

A BIBLIOMETRIC MAPPING CONCERNING THE INFLUENCE OF GENDER DIFFERENCES ON THE PERFORMANCE OF FIRMS IN THE OIL ENERGY SECTOR

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Abstract

The influences exerted by gender differences on firms' performance is a thematic of interest addressed both in academia and in company management, along the lines of the existence of subtle and systematic disparities between men and women in the professional environment, in various fields of activity, despite the progress made in promoting gender equality. Thus, the objective is oriented towards examining the perspectives from the point of view of conducting a bibliometric analysis that will contribute to the identification of the main research directions and concerns related to the influence of gender diversity on the performance of companies in the oil and gas energy sector. The methodological approach provides a broad perspective on the existing knowledge on this research topic, as the authors aim to contribute to the analysis of gender diversity in the energy-oil sector by conducting a bibliometric review of the existing literature on the Web of Science platform, from 2007 to 2024. This work contributes to a deeper understanding of the interplay between gender diversity and the performance of firms in the energy-oil sector, and can thus provide useful guidelines, both for future research and as examples of good managerial practices.

Keywords: *company performance; top management; gender diversity; bibliometric mapping.*

JEL Classification: *J16, M12, M14, M21, M48*

INTRODUCTION

Prospective Gender differences have been the subject of numerous conferences and publications for some years now, although things have changed considerably compared to perceptions 50 years ago. The presence of gender differences on company Boards can bring considerable benefits such as intangible assets: creativity, enhanced reputation, innovative organizational culture, as well as tangible ones: increased profitability, profitability, easier attraction of investors. Analyzing perspectives from different points of view, appreciating quality, dexterity, and the application of impartiality are all constructive for companies to evolve and gain competitive advantages. The study *The CS Gender 3000: Women in Senior Management*, conducted by Credit Suisse Research Institute (Kersley et al., 2019), analyzed the impact of the presence of female board members across 3,000 firms worldwide, highlighting that their involvement led to an increase in return on assets and earnings before interest, taxes, depreciation, amortization and depreciation. The presence of both women and men in firms' management structures can provide better customer perception, increased shareholder value, transparent leadership and a favorable image of social accountability.

According to a study by Boston Consulting Group (BCG), in 2022, the percentage of female employees in the energy sector, representing 29%, remained unchanged from 2018 (Beck & Pánczél, 2022). Widely regarded as one of the least gender diverse parts of the economy, the energy sector needs to change the dial, calling on all talents to deliver a secure, affordable and sustainable energy future for all (Johnstone & Silva, 2020). A number of institutional problems of gender equality in the energy sector are highlighted: the inconsistency of formal gender equality norms and existing economic practices; the lack of gender mainstreaming in energy policymaking due to insufficient attention to social relations; and the creation of additional strains in industrial relations to ensure gender equality (Shatilova et al., 2021). The development of local economies in the context of its integration into the

European environment and the global space is due to the need to improve the mechanisms and methods of interaction of all participants in economic relations (Dolega, 2019).

The present paper aims to investigate the topic of gender diversity in the energy-oil sector through a bibliometric network analysis, highlighting the dynamics of scientific literature through a scientific mapping of existing knowledge, by extracting scientific publications from the Web of Science database for the period 2007-2024, focusing the analysis on the keywords with the highest frequency, the journals that publish these topics, in terms of their number and type, on also highlighting the main terms addressed by the authors of the papers included in the database selected for investigation, respectively studying the countries of origin of the papers that will provide us with that information both about the areas of interest of the statetor and the strategic directions. Bibliometrix and Biblioshiny software have been used as a method of investigation in the critical analysis of the results, in order to fully form the main picture of the approached topic and to identify the current currents of analysis in the literature as well as the future directions towards this research field.

The following sections of the paper comprise first a part corresponding to the review of the specialized literature on the subject under analysis; the following sections will then be devoted to the methods used in order to carry out the proposed bibliometric analysis, the results and discussions on the subject under research and the main conclusions drawn from the paper.

I. LITERATURE REVIEW

You The topic of gender diversity in boards of directors has been significantly reflected in the literature in recent years, with women increasingly occupying senior management positions in the company hierarchy, demonstrating that certain essential characteristics of women have a positive impact on different areas within the company (Huang and Kisgen, 2013; Sánchez-Teba et al., 2021). Thus, this place occupied by women in the leadership of organizations could result in "building a good image" of the organization, reinforcing the mechanisms of corporate governance, given by transparency and accountability (Capezio and Mavisakalyan, 2016; Atty et al., 2018; Cumming and Leung, 2021), with an organization's effectiveness often conditioned by governance practices and strategic decisions made at the board level (Hossain et al., 2024). The relationship between the presence of women on the board and CSR performance is supported by several theories that gender diversity contributes to board effectiveness (Bear et al, 2010) or highlighting the impact of the presence of women in board positions on performance (Poggesi et al., 2020), as diversity can lead to increased organizational effectiveness and good performance as a result of a wider range of perspectives and more comprehensive decision-making (Gallego-Álvarez et al., 2010), contributing to better adaptation to market changes and enhancing the reputation and legitimacy of the organization (Soare et al., 2021).

From the analysis of some works on the presence of women in the leadership of organizations, i.e. gender diversity in the composition of the leadership, it is shown that there is a positive influence on the economic and financial performance of organizations (Konrad et al., 2008; Adams and Ferreira, 2009; Ongsakul et al., 2020).

Another approach found in the literature refers to the distinct traits and approaches that may influence how women and men perform their leadership roles, with women business leaders widely considered to have specific qualities that make them better entrepreneurs than men (Langowitz and Minniti, 2005; Martínez and Rambaud, 2019). Thus, while women have as essential traits concern, cooperation and pragmatism in solving problems, men are often motivated by financial opportunities and profit, and are more prone to take risks and adopt a more autocratic leadership style (Birindelli et al., 2019).

From the study of the literature, it reveals those aspects that show that gender differences significantly influence business performance or can improve business performance.

II. RESEARCH METHODOLOGY

This bibliometric study aims to investigate the topic of gender diversity, in the oil and gas energy sector with the aim of highlighting the dynamics of scientific literature through a scientific mapping of existing knowledge Bibliometric analysis is a process of statistical analysis, for the quantitative measurement and evaluation of publications and research papers (Goyal and Kumar, 2021). Thus, bibliometric analysis was used to extract scientific publications from the Web of Science database for the period 2007-2024, investigating a number of papers, which focused on the topic of gender diversity in the energy-oil sector, using bibliometric analysis as the method of investigation, processing of selected items and critical analysis of the results being carried out with the help of Bibliometrix and Biblioshiny software.

In order to highlight the current state of analysis of the studied topic, a report was generated from the Web of Science Core Collection online platform, using the key term gender differences energy sector, returning 88 scientific papers The graphical illustration of the number of publications is represented in Table 1.

Table 1. Data collection

Data base: Web of Science Core Collection	
Search: <i>gender differences energy sector</i>	
Results:	
1999-2024	88

Source: own processing based on data from the WOS platform

The platform indicated an important number of papers on the topic of gender differences in the oil and gas energy sector, which allowed us to analyze the most frequent keywords, the journals publishing these topics, in terms of their number and type, also highlighting the main terms addressed by the authors of the papers included in the database selected for investigation, respectively the countries of origin of the papers.

III. RESEARCH RESULTS

Figure 1 graphically shows the number of publications that have addressed gender diversity in the oil and gas energy sector, broken down by year.

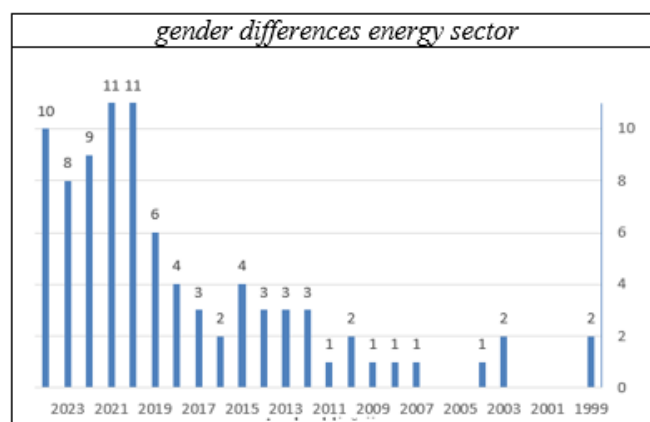


Figure 1. Breakdown of scientific work by year

Source: own processing using the Biblioshiny program

From Figure 1 it can be seen that the interest in the investigated research topic has had significant fluctuations: in the period 2009-2015 the interest was increasing compared to 2016-2017, this can be connected to the feminist movements of those periods, the ONU agenda or the level of research funding. The highest number of 24 publications was in 2020 and 2021, 11 papers each. Arguments could be the amplification of digitization, the COVID-19 pandemic that highlighted that more women were part of the workforce in this sector, so they were more likely to lose their jobs, at the same time they were providing childcare or elder care.

Because the Web of Science Core Collection platform contains mostly journals indexed by the *Institute for Scientific Information*, which is based on a complex process, through the objective of article evaluation, this approach ensures a high level of data quality and content. In order to obtain an integrated view of the topics covered, a centralization of the 10 most relevant sources presented in Table 2 has been made.

Table 2. The most relevant research sources

<i>gender differences energy sector</i>	
Research sources	Nr. articles
Energies	2
Energy Policy	2
Energy Research \& Social Science	2
Sustainability	2
2018 4th Ieee International Wie Conference On Electrical And Computer Engineering (Ieee Wiecon-Ece 2018)	1

Studying the countries of origin of the papers gives us insights into both the statetor's areas of interest and strategic directions. A suggestive representation of this type of investigation can be visualized in Figure 4.

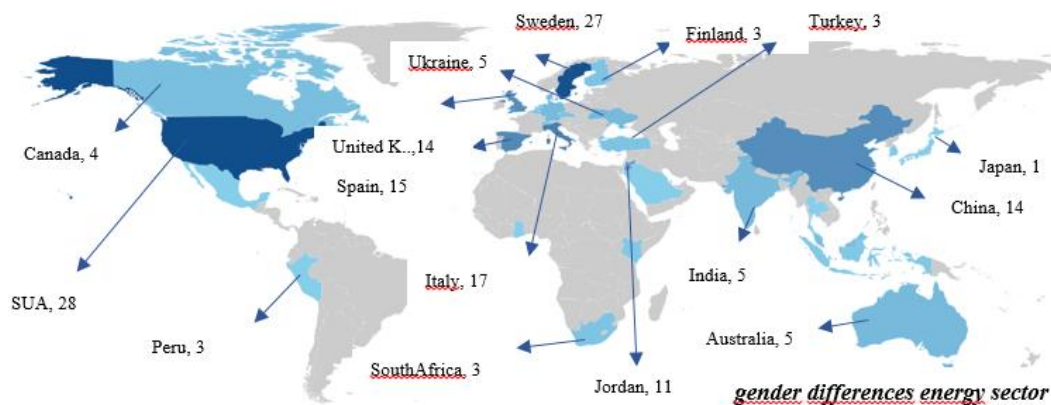


Figure 4. Countries' scientific output

Source: Own processing using the Biblioshiny program

There is a growing interest of gender differences in energy and environmental studies, environmental sciences, economics, public and occupational health, energy fuels, green sustainable science, management or business.

IV. CONCLUSIONS

The implications of gender diversity in the financial performance of the company is a debated and analyzed topic in the literature, gender can play a vital role in achieving performance, becoming a constant challenge in the management of an organization, leading to better corporate governance to match the new business culture. In corporate governance, gender diversity is desirable from the perspective of social cohesion and is an increasingly visible trend in modern companies, from an economic perspective this diversity should lead to an increase in corporate value (Rose, 2007; Gallego-Álvarez et al., 2010).

We appreciate from the literature review that, organizations should relate to an inclusive and equitable work environment, be aware of and effectively manage gender diversity in corporate governance, among the most important governance issues faced by managers is still the gender, race and cultural related composition.

Drawing on the bibliomathematical analysis on gender diversity in the energy sector provides a complex picture of the conceptual landscape of the research topic of this paper. This highlights both emerging research directions (Quttainah et al., 2023) and less studied areas (Sánchez-Teba et al., 2021). Through the bibliometric study carried out, it was possible to identify and classify the predominant terms and linkages, also present the major research concerns in the field, including the management of gender diversity in organizations. Thus, the use of bibliometric analysis outlines a detailed picture of research directions, trends and existing gaps regarding the impact of gender differences on the performance of organizations (Vieira et al., 2022), involving the search and collection of data, their processing in order to extract relevant information, leading to the creation of a network of terms, presenting them in the form of maps (Molina-García et al., 2023).

The realization of the map, where the term gender diversity is found centrally positioned, is useful to know the research trends of the authors who deal with such topics and to present the main interactions between the most frequent terms and the existing clusters. From the resulting analysis and from other works that have addressed the topic of gender diversity (Grosu et al., 2024; Mihalciuc et al., 2024; Herghelegiu et al., 2023; Bogdan et al, 2023; Grosu, Mihalciuc and Apostol, 2023) it can be observed that, the specialized publications in recent years have seen a significant increase, being justified by the growing recognition and awareness of the importance of gender diversity with its influence on organizational performance, thus resulting in the complexity and interdisciplinarity of this topic and the need for an integrated approach that contributes to a deep understanding of the role of gender diversity in various professions and fields of activity and also to the development of effective strategies and practices in various contexts of the optimal and efficient conduct of sustainable business.

A relevant conclusion on the large number of publications on the topic under review reflects the global commitment to research on the influence of gender diversity on business performance, with publications in this research area in recent years showing a significant increase, thus contributing to the understanding of how gender factors can influence organizational performance.

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