Journal of Business Research 123 (2021) 220–231

Contents lists available at ScienceDirect

Journal of Business Research

journal homepage: www.elsevier.com/locate/jbusres

The role of digital innovation in knowledge management systems: A systematic literature review

Assunta Di Vaio [a,*], Rosa Palladino [a], Alberto Pezzi [b], David E. Kalisz [c]

[a] Department of Law, University of Naples "Parthenope", Via G. Parisi, no. 13, 80132 Naples, Italy
[b] Department of Business Economics, Roma Tre University, Via Silvio D'Amico 77, 00145 Rome, Italy
[c] Campus Cluster Paris Innovation, Paris School of Business, 59 rue Nationale, 75013 Paris, France

ARTICLE INFO

Keywords:
Digital Transformation (DT)
Knowledge Management (KM)
Business Model (BM)
Sustainable Performance (SP)

ABSTRACT

This article investigates the literary corpus on digital innovation in knowledge management systems (KMS) to understand its role in business governance.

The study introduces a broad survey of the scientific literature on this topic to understand how digital innovation promotes new business models through the optimization of new knowledge.

We carried out a bibliometric analysis on a database, including 46 articles published in the last three decades (1990–2020). All the articles were written in English.

The results show that research published on the topic reveals interesting implications for business models and business performance. These findings especially highlight the links between innovation and sustainability, revealing that digital transformation tools contribute over the long-term to the value creation process. This research contributes to the existing literature analyzing the KMS topic by considering it from the digital innovation processes perspective, pointing out the need to implement new knowledge creation and to share measures which support global and inclusive growth.

1. Introduction

Innovation is a multidimensional concept, which involves organizational and procedural aspects of a company, aimed at improving performance in terms of production efficiency, and/or reducing production costs (Schumpeter, 2000). Openness to innovation measures a company's propensity for to change, through an approach aimed at obtaining a competitive advantage derived from the exploitation of new ideas and new technologies (Harryson, 2008).

The adoption of technological solutions for the development of new processes and products, habits, and good practices increases the innovation capacity of companies, enabling them to meet the needs of a continually changing market (Gil-Gomez, Guerola-Navarro, Oltra-Badenes, & Lozano-Quilis, 2020). In fact, digital transformation (DT) facilitates the dissemination of information and good practices using Big Data (BD).

Using BD (Schwertner, 2017), encourages the acquisition and exchange of knowledge between the company and the external environment (Scuotto, Santoro, Bresciani, & Del Giudice, 2017). BD, understood as large data sets containing a heterogeneity of information (Rialti et al., 2019a, 2019b), allows companies to collect, manage and preserve rich digital content for the long term (Candela et al., 2007). In addition, knowing the status of processes and resources through more modern and sophisticated analysis systems, and detecting the degree of interrelationships between the information contained in the database generates a competitive advantage for the company (Ferraris, Mazzoleni, Devalle, & Couturier, 2019). Therefore, innovation is also configured as a governance issue, which influences the business model, pushing entrepreneurs to develop intervention strategies capable of satisfying the contingencies of an increasingly globalized and liberalized market (Ghezzi & Cavallo, 2020). In particular, companies have developed specific awareness of the externalities related to the production and consumption processes. Therefore, they try to transform their management models to limit the negative impacts of their business activity, without reducing the profits (Kamble, Gunasekaran, & Gawankar, 2020).

In this context, space must be found for practices that improve the centrality of knowledge and knowledge management systems (KMS), favoring the creation of shared and integrated systems capable of improving business performance (Abubakar, Elrehail, Alatailat, & Elçi,

* Corresponding author.
E-mail address: susy.divaio@uniparthenope.it (A. Di Vaio).

https://doi.org/10.1016/j.jbusres.2020.09.042
Received 4 May 2020; Received in revised form 18 September 2020; Accepted 19 September 2020

2019; Del Giudice & Della Peruta, 2016; Santoro, Ferraris, & Bresciani, 2019).

The most advanced KMS are based on the integration of BD into corporate strategies, improving the quality of managers' choices through the "predictive ability" of the analysis processes, based on the association of data (Intezari & Gressel, 2017). In this way, companies are able to direct their behavior towards innovative and sustainable business models (Intezari & Gressel, 2017; Olivo, Guzmán, Colomo-Palacios, & Stantchev, 2016; Soto-Acosta, Del Giudice, & Scuotto, 2018), increasing the degree of social responsibility and obtaining a reputational advantage with the interested parties (Carayannis, Grigoroudis, Del Giudice, Della Peruta, & Sindakis, 2017; Nagy, Oláh, Erdei, Máté, & Popp, 2018; Raut et al., 2019).

Therefore, considering that knowledge is a critical resource for the company (Friedrich, Becker, Kramer, Wirth, & Schneider, 2020; Uden & He, 2017), it becomes interesting to understand how KMS, pushed by digital innovation, can accelerate the process of creating value in the long term, guiding the corporate strategy towards new, innovative business models.

Using a systematic review of these contributions in the literature, this study helps to identify new directions in the literature on KMS, identifying ideas for future research, through a rigorous and replicable process (Massaro, Dumay, & Guthrie, 2016). In more detail, through a bibliometric analysis, this study aims to investigate how the dissemination of knowledge can influence the DT process (Thomas & Chopra, 2020), revealing that access to more information can influence investment planning and cost evaluation, with positive effects on returns (Gunjal, 2019).

Furthermore, it also aims to find out how the previous studies were developed from the KMS approach to strategic innovation and the implementation of new business models (Hock-Doepgen, Clauss, Kraus, & Cheng, 2020) revealing that KMS guiding role in implementation and corporate governance (Maroli, 2019; Pauleen & Wang, 2017). Therefore, it should be structured to include BD, in order to support more effective strategic decisions (Intezari & Gressel, 2017; Kitsios & Kamariotou, 2017; Olivo et al., 2016; Soto-Acosta et al., 2018).

Thus, our research questions are:

- *(Q1) How have the digital transformation issues been analyzed by KMS scholars?*
- *(Q2) What main orientations do scholars adopt in this field, especially in the business governance framework?*

Therefore, this article proposes a theoretical framework of knowledge management (KM), analyzing the outputs achieved by reviewing the 46 relevant articles identified. As mentioned above, the most striking challenge for academic scholars and strategists is to increase knowledge of, and links between, digital innovation and KM. Hence, analyzing the linkages and connections in those scientific fields could be an interesting contribution to management sciences. However, there are two significant theoretical problems in this regard:

1) The outcome of knowledge management does not necessarily take into account the impact of processes linked with digital innovation;
2) The above-mentioned orientations linked with governance frameworks seem to ignore the impact of DT on KM.

The remainder of this article is organized as follows. Section 2 introduces the theoretical background, while Section 3 describes the methodology using to develop the research. Section 4 provides the results of the review, and Section 5 contains the discussion. Finally, Section 6 provides conclusions and reveals future implications.

2. Theoretical background to KMS in digital innovation

The availability of information and knowledge management directs corporate innovation processes towards a more significant competitive advantage (Adams & Lamont, 2003; Cardinal, Allessandri, & Turner, 2001; Darroch & McNaughton, 2002; Dias & Bresciani, 2006; Mao, Liu, Zhang, & Deng, 2016; Pyka, 2002). In fact, keeping up with the rapid progress of innovation is becoming increasingly difficult for companies, which are forced to make use of a collaborative network (Najafi-Tavani, Najafi-Tavani, Naudé, Oghazi, & Zeynaloo, 2018) inside and outside the organization, which is useful for promoting the sharing of knowledge for innovation (Cavusgil, Calantone, & Zhao, 2003).

According to open innovation theory (Alexy, Bascavusoglu-Moreau, & Salter, 2016), a holistic cognitive approach should allow the company to exploit efficiently internal knowledge, and absorb external knowledge concerning the dynamic environment (Del Giudice & Maggioni, 2014; Ferraris, Santoro, & Dezi, 2017; Santoro, Vrontis, Thrassou, & Dezi, 2018). On the other hand, innovation has been defined as a tool that "recombines existing knowledge in new ways" (Du Plessis, 2007, p. 24), highlighting the limits and potential of the organization's cognitive substrate to encourage development and sustainable innovations.

KMS allows the use of tangible resources to be maximized (Grant, 1996), because it is aimed at the acquisition and exploitation of data to increase performance and improve process management (Bresciani, 2010). Therefore, the construction of a robust cognitive architecture capable of guaranteeing the exploitation and conservation of information can support corporate innovation processes through intelligent infrastructures and collaborative techniques based on interaction (Santoro et al., 2018). Hence, KMS influences the company's performance as it leads to innovation, which consequently increases the competitive advantage (Martín-de Castro, López-Sáez, Delgado-Verde, Andreeva, & Kianto, 2011; Costa & Monteiro, 2016; Zack, McKeen, & Singh, 2009).

The stratification of the knowledge collected by the company (Lee, Choi, & Lee, 2020), favoring the exploitation of existing information as a driver for innovation, in order to combine it with new knowledge acquired through performance of this innovation (Ferraris et al., 2017). This highlights the role of KMS not only in terms of the efficiency of the processes of allocating internal and external knowledge to the organization, but also in the exploitation of the innovative potential of the company at several levels (Shujahat et al., 2019). This affects the corporate business model, favoring dialogue between corporate actors and alignment of strategies and capabilities (including resources).

3. Methodology

This study was conducted using a qualitative methodology based on examination of the content of articles focused on KMS, DT, and the impact on transformation processes. Following the series of steps for an indexed search (Fink, 2010), we collected all the articles that make up our database by performing a content analysis to systematize the collected results in a replicable way (Krippendorff, 1980). Notably, we used the ISI Web of Science (WoS), which is a website that allows access to multiple databases, ensuring the availability of data from a wide range of scientific disciplines. Moreover, the database was enriched thanks to a manual collection process by Google Scholar (GS), so as not to neglect any vital contribution to our analysis (Massaro et al., 2016). To be more precise, other articles which contained citations consistent with the topic investigated were selected from journals placed high in the international rankings (Rashman, Withers, & Hartley, 2009). The journals that were selected because of marked interest shown in the topics related to KMS, innovation, DT, and business performance are the *Journal of Knowledge Management*, the *Journal of Intellectual Capital*, and *Technological Forecasting & Social Change* (Okoli & Schabram, 2010).

On this basis, this article developed in two phases. The first was aimed at identifying, extracting, and studying the individual articles consistent with the aims of the research, while the second developed the bibliometric study of these articles.

In the first phase, in order to ensure a robust methodology, it was necessary to proceed by stages: (1) extraction of the articles; (2)

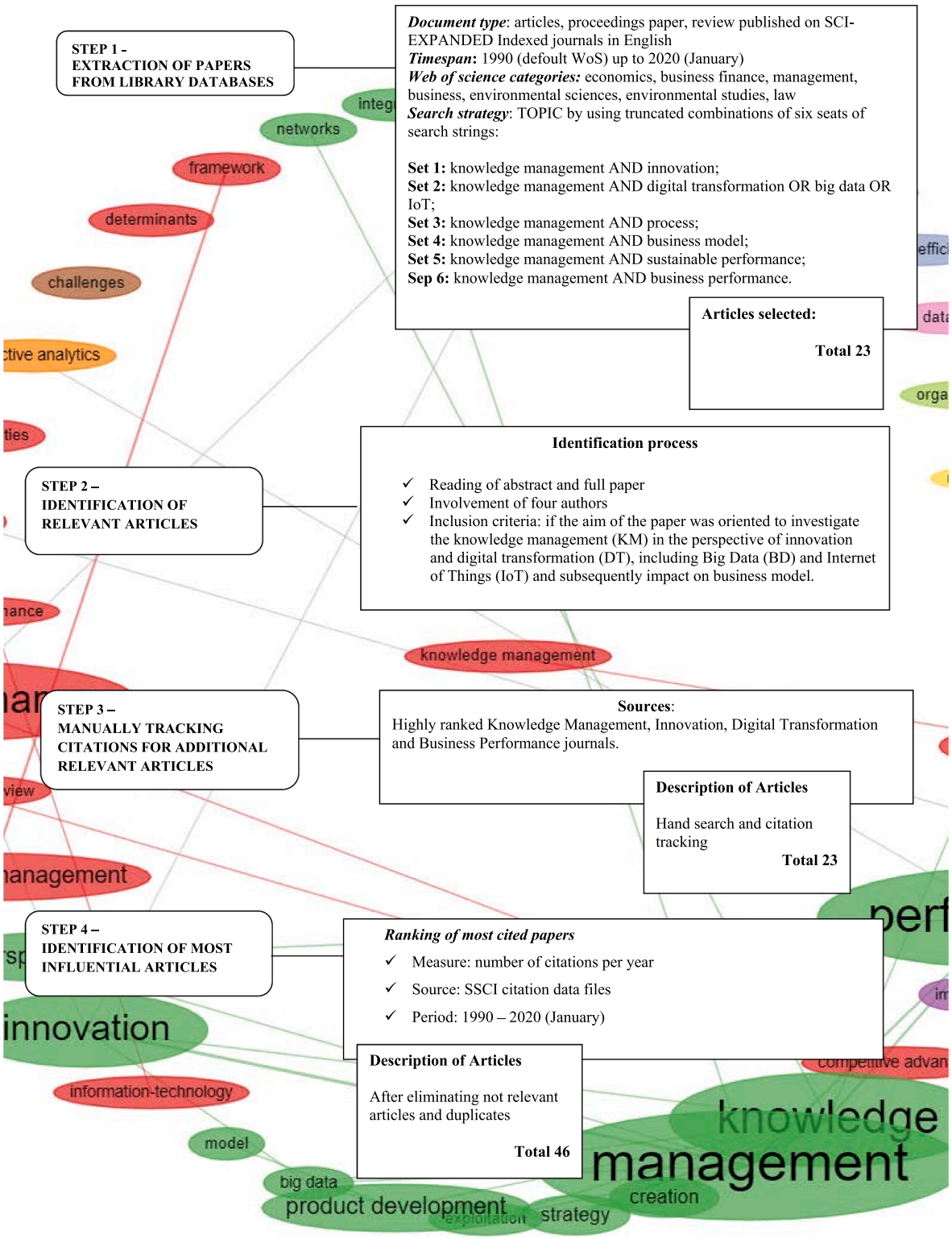

Fig. 1. Summarizes research.

verification of congruence with the RQs; (3) manual integration of the articles of the collection, and (4) database processing the final findings. The overall approach for our data collection is highlighted in Fig. 1.

In the first phase of our research, we studied the scientific articles collected by WoS and GS to identify and systematize the main orientations of scientific research.

In order to collect all relevant publications developed on the topic investigated, no time restrictions were imposed. Thus, we collected all the scientific articles on these topics from 1990 to 2019 (results of the default WoS settings: Table 1).

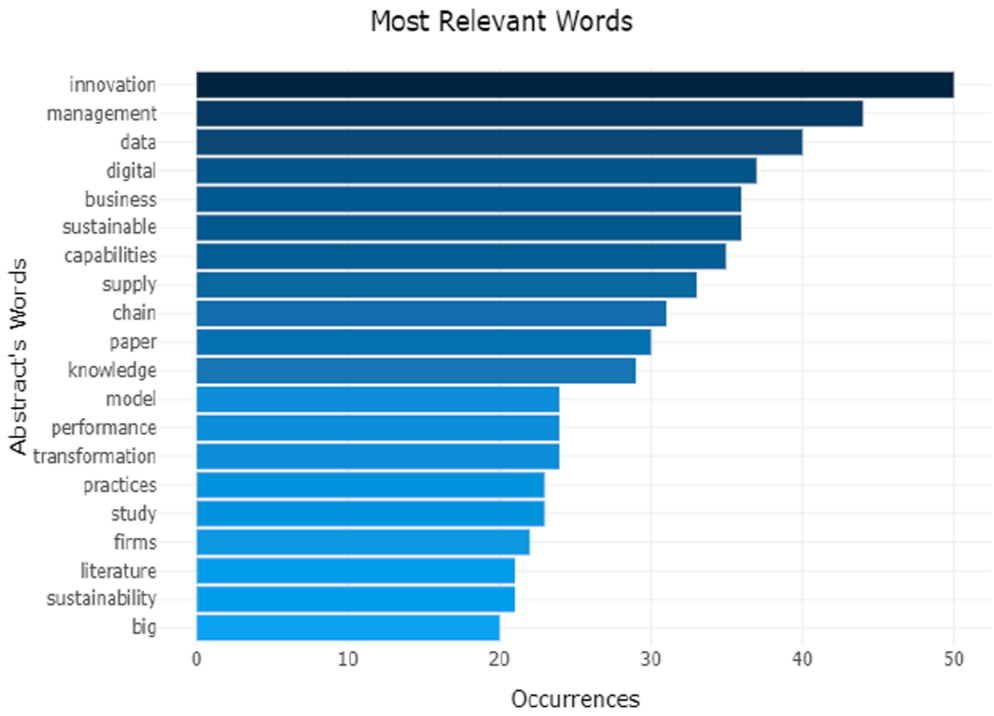

Fig. 2. Top 20 abstract's words.

To identify the articles relevant to our research, we combined truncated words. Specifically, we used the following sets:

- Set 1: knowledge management AND innovation;
- Set 2: knowledge management AND digital transformation OR Big Data OR IoT;
- Set 3: knowledge management AND process;
- Set 4: knowledge management AND business model;
- Set 5: knowledge management AND sustainable performance;
- Set 6: knowledge management AND business performance.

The extraction process of articles was driven by the mix of three words allowing the relationships among the articles from several research clusters to be established and the most significant number of contributions on the topic under investigation to be identified.

Thanks to this phase, the search was extended to research on KM from the innovation perspective and DT, including BD and the Internet of Things (IoT). It also included the impact on business performance (BP) and sustainable performance (SP). In fact, KM is the substrate of our scientific research, from which the ramifications on the sphere of innovation and the effects on performance emerged.

As regards the second phase, in order to identify the most relevant articles, each article was studied by reading keywords and the abstract to establish whether it was in line with the aims of our research. All co-authors were actively involved in this phase. They worked systematically and independently, analyzing each article and highlighting the key points of the research aims. Their conclusions were subsequently compared. Individual study of the documentation and comparison of the results is an essential step in this type of methodology, because it guarantees greater solidity to the results of the analysis. All keywords were verified to ensure that they were in line with the intentions of our investigation. Then, the abstract of each article was read in depth to ensure its relevance to the field of KM, innovation, or BD, highlighting its affinity with the issues examined in terms of processes and performance.

Regarding the third phase, considering the limited ability of WoS to identify all the scientific articles significant for our research, we carried out a manual Google search. We used identical conditions. In the last stage, each co-author involved in this research acted individually and independently. Specifically, the authors painstakingly analyzed each article to highlight the crucial issues favorable to our investigation. Any articles not relevant to the research and any duplicates were removed from the database. Finally, the authors compared their results, developing the sections of the literature review. The final list used for our analysis was composed of 46 contributions. Section 4.1. includes the bibliometric analysis of the selected articles.

4. Findings

Bibliometric boxes, concepts, and categorizations by topic, are the main dimensions of this qualitative analysis, discussed in the next section.

4.1. Bibliometric box

Contributions identified were analyzed on Bibliometrix, to process interactive and descriptive information to summarizing the investigation, highlighting the dimension of the findings obtained in time and space. Bibliometric testing enables "transparent" as well as "reproducible" reviews (Aria & Cuccurullo, 2017, p. 959), giving safer results in the collection of scientific documents and news, without the risk of ignoring the most relevant contributions, regardless of the date of publication.

Bibliometric analysis allows the reconstruction of the network of correlations between the documents, measuring the impact of each contribution within the research field examined, starting from the analysis of the keywords (Ellegaard & Wallin, 2015).

Initially, the articles were examined with the "abstract's top 20 words", as shown in Fig. 2. This allows the words which occur most often in the abstracts of the selected articles to be highlighted. It is interesting to observe that the word "innovation" has the highest occurrence index; it is repeated 50 times in the database. "Innovation" is followed by: "management", "data", "digital" and "business", which have an equal number of appearances in the abstracts. This sequence of words is

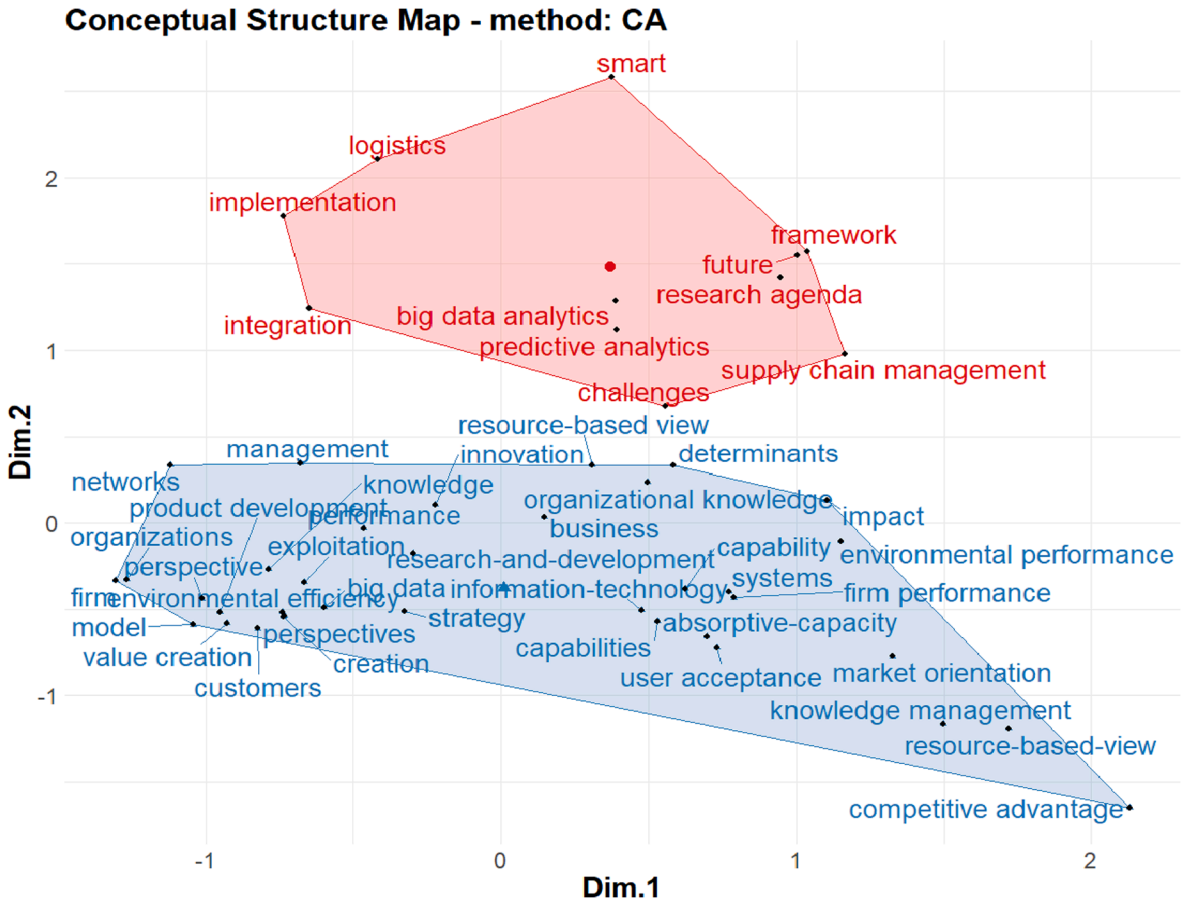

Fig. 3. Conceptual map and keyword clusters.

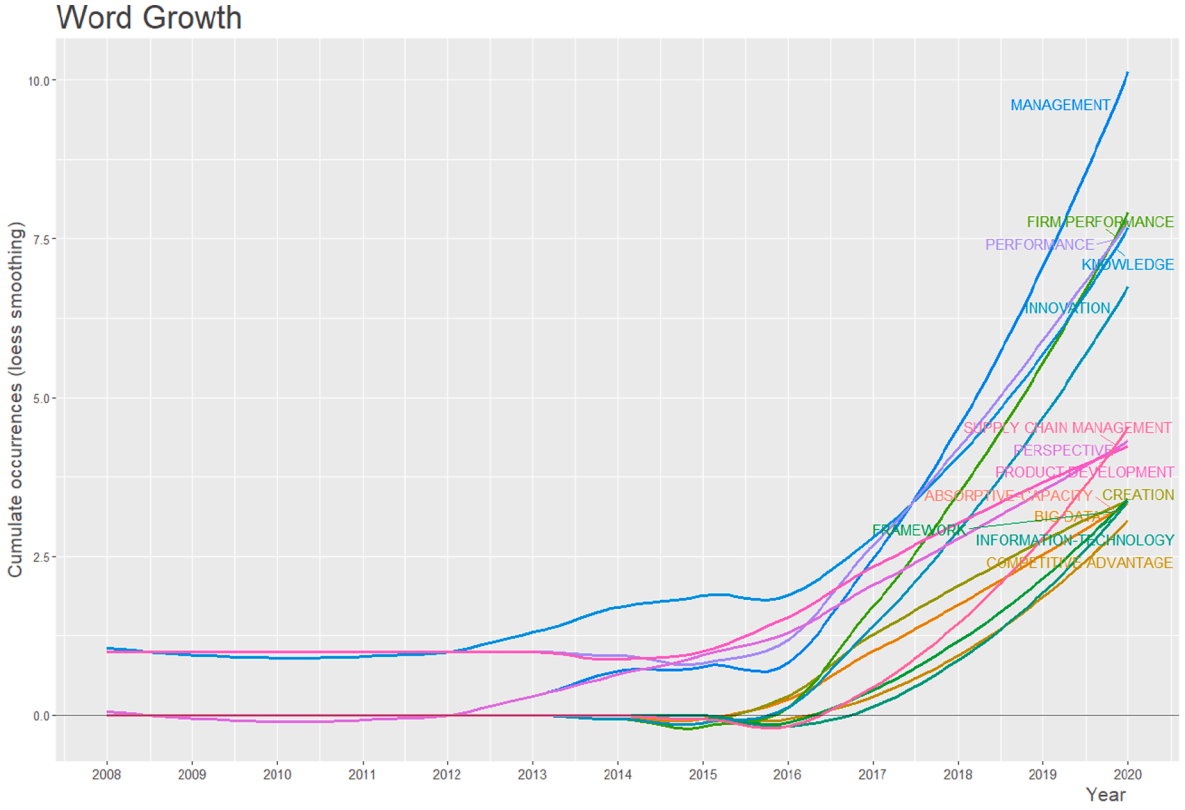

Fig. 4. Trend of scientific productions.

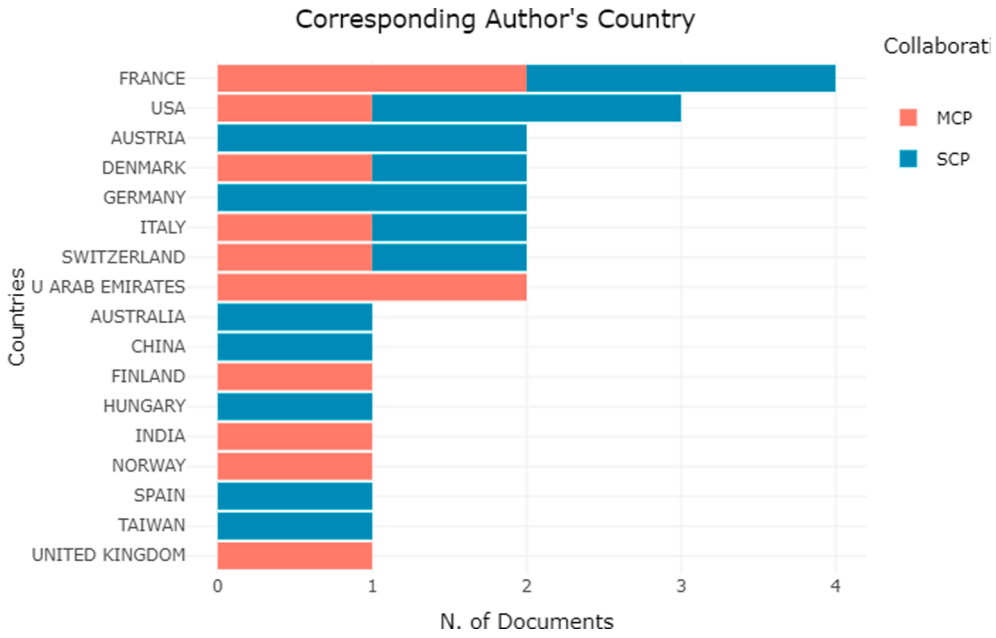

Fig. 5. Collaboration index.

particularly significant concerning the subject of our investigation, as it confirms the close relationship between the topics investigated, in particular the impact of innovation in knowledge management processes and the effects on business models (Gil-Gomez et al., 2020; Hock-Doepgen et al., 2020; Del Giudice, Garcia-Perez, Scuotto, & Orlando, 2019a; Del Giudice, Scuotto, Garcia-Perez, & Petruzzelli, 2019b; Gupta & Bose, 2019; Huesig & Endres, 2019; Kamble et al., 2020; Raut et al., 2019; Santoro et al., 2019; Lokshina & Lanting, 2019; Scuotto, Del Giudice, Tarba, Petruzzelli, & Chang, 2019a; Bogers, Chesbrough, & Moedas, 2018; Nielsen, 2018; Bresciani, Ferraris, & Del Giudice, 2018; Lin, Lin, & Lu, 2018; Pappas, Mikalef, Giannakos, Krogstie, & Lekakos, 2018; Carayannis et al., 2017; Seele, 2017; Xia, Yu, Gao, & Cheng, 2017; Del Giudice & Della Peruta, 2016; Parmentier & Mangematin, 2014). Subsequently, the words "knowledge", "model", "performance" and "transformation" occurred in most of the articles, as presented in Fig. 2 below.

According to Aria and Cuccurullo (2017), this analysis allows the creation of a graphical representation of the network of relationships between the concepts, starting from the keywords. Fig. 3 highlights two visual structures in which we can observe the concentration of concepts. More specifically, we distinguish two groups by using two different colors. A RED core symbolizes the framework of BD analytics challenges, and a BLUE core stands for dimensions of knowledge, branching out into aspects of management, organization, strategy and performance. Graphical representations are hierarchical structures that express interrelationships between concepts organically by facilitating significant comprehension of cognitive structures. The cognitive force of this conceptual mapping is useful for grasping the conceptual substrate of the topics and understanding how they are connected and related (Liu, 2004). Analyzing the conceptual plan, we observe that words linked to "knowledge", "innovation", "performance", "strategy", "big data", "information technology", "value creation", "environmental performance", "organizational knowledge", "efficiency", "business" and "model" are concentrated primarily in the BLUE core. Otherwise, BD analytics issues, which are related to the following words: "integration", "implementation", "supply chain management", "challenges", "framework", "future" and "research agenda", are included in the RED core.

Considering the time period of this study (1990–2020), we observe increasing scholarly interest in the themes since 2016, as illustrated in Fig. 4. The dynamic analysis of the most recurrent words in the set of data indicates that performance studies of management and firms grew in parallel with knowledge and innovation, reaching a peak of interest between 2019 and 2020. This is very significant for our analysis, as it attests to the growing interrelation between the topics investigated, and confirms that performance management implies the integration of knowledge and innovation.

The greatest interest was generally registered by scholars from France and the USA (Fig. 5), followed by Austria, Denmark, Germany, Italy, Switzerland and the United Arab Emirates. Fig. 5 describes the intra-country (SCP – green) and inter-country (MCP – orange) collaboration indices. From this figure, it can be seen that in France, there is not only a higher production of research articles on our topic but also a greater willingness of French scholars to collaborate with other countries.

4.2. *Content of the selected articles*

Considering the different steps developed in this research on 46 articles, the bibliometric analysis highlighted the following findings.

Table 1 (see appendix) includes an exhaustive characterization of the database using the following categories:

i) year;
ii) author;
iii) paper;
iv) article type;
v) subtopic;
vi) methodology.

Most studies suggest that the innovative footprint of business management requires an attitude of openness on the part of companies, both towards the systems of transformation of products and services, and towards the mechanisms for implementing and sharing internal and external knowledge (Bagherzadeh, Markovic, Cheng, & Vanhaverbeke, 2019; Bogers et al., 2018; Parmentier & Mangematin, 2014).

Adapting to digital transformation processes also requires a "dynamic ability" on the part of companies, to reinvent and reshape basic resources (Luppicini, 2020) in order to absorb technological management in the context of decision-making strategies aimed at obtaining competitive advantages, as in the case of *ambidextrous* organizations

(Ammirato, Sofo, Felicetti, & Raso, 2019; Bresciani et al., 2018; Konlechner, Müller, & Güttel, 2018; Scuotto, Arrigo, Candelo, & Nicotra, 2019b; Warner & Wäger, 2019). In practical terms this means that the exchange with the user communities facilitates the diffusion and the mutual exchange of knowledge by breaking traditional patterns and favoring the implementation of interactive digital platforms, without losing control of the processes and their returns (Gil-Gomez et al., 2020; Randhawa, Josserand, Schweitzer, & Logue, 2017).

Trantopoulos, von Krogh, Wallin, and Woerter (2017) observed the behavior of several Swiss manufacturing companies over a period of nine years, demonstrating that the performance of process innovation is positively influenced by the use of new information technologies (i.e. IoT), which encourage access to large databases that exploit vast amounts of information (Dai, Wang, Xu, Wan, & Imran, 2019), leading to significant improvements in profits. This suggests that companies should implement investment strategies aimed at implementing IoT to meet the new needs of the digitized market, promoting the exchange of information with the outside world in real-time (Bresciani et al., 2018; Kamble et al., 2020). This data is valuable if inserted into an intuitive BD analysis system, which allows it to be processed and to generate a competitive advantage (Carayannis et al., 2017; Nagy et al., 2018; Raut et al., 2019). This data derives from a mixture of sources. It therefore requires new and more modern methods of analysis through information technologies.

In addition, the use of BD allows the maintenance of open management of business processes which, through the involvement of stakeholders (Gupta & Bose, 2019), and also encourages the achievement of sustainability objectives by increasing corporate social responsibility (CSR) (Bogers et al., 2018; Huesig & Endres, 2019; Pappas et al., 2018; Raut et al., 2019; Seele, 2017; Xia et al., 2017). In choosing the technological options to be adopted, companies can cross-evaluate the indicators and sustainable development features of each product, facilitating decisions to obtain a more sustainable performance (Xia et al., 2017). They can also use systems to measure the efficiency of the outputs generated by the use of sustainable resources, correcting any unwanted results, in order to align the management and control systems with smarter and more sustainable business models (Lin et al., 2018). This has a significant impact on performance (Huesig & Endres, 2019; Pappas et al., 2018; Raut et al., 2019), because IoT raises the levels of knowledge in a prognostic and holistic sense (Rodríguez-Rodríguez, Rodríguez, Elizondo-Moreno, Heras-González, & Gentili, 2020), allowing the company to evaluate all the economic, environmental, social, digital and innovative aspects of the business models that best meet the needs of the market (Brenner, 2018; Ghezzi & Cavallo, 2020). A crucial element is the "predictive" skills of the algorithms that regulate IoT systems, which carry out checks in terms of the sustainability of the choices, in order to prevent future complications and possible damage (Ammirato et al., 2019; Ferraris et al., 2019; Seele, 2017).

Furthermore, the use of BD can facilitate the distribution of new skills in the business context, combining economic profit and social well-being (Pappas et al., 2018; Savastano, Amendola, Bellini, & D'Ascenzo, 2019). El-Kassar and Singh (2019) also spoke of "green innovation" as a catalyst for beneficial practices, using all tangible and intangible resources for the firm and the external environment (Kamble et al., 2020; Rothberg & Erickson, 2017).

In this scenario, managers use BD analysis tools to support decision-making strategies (Rialti et al., 2019a, 2019b) that combine the spirit of innovation with the realization of long-term value (Singh & El-Kassar, 2019). Digital innovation means interaction between IoT, tools, and people, favoring the diffusion of information and the exchange of knowledge, assuming that knowledge is the first engine of profit, especially in the era of digital innovation (Pauleen & Wang, 2017). Digital innovation is encouraged by the company's commitment towards the use of technologies capable of improving the company's knowledge levels and performance sustainability through adequate training courses for human workforce (Singh & El-Kassar, 2019). For this reason, it becomes fundamental to develop better systems to protect the exchange and strategic sharing of information in order to reduce the risk of knowledge dispersion or abuse (Ilvonen, Thalmann, Manhart, & Sillaber, 2018).

These strategies converge in a digital business model in which "the underlying business logic deliberately recognizes the characteristics of digitalization and takes advantage of it, both in interaction with customers and commercial partners, and in its internal functioning" (Bärenfänger & Otto, 2015, p. 18). Digital initiatives increase the degree of learning within the company, which improves its usefulness compared to other competitors (Gupta & Bose, 2019).

Digital innovation stimulates the processes of implementation and renewal of corporate knowledge (Arfi & Hikkerova, 2019), thanks to the push of internal social capital, understood as a network of relationships between internal units of the company and external social capital, this latter intended as a network of exchange between external units (Del Giudice, Maggioni, Jiménez-Jiménez, Martínez-Costa, & Sanz-Valle, 2014).

Therefore, a good business management system should institutionalize a continuous learning and sharing protocol (Carayannis et al., 2017; Del Giudice & Della Peruta, 2016), where digitalization, IoT and BD systems are the engines of a corporate strategy that is based on knowledge (Del Giudice et al., 2019a). Through an adequate "strategic learning" system, economic operators build a core of knowledge and skills in support of the goals planned in the strategic and operational sharing (Gupta & Bose, 2019; Huesig & Endres, 2019).

In this sense, innovation becomes a driver of corporate governance (Yin & Sheng, 2019), acting as a catalyst for the planning, management, and strategic command of corporate processes and investments, in the direction of new innovative business models (Gupta & Bose, 2019).

5. Discussion

Bibliometric analysis shows that digital innovation involves business processes from within, influencing the strategic design of companies that use new information technologies to guide their business model, especially in a sustainable sense (Bogers et al., 2018; Carayannis et al., 2017; Ghezzi & Cavallo, 2020; Gupta & Bose, 2019; Huesig & Endres, 2019; Lin et al., 2018; Nagy et al., 2018; Pappas et al., 2018; Raut et al., 2019; Seele, 2017; Xia et al., 2017).

Primarily, innovation allows the best use of the company's knowledge: encouraging the implementation of KMS that guarantee access to more information (Gunjal, 2019); influencing investment planning; evaluating costs, and generating positive effects on returns (Bresciani et al., 2018; Del Giudice et al., 2014; Intezari & Gressel, 2017). KMS has a leading role in the implementation and governance of BD (Pauleen & Wang, 2017). Therefore, it should be structured to include BD, to facilitate corporate governance and support more effective strategic decisions (Intezari & Gressel, 2017; Olivo et al., 2016; Soto-Acosta et al., 2018). The degree of transfer, sharing, and exploitation of knowledge requires the cooperation of all company departments, through the implementation of collaborative and inter-organizational learning processes that exploit large flows of information. IoT tools, in particular, contain vast amounts of data and simplify the ways of identifying exploitable knowledge along the entire organizational chain (Bresciani et al., 2018; Del Giudice & Della Peruta, 2016; Ferraris et al., 2019; Tian, 2017). The "predictive ability" of BD analysis systems elevates the degree of interrelation between information, allowing the company to make conscious decisions achieving higher performance (Ferraris et al., 2019). Thus, innovation takes on a radical character because it affects business choices and has a spillover effect towards other related companies (Del Giudice et al., 2019a, 2019b; Scuotto et al., 2020).

This "domino effect" of knowledge transfer also overcomes the difficulties related to the high costs of technological and digital updating, increasing the employees' know-how of new technological skills that the company uses to be more competitive (Del Giudice et al., 2019b; Uden &

Table 1
Data collection and classification.

Year	References	Journal	Article Type	Subtopic	Methodology
2000	Schumpeter, J. A.	*Entrepreneurship: The social science view*	ARTICLE	Innovation, Entrepreneurship, Business Model, Big Data	Qualitative Study
2008	Harryson, S. J.	*R&d Management*	ARTICLE	Innovation, Management, Business Model, Performance	Qualitative Study: Case Study
2014	Del Giudice, M., Maggioni, V., Jiménez-Jiménez, D., Martínez-Costa, M., & Sanz-Valle, R.	*Journal of Knowledge Management*	ARTICLE	KMS; Business Model, Innovation, Performance	Qualitative Study
	Parmentier, G., & Mangematin, V.	*Technological Forecasting and Social Change*	ARTICLE	Innovation, Strategy, Performance	Qualitative Study: Case Study
2015	Bärenfänger, R., & Otto, B.	*2015 IEEE 17th Conference on Business Informatics*	ARTICLE	Innovation, Business Model	Qualitative Study
2016	Del Giudice, M., & Della Peruta, M. R.	*Journal of Knowledge Management*	ARTICLE	Innovation, KMS, CSR, Performance	Quantitative Study
	Olivo, J. F. L., Guzmán, J. G., Colomo-Palacios, R., & Stantchev, V.	*Journal of Knowledge Management*	ARTICLE	IT, Business Model, Big Data, Strategy	Quantitative Study
2017	Carayannis, E. G., Grigoroudis, E., Del Giudice, M., Della Peruta, M. R., & Sindakis, S.	*Journal of Knowledge Management*	ARTICLE	Innovation, Strategy, Big Data, Performance	Qualitative Study
	Intezari, A., & Gressel, S.	*Journal of Knowledge Management*	ARTICLE	KMS, Business Model, Big Data, Performance	Quantitative and Qualitative Study
	Pauleen, D. J., & Wang, W. Y.	*Journal of Knowledge Management*	ARTICLE	KM, KMS, Innovation	Qualitative Study
	Randhawa, K., Josserand, E., Schweitzer, J., & Logue, D.	*Journal of Knowledge Management*	ARTICLE	KMS, Business Model, Big Data	Qualitative Study: Case Study
	Rothberg, H. N., & Erickson, G. S.	*Journal of Knowledge Management*	ARTICLE	KMS, Business Model, Big Data, Innovation	Quantitative and Qualitative Study
	Scuotto, V., Santoro, G., Bresciani, S., & Del Giudice, M.	*Creativity and Innovation Management*	ARTICLE	innovation, ICT, Business Model, Performance	Quantitative Study
	Seele, P.	*Journal of Cleaner Production*	ARTICLE	Innovation,	Quantitative Study
	Tian, X.	*Journal of Knowledge Management*	ARTICLE	Sustainability, Business Model, Big Data, innovation	Qualitative Study
	Trantopoulos, K., von Krogh, G., Wallin, M. W., & Woerter, M.	*MIS Quarterly*	ARTICLE	Innovation, Business model	Quantitative Study
	Uden, L., & He, W.	*Journal of Knowledge Management*	ARTICLE	KMS, Business Model, IoT, Performance	Qualitative Study: Case Study
	Xia, D., Yu, Q., Gao, Q., & Cheng, G.	*Journal of Cleaner Production*	ARTICLE	Sustainability, Innovation, Business Model, Performance	Quantitative Study
2018	Bogers, M., Chesbrough, H., & Moedas, C.	*California Management Review*	ARTICLE	Open Innovation, Business Model, Big Data	Qualitative Study
	Brenner, B.	*Sustainability*	ARTICLE	Sustainability, Innovation, Business Model, Performance	Qualitative Study
	Bresciani, S., Ferraris, A., & Del Giudice, M.	*Technological Forecasting and Social Change*	ARTICLE	Ambidexterity, Business Model, IoT	Quantitative Study
	Ferraris, A., Mazzoleni, A., Devalle, A., & Couturier, J.	*Management Decision*	ARTICLE	KMS, Performance, Innovation	Quantitative Study
	Ilvonen, I., Thalmann, S., Manhart, M., & Sillaber, C.	*Knowledge Management Research & Practice*	ARTICLE	Innovation, KMS, Performance	Qualitative Study
	Konlechner, S., Müller, B., & Güttel, W. H.	*International Journal of Technology Management*	ARTICLE	Ambidexterity, Business Model, IoT	Quantitative Study
	Lin, F., Lin, S. W., & Lu, W. M.	*Sustainability*	ARTICLE	Innovation, Sustainability, Business Model	Quantitative Study
	Nagy, J., Oláh, J., Erdei, E., Máté, D., & Popp, J.	*Sustainability*	ARTICLE	Digitalization, Business Model, Big Data	Qualitative Study
	Pappas, I. O., Mikalef, P., Giannakos, M. N., Krogstie, J., & Lekakos, G.	*Information Systems and Business Management*	ARTICLE	Big Data, Innovation, Performance	Qualitative Study
	Soto-Acosta, P., Del Giudice, M., & Scuotto, V.	*Baltic Journal of Management*	ARTICLE	KMS, Innovation, Big Data	Qualitative Study
	Usai, A., Scuotto, V., Murray, A., Fiano, F., & Dezi, L.	*Journal of Knowledge Management*	ARTICLE	Innovation, Entrepreneurial, KMS	Quantitative Study
2019	Ammirato, S., Sofo, F., Felicetti, A. M., & Raso, C.	*European Journal of Innovation Management*	ARTICLE	IoT, Business Model, Big Data	Quantitative and Qualitative Study
	Del Giudice, M., Garcia-Perez, A., Scuotto, V., & Orlando, B.	*Technological Forecasting and Social Change*	ARTICLE	Innovation, Technological, Entrepreneurial, KMS	Quantitative Study
	Del Giudice, M., Scuotto, V., Garcia-Perez, A., & Petruzzelli, A. M.	*Technological Forecasting and Social Change*	ARTICLE	Spillover, Innovation, Knowledge	Qualitative Study
	El-Kassar, A. N., & Singh, S. K.	*Technological Forecasting and Social Change*	ARTICLE	Innovation, Stakeholder, Sustainability, Performance	Qualitative Study
	Gupta, G., & Bose, I.	*Technological Forecasting and Social Change*	ARTICLE	Digital, Business Model, Innovation	Quantitative Study
	Huesig, S., & Endres, H.	*European Journal of Innovation Management*	ARTICLE	Digital, Business Model, Innovation	Quantitative Study
	Kamble, S. S., Gunasekaran, A., & Gawankar, S. A.	*International Journal of Production Economics*	ARTICLE	Innovation, Sustainability, Business Model, Big Data	Qualitative Study
	Raut, R. D., Mangla, S. K., Narwane, V. S., Gardas, B. B., Priyadarshinee, P., & Narkhede, B. E.	*Journal of Cleaner Production*	ARTICLE	Innovation, Sustainability, Business Model, Big Data	Qualitative Study
	Santoro, G., Ferraris, A., & Bresciani, S.		ARTICLE		Qualitative Study

(*continued on next page*)

Table 1 (*continued*)

Year	References	Journal	Article Type	Subtopic	Methodology
		Sinergie Italian Journal of Management		Open Innovation, Business Model, KM	
	Savastano, M., Amendola, C., Bellini, F., & D'Ascenzo, F.	*Sustainability*	ARTICLE	Innovation, Digital Transformation, Business Model	Qualitative Study
	Scuotto, V., Arrigo, E., Candelo, E., & Nicotra, M.	*Business Process Management Journal*	ARTICLE	Ambidexterity, Digital Transformation, Business Model	Quantitative Study
	Scuotto, V., Del Giudice, M., Tarba, S., Petruzzelli, A., & Chang, V.	*Journal of World Business*	ARTICLE	Innovation, Business model, Develop	Quantitative Study
	Singh, S. K., & El-Kassar, A. N.	*Journal of Cleaner Production*	ARTICLE	Sustainability, Big Data	Qualitative Study
	Warner, K. S., & Wäger, M.	*Long Range Planning*	ARTICLE	Innovation, Business Mode, Performance	Qualitative Study
2020	Gil-Gomez, H., Guerola-Navarro, V., Oltra-Badenes, R., & Lozano-Quilis, J. A.	*Economic Research*	ARTICLE	Innovation, Business Model, Digital transformation	Qualitative Study
	Ghezzi, A., & Cavallo, A.	*Journal of Business Research*	ARTICLE	Entrepreneurship, Business Model, Big Data	Qualitative Study

He, 2017).

Numerous studies confirm the positive effect of the employment of IT or BD on performance, demonstrating that the use of open, innovative systems develops an integrated strategic capability in business sectors, based on sharing and exchanging multidisciplinary knowledge (Huesig & Endres, 2019; Scuotto et al., 2017; Singh & El-Kassar, 2019; Xia et al., 2017).

In this way, our study reveals that the literature on KMS recognizes the impact of digital innovation on business performance, it improves efficiency and the quality of knowledge in organizational and strategic processes, confirming that the combined use of human and technological resources generates a competitive advantage (Ferraris et al., 2017; Lee et al., 2020; Shujahat et al., 2019). Above all, this systematic literature review demonstrates that, in the current globalized market, IoT strategies, combined with KMS, constitute an engine for the development of new BMs (Kiel, Arnold, & Voigt, 2017) driven by innovative practices, towards sustainable economic development, which increases the degree of social responsibility and enhances the company's reputation (Carayannis et al., 2017; Nagy et al., 2018; Raut et al., 2019). The open innovation paradigm suggests that a holistic, cognitive approach to corporate governance, based on a regime of cooperation between internal and external resources for the creation of value, opens the possibility of redefining business models in which knowledge develops horizontally (Furukawa, 2015). This is achieved through the involvement of all the actors involved in the corporate ecosystem to achieve a long-term, sustainable competitive advantage.

6. Conclusion, limitations and future perspective of the research

This study analyzed the existing literature on KMS, with the aim of investigating the role of KMS in the era of digital transformation, especially in terms of corporate governance. The results revealed that tools such as IoT and BD enables the current world economy significantly by increasing the competitiveness of companies, guaranteeing access to large flows of data and information, processed through powerful software, capable of highlighting the degree of correlation between useful knowledge in different company departments (Ghezzi & Cavallo, 2020; Gupta & Bose, 2019; Huesig & Endres, 2019; Nagy et al., 2018; Pappas et al., 2018; Raut et al., 2019; Tian, 2017). Furthermore, knowledge expresses its maximum potential when it is adequately exploited by the company (Usai, Scuotto, Murray, Fiano, & Dezi, 2018), through internal and external sharing processes, which enrich the company's know-how (Bogers et al., 2018; Huesig & Endres, 2019; Pappas et al., 2018; Raut et al., 2019; Seele, 2017; Xia et al., 2017).

However, there is still plenty of room for debate on the role of KMS in the framework of corporate governance and business models towards digital innovation, which remains limited. Our findings also highlight that BD has become a "need for management" because it allows the analysis of user preferences and cost trends, as well as forecasting the behavior of markets (Franklin, Serra.Diaz, Syphard, & Regan, 2017). More specifically, digital transformation and its tools provide an integrated strategic solution that operationally guides business governance.

In this scenario, KMS has a crucial role in ensuring the optimization of technologies and resources, developing knowledge-sharing strategies available to all company operators, and supporting managers in their making-decision processes. At the same time, the innovation tools adopted in KMS allow the processes to be optimized, directing the company towards innovative and sustainable business models to achieve improved performance. These business models are characterized by "open" platforms, oriented towards the free exchange of news and allocation of knowledge, through the exploitation of company potential. By adopting innovative strategies, companies can also support more sustainable behaviors, which increase CSR and improve the company's image with stakeholders. Stakeholders are increasingly sensitive to the need to reconcile economic profit and social well-being, using innovative tools capable of measuring the environmental impact of company activities, promoting the creation of long-term value. Therefore, companies' development of an open culture of innovation could enhance the use of KMS to support governance strategies oriented towards new forms of sustainable business over time. If innovation does not lead to the construction of lasting business models, capable of adapting to the changing conditions of the market and the needs of the stakeholders, it becomes an end in itself. Indeed, this access to advanced digital innovation systems requires significant investment by companies, which expose themselves to high costs and enormous risks associated with the non-recovery of the capital used. Therefore, it would be desirable to implement incentives and support measures, aimed at companies and the world of production, to support the development and sharing of new knowledge initiatives for new services or for perfecting existing ones, with the goal of an inclusive and sustainable economy.

This study presents the limitations of a theoretical analysis: the analysis should also be extended to empirical tests on corporate behavior, to understand the potential impact of KMS through digital innovation, to achieve a sustainability-oriented business model and sustainable competitive advantage.

Acknowledgements

The authors would like to thank the editors and anonymous referees for providing helpful comments and suggestions which led to an improvement of the article.

Funding

This research has been funded by University of Naples "Parthenope" - number 002158 - (Italy).

Appendix A. Additional data

Table 1 below gives the additional data related to this article.

References

Abubakar, A. M., Elrehail, H., Alatailat, M. A., & Elçi, A. (2019). Knowledge management, decision-making style and organizational performance. *Journal of Innovation & Knowledge, 4*(2), 104–114. https://doi.org/10.1016/j.jik.2017.07.003

Adams, G. L., & Lamont, B. T. (2003). Knowledge management systems and developing sustainable competitive advantage. *Journal of Knowledge Management, 7*(2), 142–154. https://doi.org/10.1108/13673270310477342

Alexy, O., Bascavusoglu-Moreau, E., & Salter, A. J. (2016). Toward an aspiration-level theory of open innovation. *Industrial and Corporate Change, 25*(2), 289–306. https://doi.org/10.1093/icc/dtw003

Ammirato, S., Sofo, F., Felicetti, A. M., & Raso, C. (2019). A methodology to support the adoption of IoT innovation and its application to the Italian bank branch security context. *European Journal of Innovation Management*. https://doi.org/10.1108/EJIM-03-2018-0058

Arfi, W. B., & Hikkerova, L. (2019). Corporate entrepreneurship, product innovation, and knowledge conversion: The role of digital platforms. *Small Business Economics, 1–14*. https://doi.org/10.1007/s11187-019-00262-6

Aria, M., & Cuccurullo, C. (2017). Bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics, 11*(4), 959–975. https://doi.org/10.1016/j.joi.2017.08.007

Bagherzadeh, M., Markovic, S., Cheng, J., & Vanhaverbeke, W. (2019). How does outside-in open innovation influence innovation performance? Analyzing the mediating roles of knowledge sharing and innovation strategy. *IEEE Transactions on Engineering Management*. https://doi.org/10.1109/TEM.2018.2889538

Bärenfänger, R., & Otto, B. (2015). Proposing a capability perspective on digital business models. In *2015 IEEE 17th Conference on Business Informatics* (vol. 1, pp. 17–25). IEEE. https://doi.org/10.1109/CBI.2015.18.

Bogers, M., Chesbrough, H., & Moedas, C. (2018). Open innovation: Research, practices, and policies. *California Management Review, 60*(2), 5–16. https://doi.org/10.1177/0008125617745086

Brenner, B. (2018). Transformative sustainable business models in the light of the digital imperative. A global business economics perspective. *Sustainability, 10*(12), 4428. https://doi.org/10.3390/su10124428

Bresciani, S. (2010). Innovation within firms: A survey in the Piedmont area. *International Journal of Quality and Innovation, 1*(2), 138–152. https://doi.org/10.1504/IJQI.2010.034644

Bresciani, S., Ferraris, A., & Del Giudice, M. (2018). The management of organizational ambidexterity through alliances in a new context of analysis: Internet of Things (IoT) smart city projects. *Technological Forecasting and Social Change, 136*, 331–338. https://doi.org/10.1016/j.techfore.2017.03.002

Candela, L., Castelli, D., Ferro, N., Ioannidis, Y., Koutrika, G., Meghini, C., & Schuldt, H. (2007). *The DELOS digital library reference model*. Foundations for Digital Libraries.

Carayannis, E. G., Grigoroudis, E., Del Giudice, M., Della Peruta, M. R., & Sindakis, S. (2017). An exploration of contemporary organizational artifacts and routines in a sustainable excellence context. *Journal of Knowledge Management, 21*(1), 35–56. https://doi.org/10.1108/JKM-10-2015-0366

Cardinal, L. B., Allessandri, T. M., & Turner, S. F. (2001). Knowledge codifiability, resources, and science based innovation. *Journal of Knowledge Management, 5*(2), 195–204. https://doi.org/10.1108/13673270110393266

Cavusgil, S. T., Calantone, R. J., & Zhao, Y. (2003). Tacit knowledge transfer and firm innovation capability. *Journal of Business & Industrial Marketing, 18*(1), 6–21. https://doi.org/10.1108/08858620310458615

Costa, V., & Monteiro, S. (2016). Key knowledge management processes for innovation: A systematic literature review. *VINE Journal of Information and Knowledge Management Systems, 46*(3), 386–410. https://doi.org/10.1108/VJIKMS-02-2015-0017

Dai, H. N., Wang, H., Xu, G., Wan, J., & Imran, M. (2019). Big data analytics for manufacturing internet of things: Opportunities, challenges and enabling technologies. *Enterprise Information Systems, 1–25*. https://doi.org/10.1080/17517575.2019.1633689

Darroch, J., & McNaughton, R. (2002). Examining the link between knowledge management practices and types of innovation. *Journal of Intellectual Capital, 3*(3), 210–222. https://doi.org/10.1108/14691930210435570

Del Giudice, M., & Della Peruta, M. R. (2016). The impact of IT-based knowledge management systems on internal venturing and innovation: A structural equation modeling approach to corporate performance. *Journal of Knowledge Management, 20*(3), 484–498. https://doi.org/10.1108/JKM-07-2015-0257

Del Giudice, M., & Maggioni, V. (2014). Managerial practices and operative directions of knowledge management within inter-firm networks: A global view. *Journal of Knowledge Management, 18*(5), 841–846. https://doi.org/10.1108/JKM-06-2014-0264

Del Giudice, M., Garcia-Perez, A., Scuotto, V., & Orlando, B. (2019a). Are social enterprises technological innovative? A quantitative analysis on social entrepreneurs in emerging countries. *Technological Forecasting and Social Change, 148*, 119704. https://doi.org/10.1016/j.techfore.2019.07.010

Del Giudice, M., Maggioni, V., Jiménez-Jiménez, D., Martínez-Costa, M., & Sanz-Valle, R. (2014). Knowledge management practices for innovation: A multinational corporation's perspective. *Journal of Knowledge Management, 20*(2), 215–229. https://doi.org/10.1108/JKM-06-2014-0242

Del Giudice, M., Scuotto, V., Garcia-Perez, A., & Petruzzelli, A. M. (2019b). Shifting Wealth II in Chinese economy. The effect of the horizontal technology spillover for SMEs for international growth. *Technological Forecasting and Social Change, 145*, 307–316. https://doi.org/10.1016/j.techfore.2018.03.013

Dias, R. T., & Bresciani, S. (2006). R&D and knowledge: A theoretical assessment of the internationalisation strategies. *International Journal of Technology, Policy and Management, 6*(1), 1–32. https://doi.org/10.1504/IJTPM.2006.010070

Du Plessis, M. (2007). The role of knowledge management in innovation. *Journal of Knowledge Management, 11*(4), 20–29. https://doi.org/10.1108/13673270710762684

El-Kassar, A. N., & Singh, S. K. (2019). Green innovation and organizational performance: The influence of big data and the moderating role of management commitment and HR practices. *Technological Forecasting and Social Change, 144*, 483–498. https://doi.org/10.1016/j.techfore.2017.12.016

Ellegaard, O., & Wallin, J. A. (2015). The bibliometric analysis of scholarly production: How great is the impact? *Scientometrics, 105*(3), 1809–1831. https://doi.org/10.1007/s11192-015-1645-z

Ferraris, A., Mazzoleni, A., Devalle, A., & Couturier, J. (2019). Big data analytics capabilities and knowledge management: Impact on firm performance. *Management Decision, 57*(8), 1923–1936. https://doi.org/10.1108/MD-07-2018-0825

Ferraris, A., Santoro, G., & Dezi, L. (2017). How MNC's subsidiaries may improve their innovative performance? The role of external sources and knowledge management capabilities. *Journal of Knowledge Management, 21*(3), 540–552. https://doi.org/10.1108/JKM-09-2016-0411

Furukawa, Y. (2015). Leapfrogging cycles in international competition. *Economic Theory, 59*(2), 401–433. https://doi.org/10.1007/s00199-014-0850-y

Fink, A. (2010). *Conducting research literature reviews*. Los Angeles: Sage.

Franklin, J., Serra.Diaz, J. M., Syphard, A. D., & Regan, H. M. (2017). Big data for forecasting the impacts of global change on plant communities. *Global Ecology and Biogeography, 26*(1), 6–17. https://doi.org/10.1111/geb.1250

Friedrich, J., Becker, M., Kramer, F., Wirth, M., & Schneider, M. (2020). Incentive design and gamification for knowledge management. *Journal of Business Research, 106*, 341–352. https://doi.org/10.1016/j.jbusres.2019.02.009

Ghezzi, A., & Cavallo, A. (2020). Agile business model innovation in digital entrepreneurship: Lean startup approaches. *Journal of Business Research*, 519–537. https://doi.org/10.1016/j.jbusres.2018.06.013

Gil-Gomez, H., Guerola-Navarro, V., Oltra-Badenes, R., & Lozano-Quilis, J. A. (2020). Customer relationship management: Digital transformation and sustainable business model innovation. *Economic Research-Ekonomska Istraživanja, 1–18*. https://doi.org/10.1080/1331677X.2019.1676283

Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal, 17*(S2), 109–122. https://doi.org/10.1002/smj.4250171110

Gunjal, B. (2019). Knowledge management: why do we need it for corporates. *Malaysian Journal of Library & Information Science*. https://doi.org/10.2139/ssrn.3375572

Gupta, G., & Bose, I. (2019). Strategic learning for digital market pioneering: Examining the transformation of Wishberry's crowdfunding model. *Technological Forecasting and Social Change, 146*, 865–876. https://doi.org/10.1016/j.techfore.2018.06.020

Harryson, S. J. (2008). Entrepreneurship through relationships–navigating from creativity to commercialisation. *R&d Management, 38*(3), 290–310. https://doi.org/10.1111/j.1467-9310.2008.00516.x

Hock-Doepgen, M., Clauss, T., Kraus, S., & Cheng, C. F. (2020). Knowledge management capabilities and organizational risk-taking for business model innovation in SMEs. *Journal of Business Research*. https://doi.org/10.1016/j.jbusres.2019.12.001

Huesig, S., & Endres, H. (2019). Exploring the digital innovation process. *European Journal of Innovation Management, 22*(2), 302–314. https://doi.org/10.1108/EJIM-02-2018-0051

Ilvonen, I., Thalmann, S., Manhart, M., & Sillaber, C. (2018). Reconciling digital transformation and knowledge protection: A research agenda. *Knowledge Management Research & Practice, 16*(2), 235–244. https://doi.org/10.1080/14778238.2018.1445427

Intezari, A., & Gressel, S. (2017). Information and reformation in KM systems: Big data and strategic decision-making. *Journal of Knowledge Management, 21*(1), 71–91. https://doi.org/10.1108/JKM-07-2015-0293

Kamble, S. S., Gunasekaran, A., & Gawankar, S. A. (2020). Achieving sustainable performance in a data-driven agriculture supply chain: A review for research and applications. *International Journal of Production Economics, 219*, 179–194. https://doi.org/10.1016/j.ijpe.2019.05.022

Kiel, D., Arnold, C., & Voigt, K. I. (2017). The influence of the Industrial Internet of Things on business models of established manufacturing companies–A business level perspective, Technovation, 68, 4–19, International Association for Management of Technology IAMOT 2016 Conference Proceedings, https://doi.org/10.1016/j.technovation.2017.09.003.

Kitsios, F., & Kamariotou, M. (2017). Decision support systems and strategic information systems planning for strategy implementation. In *Strategic Innovative Marketing* (pp. 327–332). Cham: Springer. https://doi.org/10.1007/978-3-319-56288-9_43.

Konlechner, S., Müller, B., & Güttel, W. H. (2018). A dynamic capabilities perspective on managing technological change: A review, framework and research agenda. *International Journal of Technology Management, 76*(3–4), 188–213. https://doi.org/10.1504/IJTM.2018.091285

Krippendorff, K. (1980). Validity in content analysis. In E. Mochmann (Ed.), *Computerstrategien fÃ¼r die kommunikationsanalyse* (pp. 69–112). Frankfurt, Germany: Campus.

Lee, O. K. D., Choi, B., & Lee, H. (2020). How do knowledge management resources and capabilities pay off in short term and long term? *Information & Management, 57*(2), 103166. https://doi.org/10.1016/j.im.2019.05.001

Lin, F., Lin, S. W., & Lu, W. M. (2018). Sustainability assessment of Taiwan's semiconductor industry: A new hybrid model using combined analytic hierarchy process and two-stage additive network data envelopment analysis. *Sustainability, 10*(11), 4070. https://doi.org/10.3390/su10114070

Liu, X. (2004). Using concept mapping for assessing and promoting relational conceptual change in science. *Science Education, 88*(3), 373–396. https://doi.org/10.1002/sce.10127

Lokshina, I., & Lanting, C. (2019). A qualitative evaluation of IoT-driven eHealth: Knowledge management, business models and opportunities, deployment and evolution. In *Data-Centric Business and Applications* (pp. 23–52). Cham: Springer. https://doi.org/10.1007/978-3-319-94117-2_2.

Luppicini, R. (2020). Digital transformation and innovation explained: A scoping review of an evolving interdisciplinary field. In *Interdisciplinary Approaches to Digital Transformation and Innovation* (pp. 1–21). IGI Global. https://doi.org/10.4018/978-1-7998-1879-3.ch001.

Mao, H., Liu, S., Zhang, J., & Deng, Z. (2016). Information technology resource, knowledge management capability, and competitive advantage: The moderating role of resource commitment. *International Journal of Information Management, 36*(6), 1062–1074. https://doi.org/10.1016/j.ijinfomgt.2016.07.001

Maroli, L. (2019). Role of knowledge management in strengthening corporate governance in the organisation. *Information and Knowledge Management, 9*(11). https://doi.org/10.7176/IKM/9-11-01

Martín-de Castro, G., López-Sáez, P., Delgado-Verde, M., Andreeva, T., & Kianto, A. (2011). Knowledge processes, knowledge-intensity and innovation: A moderated mediation analysis. *Journal of Knowledge Management, 15*(6), 1016–1034. https://doi.org/10.1108/13673271111179343

Massaro, M., Dumay, J., & Guthrie, J. (2016). On the shoulders of giants: Undertaking a structured literature review in accounting. *Accounting, Auditing & Accountability Journal, 29*(5), 767–801. https://doi.org/10.1108/AAAJ-01-2015-1939

Nagy, J., Oláh, J., Erdei, E., Máté, D., & Popp, J. (2018). The role and impact of industry 4.0 and the internet of things on the business strategy of the value chain—The case of Hungary. *Sustainability, 10*(10), 3491. https://doi.org/10.3390/su10103491

Najafi-Tavani, S., Najafi-Tavani, Z., Naudé, P., Oghazi, P., & Zeynaloo, E. (2018). How collaborative innovation networks affect new product performance: Product innovation capability, process innovation capability, and absorptive capacity. *Industrial Marketing Management, 73*, 193–205. https://doi.org/10.1016/j.indmarman.2018.02.009

Nielsen, C. (2018). Relating successful business models to intellectual capital and knowledge management practices. *Electronic Journal of Knowledge Management, 16*(1), 48–55.

Okoli, C., & Schabram, K., 2010. A guide to conducting a systematic literature review of information systems research, http://sprouts.aisnet.org/10-26.

Olivo, J. F. L., Guzmán, J. G., Colomo-Palacios, R., & Stantchev, V. (2016). IT innovation strategy: Managing the implementation communication and its generated knowledge through the use of an ICT tool. *Journal of Knowledge Management, 20*(3), 512–533. https://doi.org/10.1108/JKM-06-2015-0217

Pappas, I. O., Mikalef, P., Giannakos, Krogstie, J., & Lekakos, G. (2018). Big data and business analytics ecosystems: paving the way towards digital transformation and sustainable societies. *Information Systems and e-Business Management, 16*, 479–491. https://doi.org/10.1007/s10257-018-0377-z

Parmentier, G., & Mangematin, V. (2014). Orchestrating innovation with user communities in the creative industries. *Technological Forecasting and Social Change, 83*, 40–53. https://doi.org/10.1016/j.techfore.2013.03.007

Pauleen, D. J., & Wang, W. Y. (2017). Does big data mean big knowledge? KM perspectives on big data and analytics. *Journal of Knowledge Management, 21*(1), 1–6. https://doi.org/10.1108/JKM-08-2016-0339

Pyka, A. (2002). Innovation networks in economics: From the incentive-based to the knowledge based approaches. *European Journal of Innovation Management, 5*(3), 152–163. https://doi.org/10.1108/14601060210436727

Randhawa, K., Josserand, E., Schweitzer, J., & Logue, D. (2017). Knowledge collaboration between organizations and online communities: The role of open innovation intermediaries. *Journal of Knowledge Management, 21*(6), 1293–1318. https://doi.org/10.1108/JKM-09-2016-0423

Rashman, L., Withers, E., & Hartley, J. (2009). Organizational learning and knowledge in public service organizations: A systematic review. *International Journal of Management Reviews, 11*(4), 463–494. https://doi.org/10.1111/j.1468-2370.2009.00257.x

Raut, R. D., Mangla, S. K., Narwane, V. S., Gardas, B. B., Priyadarshinee, P., & Narkhede, B. E. (2019). Linking big data analytics and operational sustainability practices for sustainable business management. *Journal of Cleaner Production, 224*, 10–24. https://doi.org/10.1016/j.jclepro.2019.03.181

Rialti, R., Marzi, G., Ciappei, C., & Busso, D. (2019a). Big data and dynamic capabilities: A bibliometric analysis and systematic literature review. *Management Decision*. https://doi.org/10.1108/MD-07-2018-0821

Rialti, R., Zollo, L., Ferraris, A., & Alon, I. (2019b). Big data analytics capabilities and performance: Evidence from a moderated multi-mediation model. *Technological Forecasting and Social Change, 149*, 119781. https://doi.org/10.1016/j.techfore.2019.119781

Rodríguez-Rodríguez, I., Rodríguez, J. V., Elizondo-Moreno, A., Heras-González, P., & Gentili, M. (2020). Towards a holistic ICT platform for protecting intimate partner violence survivors based on the IoT paradigm. *Symmetry, 12*(1), 37. https://doi.org/10.3390/sym12010037

Rothberg, H. N., & Erickson, G. S. (2017). Big data systems: Knowledge transfer or intelligence insights? *Journal of Knowledge Management, 21*(1), 92–112. https://doi.org/10.1108/JKM-07-2015-0300

Santoro, G., Ferraris, A., & Bresciani, S. (2019). Assessing the breadth of open innovation practices: The impact on innovation performance. *Sinergie, Italian Journal of Management, 37*(1), 63–84. Avaiable to https://ojs.sijm.it/index.php/sinergie/article/view/725/235.

Santoro, G., Vrontis, D., Thrassou, A., & Dezi, L. (2018). The Internet of Things: Building a knowledge management system for open innovation and knowledge management capacity. *Technological Forecasting and Social Change, 136*, 347–354. https://doi.org/10.1016/j.techfore.2017.02.034

Savastano, M., Amendola, C., Bellini, F., & D'Ascenzo, F. (2019). Contextual impacts on industrial processes brought by the digital transformation of manufacturing: A systematic review. *Sustainability, 11*(3), 891. https://doi.org/10.3390/su11030891

Schumpeter, J. A. (2000). Entrepreneurship as innovation. *Entrepreneurship: The Social Science View*, 51–75.

Schwertner, K. (2017). Digital transformation of business. *Trakia Journal of Sciences, 15*(1), 388–393. https://doi.org/10.15547/tjs.2017.s.01.065

Scuotto, V., Orlando, B., Cillo, V., Nicotra, M., Di Gioia, L., & Briamonte, M. F. (2020). Uncovering the micro-foundations of knowledge sharing in open innovation partnerships: An intention-based perspective of technology transfer. *Technological Forecasting and Social Change, 152*, 119906. https://doi.org/10.1016/j.techfore.2019.119906

Scuotto, V., Arrigo, E., Candelo, E., & Nicotra, M. (2019b). Ambidextrous innovation orientation effected by the digital transformation. *Business Process Management Journal*. https://doi.org/10.1108/BPMJ-03-2019-0135

Scuotto, V., Del Giudice, M., Tarba, S., Petruzzelli, A., & Chang, V. (2019a). International social SMEs in emerging countries: Do governments support their international growth? *Journal of World Business*. https://doi.org/10.1016/j.jwb.2019.05.002

Scuotto, V., Santoro, G., Bresciani, S., & Del Giudice, M. (2017). Shifting intra-and inter-organizational innovation processes towards digital business: An empirical analysis of SMEs. *Creativity and Innovation Management, 26*(3), 247–255. https://doi.org/10.1111/caim.12221

Seele, P. (2017). Predictive Sustainability Control: A review assessing the potential to transfer big data driven 'predictive policing'to corporate sustainability management. *Journal of Cleaner Production, 153*, 673–686. https://doi.org/10.1016/j.jclepro.2016.10.175

Shujahat, M., Sousa, M. J., Hussain, S., Nawaz, F., Wang, M., & Umer, M. (2019). Translating the impact of knowledge management processes into knowledge-based innovation: The neglected and mediating role of knowledge-worker productivity. *Journal of Business Research, 94*, 442–450. https://doi.org/10.1016/j.jbusres.2017.11.001

Singh, S. K., & El-Kassar, A. N. (2019). Role of big data analytics in developing sustainable capabilities. *Journal of Cleaner Production, 213*, 1264–1273. https://doi.org/10.1016/j.jclepro.2018.12.199

Soto-Acosta, P., Del Giudice, M., & Scuotto, V. (2018). Emerging issues on business innovation ecosystems: The role of information and communication technologies (ICTs) for knowledge management (KM) and innovation within and among enterprises. *Baltic Journal of Management, 13*(3), 298–302. https://doi.org/10.1108/BJM-07-2018-398

Thomas, A., & Chopra, M. (2020). On how big data revolutionizes knowledge management. In *Digital Transformation in Business and Society* (pp. 39–60). Cham: Palgrave Macmillan. https://doi.org/10.1007/978-3-030-08277-2_3.

Tian, X. (2017). Big data and knowledge management: A case of déjà vu or back to the future? *Journal of Knowledge Management, 21*(1), 113–131. https://doi.org/10.1108/JKM-07-2015-0277

Trantopoulos, K., von Krogh, G., Wallin, M. W., & Woerter, M. (2017). External knowledge and information technology: Implications for process innovation performance. *MIS Quarterly, 41*(1), 287–300. https://doi.org/10.25300/MISQ/2017/41.1.15

Uden, L., & He, W. (2017). How the Internet of Things can help knowledge management: A case study from the automotive domain. *Journal of Knowledge Management, 21*(1), 57–70. https://doi.org/10.1108/JKM-07-2015-0291

Usai, A., Scuotto, V., Murray, A., Fiano, F., & Dezi, L. (2018). Do entrepreneurial knowledge and innovative attitude overcome "imperfections" in the innovation process? Insights from SMEs in the UK and Italy. *Journal of Knowledge Management, 22*(8), 1637–1654. https://doi.org/10.1108/JKM-01-2018-0035

Warner, K. S., & Wäger, M. (2019). Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. *Long Range Planning, 52*(3), 326–349. https://doi.org/10.1016/j.lrp.2018.12.001

Xia, D., Yu, Q., Gao, Q., & Cheng, G. (2017). Sustainable technology selection decision-making model for enterprise in supply chain: Based on a modified strategic balanced scorecard. *Journal of Cleaner Production, 141*, 1337–1348. https://doi.org/10.1016/j.jclepro.2016.09.083

Yin, M., & Sheng, L. (2019). Corporate governance, innovation input and corporate performance. *Nankai Business Review International*. https://doi.org/10.1108/NBRI-10-2018-0057

Zack, M., McKeen, J., & Singh, S. (2009). Knowledge management and organizational performance: An exploratory analysis. *Journal of knowledge management, 13*(6), 392–409. https://doi.org/10.1108/13673270910997088

Assunta Di Vaio*, is an Associate Professor of Business Administration at University of Naples Parthenope, Italy. She is qualified as Full Professor in the same scientific field. She teaches Business Administration; Sustainable Disclosure and Reporting; Corporate Governance of Maritime companies; Governance of Port Systems. Her research fields include managerial accounting and management information for the decision-making processes in the public and private sector; performance measurement; sustainable accounting; non-financial disclosure; human resources disclosure; intellectual capital and sustainable business models; sustainable development and UN 2030 Agenda; digital

transformation, Artificial Intelligence and Blockchain technology. Her research has been published in various prestigious journals (e.g., Journal of Cleaner Production, Journal of Intellectual Capital, Journal of Business Research, International Journal of Information Management, Energy Policy, Utility Policy, Maritime Policy & Management, and so forth). She is editorial board member of international Journals. She is a peer reviewer for international Journals edited by Elsevier, Emerald, Taylor & Francis, MDPI, Springer. She regularly participates as speaker at many International Conferences on port and maritime issues. She is member of the International Steering Committee of these Conferences. She has been an associate member of UCL Quantitative and Applied Spatial Economic Research Laboratory (QASER) at University College London (UK). Currently, she is Deputy-Director of the Department of Law at University of Naples "Parthenope".

Rosa Palladino, is PhD Student in Law and economic-social institutions: regulatory, organizational and historical-evolutionary profiles at the University of Naples "Parthenope" (Italy). Her research fields include non-financial disclosure; human resources disclosure; intellectual capital and sustainable business models; sustainable development and UN 2030 Agenda; digital transformation, Artificial Intelligence and Blockchain technology. She is has high knowledge about SLR. She is a reviewer for international Journals edited by Emerald and Springer. She regularly attends seminars and conferences on these issues. Her research has been published in international books and journals (e.g., Journal of Intellectual Capital, Journal of Cleaner Production, Meditari Accountancy Research, Journal of Business Research, Sustainability).

Alberto Pezzi, Ph.D., is an Associate Professor of Management at University of Roma TRE, Italy. He teaches strategy; business planning; management. He was a visiting professor at important Universities. His research fields include Cross-border Mergers and Acquisitions, digital convergence, digitalisation performance, e-business, strategies and governance models, performance and internationalization strategies, technology and knowledge management. He is editorial board member of international Journals. His research has been published in various significant outlets.

David E. Kalisz, Ph.D., is an Associate Professor at Paris School of Business (Paris, France), Head of Management & Strategy Department. Author of numerous publications in the field of new media, digital, competition strategy and value innovation and author of a book "Competitive Strategies". Scientifically he is inspired by the influence of the latest technologies on the functioning of enterprises. He is the creator of the program of the Blue Ocean Strategy and the Blue Ocean Shift. He gives lectures in English, French and Polish. He is also interested in exploring future trends and concepts linked with Strategic Foresight, member of the Center for Futures Studies.