



## INTUITION AND DECISION MAKING IN MANAGEMENT: BIBLIOMETRIC REVIEW FROM 2009 TO 2019

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### ABSTRACT

This study aims to contribute to the production of knowledge about the themes of intuition and decision making in the organizational scope. For that, the bibliometric review of scientific production is presented, referring to the central themes established for this study. The nature of publications made between 2009 and 2019 on intuition related to decision-making in the business context was verified, respecting the laws of bibliometrics. In addition, a word cloud was produced, from which the keywords of the selected articles could be analyzed, indicating from these words, what is involved in decision-making based on the intuition of decision makers. The results demonstrate that research on the subject follows a continuous evolution curve in the social sciences area and illustrates the relationship of emotional, ethical, and experience-related factors, as the main interferences in the managers' intuitive decision-making.

**Key words:** Management; Intuition; Decision-making; Ethic; Bibliometric Research.

### 1. INTRODUCTION

Intuition is a thought process that it is closely linked to unconscious intelligence (ISENMAN, 2018). It can be understood as an information processing system that produces fast and holistic thinking, based on complex patterns and conceptual relationships (SALAS et. Al., 2010). In a dynamic environment that requires increasingly quick responses, such as the organizational environment, there is a great difficulty on the part of the current models in contemplating all the elements present in the decision-making processes, leading individuals to resort to sources of a more informal nature, with easier access, among them intuition (ANDRIOTTI, 2012).

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Historically, it is known that the academic interest in decision-making processes is not exclusive to the social sciences area and more specifically to strategic management, there are other areas such as neurosciences and psychology that also study the topic and their findings are complementary (BUCHANAN; O'CONNELL, 2006). In addition to the different points of view related to the areas of knowledge, the decision-making process of executives also needs to be analyzed from other influences, such as globalization, the knowledge obtained through software and Big Data, that is, by the amount of information that arrive at all times and have been taking space in organizations, thus changing the way decisions are made by managers (CASTELLS, 2009; DA LUZ et al., 2018).

As a way of contributing to the construction of knowledge about the interrelationship of these themes and about how scientific studies have presented the role of intuition in the decision-making process, given the large amount of information that companies and managers are submitted to routinely, it is proposed to present this bibliometric review that covers the last 10 years of scientific publications that address this subject.

Therefore, the objective of this research is to analyze through a bibliometric study, publications related to the themes of intuition and decision making in the business context. It also aims to identify the countries, universities and journals with the largest number of publications on the topic, in addition to performing the analysis of the keywords used in the articles.

Before leaving for research, we will do a brief review of the literature on the central concepts of the study. In order to clarify the ideas, the concepts were separated into three distinct topics: in the first moment it will be explained about the concept of intuition, in the second moment we will debate about different styles of decision making, focusing on intuitive decision making and, in the last topic we will join the two previous concepts introducing them in an organizational management perspective. Subsequently, it will be explained more broadly about the method used in the research and the results will be explained in graphics and in a word cloud as a way of making a brief conceptual analysis of the keywords used in the articles that were selected.

## **2 THEORETICAL FRAMEWORK**

The decision-making process is the main activity attributed to managers (MINTZBERG, 1978). According Buchanan and O'Connell (2006), the interest in the way the decision-making process takes place dates back to the middle ages. In the last century, more

specifically in 1947, Herbert Simon, an American economist, whose research brought together several fields such as administration, psychology, philosophy and computer science, proposed that due to the cost of gathering information, executives end up having to make decisions using limited rationality (BALESTRIN, 2002). In this period, with the possibility of simulating human cognition by computational means, the interest in intuition as an important element of decision making begins to gain space (BALESTRIN, 2002; ANDRIOTTI, 2012). In the 1950s, research at the Carnegie Institute of Technology and at MIT led to the emergence of the first computerized decision support tools. Process and quality management tools that favor decision making, also emerged in the 60s, such as the tool known as the SWOT matrix proposed by Edmundo Learned, C. Roland Christensen and Kenneth Andrews. The acronym SWOT stands for Strengths (strengths), Weaknesses (weaknesses), which are related to the internal organizational environment and Opportunities (threats) and Threats (threats) related to the external environment of the organization (ANSOFF; MC'DONNELL, 1984).

The evolution of information technologies results in what we currently know as Big data, allowing unrestricted access to a large amount of information from a multitude of topics (DA LUZ et al. 2018). Questions are then raised about the reasons why people tend to exclude some information that could be important and select what they think is relevant in order to reduce information overload, using shortcuts, called heuristics (SBICCA, 2014).

We realized, therefore, that studies about decision making, its relationship with intuition and the management area were intertwined in the research carried out over the last century to the present day. In the following, each theme is explored separately.

### **2.1 INTUITION**

Intuition as a key factor in decision making is based on a simultaneous interrelation between evidence evidence in the data that the subject finds available in his memory, conclusions from it and internal consistency tests that are condensed into a coherent and integrated understanding of the problem situation. In other words, an unconscious synthesis of contents in which it becomes difficult to understand which path was drawn to the conclusion (BUCHANAN; O'CONNELL,2006). Subjects with better implicit learning skills, that is, internalized learning in addition to conscious perception, have a better sense of intuition (ISENMAN, 2018).

There are authors who consider intuition in two different ways (SALAS et. Al., 2010): (1) experienced intuition, which is based on high levels of skill, experience and knowledge of

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a given subject, who starts from this bias and considered expert, and (2) general intuition, which does not have these requirements. If the subject has extensive experience in a given subject, given his implicit knowledge, he will have better cognitive abilities in that domain and his effectiveness will be greater.

Experts are capable of better intuitions, as their ability to recognize patterns helps them to predict results by comparing quickly with previous experiences they have already experienced, in addition to having more connections between concepts available in their cognition due to the vast knowledge, which leads to the organization of thinking more efficiently (GOBET; SIMON, 1996; FELTOVICH et. al., 1984). According to Salas et. al. (2010), the automaticity of responses is intrinsically linked to the subject's ability in a given situation, because this ability makes the subject solve a problem so automatically that he doesn't even realize how he did it, there is no deliberative awareness in the action, there is intuition.

Prietula and Simon (1989) indicate that becoming an expert on a subject takes an average of 10 years. However, what previously would take a long time of analysis and planning becomes obvious to the subject who is an expert, since he acquires tacit knowledge (POLANYI, 1967). THE intuition is intertwined with the subject's previous experiences, based on the subject's skills, knowledge. Therefore, if the subject who makes the intuitive decision is taken out of his comfort zone, from the context in which he is an expert, it is likely that the intuition's utility will decrease (SALAS et. Al., 2010).

The intuitive activity in the decision-making process was also studied by Sloman (1996) and more recently Dane and Pratt (2007), who analyzed decision-making from two different mental systems, called System 1 and System 2. System 1 is responsible for the usual thoughts and actions, it works automatically. In turn, System 2 is responsible for producing analyzes in a deliberative way, which require more reasoning, however, it tends to be overloaded more easily than System 1. According to Dane and Pratt (2007) the intuitive decision is more effective on judgment-based tasks. Usually when the task is more complex, individuals end up making use of the intuitive decision, since, when overloading, System 2 passes the task back to System 1. Despite being seen as a product of system 1, high-level intuition is related to the opposite of a usual action, it redirects habitual thoughts into important and original thoughts, it is a complex and innovative cognitive capacity (SLOMAN, 1996).

### **2.2 DECISION MAKING**

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Studies on decision-making models are significant for helping problems faced by both people and organizations (KLEIN; CALDERWOOD, 1991). Simon (1990) defines decision making as the act of evaluating and choosing between two or more alternatives. Beach (1993) adds that it is a matter of choosing the best alternative available, however, he makes the reservation that in some cases none of the options may be sufficiently good. The decision-making process can be understood in the literature as the process of evaluating and creating alternatives in order to solve problems (COHEN et al. 1996). Robbins et al. (2010) corroborate this idea by pointing out that decision making is an action aimed at solving a problem, when there is a gap between what you have and what you want.

There are two main decision-making strategies that a manager can adopt (BETSCH, 2008). One is based on the analytical / deliberative style in which there is a logical analysis and conscious effort, the other refers to the intuitive style, in which decisions are made based on unconscious mental processes. Individuals who make decisions analytically are more likely to be rational and less impulsive, in addition to using a lot of their cognition (EVANS, 2008). The second way of making decisions is based on intuition, in which affect has a significant influence (BETSCH, 2008). According to Mintzberg (1978), strategic reasoning requires creativity and synthesis, thus, it combines better with intuition than with the analytical decision style. The pressure of time increases the use and confidence in the intuitive decision, simply because there is not enough time to make a decision from a deliberative analysis (LIPSHITZ et al., 2001).

Individuals have differences in the information processing style, however, in most cases, these two systems interact continuously, but people tend to have more confidence in one than in the other (BETSCH, 2008).

Different theories can be used to study the decision-making process, such as the theory of Heuristics and Biases, proposed by Kahneman and Tversky (1979), in which the authors recognize the habit of using heuristics and state that such a habit can lead to errors, including of experts. Another relevant theory is the Prospect Theory, in which the authors cite the “reflex effect”, this effect, despite seeming to be contradictory, indicates that the greater the risk involving a loss, the greater the chance of the subject taking a risk. This is due to the fact that while the probability of small losses is large, the probability of a large loss is small (SBICCA, 2014).

There are authors who address the ethical dimensions involved in the decision-making process. Ferrel and Gresham (1985) affirm that the subjects adopt different models to make decisions because they have different perceptions about the same situation and that this is due

to the fact that the decision-making process is permeated by ethics. Among the models that address ethical issues in the decision-making process, there is the model proposed by Rest (1986), which indicates four phases through which this process goes through: (1) identifying the ethical issue; (2) making an ethical judgment; (3) having the intention to act ethically; and (4) opt for ethical behavior. Once the perceptions regarding what is ethical or not permeates the subjectivity of the decision maker, in organizations, the ethical guidelines that should guide the decision-making process,

According to Evans (2008) there are several scales that seek to evaluate decision making, however, most of them focus on in very specific aspects, which makes its generalization impossible. Among the measures used, there is the Implicit Association Test, proposed by Greenwald et. al. (1995), in which it is possible to verify unconscious attitudes or beliefs capable of influencing judgment.

### **2.3 INTUITION IN THE DECISION-MAKING PROCESS IN ORGANIZATIONS**

Decision making in the organizational context can be understood as a problem identification and resolution process (Shimizu, 2001). In this process, age (considering the maturity of the decision maker) and experience also influence the decision-making style adopted by the subjects within the management area: older individuals tend to make decisions according to the successes and mistakes of the past, while younger individuals are more daring and innovative in their choices (FIEDLER; GARCIA 1987).

The size of the team can also be a factor that interferes with the manager's decision making. De Sousa and Amaral (2010) realized that the greater the number of employees reporting to a subject, that is, the higher the subject's position on the organization's organizational chart, the more he uses intuition for decision making. The opposite is true for employees who are in the lowest part of the organizational hierarchy, they feel the need to prove their decisions through rationality while the highest-ranking employees have a vote of confidence to use their intuition. In addition, the subject may often find it difficult to admit that he is making his decisions based on an intuition for fear of judgment. (SADLER-SMITH; SHEFY, 2004).

Likewise, managers of micro, small and medium-sized Brazilian companies tend to use the analytical style of decision making and almost never the intuitive, thus differentiating themselves uniquely from other countries such as the United States (FONTES FILHO; NUNES, 2010) . On the other hand, globalization, the demand for agility in decision-making and the large amount of information that managers are exposed to puts pressure on them to

make assertive and quick decisions. That is, intuition has become a key factor to assist managers in this increasingly complex (CASTELLS, 2009).

In the last decade, the advent of Big Data and the evolution of artificial intelligence have become allies in the decision-making process of managers (CASTELLS, 2009; DA LUZ et. Al., 2018). Given this, it is pertinent to look at the evolution of studies that are interested in intuitive decision making, in organizational contexts, in the last decade, justifying the relevance of this bibliometric study as a driver of this process.

### **3 METHODOLOGICAL PROCEDURES**

To proceed with the proposed bibliometric analysis, the documents were searched in the Scopus database. The choice for such a base is justified by being a wide-ranging meta-searcher, including international sources and for having features that support bibliometrics, such as the identification of publications, authors, analysis of citations, geographical data, affiliation to universities and the H index (CAPES, 2015; SCOPUS, 2019).

In the first stage, the combined terms: "intuition" and "decision making" were used, delimiting the articles from 2009 to 2019, which resulted in a total of 1,268 documents. In the second stage, it was filtered by language (Portuguese and English) and also by the areas of knowledge "Business, Management and Accounting" and "Social Sciences", since the objective of this article is linked to the area of management. In addition, the search was restricted to articles only, which resulted in 497 publications that were then submitted to bibliometric analysis.

According to research by Paulista et. The. (2010), the use of bibliometrics consists of a statistical analysis aimed at the quantitative measurement of knowledge production, taking into account a certain period of time, area, type of publication, language and other filters. Guedes and Borschiver (2005) advise that the conduct of bibliometric studies obey three laws: (1) Bradford's Law, which aims to analyze how much each journal produces; (2) Lotka's Law, referring to how much each author produces and (3) Zipf's Law that shows that there is a regularity in the choice of words and that certain words appear more frequently.

The first two Laws can be analyzed from the results offered by the database itself - Scopus. To analyze the frequency of the keywords, respecting the Zipf laws, the VOSviewer software version 1.6.11 was used, where the 1,500 keywords were inserted.

In addition to paying attention to the laws of bibliometrics, a brief contextualization is also made regarding the places and years in which the publications are made and, finally, a

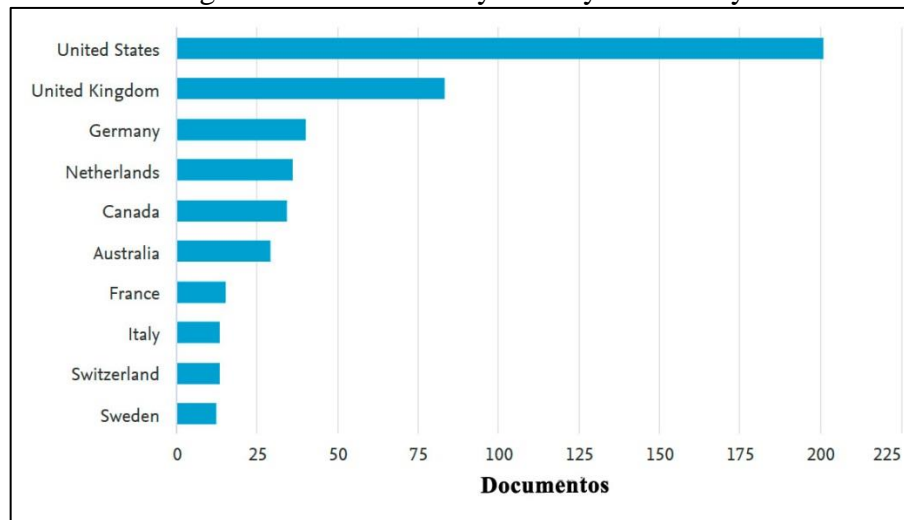
qualitative analysis of the content of the articles in relation to the listed themes is presented, based on the analysis frequency and relationship between keywords.

## 4 PRESENTATION AND DISCUSSION OF RESULTS

The 497 articles obtained as sources for the analysis and the results are presented below. Before the three laws of bibliometrics, the temporal context of the selected articles will be made.

As can be seen in the graph presented in Figure 1, among the main countries that carry out research on these topics, the United States ranks first as the country with the largest number of articles published on the subject, with 200 articles published so far. The United Kingdom is in second place with a considerably smaller number of articles, 83 articles were published. Brazil, in turn, produced only ten articles, ranking 12th.

Figure 1 - Documents by country or territory.



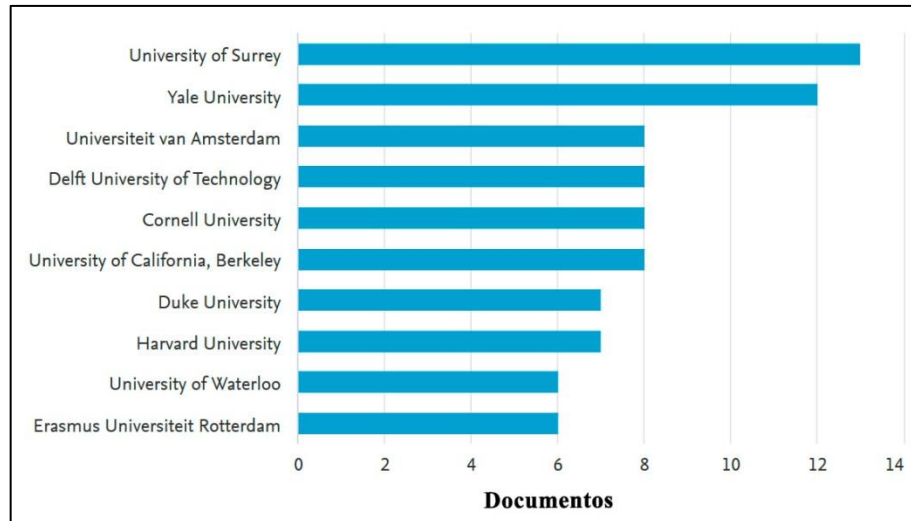
Source: Elaborated by the authors from search results (2020).

Therefore, with regard to the institutions that have developed the most research on the topic in the last 10 years, as can be seen in Figure 2, they were the British University University of Surrey and the American University Yale University, with 13 and 12 articles published, respectively. These data, combined with the data referring to the journals (Figure 5), the countries (Figure 1) and the authors' affiliation (Figure 6) that most publish, make clear the predominance of the United Kingdom and the United States in research related to these subjects.

Figure 2 - Documents by institution.



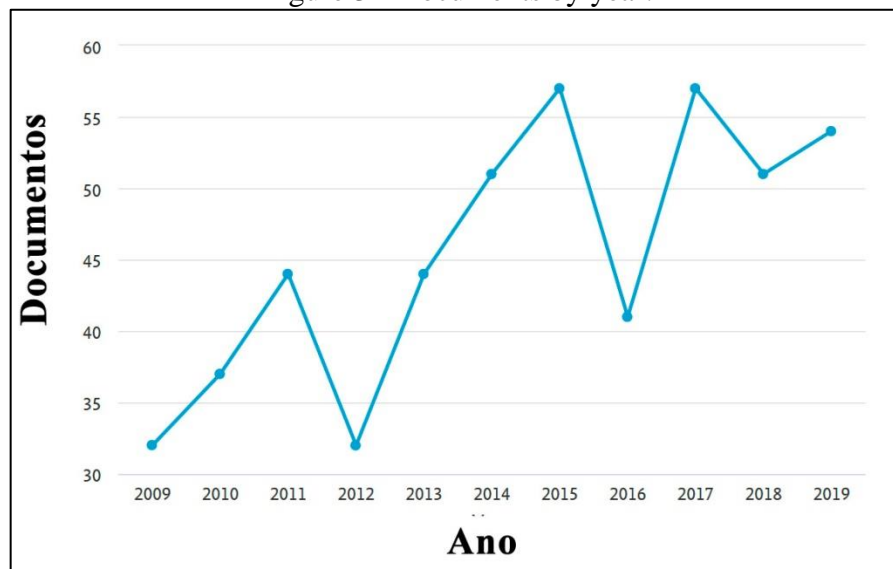
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Source: Elaborated by the authors from search results (2020).

Over the past 10 years, studies relating intuition and decision making continue to interest the scientific community. It is observed that the year with the lowest number of publications (32), was 2012. All other periods show higher quantitative results and indicate a growing interest on the topic. Especially in the years following the sharp falls, as shown in Figure 3, with 44 studies published in 2013 and 57 studies published in 2017.

Figure 3 - Documents by year.



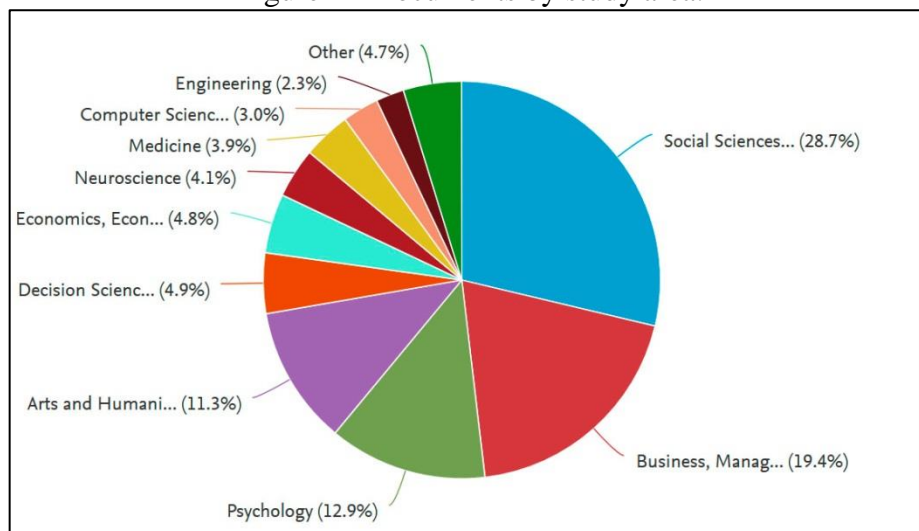
Source: Prepared by the authors based on the search results (2020).

Still with the purpose of contextualizing the publications related to these themes, in relation to the study areas presented in Figure 4, it should be taken into account that the filters used in the selection of documents, in relation to the scientific areas, were “Business, Management and Accounting” and “Social Sciences”, so the predominance of these areas in

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the chart. In spite of this, other areas appear that are frequently intertwined in these publications, the main ones being psychology (12.9%) and arts and humanities (11.3%). The emphasis on Psychology over the decades can be explained by the role played by studies in this area in order to contribute to the evolution in the field of corporate management and organizational practices (BENDASSOLLI; BORGES-ANDRADE, 2015).

Figure 4 - Documents by study area.

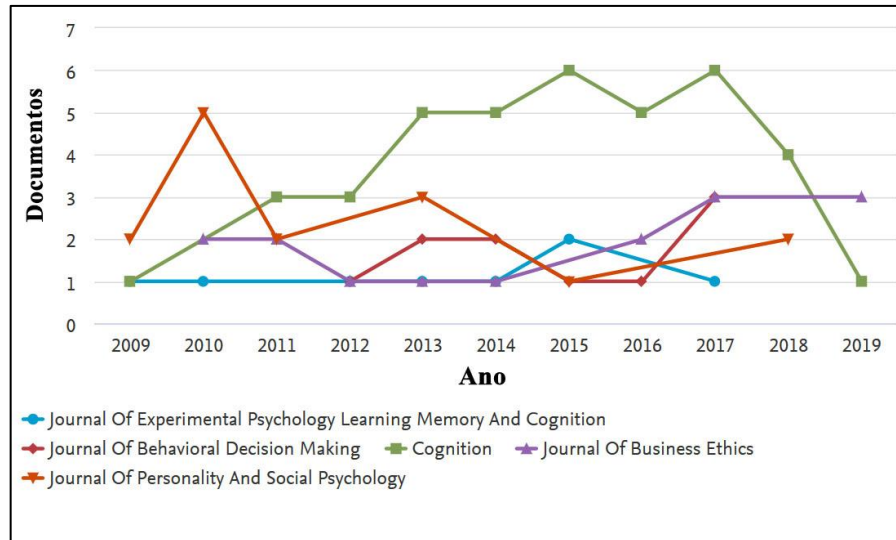


Source: Elaborated by the authors from search results (2020).

In accordance with Bradford's Law, the journals with the most numbers of publications referring to the themes in the period surveyed are shown in the graph contained in Figure 5.

Figure 5 - Documents by year, by source.

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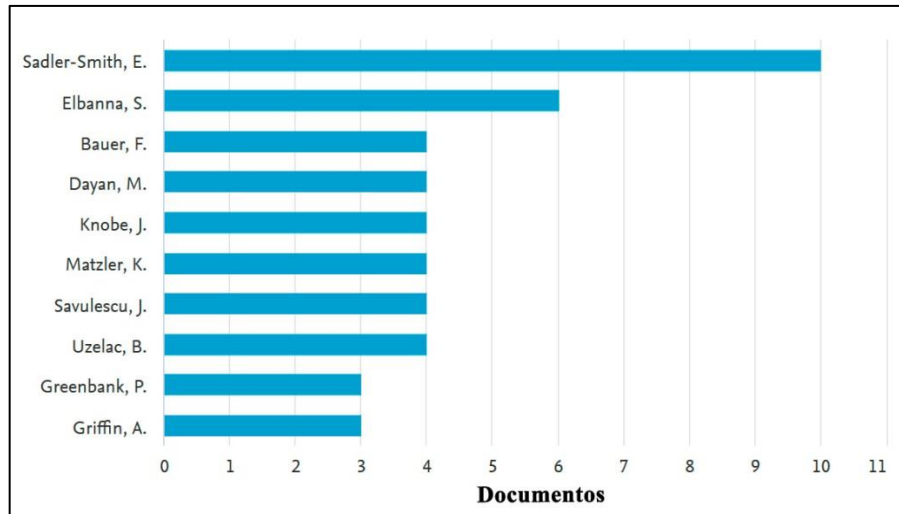
Source: Elaborated by the authors from search results (2020).

It is interesting to note that the publications were made in journals from different areas. Among the journals that most publish on these topics together are: (1) *Cognition*: international journal of cognitive science, a journal published by Elsevier, whose scope is aimed at theoretical and experimental studies on the area of cognition; (2) *Journal of Business Ethics*, published through *Springer Science + Business Media*, according to the website itself, it publishes only articles that bring something new or unique to the field of ethics research in organizations; (3) *Journal of Behavioral Decision Making*, according to the publisher's website, focuses on the publication of original empirical articles; (4) *Journal of Personality and Social Psychology*, published monthly by the American Psychological Association (APA); (5) *Management Decision*, the oldest Management Journal, active since 1967; (6) *Journal of Experimental Psychology Learning Memory and Cognition*, also published by the American Psychological Association.

The presentation of the authors with the largest number of publications in the surveyed sample, in accordance with Lotka's Law, is indicated by the graph contained in Figure 6.

Figure 6 - Documents by author.

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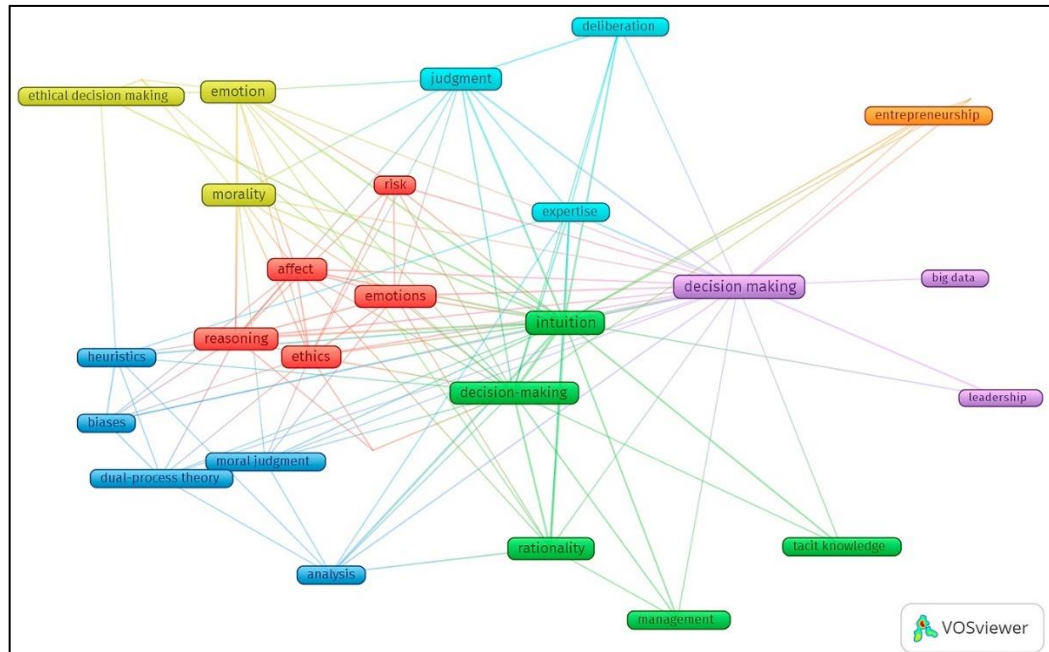
Source: Elaborated by the authors from search results (2020).

Note that the author with the largest number of publications is the teacher of organizational behavior Eugene Sadler-Smith, with ten articles. The professor teaches at the University of Surrey, in the city of Guildford, England and, therefore, this university is the second largest producer of articles on the researched topic. In addition, the author's articles are among the most cited on the topic in the Scopus database. Second, with six articles is the professor of Strategic Management at the University of Qatar, Saïd Elbanna.

Finally, to identify the frequency of keywords listed in the studies contained in the sample, a word cloud was generated in order to explain which were the most recurring concepts. The analysis of keywords resulted in a total of 1500 keywords indicated by the authors, 30 of which were repeated at least five times and established relationships with each other. The word cloud elaborated from the VosViewer software and included in figure 7 shows the main relationships between them. The greater the prominence, the more number of times the word was used by the authors, because of the search criteria it is justifiable that the terms "Decision making" and "Intuition" appear in prominence.

Figure 7 - Word cloud

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Source: Elaborated by the authors, through the VOSviewer Software (2020).

In this word cloud, the frequency of words is indicated by the size of the circle, the more frequent the articles, the larger the circle. The colors indicate the clusters to which they belong, that is, they indicate which words are related to each other.

The second word cloud (timeline), in turn, shows the interest of subjects over time from the colors. This cloud helps in the identification of themes related to decision making and intuition that has been the focus of interest for researchers today. The closer to yellow, the more recent the subjects are.

Figure 8 - Keywords by year



"moral intuition"; "ethical decision making"), add up to forty-eight occurrences. The interest in relating managers' intuitive decision making with moral and ethical attitudes and behaviors is a concern of organizations, expressed even in their codes of ethics (ALVES, 2005; SCHWARTZ, 2016; GILIOLI et al., 2020). Haidt (2001) also mentions that moral judgments would be intuitive, which indicates the interrelationship between the themes. In addition, the journal "*Journal of Business Ethics*" constitutes a reference in publications on the topic.

The literature confirms the influence of affective and emotional elements in intuitive decision-making and also corroborates the role of experience ("expertise") in that process (BETSCH, 2008; SALAS et al., 2010). These terms are linked to the terms "moral" and "ethics", which can reinforce the position that complex decisions in the organizational sphere, even if based on affective elements, require knowledge and ethical guidelines. In organizations, this direction is done mainly by the code of ethics (ALVEZ, 2005). The diversity of words used to address the themes "moral" and "ethics", also indicates the search options for authors who are interested in deepening their readings and research related to these subjects.

Still with regard to the knowledge and experience necessary for decision making, the word "expertise" (fifteen occurrences) and the expression "tacit knowing" (tacit knowledge) (five occurrences) are linked to intuitive decision making, as illustrated Figures 7 and 8. Again reinforcing the need for prior knowledge, which may not be explicit, but comes from experience and which will influence the decision-making process. Empirically, this can be explained by considering that managers who claim to base their decisions on intuition, refer to extensive knowledge of the topic to which the decision addresses (FELTOVICH et al., 1984; SALAS et al., 2010).

The main theories used in studies on decision-making and intuition are also present in the word cloud. The terms "heuristics" (fourteen occurrences) and "bias" (six occurrences) appear related and are often used together to understand the decision-making process through mental shortcuts. Authors such as Herbert Simon, Amos Tversky and Daniel Kahneman theoretically contribute to studies on decision making through theories based on heuristics and biases (TVERSKY; KAHNEMAN, 1979; SBICCA, 2014). The dual process theory also appears among the keywords most used in studies because it is another theory that refers to decision analysis, "Dual-Process Theory" (five occurrences), is the term used in English to refer to the theory which divides mental processes into automatic and deliberative. This theory that differentiates decision-making in systems one and 2 is used by authors such as Sloman (1996) and Dane and Pratt (2007) to evaluate different mental processes.

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Other terms related to intuitive decision making in the word cloud allude to the risk factors that involve this process. The keyword “risk” (risk - five occurrences) appears connected to the terms “emotion”, “emotions”, “ethics” and “reasoning”. Indicating the relationship or consideration of risks in intuitive decision making. The risks of making mistakes are present in Heuristics and Biases (KAHNEMAN; TVERSKY, 1979) and the influence of risk perception is also addressed in the Prospectus theory (SBICCA, 2014).

In figure 8, which shows the temporal distribution of publications, it is possible to observe that the articles involving decision making and intuition, published in recent years, relate these themes to “artificial intelligence” (“artificial intelligence” - six occurrences), “Big Data ”(five occurrences), and its relation to “ management ” (“ management ” - five occurrences). This is in line with the analysis of the current scenario (CASTELLS, 2019) that demands increasingly quick and complex decisions from managers due to the amount of information received from globalization and artificial intelligence software such as Big Data.

### **5 FINAL CONSIDERATIONS**

The study presents a bibliometric review of articles whose themes correspond to 'intuition' and 'decision making' in the organizational scope, with a view to contributing for the production of knowledge about such themes. In this sense, the search carried out allows to guide researchers in the conduct of their studies, and respects the laws of bibliometrics (GUEDES, BORSCHIVER, 2005).

From the survey of publications related to decision making and intuition, it can be seen that the theme maintains a *continuum* growth in the academic environment, in addition to a large volume of publications in the researched area. Thus, the content produced here aims to contribute to the academic community by indicating which nuclei of knowledge production on the subject, in order to facilitate the research process of the same.

From the analysis and discussion of the results, it was possible to go beyond bibliometric laws and present additional content, which allowed us to verify the predominance of American and British studies, to elucidate the concepts and the possibilities of intersection of associated themes, such as, for example, decision-making and ethics. In this way, it was possible to perceive in what way the theme is being studied and what are its relations with other issues related to management, and also its interrelation with other areas of knowledge in order to generate a substantially significant number of publications.

Lastly, decisions made based on the responsible person's intuition take into account



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the analysis and / or assessment of the context in which the situation presents itself, its learning, knowledge, and experience in relation to the subject for which it is deciding. In these cases, the use of rationality and quantitative consideration of the data, may give rise to subjective assessment based on the decision maker's previous experience and knowledge. The way in which this process occurs at the eminence of Big Data further elucidates another opportunity for future research.

Both the word clouds presented in this study, can guide authors both with regard to the possible relationships between constructs, as well as in the identification of research trends on these topics that have attracted the attention of other researchers and editors.

Although the Scopus database covers a large amount of data whose indexes indicate the quality of the studies, this may still have been a limiting factor for the study, suggesting that new bibliographic reviews of a bibliometric and systematic character may complement the present study in the future.

### **REFERENCES**

ALVES, FJS Adherence of the accountant to the code of ethics of his profession: an empirical study on perceptions. USP, São Paulo, 2005.

ANDRIOTTI, Fernando Kuhn. Intuition in the instant decision-making process. Thesis, PhD in administration. Graduate Program in Administration at the Federal University of Rio Grande do Sul, Porto Alegre, Brazil. 2012.

ANSOFF, H. Igor; MCDONNELL, Edward J. Implementing Strategic Management. Prentice-Hall, 1984.

BALESTRIN, Alsones. An analysis of Herbert Simon's contribution to organizational theories. *Electronic Journal of Administration*, v. 8, n. 4, 2002.

BENDASSOLLI, Pedro F .; BORGES-ANDRADE, Jairo Eduardo. Dictionary of psychology of work and organizations. São Paulo Casapsi Livraria e Editora Ltda, 2015.

BETSCH, Cornelia. Chronic preferences for intuition and deliberation in decision making: Lessons learned about intuition from an individual differences approach. In: PLESSNER, Henning; BETSCH, Cornelia; BETSCH, Tilmann. *Intuition in judgment and decision making*, p. 231-248, 2008.

BEACH, Lee Roy. Broadening the definition of decision making: The role of prechoice screening of options. *Psychological science*, v. 4, n. 4, p. 215-220, 1993.

BUCHANAN, Leigh; O'CONNELL, Andrew. A brief history of decision making. *Harvard Business Review*, Vol. 1, p. 20-29, 2006. CAPES - Portal of Periodicals. 2015.

CASTELLS, Manuel. *The network society (The information age: economy, society and culture; v. 1)*. rev.amp. São Paulo: Paz e Terra, 2009.

COHEN, Marvin S .; FREEMAN, Jared T .; WOLF, Steve. *Metarecognition in time-stressed*

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decision making: Recognizing, critiquing, and correcting. *Human Factors*, v. 38, n. 2, p. 206-219, 1996.

DA LUZ, Daniela P .; DA COSTA, Luana F; MACHADO, Vanessa de C .; FACHINELLI, Ana C. The cognitive and knowledge creation processes for decision making in the context of big data. *Competitive Intelligence Magazine*, Vol. 8, n. 1, p. 80-107, 2018.

DANE, Erik; PRATT, Michael G. Exploring intuition and its role in managerial decision making. *Academy of management review*, v. 32, n. 1, p. 33-54, 2007.

DE SOUSA, Antonio José Figueiredo Peva; DO AMARAL, Sueli Angelica. Quality of information and intuition in organizational decision-making. *Perspectives in Information Science*, v. 16, n. 1, p. 133-146, 2010.

EVANS, Clarisse. *The Relevance of Context to Decision-Making Styles*. 2008. Doctoral thesis. The Ohio State University.

FELTOVICH, Paul J .; JOHNSON Paul E .; MOLLER James H .; SWANSON David B. LCS: The role and development of medical knowledge in diagnostic expertise. *Readings in medical artificial intelligence*, p. 275-319, 1984.

FERRELL, OC; GRESHAM, LG A contingency framework for understanding ethical decision making in marketing. *Journal of Marketing*, v.49, n.3, p.87-96, 1985.

FIEDLER, Fred E .; GARCIA, Joseph E. *New approaches to effective leadership: Cognitive resources and organizational performance*. John Wiley & Sons, 1987.

FONTES FILHO, Joaquim Rubens; NUNES, Geraldo Sant Anna. The strategist of the micro, small and medium Brazilian private company. *Brazilian Journal of Business Management*, v. 12, n. 36, p. 271-288, 2010.

GILIOLI, Marcia da Costa; SANTOS, Marcia JC, ANTONELLI, Ricardo A., TONIN, Joyce MF Ethics and morals in the decision-making process: the case of accounting science students, *ConTexto*, v.20, n. 44, 29-40. 2020.

GREENWALD, Anthony G .; MCGHEE, Debbie E .; SCHWARTZ, Jordan LK (1998), "Measuring Individual Differences in Implicit Cognition: The Implicit Association Test", *Journal of Personality and Social Psychology*, 74 (6): 1464–1480.

GOBET, Fernand; SIMON, Herbert A. Templates in chess memory: A mechanism for recalling several boards. *Cognitive psychology*, v. 31, n. 1, p. 1-40, 1996.

GUEDES, Vânia LS; BORSCHIVER, Suzana. Bibliometrics: a statistical tool for the management of information and knowledge, in information, communication and scientific and technological evaluation systems. *cinform – national information science meeting*, v. 6, 2005.

Haidt, Jonathan. The emotional dog and its rational tail: a social intuitionist approach to moral judgment. *Psychological review*, v. 108, n. 4, p. 814, 2001.

ISENMAN, Lois. *Understanding Intuition: A Journey in and Out of Science*. Academic Press, 2018.

KAHNEMAN, D .; TVERSKY, A. "Prospect theory: an analysis of decision under risk". *Econometrica*, 47 (2), p. 263-291, 1979.

KLEIN, Gary A .; CALDERWOOD, Roberta. Decision models: Some lessons from the field. *IEEE Transactions on Systems, Man, and Cybernetics*, v. 21, n. 5, p. 1018-1026, 1991.

LIPSHITZ, Raanan; KLEIN, Gary; ORASANU, Judith; SALAS, Eduardo. Taking stock of naturalistic decision making. *Journal of behavioral decision making*, v. 14, n. 5, p. 331-352,

## **Intuition and Decision Making in Management: Bibliometric Review from 2009 to 2019**

2001.

MINTZBERG, Henry. Patterns in strategy formation. *Management science*, v. 24, n. 9, p. 934-948, 1978.

PAULISTA, Paulo H .; FIELDS Danielle F .; TURRIONI, João B. Bibliometric analysis of knowledge management. *National Meeting of Production Engineering*, v. 30, p. 1-12, 2010.

POLANYI, Michael. *The tacit dimension*. Anchor. Garden City, NY, 1967.

PRIETULA, Michael J .; SIMON, Herbert A. The experts in your midst. *Harvard business review*, vol. 67, n. 1, p. 120-124, 1989.

REST, JR Moral development: Advances in research and theory. New York: Praeger, 1986

ROBBINS, Stephen; JUDGE, Tim; SOBRAL, Filipe. *Organizational behavior: theory and practice in the Brazilian context*. Pearson Prentice Hall, 2010.

ROCKART, John F. (1978). A New Approach to Defining the Chief Executive's Information Needs. Working Paper no. 37. Center for Information Systems Research, Sloan School of Management. Massachusetts Institute of Technology

SADLER-SMITH, Eugene; SHEFY, Erella. The intuitive executive: Understanding and applying 'gut feel'in decision-making. *Academy of Management Perspectives*, v. 18, n. 4, p. 76-91, 2004.

SALAS, Eduardo; ROSEN, Michael A .; DIAZGRANADOS, Deborah. Expertise-based intuition and decision making in organizations. *Journal of management*, vol. 36, n. 4, p. 941-973, 2010.

SBICCA, Adriana. Heuristics in the study of economic decisions: contributions from Herbert Simon, Daniel Kahneman and Amos Tversky. *Economic Studies (São Paulo)*, v. 44, n. 3, p. 579-603, 2014.

SCHWARTZ, Mark S. Ethical decision-making theory: An integrated approach. *Journal of Business Ethics*, v. 139, n. 4, p. 755-776, 2016.

SCOPUS. 2019. What is Scopus about? Available in:[https://service.elsevier.com/app/answers/detail/a\\_id/15534/supporthub/scopus/#tips](https://service.elsevier.com/app/answers/detail/a_id/15534/supporthub/scopus/#tips). Access in: jul. of 2019

SHIMIZU, Tamio. *Organizational decisions: introduction to decision problems encountered in organizations and decision support systems*. Atlas, 2001.

SIMON, Herbert A. Alternative visions of rationality. *Rationality in action: Contemporary approaches*, p. 189-204, 1990.

SLOMAN, Steven A. The empirical case for two systems of reasoning. *Psychological bulletin*, v. 119, n. 1, p. 3, 1996.