

MAPPING THE RESEARCH ON AI SUPPORTED DECISION-MAKING: A BIBLIOMETRIC ANALYSIS BY DECISION TYPE

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Abstract

The literature frequently analyses the impact or implications of artificial intelligence on management and implicitly on the decision-making process in organizations. Both the changes generated by this modern technology and the outcomes it produces are frequently discussed, particularly in terms of organizational performance and adaptability. Yet, what remains interesting to analyse is the way in which AI supported decisions are discussed in terms of types of decisions and whether the literature satisfactorily covers this specific field or if it is rather focused only on a certain area. That is why, this paper offers, through bibliometric analysis, a mapping of research focusing on AI supported decision-making by decision type. Through this chosen method, the results could make important contributions to the literature, being relevant for studies that wish to delve deeper into the decision-making process and the implications that intelligent systems hold over it. In this sense, it can be said that the focus of the results leans towards strategic and group decisions. While this may be motivated by the strong impact that digitalization has in changing the decision architecture. Thus, in order to conduct the said analysis, Biblioshiny was employed as a methodological tool, facilitating the generation of both relevant tables and high-impact visual representations through figures.

Keywords: AI, decision-making, decision type, bibliometric analysis

Clasificare JEL: C88, D81, M10, O30, O33.

1. Introduction and context of the study

Managerial decision-making acquires a new dimension in contemporary organizations, due to the fact that the classical managerial paradigm is changing. Decisions, regardless of their type, are taking on a new form, as they are no longer limited to the simple expertise and intuition of managers, but are rather based on the support offered by artificial intelligence. From tactical decisions to individual ones, change is visible not only in terms of how AI supported decisions are accepted by all actors involved, but also in terms of the impact they have on organizational performance. In this sense, when it comes to the specialized literature, one frequently encounters works that analyze the impact of AI on the decision-making process in organizations. This is done either from a general organizational perspective, where even issues such as replacing human decision-makers with artificial ones are discussed (Beirouty, 2019). Or issues related to the impact of intelligent systems on the decision-making process, such as the impact on the development of organizational policies (Rajagopal et al., 2022).

However, in terms of types of decisions, the strategic part is most often debated. This could be motivated by the fact that the use of tools such as AI is no longer an option for organizations, but has become a true link in making the most optimal decisions (Bargavi, 2024). Which places AI-supported management in the area of strategic decisions, as intelligent systems are often perceived as real factors that exert great influence on the speed and accuracy of decisions (Mohammed, Pandey & Sruthi, 2025). Moreover, given the decentralization of decision-making that these modern technologies produce (Hui & Tucker, 2025), one can also discuss a shift in focus towards group decisions rather than individual ones. Given this, it can be assumed that the strategic part will occupy the focus of the bibliometric analysis, while the types of decisions less addressed (for example, tactical or individual ones) may not be noticeable in the data set used for this research.

2. Methodology

Bibliometric analysis was identified as the appropriate study methodology for this work, being in fact one of the most advantageous methods by which the study of literature in a field can be done in a much more refined manner (Passas, 2024). In literature, this approach is considered as being a quantitative method used for analysing bibliographic material (Merigó & Yang, 2017). The actual completion of this study involved following several steps, which is why bibliographic material had to be obtained first. To extract and obtain raw data, the Web of Science platform was targeted, a choice that is quite common in the literature and in other studies of this kind (Ellegaard & Wallin, 2015; Hou et al., 2021). Thus, a series of constructions containing keywords relevant to the chosen research topic were introduced into the platform, starting from those reflecting the decision part and going up to those imposing the targeted decision types. Therefore, the material was determined by the following words and relationships between them: "decision making" OR "decision-making" OR "decision process*" OR "management decision*" OR "organizational decision*" OR "business decision*" AND "artificial intelligence" OR "AI" OR "machine learning" OR "ML" OR "deep learning" OR "DL" OR "intelligent system*" AND "organization" OR "enterprise" OR "business" OR "corporation" OR "firm" OR "company" AND "strategic decision*" OR "tactical decision*" OR "operational decision*" OR "structured decision*" OR "unstructured decision*" OR "semi-structured decision*" OR "programmed decision*" OR "non-programmed decision*" OR "individual decision*" OR "group decision*".

When examining the construction of topics and the relationships between them, three important issues must be considered. First, the symbol * was used, i.e. the so-called wildcard that allows the search to be extended to the plural form of words (Rao, Guo & Tian, 2025). Secondly, for each searched topic the OR operator was used, allowing the identification of multiple works related to the topic of the work. Thirdly, between each set of words the AND linking operator was used, hence allowing the construction of a bibliographic material that reflects the entire context of the targeted study. Moreover, no additional classification was applied to this construction in the platform, which led to the direct generation of 303 works.

The next step involved actually carrying out the analysis by importing data from the Web of Science into the Biblioshiny interface, which belongs to the Bibliometrix R package (Monadi & Lakrarsi, 2026). In this part, 4 issues were determined, specifically: a word cloud, in order to determine the strongest terms of the data set (with only the top 100 keywords of the authors being selected according to their frequency); a ranking of the top 10 strongest keywords; a list of keywords by type of decision and a thematic evolution of all words for the period 1998-2026 (with a cutting point in 2024).

3. Results

The central focus of this paper is given by the duality of the analyzed context, namely that of AI-assisted decisions and the type of decisions. In contrast to these, the results aimed to identify, for a start, the terms that receive the most attention when both contexts are taken into consideration. For this reason, the first analysis that was carried out was that of a word cloud. A scheme intended to present in an interactive manner the main topics of the 303 papers (Figure 1).



Figure 1. Word cloud for the 303 works

Source: Authors work using Biblioshiny

Figure 1 shows the “weight” of artificial intelligence in the literature determined by the dataset extracted from the Web of Science Core Collection. This is a predominant keyword, much stronger than that of decision-making or whichever keyword correlated with any decision type. At the same time, the appearance of machine learning as the second strongest topic in the analysis maps the focus on technology, rather than on the decision-making process. Similarly, in a paper studying the idea of intelligent decision, the bibliometric analysis of keywords also places machine learning in the top 3 of the strongest keywords (Li et al., 2022). To go into more detail and establish the power these words hold, a table of the top 10 most occurred words was created (Table 1).

Table 1. First 10 words by occurrence

<i>Words</i>	<i>Occurrences</i>
<i>artificial intelligence</i>	72
<i>management</i>	44
<i>machine learning</i>	43
<i>model</i>	36
<i>performance</i>	30
<i>artificial-intelligence</i>	29
<i>decision-making</i>	28
<i>framework</i>	21
<i>innovation</i>	21

Source: Authors work using Biblioshiny

Table 1 slightly changes the situation presented in Figure 1 and brings management into the picture as a word with a high frequency among the 303 papers. Management being slightly above machine learning. Which also brings a much higher clarity to the data set, as it places AI and ML in the management scenario. It should also be noted that artificial intelligence appears twice, in two forms, a circumstance that which solidifies its position. In addition, it should be taken into account

that performance is positioned relatively well, even higher than innovation, which may imply that the focus is not on innovating management through these technologies, but on making it more performant. After these two examinations that identified the central points of the research, a table is presented according to the frequency of words related to the types of decisions set in the construction of the data set (Table 2).

Table 2. Words occurrence by decision type

<i>Words</i>	<i>Occurrences</i>
<i>strategic decision-making</i>	18
<i>group decision-making</i>	16
<i>strategic decision making</i>	9
<i>group decision making</i>	5
<i>strategic decision</i>	3
<i>strategic decisions</i>	3
<i>strategic management</i>	3
<i>fuzzy multi-criteria group decision-making</i>	1
<i>group decision-making theory</i>	1
<i>group decision making system</i>	1
<i>group decision support system (gdss)</i>	1
<i>large-scale group decision-making</i>	1
<i>large group consensus</i>	1
<i>operational decision-making</i>	1
<i>operational decisions</i>	1
<i>strategic decision-making framework</i>	1
<i>strategic decision-making with ai</i>	1
<i>strategic decision support</i>	1

Source: Authors work using Biblioshiny

According to Table 2, strategic decisions are one of the most frequently discussed among the 303 papers, as keywords directly and indirectly related to them are found in 8 out of a total of 18 words. Among these are expressions such as strategic decision-making with AI or even strategic decision support, words that are frequently encountered in the literature discussing the use of AI to make strategic decisions. A good example in this sense would be those related to decisions in the marketing area (Stone et al., 2020). The second most frequently approached type of decision is group decisions, also 8 in number, but with a much lower recorded frequency. The third type of decision present is the operational one, unfortunately having a very low frequency, of only 2 words with one occurrence each. In the following stage, the last and most important analysis will be presented, namely the thematic map. An examination intended to highlight the evolution of the central themes of the dataset extracted from the Web of Science platform (Figure 2).

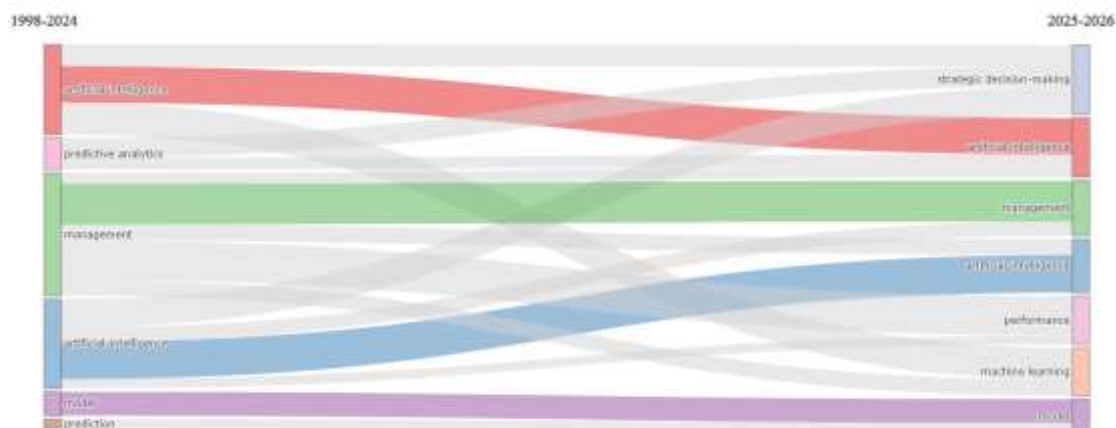


Figure 2. Thematic evolution

Source: Authors work using Biblioshiny

From the analysis of the thematic evolution, a paradigm shift can be observed in the literature. Thus, if during the period 1998-2024, the focus was on AI and predictive analytics, starting with 2025 a convergence towards strategic decision-making can be observed. Additionally, the flow demonstrates that AI has become an integral part at the strategic level of organizations. Moreover, it can be said that it can be perceived as an essential part of modern management, helping to make strategic decisions.

4. Conclusions

According to the bibliometric analysis carried out in this work, it is particularly highlighted that with regard to AI and managerial decisions, the literature discusses it mainly in terms of strategic decisions. Hence, indicating that intelligent systems are perceived rather as fundamental modern pillars for making strategic organizational decisions. At the same time, group decisions can also be identified, which stand out in contemporary organizations through the fact that AI has the ability to decentralize decision-making, which can lead to the growth of more group decisions. Therefore, it can be argued that AI-supported decisions remain a matter situated between emerging technology and organizational adaptability, as not all organizations have access to modern intelligent technologies. Either due to financial constraints or even because of a lack of digital literacy among employees.

It can thus be said that the present work considers a certain situation in the scientific literature, but equally it encounters certain limits imposed by the novelty that intelligent systems still represent for contemporary management.

5. Bibliography

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