical references in three major topics: Knowledge management, Technology and History of Knowledge. Methodologically it will provide a way to build a new understanding based on the accumulation of knowledge already written and researched in the past. This enables new information and knowledge to be generated (FONSECA, 2002).

The use of documents in research should be appreciated and valued and according to Sá-Silva, Almeida and Guindani (2009), the wealth of information that can be extracted and rescued justifies its use in

several areas of Human and Social Sciences because it allows to broaden the understanding of objects whose understanding requires historical and sociocultural contextualization.

For example, in the reconstruction of a lived history, [...] the written document is an extremely precious source for every researcher in the social sciences. It is, of course, irreplaceable in any reconstitution concerning a relatively distant past, for it is not uncommon for it to represent almost all traces of human activity at certain times. Moreover, very often, it remains the only testimony of particular activities that have occurred in the recent past (CELLARD, 2008, p. 295).

Also, according to Sá-Silva, Almeida and Guindan (2009), another justification for the use of documents in research is that it allows adding the dimension of time to the understanding of the social phenomena. Documentary analysis favors the observation of the process of maturation or evolution of individuals, groups, concepts, knowledge, behaviors, mentalities, practices, among others. (CELLARD, 2008).

That said, our documentary research seeks to rescue the use of knowledge, technologies and people throughout history, in order to understand how knowledge was managed throughout this evolution. Once understood as the evolution of knowledge occurred in this context, we will parallel the knowledge cycles defined in Knowledge Management.

In addition, this explanatory and qualitative study, aiming to build a deep understanding of Knowledge Management and its evolution during the evolution of humanity. The intention is to explain, not define, or prove, but rather to show: the evolution of knowledge and in parallel as occurred the management of knowledge; as well as which technologies help in this evolutionary process. Qualitative research, according to Manayo (2001), works with aspects that cannot be quantified, so it is necessary to work in an environment that has a level of subjectivity.

Therefore, according to Cellard (2008, p. 298), a person who wishes to undertake documentary research must, in order to constitute a satisfactory corpus, exhaust all clues capable of providing him with interesting information.

V. Results

In the following paragraphs we show how different technologies impact directly the capacity of organizations to create, store, share, use and learn from knowledge. We look at different technologies to show a brief pattern, but do not have the objective of showing all technologies that impacted KMC in a comprehensive manner. For our definition of technology, we will utilize the concept that technology is any tool or system that aids the human being, (Bain, 1937), or a way to solve for a human desire or need (Arthur, 2002). That ample definition and vision will allow us to walk through history and identify techniques and tools that are often ignored when the discussion is tech.

Oral Language

At first, we will look at the beginning of civilization. Allow us to consider all the knowledge created in a generation. Prior to the development of oral language, how would Knowledge be stored? How was it shared? The reality is that oral language was the first jump in capacity specifically for storage. Through myths, and stories information was transferred from generation to generation. The adage of storage allowed for residual effects in terms of capacity throughout the system, therefore allowing for more knowledge as we can see illustrated below.

While the accuracy of such stories was small, it was ideal to transfer culture norms and values. An example of such a movement is the way the Hebrew stories spoke about not eating pork, due to its potential for disease. Another example is the epic of homer, which shows the importance of courage in times of war. In Summary, we can see that the Knowledge Management Cycle is able to illustrate the addition of knowledge. The ability for man to create knowledge was far superior then its ability to store, and therefore to share, use or learn. With the addition of oral language as a tool for storage, it increased human beings' ability to also share, utilize and learn new knowledge, and therefore create more knowledge.

Figure 3 - The evolution of Knowledge with Oral language. Source: Authors.

Paper

The process repeats itself with the addition of paper. The addition of paper was able to increase the capacity for knowledge to be stored and shared. Paper made it much cheaper, and easier to travel with documentation in the various forms of paper. Documentation about legislation, accounting, and philosophy began to be recorded, and increase overall knowledge available in humanity. Paper made it possible for the first libraries, for the first physical archives of knowledge throughout human history, and spurned innovation and knowledge creation like never before. Figure 4 shows the shape of knowledge evolution after introducing paper to disseminate information.

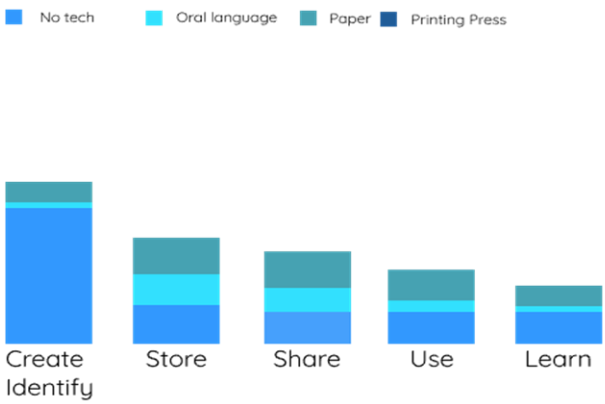

Figure 4 - Evolution of Knowledge with paper. Source: Authors.

The Printing Press

The next process that we will look at is the effect of the printing press. The printing press had a profound effect on the revolutions of the 16th century. Due to the press there was a surge in both the creation of newspapers and small publications as well as higher literacy rates throughout Europe. This climate was essential to the political and economic changes of the 17th, 18th and 19th century (MAN, 2002). Figure 5 shows the number of books published in between 1450 and 1800.

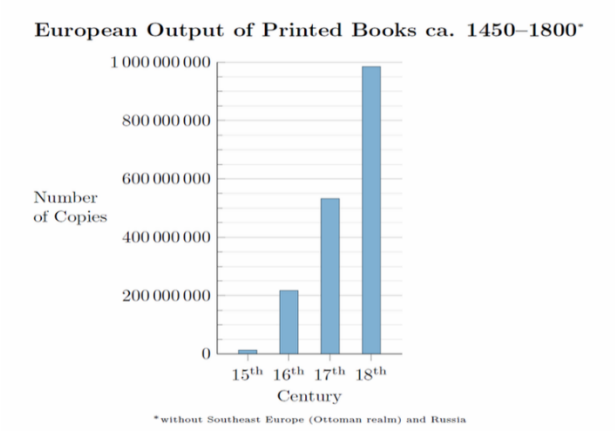

Figure 5 – The quantity of books published in between 1450 and 1800. Source: Man, 2002.

The innovation within the Gutenberg press was the ease in which one could reconfigure the letters in order to print something completely new. Essentially, the form letters were made of metal, arranged in rows per page. The mechanism would insert ink and press those letters on the pages. This allowed from a tremendous amount of production in a reduced amount of time. The effect of this simple process would be felt for centuries to come. (WEBBER,2006) Through the Gutenberg press the scientific method was created and introduced to the world at a rapid pace, and completely changed the way in which the process of knowledge creation was done. The scientific method introduced for the first time an ordered and measured way to the knowledge creation cycle. The number of books available grew by an exponential amount. The areas that impacted was again was the ability to both store and share knowledge. This impacted tangentially the ability to utilize learn and create new knowledge as seen in Figure 6.

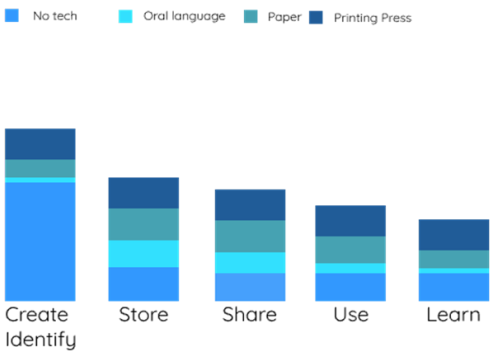

Figure 6 - Evolution of Knowledge Printing Press. Source: Authors.

Television and Telephone

In the 20th century, there was a revolution in the way in which we communicate, both peer to peer as well as mass communication. In 1912, radio began being transmitted in the United States and Europe. That marked the first time that information could be transferred in close to real time to masses of the population. The creation of a common narrative between nations, with vital information being transferred, and there became a leveling of certain knowledge. The magic of communication with people thousands of miles away, to millions of people at the same time, was at first via radio. A few decades later, that would be possible with the television, which not only transferred audio, but images for the first time. The doors were open to transmit knowledge and information to the general population in completely different and impactful manner (BENNINGER, 2009). Figure 7 shows the impact of both television and the telephone. These two innovations serve as examples for the various advancements of the 19th and early 20th century. They impacted primarily the ability to share information quickly throughout most of human civilization. Now, the barrier of distance became almost null, since something that happened in one side of the globe could be known by the large masses almost simultaneously.

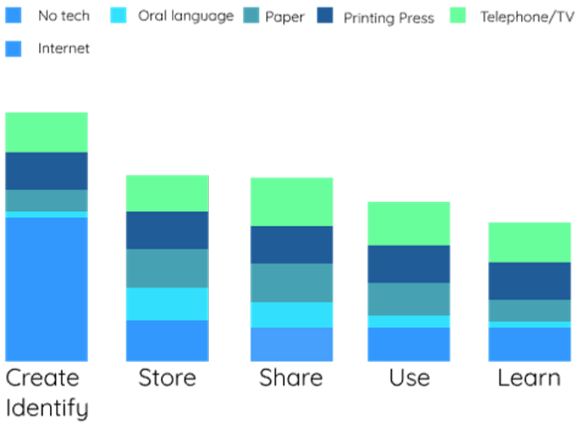

Figure 7 - Evolution of knowledge Telephone. Source: Authors.

Internet

The next, perhaps most obvious expansion on our ability to manage and create knowledge, is the internet. With the internet, anywhere in the world, data, information and knowledge could be transferred in any medium (text, images, videos). The internet made it possible to create knowledge not only from established entities, but from individuals and small communities to other individuals. The internet made it possible for there to be an avalanche of information, for all corners of the world, unlike any other previous technology in the history of the world (BUCHNER, 1999). Its advent similar to the time to the rise of Knowledge Management as a discipline, the internet revolutionized almost every aspect of our modern lives. As we speak of Knowledge Management Cycle specifically, we can observe the main change as a rise in the way in which we share knowledge in Figure 8. Today we are saturated with knowledge, the bar graph reflects that, as our ability to utilize, learn, or create knowledge if less than our ability to share knowledge.

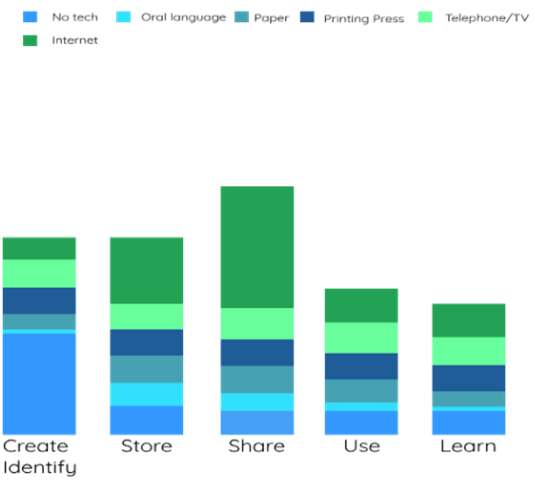

Figure 8 - Evolution of Knowledge: Internet. Source: Authors.

Big Data

Big Data has become a vogue subject in the past few years, however the groundwork for such projects started when the internet became real. From the beginning of the internet, that meant that information is no longer stored individually, but rather shared within a broader network. This also meant that more information had to be organized and created in order to make millions of people being able to access the internet. With the speed of growth of data, search engines and databases began to form the base for what would be big data. Companies such as Microsoft, oracle, google and IBM began investing millions of dollars to buy up startups that dealt with big data (CHEN, 2014). Big data requires specific technology that is capable to deal with large

sets of data instantly. The technology that is most common cited with Big Data is Hadoop which allows for fast query's to be processed through the open source platform (DE MAURO, 2016).

Big data opens opportunities for companies to measure knowledge, processes, knowledge creation, in such a way that it can directly affect the decision-making process of companies and organizations. There are various definitions for what is Big Data, De Mauro, Grecco and Grimaldi (2016) worked through the literature in order to come to a definition that might be close to a consensus within the academy: "Big Data is an active of information, characterized by Volume, Velocity and Variety that is so large that there is a need for technology and analytical methods to transform that into something of discernable value"

To best understand the scope of what big data is, allow us to work with number. First, let us understand Volume, today more new information is stored every second, then all the information that was created between 1970 and 1990. Each hour, Walmart collects enough data about their clients, that would be enough to fill 20 million standard sized lockers. Second, let us understand the Velocity which this information is happening. Think about the speed in which a driver from a ride sharing app receives your request. That speed is essential for the business to run correctly. Lastly, Variety, the different type of information which we receive, and the different ways in which we receive it. A Formula one car is a perfect example, since each car has 150 different points of information, coming from sensors, velocimeters, GPS and other different sources (MCFEE,2012). All of these allow for the highly optimized efficient operation.

Big data opens up the opportunity for new information, for a change in the process of knowledge creation, and mostly a large step on the efficiency of the management of organizations, since organization will make data-based decisions, while then intuition (MCFEE, 2012). For many we could add an addition V, for value (MCNELLY, 2014). This value has already been identified by the great majority of large companies. IBM and even twitter already offer their databases and big data services in order to help organizations make their decision. (WORTH, 2015) Big data has already become crucial to the competitiveness of organizations, making information more transparent and available, and improving their decision-making process (MCGUIRE, 2012). Big data creates a tension in the Knowledge Management model that currently work with a learning process based on hypothesis and testing. Big Data promises the ability to predict the behavior of individuals and markets, thus not having to go through that arduous testing to learn process (BATRA, 2014).

Figure 9 demonstrates how the process of knowledge generation can be shortened and be more direct by utilizing Big Data. Increasing access to information, and transforming information into something more direct and predictive, than the knowledge usually generated in organizations. As we can see below, the process for knowledge creation has been reduced to Big Data, Knowledge to Wisdom, to Accurate Business prediction. This means that information is more accurate, more numerous, therefore, information becomes more complete, and wisdom, is not general, but rather direct, which helps companies make more assertive decisions.

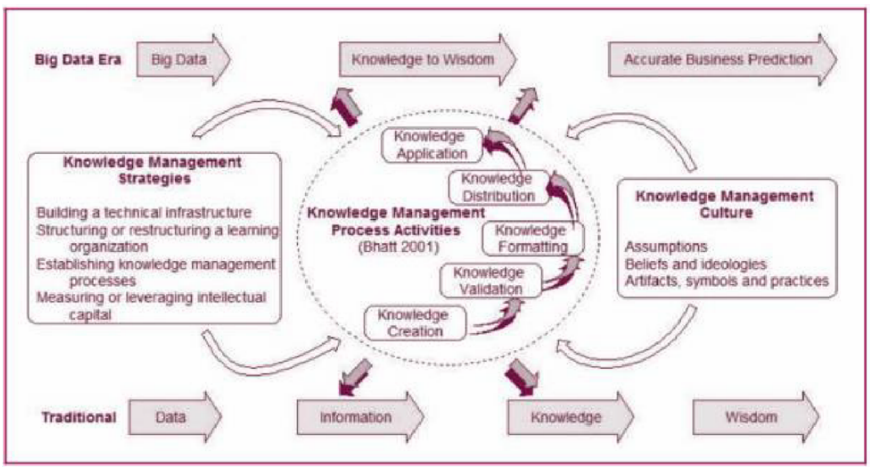

Figure 9 - How the process of knowledge generation can be shortened and be more direct by utilizing Big Data. Source: Xuemei tian (2017).

Through an innovative study, Sumbal (2017) presents the relationship between Big Data and KM specifically within the Oil and Gas industries. The sector is known to be knowledge intensive, something necessary for this analysis (NONAKA, 1995). In their analysis, they analyzed companies located in the Middle East and Europe through several internal reports for a period of 12 months. Companies that already worked with data correctly implemented big data within their projects, with well-designed projects that generated relevant knowledge for the Company. Big data generates important, predictive information (COWLEY-DURST, 1999), but a human intervention is required to see if that information should be evaluated or discarded. Knowledge is

created through machine learning, or a method of data analysis that can automatically show patterns, which exempts the need for interaction between members of the organization. After this, tacit knowledge of the companies, is applied based on the SECI model (NONAKA, 1995) as describes Figure 10.

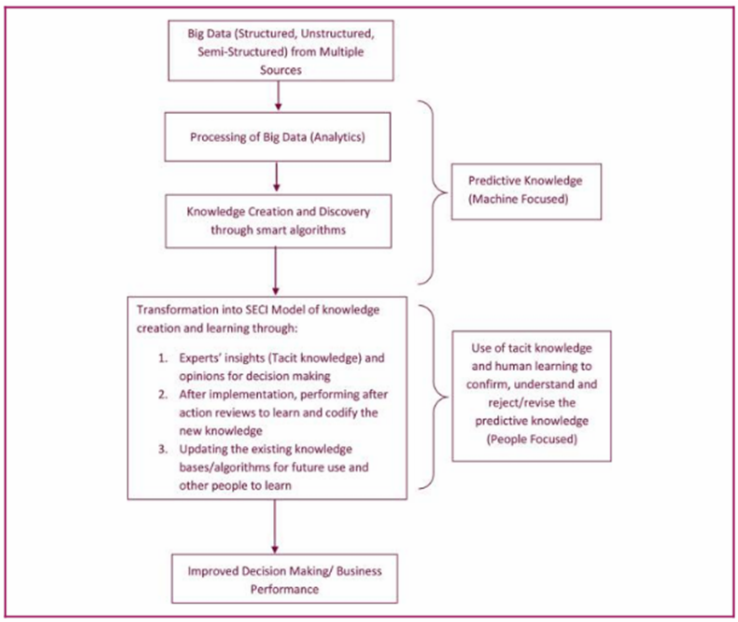

Figure 10 – Tacit knowledge of the companies, is applied based on the SECI model Sumbal (2017).

In summary, Sumbal's study show a clear link between Big Data and KM, and the ability of Big Data to make KM a more powerful and effective tool for any organizations, specifically as it opens up opportunities in data storage that is far more comprehensive than previously thought of. That is reflected in the capabilities shown in Figure 11.

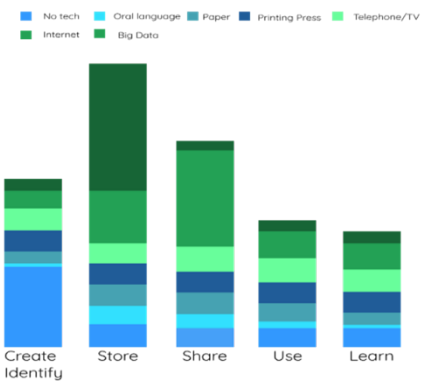

Figure 11 - Evolution of Knowledge Big Data. Source: Authors.

Artificial Intelligence

The artificial intelligence field is vast, but a succinct and simple explanation for AI was mentioned by Bellman as "The automation of activities associated with human thinking, such as decision making, problem solving, and learning" (BELLMAN, 1978, 67). Volume, Speed and Variety of Big Data created the need for new technologies such as Artificial Intelligence to be able to process all of the incoming data (HOESCHL, 2006). Possibilities to mine data, create knowledge repositories, create new knowledge and identify trends to aid decision making (LIEBOWTIZ, 2000). A more advanced version of Artificial Intelligence with so-called intelligent agents that work independently to store, search, and even create new knowledge without human intervention (BRADSHAW, 1998). In Metaxiotis et al. (2003) study, "Decision support through knowledge management: the role of artificial intelligence", defined three areas within Artificial Intelligence essential for KM. Firstly, Expert systems, which is an area that tries to simulate the reasoning of a human being with vast knowledge in a specific area. The creation of Expert Systems, powered by fuzzy ontologies, can create more

efficient systems, goals, and empower a human expert. Second is Artificial Neural Networks, it is a technique based on our nervous system, which is used to process information. The big difference is that the system learns, by itself, with existing information, but not necessarily all available information (HAYKEN, 1994). This type of system is used within KM to decide how to distribute and share information. Finally, Intelligent Agents is a computer system that is autonomous in the decision-making process (JENNINGS, 1998). An example is a Startup in Maringá, in the south of Brazil, Multibot, which sells and buys stocks in a fraction of a second.

Artificial Intelligence Techniques

The field of artificial intelligence is extremely broad, Figure 12 shows some of the fields that are currently being researched. All of which are extremely important, we will attempt to give brief summary of each field that are related to knowledge management.

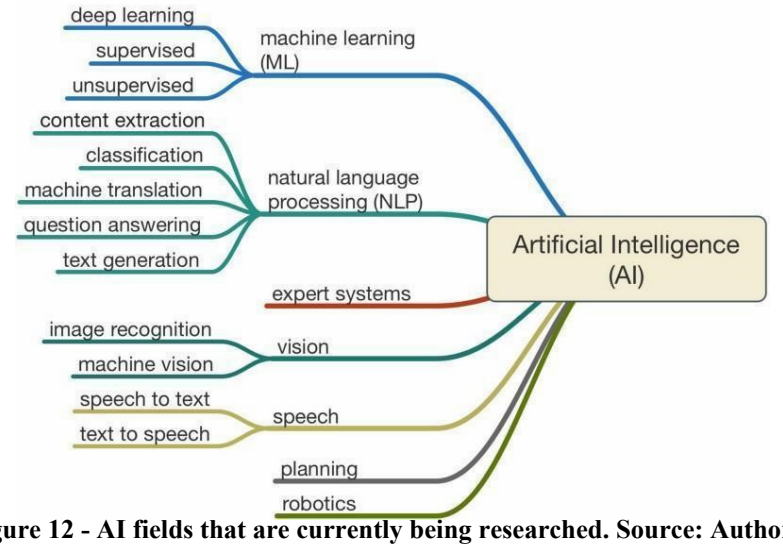

Figure 12 - AI fields that are currently being researched. Source: Authors.

The AI field is extremely broad, so, Figure 12 shows some of the fields that are currently being researched. All of which are extremely important, we will attempt to give brief summary of each field that are related to knowledge management.

Natural Language Processing

Natural Language Processing (NPL) was one of the first areas of AI to be research. It was the basis for the Turing test. For most of its history it was based on handwritten coding language, that through a rule-based approach. This meant that most of the research was focused on translation, until the late 1980's 1990's, when NPL started to utilize statistical models based on machine learning (RESNIK, 2011.) This new approach was able to take into consideration context, and therefore better understand and communicate through human language. We use this technology every time we ask apps such as Siri or google home something. These types of technologies used to be able to answer direct pointed questions. Currently even non sophisticated NPL techniques already take into account context answer more ambiguous questions. Mariani, Joseph; Francopoulo, Gil; Paroubek, Patrick; Vernier, Frédéric (2019), "The NLP4NLP Corpus (I): 50 Years of Research in Speech and Language Processing", Frontiers in Research Metrics and Analytics.

Machine Learning

In 1959, the concept of machine learning was created, with the influence of an experienced based approach to learning. As statistical models, computational power, and big data evolved, the opportunity for experience to create knowledge was further emphasized. Samuel, Arthur (1959).

Machine Learning is a technique that uses statistical models to help machines make decisions without specific instructions. Machine learning utilizes large datasets, in order to understand the statistical probability of something happening, and through that it makes inferences and decisions. A simple example is when your inbox marks something as spam. If the data shows that people are not opening that email, or deleting it quickly, it will look to understand why, label words on the title, or the sender, and start automatically labeling it as spam. When that process is done, the statistic becomes more accurate and therefore a better system throughout time.

Machine Learning is also broken down into supervised and unsupervised and also opened the door to Deep Learning. In supervised model, the algorithm is given both inputs, as training data, as well as desired outcomes. This limits the range of learning and analysis that is possible with machine learning, however it is

highly effective for defined results. Unsupervised Machine Learning setups an initial data supply set, however it allows for the algorithm to find statistically relevant clusters and learn through that pattern. Knowledge creation is becoming farther and farther from the input of a human being. The next step in machine learning is deep learning.

Deep Learning

Deep learning was introduced in the latter years of the 1980's, however saw its popularity blossom in the 21st century. The most utilized approach in deep learning is neural networks, which attempt to mimic the process of a biological human brain. Similar to a human brain it looks at a picture, and it identifies a general concept, afterwards it defines things in more details as time goes one. First, we understand there is something moving towards us, after we decide what it is, and lastly, we decide whether it is a danger.

Those Neural Networks work similar to a biological nervous system, and essentially having the ability to learn on its own. This idea is what has most closely resembled the second category of Artificial Intelligence. The second Category for Artificial Intelligence, is General Intelligence, or Strong A.I. This type of AI is similar to the human brain. The human brain has the ability to think, strategize, create myths, and think about things abstractly. We do this through our experiences, both read, and felt, and constantly updated. We only see examples of true general A.I in Sci-Fi movies such as "Her", however the closest techniques to find General A.I is machine learning, and later deep learning.

General AI

The idea behind general AI is something that would be able to have general knowledge. Be able to be flexible and able to think essentially thinking the same way a human would . The ability to intelligently make real time decisions (KURZWEIL, 2005, p. 260).

This technology impacts, for the first time, creation. The ability to create was always restricted to human intellect, Artificial Intelligence changes that equation. It also unlocks the potential that was stored through Big Data, because while a human brain is not able to compute all the data being generated, artificial intelligence has the capacity to do so. The intelligence generated by AI is also far greater than the capacity of the human mind to do so, how will that impact the way in which we are able to utilize and learn from that knowledge. If we automate its application, what role is left for human beings in Knowledge Management? So, Figure 13 presents the evolution of Knowledge related with AI.

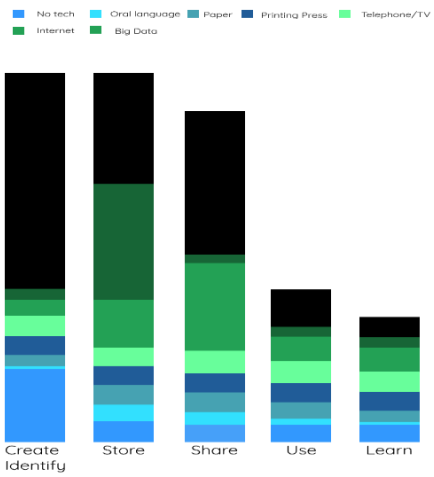

Figure 13 - Evolution of Knowledge with Artificial Intelligence. Source: Authors.

A New Knowledge Management Cycle

A new management cycle must assign roles for human beings. Human beings should be more focused on finding things we do not know, rather than attempting create knowledge. Organizations that are able to find problems will be far more relevant than those that attempt to solve them. The reason is that given the correct inputs, and problems, artificial intelligence will be able to run through relevant information in way that is faster and be able to apply that knowledge quicker.

PayPal is an example of such a condition. When there is payment request made, PayPal's artificial intelligence is able to check hundreds of datapoints in order to validate the request. An example is a purchase by john made in Japan, but he is a resident in Boston, yet the delivery of the item is in Dallas Texas. If a human being had to make a decision in seconds to validate or negate that purchase, he would most likely negate it. PayPal's Artificial Intelligence is able to piece together that John had bought a ticket to go japan the previous day, it could also see that John he had booked hotel room, furthermore they could verify that he had received money from his brother, for exactly half of the amount that item he purchased, and that the same thing has happened the same day the previous year. Lastly, the last time that occurred the address was the same. Basically, John and His brother were sending a gift for his father's birthday. PayPal's Artificial Intelligence is able to piece that together in seconds. We have a new paradigm in the knowledge management cycle. The cycle is so quick and dynamic that we no longer have much to do with it, other than provide the parameters and problems to be resolved.

The new model for knowledge management might look a bit more like, find problem, define parameters, desired outcomes, feed it through big data and artificial intelligence platforms. An example of that airbus is utilizing to design solutions. A human being placed the parameters, the rules, what we want to create, what we want it to do, and it creates thousands of designs based on those parameters. The next advancement is when artificial intelligence can search, select information, and create their own design based on the parameters they themselves set, and all a human would have to say is its objective.

VI. Conclusion

The way in which we analyzed the Knowledge Management Cycle does not adapt to the way in which knowledge is created, shared and utilized by Artificial Intelligence acts. We must reconsider the way in which human beings will fit in to the process of knowledge creation, utilization and management. There needs to be further research as to whether there will be a separation on the type of knowledge being created, human or AI based, or what role the human being will play, but what is certain is the current models of KMC are no longer robust enough to map out the process of knowledge creation. The process of knowledge creation, storage, and utilization may now be completely separate and unknown by human being. Is the discipline ready for that change? Are organizations ready for that?

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