

The blind Spot of Conceptualizing Natural Resources: How the RBV and the NRBV Themselves Get Caught Up in the 'Great Challenges'.

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Abstract

Nowadays, natural resources underpin human and organizational activities. However, while natural resources and their scarcity pose a real managerial challenge and a serious constraint for firms, they have received little attention in strategic management and resources theories. Therefore, considering the longstanding neglect of natural resources by RBV scholars, this research aims to discuss the place of natural resources within the RBV. Indeed, given that NRBV has sought to address the gap of the RBV by providing a conceptual framework that incorporates the constraints posed by the natural environment into firms' strategy, a bibliometric analysis has been conducted to examine what types of natural challenges have been covered by previous NRBV research and then depict the place of natural resources within this theory. Indeed, the results reveal that natural resources remain overlooked by the strategic management scholars, RBV and NRBV. Additionally, the results allow to conclude that RBV and NRBV are limited to address challenges related to natural resources.

Keywords : RBV, NRBV, Natural Resources, Bibliometric Analysis.

Résumé

De nos jours, les ressources naturelles sont à la base des activités humaines et organisationnelles. Cependant, bien que les ressources naturelles et leur rareté représentent un véritable défi managérial et une contrainte pour les entreprises, elles ont reçu peu d'attention dans le management stratégique et les théories des ressources. Par conséquent, sachant que les

chercheurs de la RBV ont longtemps négligé les ressources naturelles, cette recherche vise à discuter de la place des ressources naturelles dans la RBV. En effet, comme la NRBV a cherché à combler les lacunes de la RBV en fournissant un cadre conceptuel qui intègre les contraintes posées par l'environnement naturel dans la stratégie des entreprises, une analyse bibliométrique a été menée pour examiner quels types de défis naturels ont été couverts par les recherches précédentes sur la NRBV, et ensuite définir la place des ressources naturelles au sein de cette théorie. En effet, les résultats révèlent que les ressources naturelles restent négligées par les chercheurs en management stratégique, ainsi que dans la RBV et la NRBV. En outre, les résultats permettent de conclure que la RBV et la NRBV sont limitées pour relever les défis liés aux ressources naturelles.

Mots Clés : RBV, NRBV, Ressources Naturelles, Analyse bibliométrique

INTRODUCTION

Generally, Grand challenges (GCs) are defined as specific critical barrier(s) that, if removed, would help solve an important societal problem with a high likelihood of global impact through widespread implementation (George et.al, 2016). Perhaps, the most universal and widely adopted GCs are the sustainable development goals (SDGs) proposed by the United Nations in 2015. In fact, these SDGs encompass a wide array of challenges including poverty, education, climate change, natural resources (NR), land, as well as the access to clean water and energy (George et.al, 2016). Therefore, while all GCs are important to study, this paper seeks to focus only on one challenge, the Scarcity of Natural Resources (NRS). Hence, a question can be asked: why is it important to focus on NRS challenge?

First, according to George, Schillebeeckx & Liak (2018) more than half of the SDGs have direct implications for the management of natural resources. This fact provides a powerful indication that this topic should no longer elude management scholars.

Second, the increased risk and proximity of natural resource shortages, and the presence of scarcity-related issues across a wide variety of renewable and non-renewable resources, local and global challenges, small, medium, and large enterprises, call the strategic management scholars to conduct further research on NRS (George et.al, 2015; George, Schillebeeckx & Liak, 2018). Today, managers and companies can no longer ignore environmental problems and are obliged to take them into account in their economic activity. Companies still see the preservation of the natural environment and the NRS phenomenon in part as an economic constraint. For a long time, they have been more concerned with the consumption and exploitation of NR in their business activities, considering it to be inexhaustible. A change of mindset is needed. Analyzing how natural resources are conceptualized in RBV and NRBV reveals the way in which strategy as a discipline views natural resources and enables us to

understand whether strategy needs to evolve to take account of the major challenges linked to natural resources.

Moreover, challenges concerning natural environment (Hart & Dowell, 2011) and NRS (Barbier, 2021) can be a source of serious and real constraint for firms. According to Goldratt (1988), constraints are defined as anything that limits a system from achieving higher performance versus its goal. Hence, as scarcity leads to the unavailability of NR, firms that depend on NR find themselves constrained due to the lack of needed resources, the fact that can threaten their competitiveness and value creation process.

Additionally, NR have long received limited to no attention in the management field despite their unique value for understanding firm actions (Schillebeeckx & George, 2013; George et al., 2015; Tashman, 2021), where also according to Figge & Hahn, (2021) only few studies have examined the use of natural resources at the firm level. As well, according to Schillebeeckx & George (2013) management literature has paid little attention to NRS, where there are few studies on the impact of natural resource scarcity on strategic decisions and actions of firms (Schillebeeckx & George, 2013). Furthermore, according to Hart (1995), RBV which has emphasized the role of VRIN resources and capabilities in forming the basis of competitive advantage, has ignored the interaction between an organization and its natural environment. To address the RBV gap, scholars have proposed several perspectives, such as Hart's Natural Resource-Based View (NRBV) in 1995 and Aragon and Sharma's contingent RBV of proactive corporate environmental strategy in 2003. These frameworks have aimed to extend the RBV and incorporate the challenges posed by the natural environment into firms' strategy, as it could create a serious constraint for firms. Nevertheless, despite the theoretical evolution, the place of NR in these perspectives remains ambiguous and unconceptualized in the works of Barney, Hart, and Sharma and Aragon.

Nonetheless, NR and NRS that are constituting a pressing managerial challenge and posing serious constraints for firms, can no longer be ignored. Thus, this urgent reality places the NR and their challenge of scarcity at the forefront of strategic management literature, and introduces them as new imperatives to be addressed, and calls for the conduct of more research in this area. Therefore, considering the longstanding neglect of NR by RBV scholars, this research aims to investigate the place of NR in RBV. This study complements the few existing research in this area, building on recent works of Bastian, Richter & Tucci (2018) and Carton & Parigot (2021) who have shown interest in this topic. Indeed, as the NRBV has integrated the natural environment, and since prior studies have lacked to examine the conceptualization of NR within the NRBV, this research seeks to explore further what this perspective uncovers and investigate the place of NR in the NRBV through conducting a bibliometric analysis. In fact, the bibliometric analysis provides a one-stop overview of the studied subject, identifies knowledge gaps, derives novel ideas for investigation, and positions the contributions to the field. Nevertheless, while it is very important to discuss the most trending topics in NRBV research, this study focuses solely on identifying the research gaps and limitations in NRBV research and proposing new areas of research through the use of performance and co-word analysis. Hence, this method allows to achieve our research objective and explore whether and how NR are conceptualized within the NRBV.

In fact, the results of the bibliometric study conducted on NRBV research reveal a remarkable surge in the volume of published research on NRBV, indicating the renewed interest and attention directed towards this theory in contemporary discourse. This fact justifies the importance of exploring further this perspective and examining whether and how it can deal with the grand challenges associated with NR. Additionally, it allows to grasp and understand the reasons behind this newfound significance. In addition, the findings unveil an important research gap and a limitation to NRBV. Concerning the research gap, the results show that

despite the increased number of published research on NRBV, NR and NRS are neglected in NRBV. Interestingly, a very few numbers of articles in the sample explicitly focus on natural resources and NRS. The majority of studies have focused on the proactive environmental strategies (PES) proscribed by Hart (1995) but do not touch upon issues of natural resource scarcity or dependence on specific natural resources. In 2013, Schillebeeckx & George have systematically reviewed the management literature on NRS and NR. The results of their study showed that NR are not taken into account by the NRBV. Therefore, our results support the conclusion drawn by Schillebeeckx & George (2013), indicating that after ten years, NR remain overlooked within the NRBV. Furthermore, while the natural environment has regained attention in the strategic management literature and theories of resources, natural resources often remain outside their scopes. It is also crucial to note that the natural environment differs from natural resources, and incorporating the natural environment does not necessarily equate to studying natural resources.

Indeed, regarding the criticisms and limitations of NRBV, it can be concluded that, akin to RBV, NRBV, which aims to appropriate rare resources to maximize profits and gain competitive advantage, is rooted in the neoclassical view and Ricardian rent, contributing to the exacerbation of challenges related to NRS. Consequently, these factors limit NRBV's ability to effectively respond to challenges related to natural resources. Additionally, even theories that have attempted to integrate the natural environment fall short in addressing natural resource-related challenges as long as they do not question the fundamental assumptions of RBV. In summary, all these issues will be examined in the forthcoming sections of this paper.

Hence, this document is structured as follow: The first section offers a brief overview of NR, highlighting their dual status as a resource and a common good. Subsequently, it discusses the conceptualization of NR within the RBV. Afterwards, it presents the methodology and the

results of the bibliometric analysis, revealing insights into the evolution of NRBV, identifying NRBV's gaps and limitations, and discussing the conceptualization of NR with the NRBV. The final section summarizes the findings, explains the reasons behind the neglect of NR in RBV and NRBV, and proposes theoretical implications and directions for future research.

1. LITERATURE REVIEW AND BIBLIOMETRIC ANALYSIS

1.1.DEFINITION and CHARACTERISTICS of NATURAL RESOURCES

Generally, natural resources are defined as substance in the physical environment that have value or usefulness to human beings and are economically feasible and socially acceptable to use (Schellens & Gisladdottir, 2018). Furthermore, many features characterize NR. First, NR are considered as strategic resources. This means they are valuable, rare, inimitable, and non-substitutable (George & Schillebeeckx, 2018; Bastian Richter, & Tucci, 2018). In addition, NR are common resources as they are collectively owned or accessible to a group of individuals or a community (Hardin, 1968). Indeed, NR are non-excludable, where individuals or populations typically cannot be prevented from using them, even if they don't pay for them. As well, common NR are subtractable where their exploitation by one user reduces resource availability for others (Ostrom, 1990). Moreover, NR are in flow resources where they move through production process without ever becoming part of the organization itself. Finally, NR are auto-consumptive resources. This means that through use, they are constantly in a state of decline (George & Schillebeeckx, 2018). However, NR are finite (Ostrom, 1990) and then they are subjected to scarcity, where according to Bell et.al, (2013) scarcity is the lack of adequate supply of natural resource to meet required human demand.

Therefore, NR, which are resources, sometimes strategic resources, and at the same time common goods, are particular resources with ambivalent status. Therefore, can a resource, which is also a common good, be conceived a resource in strategic perspective, i.e. according to the RBV and NRBV frameworks? Hence, the next sections discuss further this issue.

1.2.THE CONCEPTUALIZATION OF NR WITHIN RBV AND NRBV

1.2.1. THE PLACE OF NR WITHIN THE RBV

« Les richesses naturelles sont inépuisables, car sans cela nous ne les obtiendrions pas gratuitement. Ne pouvant être ni multipliées, ni épuisées, elles ne font pas l'objet des sciences économiques » Jean-Baptiste Say (1803)

If we refer back to the old adage of Jean-Baptiste Say (1803), NR have long been considered as infinite and inexhaustible resources, always available to companies, sometimes obtained free of charge for unlimited use. We might wonder whether this is why the RBV did not consider them to be resources worthy of attention. Most of them do not have VRIN characteristics, so have remained outside the spectrum of RBV resources. However, some natural resources have been and still are valuable, rare, inimitable and non-substitutable.

In general, RBV emphasizes the role of valuable, rare, inimitable, and non-substitutable (VRIN) resources and capabilities in forming the basis of competitive advantage (Barney, 1991). However, whereas RBV has been criticized by Hart (1995) for ignoring the interaction between an organization and its natural environment, and while natural environment has been incorporated into RBV in the work of Aragon & Sharma (2003), NR remain neglected. Nevertheless, query can emerge that may question the place of NR in RBV: Why are NR ignored in RBV even though they are considered VRIN resources (Bastian, Richter & Tucci, 2018)? In summary, it is not clear how NR are considered and treated in RBV, and further work is needed to understand their place and nature in RBV.

Additionally, as the Ricardian perspective has been adopted on NR (Bastian et.al, 2018), RBV can be criticized for its contribution to the increased challenge of NRS and environmental challenges. This means that the basic assumptions of the RBV, which are grounded in Ricardian rent where scarce resources are exploited and possessed to maximize profits and create competitive advantage (Kraaijenbrink, Spender & Groen, 2010) can contribute to increasing

the scarcity of rare NR. In other words, NR are auto-consumptive resources. This means that through use, they are constantly in a state of decline (George & Schillebeeckx, 2018). In fact, this characteristic differs from most of the resources commonly studied in the RBV, such as knowledge and reputation, where their values tend to increase through use. This is why, the overexploitation of these rare and finite resources can increase their scarcity. Thus, firms' practices that reflect the RBV's logic contribute to increasing the challenge of NRS. Consequently, the RBV can be questioned in the light of NRS, as it does not offer a sustainable management of natural resources.

1.2.2. THE PLACE OF NR WITHIN THE NRBV

In general, as natural environment could create a serious constraint on firms' attempts to create sustainable advantage, and since RBV was silent on environmental constraints during the 1990s, the NRBV was proposed by Hart in 1995. Thus, by the NRBV Hart has extended the RBV by explaining the link between proactive environmental strategy and competitive advantage in light of the constraints and opportunities posed by the natural environment.

In fact, the NRBV introduces three environmentally related strategic capabilities that allow for achieving a competitive advantage. First, the pollution prevention refers to business activities in the production process to reduce or prevent waste and emissions rather than cleaning them up at the end of the pipe. Hence, pollution prevention capability may generate a competitive advantage via superior operational efficiency and cost reduction (Hart, 1995). Second, the product stewardship entails designing a product that has minimal environmental impact over the entire value chain or life cycle of the firm's product systems. Hence, through stakeholder engagement, the voice of the environment can be effectively integrated into the product design and development process resulting then in increasing a firm's positive reputation (Hart, 1995; Hart & Dowell, 2011). Finally, sustainable development, as defined, encompasses not only environmental considerations but also economic and social aspects. Hence the area of corporate

sustainable development strategy has been separated into two distinct areas: clean technology and Base of the Pyramid (BoP). In fact, clean technology strategies involve firms developing new competencies and positioning themselves for competitive advantage as their industries evolve. This entails reducing energy consumption through the adoption of clean technologies that meet human needs without straining the planet's resources (Hart & Dowell, 2011). Meanwhile, the other significant evolution in the sustainable development aspect of NRBV is the heightened focus on corporations' role in addressing poverty among the world's poorest citizens.

Therefore, as NRBV addresses some environmental challenges, it's essential to explore how and which types of these challenges have been studied and covered by NRBV research since 1995. To do so, a bibliometric analysis was conducted. Consequently, the upcoming section underscores the importance of the bibliometric analysis and elucidates the methodology adopted by the researchers for this purpose.

1.2.2.1.DESCRPTION OF THE BIBLIOMETRIC ANALYSIS METHODOLOGY

Generally, according to Donthu, Kumar, Mukherjee, Pandey & Lim (2021), bibliometric analysis is a scientific method that can be useful for scholars who wish to pursue a retrospective of broad and rich areas in business research. Also, bibliometric analysis can be useful for uncovering emerging trends in article and journal performance, collaboration patterns, and research constituents, and for exploring the intellectual structure of a specific domain in the existent literature. It also helps to identify the development and evolution of a concept or theory for future use.

In fact, the data that takes center stage in bibliometric analysis tends to be massive, hundreds if not thousands, as well as being objective in nature. This means that what characterizes bibliometric analysis is its quantitative approach to describe and evaluate scientific fields. Thus,

the interpretations of the bibliometric analysis often rely on objective evaluations such as performance analysis that seeks to examine the contributions of research constituents through analyzing the total number of publications, total citations, authors... It also relies on science mapping that focuses on the relationships between research constituents through using co-word analysis, citation analysis, co-citation analysis... (Donthu, Kumar, Mukherjee, Pandey & Lim, 2021). Hence, this section presents the different steps followed by the researchers to run the bibliometric analysis.

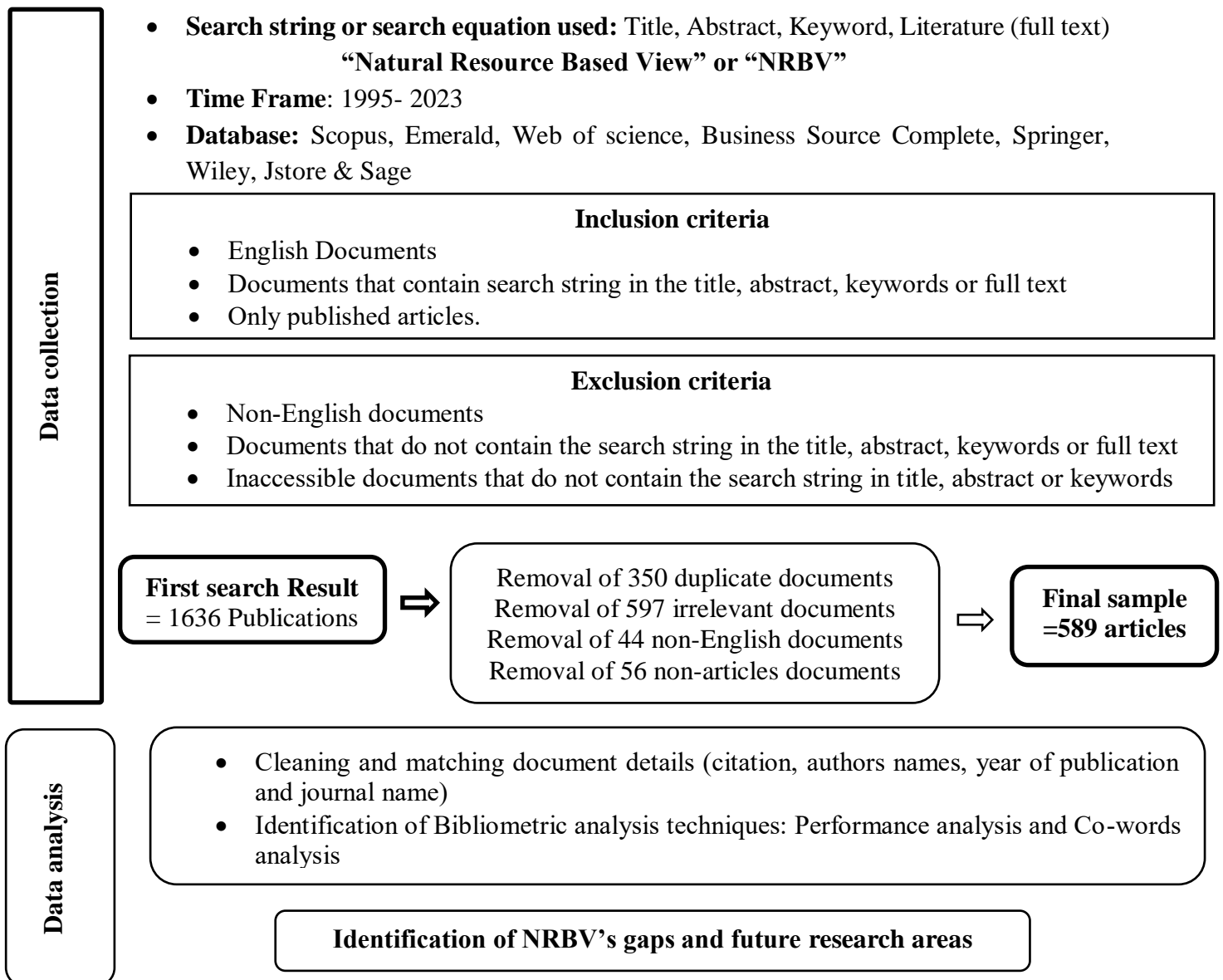


Figure 1: Methodology and Procedure of Bibliometric Analysis

First, the researchers have established a set of objectives: tracking the evolution of the NRBV, delineating NRBV's gaps and challenges, assessing current progress and charting future directions for this perspective.

After, the researchers have fixed the criteria for the data collection process in terms of search string, time frame and inclusion and exclusion criteria. Thus, the search string or search equation was "Natural Resource Based View" or "NRBV", to collect data from the following eight databases: Scopus, Emerald, Web of science, Business Source Complete, Springer, Jstore, Wiley and Sage. Also, the time frame was chosen to be between 1995 and 2023. In fact, the year 1995 was set as the starting point for the research procedure, because the NRBV was first proposed by Hart (1995) in his article intitled as "A Natural-Resource based view of the firm". In addition, after setting the search string, databases and time frame, the researchers have determined the inclusion and exclusion research criteria. This means that English publications, only published articles in academic journals, documents that have taken the NRBV as a key element of the focal study as well as those that have mentioned it anywhere in the document, and publications with search string in the title, abstract, keywords or full text, are included in the sample. However, non-English publications, publications that do not contain the search string in title, abstract, keywords or full text, and inaccessible documents that do not contain search string in the title, abstract or keywords, are excluded from the sample.

Therefore, after identifying the various conditions of the data collection process, the researchers were ready to collect the data. Accordingly, the first search result has recorded 1636 publications of various types of documents such as articles journal, books, chapters, conference papers, reference work and working papers. After, the 1636 extracted publications were filtered and cleaned by screening and checking the "Title", "Abstract", "Keywords" and referring to the "full text" to determine their suitability for inclusion in the final sample collection. Thus, in a first step, 350 duplicate documents were removed from the first sample, leaving then 1286

documents. In a next step, a total of 44 foreign language documents (German and Spanish) as well as 597 irrelevant publications in NRBV, and 56 non-articles documents such as books, chapters, working papers, and conference papers were removed and excluded, leaving then a final sample of 589 articles. Finally, after defining the final sample, the researchers have cleaned and matched the details of the 589 articles such as citation, author names, year of publication and journal name to conduct the bibliometric analysis.

Then, once the full sample was obtained, the researchers have proceeded with the bibliometric analysis through the use of performance analysis and co-word analysis. This allows them to examine the current status of the NRBV, to identify research gaps and limitations, as well as to discuss the place of NR and NRS in NRBV, and to propose future research topics. Hence, the results of the bibliometric analysis are presented in the next sections.

1.2.2.2.PERFORMANCE ANALYSIS: EXAMINING THE CURRENT STATUS OF NRBV

1.2.2.2.1. NUMBER OF PUBLICATIONS ON NRBV

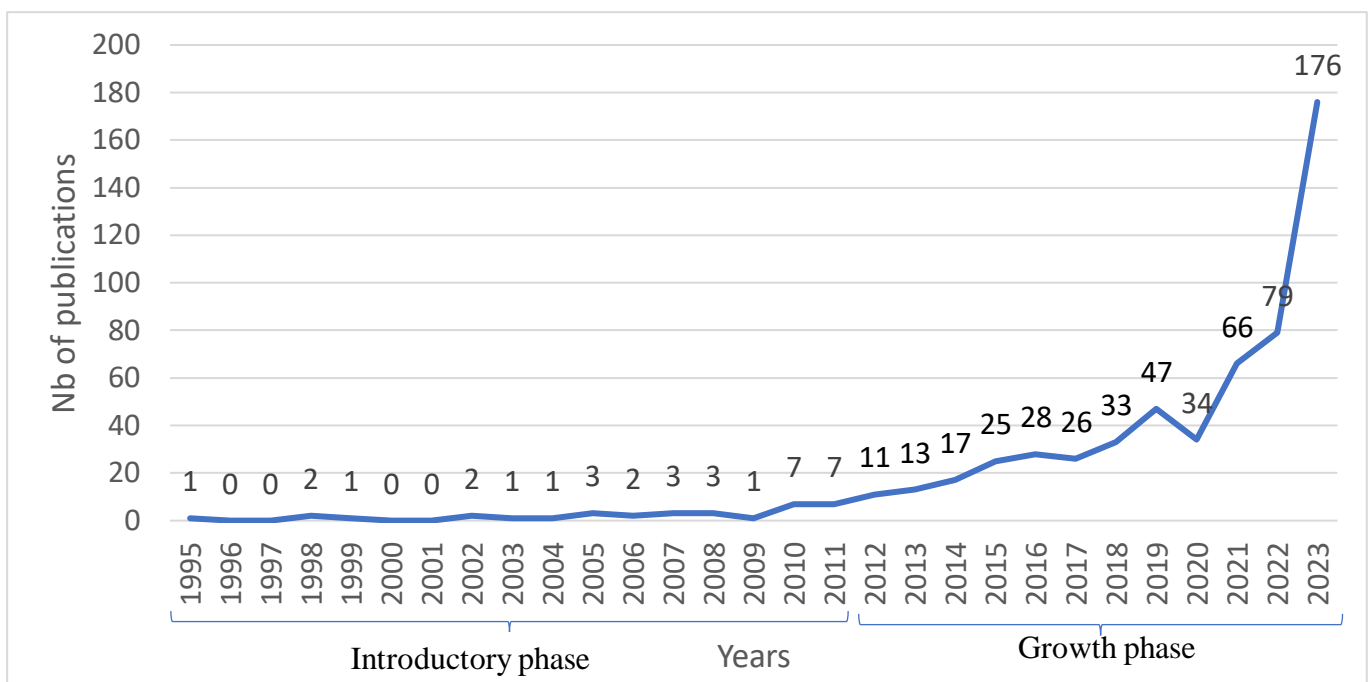


Figure 2: Number of Publications on NRBV per year from 1995 to 2023

Actually, the yearly output displayed in figure 2 demonstrates that the number of publications on NRBV is proliferating but not at the same pace. Thus, the figure 2 prompts to conclude that the evolution of the NRBV is reflected in two phases: the introductory phase and the growth phase.

In fact, 1995, is the year of publication of Hart's first article. However, 2011, is the year of publication of Hart & Dowell (2011)'s invited editorial on the NRBV by which the authors have aimed to summarize the progress made in testing the elements of NRBV. Therefore, referring to the figure 2 above, the period between 1995 and 2011 can be considered as the introductory phase of NRBV where, over 16 years, the total number of publications count only 34. Therefore, it appears that between 1995 and 2011, NRBV was not considered a prominent theory and received little attention in the strategic management literature where Hart and his colleague (2011) hoped that the NRBV would be fully integrated into strategic management theory and practice in the coming years.

However, the results of the period after 2011 indicate that NRBV, which seeks to integrate the environmental challenge, has entered its growth stage where the total number of publications per year have been in an exponential increase, especially since 2015. Thus, the NRBV started to gain more attention. In fact, many reasons can explain this evolution. First, the release of the Special Issue Editorial by Barney et. al, (2011) entitled "The Future of Resource-Based Theory: Revitalization or Decline?" can hold substantial importance where Barney and his colleagues proposed new research that establishes a connection between RBV and sustainable development. Second, the introduction of the United Nations Sustainable Development Goals in 2015, concurrently with the emergence of a literature on grand challenges can be instrumental in elevating the focus on the NRBV. In fact, the publication of the special issue of George et.al, (2016) entitled as "Understanding and tackling societal grand challenges through management research" as well as the publication of George (2016) entitled as "Management Research in

AMJ: Celebrating Impact while Striving for More”, can be considered as an important turning point in the management literature where the two research have raised calls and encouraged management scholars to conduct research with impact that contribute to knowledge useful for addressing the most pressing challenges of the world, living up to the idea that business is a force of good for society (George et. al, 2015; George, Schillebeeckx & Liak, 2018).

Furthermore, the increased risk and threats of environmental and social challenges proposed by Hart (1995), and the increased interest of business leaders to tackle these challenges (Hart & Dowell, 2011), have motivated researchers to be more integrated and conduct further research to examine environmental and sustainability transition. This means that, as the NRBV in its basic essence seeks to address environmental challenge and constraints imposed by the natural environment, researchers have used the NRBV’s conceptual framework and elements to examine the firms’ sustainability transition and giving then major attention to the role of management literature. In another words, the increased global environmental awareness has played an important role in impacting the NRBV discourse and highlighting the need for this perspective as a theoretical background to explain sustainable challenge. In short, it seems that over the past 10 years, the NRBV has regained importance in the strategic management literature and has entered its growth phase.

Hence, after reviewing the number of publications on NRBV research, the next section presents the most important journals on NRBV research. This fact is important because, the journals’ scopes and research interests offer an insight into the academic disciplines and fields that have delved into NRBV. This helps to identify the level of attention that the NRBV has received in the strategic management research. Additionally, it allows us to examine whether the same journals that have published the important articles on RBV have also published those related to the NRBV. This can be important to analyze whether strategic management scholars have

broadened their focus beyond RBV and have integrated the question of sustainability and natural environment challenges.

1.2.2.2.2. THE MOST IMPORTANT JOURNALS ON NRBV RESEARCH

This section represents a list of the top 6 journals on NRBV research. In fact, these journals are ranked based on their total number of publications on NRBV from 1995 until 2023.

The results shown in the table 1 below reveal that the 6 topmost productive journals on NRBV research area are peer-reviewed academic journals. Additionally, the results show that the most prolific journal is the Journal of Cleaner Production with 95 publications. Further, the Journal of business strategy and the environment is the second most prolific journal with a total number of publications on NRBV equal to 35, followed by the environmental science and pollution research with 29 publications, sustainability with 27 publications, journal of business ethics with 25 publications, and then Journal of business research with 17 publications.

	Journals	Type of Journal	Total Publication	FNEGE 2022	Journal scope
1	Journal of Cleaner Production	Peer-reviewed academic journal	95	2	Cleaner Production, Environmental, and Sustainability research and practice
2	Business Strategy and the Environment	Peer-reviewed academic journal	35	3	Environmental performance, eco-innovation, corporate environmental management tools, organizations and management
3	Environmental Science and Pollution Research	Peer-reviewed academic journal	29	Not classified	serves the international community in all areas of Environmental Science and related subjects with emphasis on chemical compounds
4	Sustainability	Peer-reviewed academic journal	27	Not classified	Studies related to sustainability and sustainable development
5	Journal of Business Ethics	Peer-reviewed academic journal	25	1	Ethical issues related to business
6	Journal of Business Research	Peer-reviewed academic journal	17	2	Covering research on all aspects of business

Table 1: The Most important Journals on NRBV Research

In addition, the table 1 represents the quality assessment of the six journals using the FNEGE guide 2022. Generally, the FNEGE assigns ranking grades based on the quality of the journal to the management and business journals, where the ranking ranges from 1, 2, 3, to 4 grades. In fact, grade 1 refers to the highest quality whereas grade 4 refers to the lowest quality of the journal. Thus, the results presented in table 1 indicate that out of the top 6 journals, 4 journals fall under the FNEGE ranking list 2022 which are the journal of cleaner production and journal of business research with a rate of 2, Business Strategy and the Environment with a rate of 3, journal of business ethics with a rate of 1, and Journal of Business Research with a rate of 3. However, the journals of sustainability and Environmental Science and Pollution Research do not fall under the ranked journal of FNEGE 2022. In sum, it can be concluded that not all the studies on NRBV are published in ranked journal according to FNEGE 2022.

Furthermore, it can be concluded that even NRBV has regained attention, the majority of the research have not been published in strategic management journals. Also, it seems that the NRBV has extended beyond the realm of management field and has influenced other disciplines such as ethics, sustainability and environment.

Hence, the previous sections have presented the results of the performance analysis and discussed the evolution of NRBV. In fact, through the co-word analysis, the next section will discuss the least frequent, but potential and important keywords, which have been ignored and undiscovered by researchers, and which can be considered as important area for future research.

1.2.2.3.EXAMINING NRBV'S RESEARCH GAP AND LIMITATION THROUGH THE CO-WORD ANALYSIS

Generally, the words in a co-word analysis are often derived from “author keywords”, where it is assumed that words that frequently appear together have a thematic relationship with one another. In another words, co-word analysis measures keywords frequency and co-occurrence, which can be useful for business scholars in identifying the most emerging research themes and

gaps allowing them to predict forthcoming trajectories and provide a preview of the future of the research field (Donthu, Kumar, Mukherjee, Pandey & Lim, 2021). Therefore, the results of the co-word analysis can lead to identify an important research gap and a limitation to NRBV. First, criticism may arise as NRBV can reflect or replicate the same logic of RBV, which can exacerbate the depletion of scarce resources. This fact can hamper the NRBV to address the environmental challenges. Second, the NRBV literature has overlooked an essential area concerning NR and NRS highlighting then a notable gap in research. Hence, this limitation and research gap will be discussed in the following sections.

First, as the RBV's origin has its roots in Hart's (1995) view (Salvadó, de Castro, Verde & López, 2012), according to Verbeke, Bowen & Sellers (2006) not every resource will necessarily contribute to competitive advantage. However, a pre-condition for such contribution is that each environmental strategy is characterized by specific sets of valuable and rare resources, which are difficult to substitute or imitate (Hart, 1995) to create sustainable competitive advantage. Thus, it seems that the core assumptions of the NRBV reflect and replicate the same foundations as the RBV's postulates of heterogeneity and immobility. In addition, the RBV's main focus on economic gain (Priem & Butler, 2001) is also reflected in the NRBV's competitive rewards of competitive cost cutting, enhanced efficiency, differentiation and access to scarce resources. Indeed, Salvadó, de Castro, Verde & López (2012) confirmed this argument by pointing out that the NRBV serves to connect some elements of the neoclassical logic such as cost reduction and competitive advantage to more ecologically and socially sound initiatives without renouncing to profit maximization and the use of rare resources. Thus, it can also be concluded that, like RBV, NRBV places a greater emphasize on economic value creation rather than environmental value creation.

Therefore, NRBV that reflects or replicates the same logic of RBV, can increase the depletion of scarce natural resources. Indeed, according to Figge & Hahn (2021), NRBV that seeks to

explain how firms can achieve above-average financial performance and profit maximization by adopting proactive environmental strategy (PES) and VRIN resources and capabilities, can be rooted in the neoclassical view and RBV's Ricardian rent that can increase NRS. This fact makes NRBV's assumptions and purposes somehow ambiguous and contradictory, thus constraining its ability to respond to environmental challenges.

Keywords	Total frequency	Articles	Year	Journals
Natural resource	5	Does natural-resource-dependency create the need of green innovation?	2023	Resources Policy
		Natural resources, financial technologies, and digitalization: The role of institutional quality and human capital in selected OECD economies	2023	Resources Policy
		A Natural Resource Dependence Perspective of the Firm: How and Why Firms Manage Natural Resource Scarcity	2021	Business & Society
		Applicability of resource-based environmental studies in Green IT	2013	Journal of Systems and Information Technology
		The influence of green supply chain integration and environmental uncertainty on green innovation in Taiwan's IT industry	2013	Supply Chain Management: An International Journal
Natural resource scarcity	1	Resource-efficient supply chains: a research framework, literature review and research agenda	2015	Supply Chain Management

Table 2: The Least frequent used keywords on NRBV research from 1995 until 2023.

Second, even though the NRBV proposed by Hart (1995) addresses the gap of the RBV by providing a conceptual framework that incorporates the challenge of the natural environment, the NRBV has also overlooked NR and NRS. This is explained by the results of the keywords analysis of the bibliometric study on NRBV in table 2. Interestingly, very few NRBV articles in the sample have focused explicitly on natural resources and NRS. The majority of studies have focused on the proactive environmental strategies (PES) proscribed by Hart (1995) but do not touch upon issues of natural resource scarcity or dependence on specific natural resources. In 2013, Schillebeeckx and George have systematically reviewed the management literature on

NRS and NR. The results of their study showed that NR are not taken into account by the NRBV. Therefore, our results reinforce the conclusion drawn by Schillebeeckx & George (2013), showing that a decade ago, NR remain neglected within the NRBV.

Indeed, while scholarly research on business and the environment have been growing, and while natural resources and their scarcity are complex topics of substantive interest for executives and policymakers, according to Schillebeeckx & George (2013), George et al. (2015) and Tashman (2021), they have received limited to no attention in the management field despite their unique value for understanding firm actions. Moreover, there are few studies on the impact of natural resource scarcity on strategic decisions and actions of firms (Schillebeeckx & George, 2013; George, Schillebeeckx & Liak, 2018), where also only few studies have examined the use of natural resources at the firm level (Figge & Hahn, 2021).

In sum, referring to the results of the bibliometric analysis, it can be concluded that NRBV can be limited to NR as it can contribute to increasing the challenge of NRS. Indeed, this overview leads to conclude that while scholarly research on business and the environment have been growing, natural resource and its scarcity have received little to no attention in resources theories and management field, where they remain in a nascent state and need further conceptualization. Therefore, to address this research gap, it becomes important to understand the underlying reasons for this issue, which is the focal point of the next section.

2. The REASONS BEHIND THE NEGLECT OF NR AND NRS AND FUTURE RESEARCH AGENDA

2.1.WHY HAVE NR AND NRS RECEIVED SCANT ATTENTION IN STRATEGIC MANAGEMENT, RBV AND NRBV?

In fact, there are many reasons that may explain why NR and NRS have received little attention in management literature. According to George & Schillebeeckx, (2018) research on natural resources face two major challenges. First, many scholars see a need for conceptualization and theory development before embarking on empirical work, given the nascent state of natural

resource research in management field. For instance, even though a conceptual framework such as NRBV has sought to address environmental constraints, the results of the bibliometric analysis have demonstrated that NRBV has failed to address and discuss the NR and its challenge of scarcity. Second, and perhaps more importantly, management researchers in this area face difficulties in getting access to large scale datasets (George & Schillebeeckx, 2018). Additionally, management scholars have worked under the assumption that the tangible and natural objects that are being managed are far less important than the intangible aspects that characterize the nature of management itself (George et.al, 2015; George & Schillebeeckx, 2018). This can be explained by the fact that intangible resources, which are socially complex and difficult to imitate, are the most likely to provide firms with the opportunity to create a competitive advantage (Barney, 1991). Hence, NR, which are by definition physical and tangible resources, have been neglected.

Indeed, the perception of NR as totally controlled and constantly available resources for firms has contributed to the neglect of NR and scarcity in the field of strategic management. In fact, many management scholars have defined NR as firm's asset (Krautkraemer, 2005; Bell, et.al, 2013). However, NR that are common and in flow resources cannot be appropriated and controlled by firms. Also, NR are not permanently available since many factors could make them inaccessible. For example, the constant uncertainty regarding property rights of natural resource deposits, that are always tied to specific geographic locations, results in heightened political risk which can decrease accessibility of NR (George & Schillebeeckx, 2018; Bastian Richter, & Tucci, 2018). Thus, strategic management should pay more attention to NR because nowadays, unavailability of NR posed by exogenous factors can pose a real constraint that can threaten firm's competitiveness.

Moreover, the perception of NR as inexhaustible and free resources, has contributed to the neglect of NR and its challenge of scarcity in strategic management and RBV. In this context,

Jean-Baptiste Say's (1803) idea which states that « Les richesses naturelles sont inépuisables, car sans cela nous ne les obtiendrions pas gratuitement. Ne pouvant être ni multipliées, ni épuisées, elles ne font pas l'objet des sciences économiques » continues to hold significance in our modern era. According to Say, natural resources are considered inexhaustible because they seem to be freely available in nature. In another words, Say suggests that if NR were limited or exhaustible, they could not be obtained for free. However, contrary to what Say claimed, NR are not inexhaustible and infinite (Abdelmalki & Mundler, 2010; Gumplová, 2021), where according to Bell et.al (2013) dynamic changes in a resource's status can also be made. For example, forces such as consumption, competition and resource base degradation can accelerate many natural resources from states of renewability toward non-renewability, and from states of availability toward scarcity (Bell et al, 2013). Indeed, scarcity does not only affect non-renewable resources where many resources are exploited at a pace that does not allow for their renewal. This is the case for fresh water, wood and even certain species of fish which are today in danger due to excessive harvesting (Abdelmalki & Mundler, 2010). Therefore, it should be noted that Say's perspective on NR as inexhaustible resources can be criticized for neglecting the effects of overexploitation and environmental degradation associated with use of natural resources (Abdelmalki & Mundler, 2010). Moreover, contrary to Say's assertion, NR are not free because when scarcity of NR increases, the price of these NR also increases, where for George et.al (2013), the 100 years of ever-cheaper commodity resources are permanently over, and increasing competition and rising prices for ever-scarcer resources will become the new norm. Hence, strategic management should pay more attention to NR and NRS, because nowadays, NR are not inexhaustible and always available, and then they will no longer be free resources.

In the same vein, the common feature of NR, which favors the free nature of NR, can fit Say's point of view, and may explain the scant attention paid to NR and scarcity by management

scholars. According to Ciriacy-Wantrup & Bishop (1975) everybody's property is nobody's property. This means that when a given natural resource is physically and legally accessible to more than one resource user, the result is said to be a free-for-all, with users competing with one another for a greater share of the resource to the detriment of themselves, the resource, and society as a whole. This fact leads each user to ignore costs imposed on others, where individual decisions cumulate to a tragic overuse and the potential destruction of an open-access common (Ostrom, 1990). Thus, the non-proprietary and free nature of common resources, which leads to neglect the cost of overexploitation of NR as it suggests a free, open access, continuous and inexhaustible availability of resource, makes NR less important for management scholars. Hence, strategic management should pay more attention to NR, because common resources that are free resources can be source of increased NRS and controversy.

Furthermore, the focus on natural environment constraint instead of NR may be one of the reasons why natural resources have been neglected. In fact, NRBV provides a conceptual framework incorporating the challenge of the natural environment rather than focusing on natural resources. In 1995, when the NRBV was proposed by Hart, prevalent concerns were predominantly related to environmental challenges such as pollution and climate change. However, during this period, NR were not considered as finite resources, where also the scarcity of NR was not regarded as a real threat that may occur and constrain firms in the future. In addition, according to George et. al (2015) the past two decades, attention to regulatory and institutional aspects of the natural environment has risen, but this increasing attention has not been accompanied by a stronger focus on natural resource inputs. In sum, it can be concluded that the focus was on the natural environment rather than NR and NRS. However, it can be important to conduct more research focusing on NR, because nowadays, firms are questioning their practices in the light of NR rather than just seeking to adapt to the constraints imposed by the natural environment. Indeed, given the escalating scarcity of NR, it's important for NRBV

to broaden its scope to address this challenge. Indeed, we need a theoretical framework for strategy that takes account of NR and NRS.

Lastly, the management field has mainly used the RBV as a singular framework to address scarcity (George et.al, 2015). In fact, this theory has helped to understand the positive side of resource scarcity (its power to create financial value) and has implied that an organization can gain advantages and maximize profits through the use of scarce resources. However, some early economists such as Malthus warned of the potentially negative impacts of impending NRS, because in such context, scarcity, which is the lack of adequate supply of natural resource to meet required human demand (Bell et.al, 2013; Bell et.al, 2012), is equal to constraint that may threaten firms' competitiveness. However, these negative predictions have not always held, so it was not surprising that firm level theory and practical methods for responding to the negative aspects of NRS have not been developed in the last 50 years (Bell et.al, 2013). Furthermore, it is important to remember that RBV, which emerged in the 1980s, is a theory rooted in a logic of propriety and consumption in which the company's responsibility towards its stakeholders is not an issue.

2.2. THEORETICAL IMPLICATIONS AND FUTURE RESEARCH AGENDA

To conclude, both the NR and NRS have received scant attention by the strategic management, RBV and NRBV scholars. However, as NR and NRS reemerge as pivotal elements in the strategic management literature, they cannot be overlooked anymore. This fact offers a great opportunity for strategic management scholars to explore many important areas of research that are not discovered yet on these subjects. Hence, many future areas of research can be proposed.

First, a promising direction for future research, in strategic management, lies in exploring further the concepts of scarcity and rarity. Understanding these concepts is very important, because they hold divergent implications within natural resources and the RBV. In fact, in the

RBV, rareness is a source of competitive advantage (Barney, 1991). However, scarcity or rareness of NR, which is defined as lack of resources (Bell et. al, 2013), can be a source of disadvantage concerning finite NR. Thus, when scarcity leads to unavailability and inaccessibility of natural resources, it becomes a source of constraint that affects firm's competitiveness (Barbier, 2021) rather than being a source of competitive advantage. In addition, Bastian, Richter & Tucci (2018) have defined NR as strategic assets. In fact, the heightened scarcity of NR can accentuate their strategic status in the RBV sense. However, Riccardo Petrella (in *Usages de l'eau et conflits*, November 2023), a political scientist and economist, highlights that the rarity attributed to NR can reinforce rivalry and scarcity of these resources. This is due to the fact that rare resource means that not everyone can possess it, and when resource becomes rare everyone does everything to capture it without taking negative externalities into account. In such context, strategic NR can become a resource in tension. Thus, the example in the exhibit 1 below, can further illustrate this idea.

For example, the water bottled firms in France are facing a real challenge of water scarcity. Indeed, presenting water as "the Blue Gold" underscores its increasing rarity, aligning with its strategic resource status in the RBV sense. However, the increased rarity of water, exacerbated by the challenge of climate change, poses a real challenge for the water bottled firms, because the unavailability of water puts these firms under constrained situation, necessitating then strategic adaptations to address this challenge. Indeed, portraying water as "the blue gold" intensifies the competition among the water bottled firms, farmers, and other actors seeking to secure their access to water. Thus, water as a strategic rare resource can pass from being a source of competitive advantage, to be a source of conflicts and constraints. Therefore, the concepts of scarcity and rarity need further investigation specially when they are discussed within the context of NR. This fact unveils a significant area for future research.

Exhibit 1: Example highlighting the divergent implications of the "Rare" characteristic

Moreover, the literature falling within RBV is more interested in the bundle of resources (Sirmon et.al, 2007), considering that sustainable competitive advantage or value creation generally comes from the combination of resources more than from a resource itself. However, in order to reintegrate natural resources into the spectrum of resources taken into account by the RBV, it seems important to develop research that consider the management practices of natural resource as the unit of analysis. In fact, as NR constitute strategic assets for firms, natural resources management practices help to reintegrate NR within RBV by emphasizing and understanding how natural resources can drive sustained competitive advantage while responding to ecological challenge. Thus, exhibit 2 provides an illustrative example that can explain this idea.

For instance, as water is today the source of competitive advantage for water bottled firms, many practices have been developed by these firms operating in France to manage water resources in a more sustainable way. For example, many groups such as Alma, Danone and Nestlé have decided to use the resource less intensively by reducing their withdrawals. Also, Nestlé has stopped exploiting water by suspending two boreholes. Moreover, Danone have decided to use alternative resources such as wastewater by adopting the Reuse plan for to limit withdrawals from the source.

Exhibit 2: Example presents the management practices of water resource as the unit of analysis.

In sum, as NR play a strategic role, zooming in on how companies can manage natural resources while being economical viable. Also, it can help researchers to expand the RBV framework to encompass a broader spectrum of resources and fitting today's challenges.

Furthermore, the results of the bibliometric analysis have highlighted a significant gap in NRBV regarding NR and NRS. This suggests an opportunity for future research to integrate the NR and NRS within the spectrum of environmental constraints proposed by NRBV, thereby broadening the scope and applicability of the NRBV. Indeed, the results of the bibliometric

analysis have showed a disparity in research focus within the NRBV. In fact, while competitive advantage has received little attention with a total keyword frequency of approximately 20, the focus has been more on performance with a total keyword frequency of around 225. However, understanding how a firm's natural resources management practices contribute to its competitive advantage is crucial because firm that effectively manage these resources may gain cost advantages, secure supply chain resilience, or differentiate products based on their sustainable practices. Thus, understanding the reasons behind the limited research attention on competitive advantage remains an important issue to explore.

Additionally, NRBV is criticized for mirroring the RBV's assumptions in terms of generating Ricardian rents through the control of rare resources (Kraaijenbrink, Spender & Groen, 2010), which can increase the scarcity of natural resources. Thus, this fact can raise fundamental questions: how can NRBV be different from RBV? Does it really enable the development of a responsible strategic approach to resource management? In sum, rethinking the NRBV's assumptions is very important, as it can help to understand what NRBV is seeking to say differently from RBV. Therefore, more empirical research is required to empirically demonstrate the limitations of NRBV and to determine how it can contribute to solving the major challenges linked to NR and NRS.

Lastly, the status of natural resources remains ambiguous and requires further exploration. In fact, there are divergent perspectives regarding the nature and status of NR. First, NR are defined as common resources (Hardin, 1968). However, the two features that characterize common NR in terms of difficulty of exclusion and subtraction create potential dilemmas in which people pursuing short-term and individualistic interests that can produce outcomes that are not in anyone's long-term interest. Second, NR can be seen and exploited by different actors as economic resources (Riccardo Petrella, in Usages de l'eau et conflits, November 2023). For example, listing water on the stock exchange, can illustrate the transition of NR towards an

economic status. Indeed, NR can be considered as strategic resources in the RBV sense. However, the strategic status of NR can be called into question, as it is likely to intensify their competitiveness and scarcity, with the negative consequences that this may have from an environmental and social point of view. Exhibit 3 shows an example of the different perceptions that different stakeholders have of the status of a natural resource, water.

Actually, the perception of water resource in France varies among different actors. For example, the environmental opponents such as environmental associations and collectives consider water as a common resource and accuse Danone in Volvic and Salvétat, Nestlé in Vittel, Alma in Cristaline and Compagnie Générale d'Eaux de Source, and Coca Cola to overexploit rare water for private interests and profit maximization (Pèlerin, Mars 2023), and to appropriate a common good for economic use (La Gazette des communes, Avril 2021). Nevertheless, while the water bottled firms exploit water as a strategic resource to create competitive advantage and generate profits, they seek to defend themselves and minimize the reproaches addressed to them. In such context, water is considered as economic resource.

Exhibit 3: Example illustrating the different perceptions of water status in France.

In sum, it can be concluded that the perception and exploitation of NR vary among different actors. However, a question may rise in such context: How can a common natural resource be considered as strategic or economic resource? However, given that NR underpin the organizations' activities, and are indispensable for their continuity, is it economically rational not to exploit those resources? Moreover, knowing that the definition and features of resources in the RBV and NRBV limit these theories to address NR related challenges, should NR be defined and managed as resources? In fact, it seems that distinct approaches are needed nowadays to manage finite NR, because as long as NR are defined as resources, different actors seek to secure their access to these resources, accentuating then the individualistic approach. Therefore, what are the alternatives approaches to manage these finite resources? It seems that the management of NR has to take into account its common nature. Thus, can the common

approach be considered as a viable alternative? According to Adams, Brockington, Dyson & Vira (2003), it is difficult to manage a common resource when it is used between individuals since it is seen as a problem of collective action that leads to NRS. However, the collective action is required to tackle NRS challenge (George et.al, 2015). Indeed, Acquier & Carbone (2020) argued that the problem resides in the governance of common NR. Thus, it seems that common NR are subject to debate and constitute an important topic for strategy for further exploration. To conclude, are natural resources common goods, resources or strategic resources? Thus, the status of NR in management literature remains unclear and needs further investigation.

3. CONCLUSION AND LIMITATION

The aim of this paper is to examine the conceptualization of NR within RBV and NRBV. Our discussion reveals that even both RBV and NRBV have incorporated the natural environment, and even NRBV regained high importance especially in the recent years, NR remain overlooked and fall outside the spectrum of these frameworks. In fact, it is very important to note that the “NR” within the NRBV does not specifically pertain to natural resources, however, the “N” within the NRBV refers to the extension of RBV by integrating the natural environment. Therefore, it can be more apt to view this perspective through the lens of N-RBV rather than NR-BV.

In addition, the conceptualization of NR by RBV and NRBV as strategic, infinite, inexhaustible resources, and sources of competitive advantage, makes these two perspectives limited in offering a sustainable management for finite and scarce NR. Moreover, NRBV and RBV that are grounded in Ricardian rents and profit maximization, which are based on competitiveness to obtain rare resources, and which place greater emphasize on economic value creation rather than environmental value creation, are not able to catch up in the great challenge of NR. Perhaps, NRBV can delve deeper into the environmental grand challenges. In addition, it is

very important to incorporate discussions of natural resources and the environment into resource theories discourses. However, these theories are limited to manage NR as long as they are grounded in the Ricardian rents. It is even crucial to wonder whether it is useful to extend these theories without calling into question the main assumptions of RBV.

In fact, this paper seeks to contribute theoretically to the grand challenge literature. Specifically, it represents the first bibliometric study conducted on NRBV. Thus, by analyzing the past to prepare for the future, this research offers insights into underexplored areas where future research efforts could be focused and highlights additional avenues to advance the understanding of these issues. In other words, this study contributes to the grand challenge literature by illuminating the dearth of studies on natural resources, by elucidating the limitations of RBV and NRBV in addressing grand challenges related to natural resources, and by advocating for the development of a novel theoretical framework that will not be rooted in Ricardian rent in order to deal with NR related grand challenges and manage a particular and ambivalent natural resource. In sum, strategy needs to evolve to take account of the major challenges linked to natural resources.

Finally, the paper is limited by the absence of certain bibliometric analysis tests, such as citation analysis and the keyword co-occurrence network visualization using VOSviewer of Biblioshiny which could highlight the most trending topics on NRBV. Thus, in future studies, these analyses will be conducted to enhance the completeness of the study.

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