

# Mapping Knowledge Management for Sustainability and Information Technology: Trends and Opportunities

**Jaime J. González-Masip**

 <https://orcid.org/0000-0001-9352-7896>

*Universidad Politécnica de Madrid, Spain*

## EXECUTIVE SUMMARY

*Knowledge management became a relevant topic for academics and practitioners. Information and communication technologies are important tools for supporting knowledge management practices. In this sense, artificial intelligence has recently acquired great prominence. On the other hand, there is great interest in fitting organizational strategies in the so-called sustainability paradigm due to the urgency perceived by the different stakeholders. This chapter presents the results of a mapping bibliometric analysis of the academic literature that jointly addresses these three concepts using SciMAT software. These results include bibliometric performance metrics of publications and graphical representations of the cognitive structures (conceptual themes) hidden in the selected bibliographic sample. The work shows the most and least studied topics in the field. Also, a series of recommendations on possible lines of research work in the field are included.*

## INTRODUCTION

Knowledge economies are advancing and consolidating, making knowledge and its management a key piece in the value creation and productivity of organizations (Sheehan & Houghton, 2000). They can be defined as “production and services based on knowledge-intensive activities that contribute to an accelerated pace of technical and scientific advance, as well as rapid obsolescence” (Powell & Snellman, 2004, p.199). Knowledge management is a set of systematic and disciplined actions that an organization can take to obtain the greatest value from the available knowledge (Marwick, 2001). Well-done knowledge

DOI: 10.4018/978-1-6684-5859-4.ch001

management is based on the adequate use of technologies that allow processing and systematizing information in an optimal way to be used in decision-making (Liao, 2003). Artificial intelligence is one of the technologies at the foundation of knowledge management (Baskerville & Dulipovici, 2006). Artificial intelligence, together with massive data analysis, is gaining relevance due to the technical advances that these technologies are experiencing. Currently, a distinction can be made between human knowledge, processed or shared knowledge, and machine knowledge or artificial intelligence (Russ, 2021).

On the other hand, there is a notable concern and urgency to understanding everything related to the environmental and social impact that the economic activity of organizations is generating (Gond & Crane, 2010). Organizations and regulators must adopt sustainability strategies, that enable them to fit their proposals and activities within the sustainable development framework to positively manage their impact (Curran, 2009). Thus, academics and practitioners already know that, in addition to growth and profitability, organizations must pursue objectives related to sustainable development such as environmental protection, social justice, and equity (Wilson, 2003).

Taking these three aspects into account, this study aims to identify the topics that have been studied most in the academic literature that deals jointly with knowledge management, sustainability, and the use of technologies (which we will call 'KST studies'). This allows us to assess the scientific relevance of some issues in the field and possible research opportunities or knowledge gaps that may represent important contributions. To carry out the study, a science mapping analysis will be made, which helps to identify the most commonly studied topics or themes and their relations (Mura, Longo, Micheli, & Bolzani, 2018), as well as under-explored or emerging conceptual areas of research (Shiffrin & Borner, 2004; Van Raan & Noyons, 2002). Web of Science is used as a data source and the SciMAT software is used as an analytical tool (Cobo, López-Herrera, Herrera-Viedma, & Herrera, 2012).

This work provides two main novelties. First, the results of the mapping analysis show descriptively the state of the art in the field, organized by topics of interest. It is accompanied by data on the bibliometric performance of the publications and the conceptual structures or themes identified in the analysis. Secondly, a series of questions are answered on the presence in the literature of the KST dimensions studied from different perspectives. At the end of these questions, present and future possible lines of research are raised based on the topics found.

The chapter is structured in several parts. First, a brief theoretical analysis is made to justify the convenience of the study. Second, the bibliometric method used is explained step by step. Third, the results of the bibliometric analysis and the science mapping analysis are shown. Next, the results are analyzed by answering a series of questions aimed at identifying the presence of the three KST elements under study. Finally, a series of conclusions are drawn, including recommendations for further research based on this field.

## **BACKGROUND**

This section presents the theoretical foundations underpinning this study, which aims to provide evidence of the existing cognitive structures in the academic literature on knowledge management (KM), sustainability, and the use of technology, all together. The following lines show the conceptual connection between these three topics, which gives meaning to the results of the subsequent bibliometric analysis.

Knowledge management "is the collection, integration, and classification of disordered information, technology, and expertise in an enterprise and provides systematic and organized information for inter-

29 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/mapping-knowledge-management-for-sustainability-and-information-technology/325486](http://www.igi-global.com/chapter/mapping-knowledge-management-for-sustainability-and-information-technology/325486)

## Related Content

---

### Unleashing the Potential of Every Child: The Transformative Role of Artificial Intelligence in Personalized Learning

Natalia Riapina (2024). *Embracing Cutting-Edge Technology in Modern Educational Settings* (pp. 19-47). [www.irma-international.org/chapter/unleashing-the-potential-of-every-child/336189](http://www.irma-international.org/chapter/unleashing-the-potential-of-every-child/336189)

### Bridging Taxonomic Semantics to Accurate Hierarchical Classification

Lei Tang, Huan Liu and Jiangping Zhang (2009). *Encyclopedia of Data Warehousing and Mining, Second Edition* (pp. 178-182). [www.irma-international.org/chapter/bridging-taxonomic-semantics-accurate-hierarchical/10817](http://www.irma-international.org/chapter/bridging-taxonomic-semantics-accurate-hierarchical/10817)

### Synergistic Play Design: An Integrated Framework for Game Element and Mechanic Implementation to Enhance Game-Based Learning Experiences

Pua Shiau Chen (2024). *Embracing Cutting-Edge Technology in Modern Educational Settings* (pp. 119-139). [www.irma-international.org/chapter/synergistic-play-design/336193](http://www.irma-international.org/chapter/synergistic-play-design/336193)

### Quantization of Continuous Data for Pattern Based Rule Extraction

Andrew Hamilton-Wright and Daniel W. Stashuk (2009). *Encyclopedia of Data Warehousing and Mining, Second Edition* (pp. 1646-1652). [www.irma-international.org/chapter/quantization-continuous-data-pattern-based/11039](http://www.irma-international.org/chapter/quantization-continuous-data-pattern-based/11039)

### Reflecting Reporting Problems and Data Warehousing

Juha Kontio (2009). *Encyclopedia of Data Warehousing and Mining, Second Edition* (pp. 1682-1688). [www.irma-international.org/chapter/reflecting-reporting-problems-data-warehousing/11044](http://www.irma-international.org/chapter/reflecting-reporting-problems-data-warehousing/11044)