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Sustainability and SME performance in the Herbal Medicine (Jamu) sector: Future research directions

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ABSTRACT: Corporate sustainability and performance are critical amidst global challenges such as climate change and market competition. Sustainability issues are particularly relevant for herbal medicine companies because they use green and sustainable natural ingredients upstream and strive to help consumers who consume their products achieve sustainable health downstream. This study explores key trends and future research directions using bibliometric analysis with biblioshiny methods, including word cloud, tree map, co-occurrence network, factorial analysis, and thematic mapping. The study examines cross-country collaboration through a world map. The findings highlight management strategy, innovation, and efficiency as core themes supporting corporate sustainability. The co-occurrence network emphasizes the role of strategic management in performance, while the tree map identifies impact, capability, and market orientation as key factors. Factorial analysis distinguishes conceptual themes such as corporate sustainability from practical applications such as financial performance. Developed countries, especially China and the USA, dominate the research, with limited contributions from developing countries. The study shows that innovative strategies, efficiency, and green technology enhance sustainability and performance. Future research should explore green supply chains, sustainability measurement, and stronger collaboration with developing countries for holistic solutions.
Keywords: corporate performance; strategic management; innovation.

Sustentabilidade e desempenho das PMEs no setor de fitoterapia (Jamu): Direções futuras de pesquisa

RESUMO: A sustentabilidade e o desempenho corporativo são cruciais em meio a desafios globais, como as mudanças climáticas e a concorrência no mercado. As questões de sustentabilidade são particularmente relevantes para as empresas de fitoterapia (Jamu), pois utilizam ingredientes naturais verdes e sustentáveis no upstream e se esforçam para que os consumidores que consomem seus produtos alcancem a saúde sustentável no *downstream*. Este estudo explora as principais tendências e as direções futuras de pesquisa por meio de análise bibliométrica com métodos *biblioshiny*, incluindo nuvem de palavras (*word cloud*), mapa em árvore (*tree map*), rede de coocorrência, análise fatorial e mapeamento temático. O estudo examina a colaboração internacional por meio de um mapa mundial. Os resultados destacam a estratégia de gestão, a inovação e a eficiência como temas centrais que sustentam a sustentabilidade corporativa. A rede de coocorrência enfatiza o papel da gestão estratégica no desempenho, enquanto o mapa em árvore identifica impacto, capacidade e orientação para o mercado como fatores-chave. A análise fatorial distingue temas conceituais, como a sustentabilidade corporativa, de aplicações práticas, como o desempenho financeiro. Os países desenvolvidos, especialmente a China e os EUA, dominam a pesquisa, enquanto as contribuições dos países em desenvolvimento são limitadas. O estudo mostra que estratégias inovadoras, eficiência e tecnologia verde aumentam a sustentabilidade e o desempenho. Pesquisas futuras devem explorar cadeias de suprimentos verdes, medição da sustentabilidade e uma colaboração mais forte com países em desenvolvimento para soluções holísticas.
Palavras-chave: desempenho corporativo; gestão estratégica; inovação.

1. INTRODUCTION

1.1. Background

Currently, the business world is facing problems; on the one hand, it is required to improve business performance amidst the changing business landscape and marketing strategies due to the rapid advancement of communication and information technology. However, they are also required to implement sustainable corporate practices to reduce the negative impacts of climate change on ecology and the environment. Therefore, nowadays, company performance is

not enough to focus only on traditional short-term financial goals such as profitability, sales volume, and market share (KORKMAZ; NUR, 2023). In recent decades, attention to sustainability and firm performance has increased significantly. Sustainability is not only considered a moral obligation of the company but also an important strategy that directly impacts improving business performance. According to various studies, companies that implement sustainability principles tend to have a competitive advantage in the long term (QAIM et al., 2021). This is because sustainability helps companies manage resources more efficiently, increase innovation, and strengthen stakeholder relationships.

Many companies realize the importance of integrating sustainability into their business strategies as global trends develop. A critical aspect of sustainability is its ability to create sustainable economic, environmental, and social value simultaneously (ALAM; TARIQ, 2023). Participatory decision-making and sustainable organizational development can improve corporate environmental management and sustainability performance (MAÎTRE et al., 2022). Sustainable practices in companies that have an impact on the environment are reflected in improvements to operational processes and products produced by reducing the use of toxic substances, minimizing waste, reducing CO_2 emissions, and designing products to be recyclable or naturally decomposable (CORTEZ et al., 2011). In the context of herbal medicine companies, the aspect of environmental sustainability must also be focused on efforts to preserve medicinal plants because according to the International Union for Conservation of Nature and the World Wildlife Fund, there are around 50,000 to 80,000 species of flowering plants used for medicinal purposes worldwide that are threatened with extinction due to forest exploitation (CHEN et al., 2016; KATU-AMINA, 2025). One solution to overcome these problems and ensure the sustainability of medicinal plants is germplasm. The benefits of germplasm include cryopreservation of cell and tissue cultures for many plant species, preservation of plant material from threatened species, maintaining long-term viability of cell cultures that produce secondary metabolites, storing difficult-to-grow seeds, preserving disease-free plant material, preserving somaclonal variants, storing rare germplasm from genetic modification methods, extending the life of pollen, and facilitating international information exchange through germplasm banks (BASHEER, 2021).

Sustainable practices in companies that have an impact on the environment are reflected in improvements to operational processes and products produced by reducing the use of toxic substances, minimizing waste, reducing CO_2 emissions, and designing products to be recyclable or naturally decomposable (CORTEZ et al., 2011). Sustainable practices in companies that have economic and social impact are reflected in various corporate initiatives and responsibilities to conduct business based on the principle of economic inclusiveness by involving related local industries in the company's supply chain and empowering the surrounding community (KOROLEVA et al., 2020; SHAIKH, 2021; SAAVEDRA-GARCÍA, 2022; GAVALAS, 2024). This integration is essential in building a positive corporate image while increasing productivity and operational efficiency.

In the context of herbal medicine companies, sustainability aspects are prioritized in occupational safety and health (OHS) including: 1) OHS management system; 2) provision of health facilities for workers; 3) OHS training, 4) mitigation of work accident risks; 5) hazard identification, risk assessment, and incident investigation; and 6) OHS organization (TRIANA et al., 2024). The occupational health and safety management system of herbal medicine companies must establish sustainable relationships with suppliers because they are an important part of the value chain related to the sustainability of the volume and quality of raw materials (simplicia) to produce herbal orbals that meet pharmaceutical quality standards (TRIANA et al., 2024). Moreover, herbal medicine companies must dare to proclaim the integrity of their sustainable products including: 1) certified food safety and quality management; 2) safe, healthy, and quality products; 3) sustainable product research, innovation, and development; 4) raw material quality standards; 5) sustainable raw material supply; 6) supplier audit and coaching; 7) responsible marketing, packaging, and labeling; 8) packaging and labeling; and 9) consumer complaint facilities (MIRZAEIAN et al., 2019; TRIANA et al., 2024; JAMALUDIN et al., 2024).

Herbal medicines must be safe and medically and pharmaceutically relevant. Various facts prove that usually the efficacy of herbal medicine is medically confirmed through the chemical substances contained in medicinal plants, for example the efficacy of herbal medicine derived from the white willow tree (Salix alba) for analgesics, antipyretics, and anti-inflammatories, which are then confirmed because they contain salicylic acid; Herbal medicine derived from the original arnica root (Mountain Arnica) has healing, anti-inflammatory, analgesic and antiseptic properties, confirmed because it contains several chemical compounds such as phenol, flavonoids and terpenes; Herbal medicine derived from valerian root (Valerian officinalis) which is efficacious for treating anxiety, nervousness, and epilepsy, its anxiolytic properties have been confirmed due to the synergism of sesquiterpenes, alkaloids, and monoterpene derivatives; Herbal medicine derived from ginkgo (Ginkgo biloba) which is efficacious for increasing cognitive capacity and concentration, heart and lung tonic, and topical treatment of wounds and gastrointestinal problems, confirmed because it contains terpenoids, flavonoids, ginkgolides, and bilobalides; and many other herbal medicines (LUSZCZKI et al., 2019; SEO et al., 2021; SOUZA et al., 2024).

Moreover, recent research has highlighted a positive correlation between sustainability practices and corporate performance. Companies that incorporate sustainability principles often achieve stronger financial performance by effectively managing environmental risks, lowering operational costs, and fostering value-added innovations (SCHMIDT; OSEBOLD, 2017). This profit is obtained from a sustainable production process by reducing operational costs through efficient energy use, and the entire production process is effective and productive. Moreover, the products produced are of high quality and based on innovation. Thus, the company's long-term goal to run a business that focuses on sustainability issues is to make a profit. As a result, sustainability benefits the environment and society and enhances a company's profitability (LU et al., 2022; A et al., 2023).

1.2. Gap research

Further research is needed to explore how corporate governance systems can shape sustainable organizational

cultures. Measurement, management, and communication of corporate sustainability performance are promising research areas. Evidence suggests that management control systems and investor pressure can improve corporate sustainability outcomes. Further research is needed to develop better sustainability metrics and understand their impact on financial performance (SUNANI et al., 2024). A conceptual framework for integrating sustainability performance into business has been proposed, which includes corporate sustainability principles and core sustainable business elements (SUNANI et al., 2024). This study highlights key contributions and gaps in the literature and guides future research (MORIOKA, 2014). Current trends in sustainable organizational management indicate that this area of research is still in its infancy and has excellent research potential.

Further research is required to examine the role of technology and innovation in advancing sustainable practices within organizations. This is crucial for understanding how organizations can maintain competitiveness in the global market. Additionally, the link between corporate sustainability practices and financial performance has gained increasing research attention. While most studies indicate a positive correlation, differences in research methodologies and variable measurements have led to varying perspectives. Therefore, further investigation is necessary to establish a more unified understanding of this relationship. This study analyzes trends and future research directions concerning sustainability and corporate performance in business management. A bibliometric approach comprehensively maps how sustainability contributes to corporate performance while identifying research gaps for further exploration.

Research on key performance indicators (KPIs) has covered various fields, such as business management, finance, operations, and sustainability. Each study includes essential elements, including the study's title, the author's name, the year of publication, the performance indicators used, the KPI categories, and the research methods applied. Various approaches are used in this study, including balanced scorecard, data envelopment analysis (DEA), statistical regression, expert interviews, case studies, and bibliometric analysis (HORVATHOVA; MOKRISOVA, 2023; VARELAS et al., 2024). In addition, the study also discusses aspects of business sustainability, operational efficiency, and management strategies in various sectors, including the agricultural, financial, technology, and education industries.

Some studies highlight the influence of business strategy on company performance (Bubenik et al., 2022), while others explore the relationship between social capital and corporate sustainability (LI et al., 2022). In addition, the study also discusses the implementation of performance management systems in various industries, such as manufacturing, hospitality, and healthcare (SILVESTRI et al., 2021). With a multidisciplinary approach, this study provides deeper insight into the application of KPIs in improving organizational competitiveness and efficiency. Although many studies have discussed the use of KPIs in measuring business performance and sustainability, there are still limitations in the holistic integration of KPIs with sustainability aspects in various industries.

Most studies focus more on financial and operational aspects, while social and environmental sustainability dimensions have not been widely studied (HŘEBÍČEK et al., 2012; ELEFTHERIADIS; ANAGNOSTOPOULOU, 2017). In the modern business world, sustainability is a significant factor in maintaining long-term competitiveness. Therefore, further research is needed to develop a performance measurement model that considers both efficiency and profitability and social and environmental impacts. In addition, although several studies have used approaches such as the balanced scorecard and DEA in evaluating business performance, there are still limitations in integrating multidisciplinary methods. Horváthová; Mokrišová (2023) adopted the balanced scorecard and Lasso regression to assess financial performance in the heating industry, while Varelas et al. (2024) applied the DEA method to measure the efficiency of the tourism sector. The lack of integration between strategic, operational, and sustainability perspectives creates a research gap that can be addressed by developing a framework that accommodates various aspects in a more practical and applicable performance measurement system.

In addition to the limitations in sector coverage, existing research still focuses more on financial indicators such as Return on Investment (ROI), Return on Assets (ROA), and profit margin. In contrast, non-financial factors such as innovation, employee engagement, and organizational culture have not been widely discussed; Radonić et al. (2021) used survey methods and statistical analysis to evaluate the impact of intangible assets on IT company performance, while Pokynchereda et al. (2017) used a conceptual approach in assessing human resource accounting in value-based businesses. The lack of research that combines qualitative and quantitative methods to understand the impact of non-financial factors on business performance is a gap that needs to be filled through further research. In addition, the development of digitalization has brought significant changes to the performance measurement system. However, few studies still discuss how digital technologies, such as artificial intelligence and data analytics, can improve the effectiveness of KPIs. Bokolo (2022) examines the interoperability of digital systems using design and implementation methods, while Khan et al. (2022) apply an empirical study based on macroeconomic data to evaluate how machine learning can be applied in sustainable business management. These methodological differences indicate that there are still research opportunities to develop a more adaptive digital-based KPI system to provide real-time analysis for various industries.

Most KPI-related studies are cross-sectional, describing conditions at a specific period, so they cannot capture the dynamics of performance changes in the long term. Longitudinal studies that observe the development of business performance over an extended period are still minimal. However, this approach is essential in understanding changes that occur due to internal and external factors. Bubenik et al. (2022) applied survey studies and strategy design in evaluating the impact of strategic changes on business efficiency, while van Tuin et al. (2020) used a quasi-experimental study to assess the relationship between leadership and employee well-being. More in-depth longitudinal studies are needed to understand patterns of business performance changes and help companies design more adaptive strategies to achieve better business sustainability.

Finally, many studies on KPIs are still carried out in general without considering the specific characteristics of each industry. More in-depth studies in the agribusiness

sector, creative industries, or the informal sector are still limited, even though each industry has different challenges and opportunities in measuring and improving its performance. Hřebíček et al. (2012) used a descriptive approach in assessing ESG indicators in the agribusiness sector, while Cvijanović et al. (2015) applied a field survey and Balanced Scorecard approach to determine the impact of marketing consulting on agrarian clusters in Serbia. These differences in methods indicate that more in-depth empirical data-based research is still needed to understand how performance measurement systems can be tailored to the specific needs of different industries. Thus, developing a more contextual KPI model can help companies optimize their business strategies according to the characteristics and dynamics of the sectors they face.

1.3. Literature review

Sustainability in business management has become a vital issue that is increasingly receiving attention among academics and practitioners. Companies today are not only faced with economic challenges but also with increasing social and environmental responsibilities. In this context, implementing Key Performance Indicators (KPIs) that focus on sustainability has become the main instrument in evaluating company performance. Several studies have demonstrated that integrating various management systems, such as ISO 9001 (Quality Management), ISO 14001 (Environmental Management), and ISO 45001 (Occupational Health and Safety), plays a crucial role in enhancing sustainable business performance. Research by Silvestri et al. (2021) revealed that implementing the Global Performance Index for Integrated Management Systems (GPI-IMS) offers significant advantages in assessing company performance from multiple perspectives, including social and environmental aspects.

The priority aspects of environmental sustainability in herbal medicine companies include: 1) environmental management system and ISO 14001 certification; 2) access to clean water and sanitation; 3) wastewater management; 4) production machine innovation; 5) reduction of GHG emissions, 6) energy efficiency; 7) utilization of renewable energy; 8) management of B3 waste and B3 waste reduction program; 9) management of non-B3 waste and non-B3 waste reduction program; and 10) maintaining the sustainability and diversity of medicinal plants (TRIANA et al., 2024). The diversity of medicinal plants must be maintained and preserved because they have many medicinal properties associated with substances such as alkaloids (nitrogen), flavonoids (phenolics), terpenes and other bioactive substances, which have certain physiological effects (KUMADOH et al., 2020; SOUZA et al., 2024).

Along with the increasing need for holistic performance management, many companies have begun to adopt a Balanced Scorecard (BSC)-based approach to assess their sustainability. This approach allows companies to measure financial, operational, social, and environmental performance (FACHRUDIN et al., 2024). MCS (Management Control Systems), which focuses on performance evaluation using BSC, has encouraged increased organizational managerial creativity and innovation. According to Fachrudin et al. (2024), effective MCS can improve company performance and accelerate the adoption of innovations needed to support long-term sustainability (FACHRUDIN et al., 2024). Therefore, innovative management utilizing appropriate KPIs is essential to achieving sustainable business goals. In addition, it is vital to highlight the influence of leadership on sustainability and company performance.

Research by van Tuin et al. (2020) shows that leadership development programs based on Self-Determination Theory (SDT) can improve business performance and reduce employee absenteeism by increasing intrinsic motivation and satisfaction with autonomy. In this context, programs that involve the active involvement of leaders in creating a work environment that supports employees' basic psychological needs improve individual performance and support organizational sustainability through better human resource development. In the tourism sector, especially in Greece, research combining Data Envelopment Analysis (DEA) with KPIs shows that evaluating the efficiency and performance of tourism destinations can be significantly improved by applying appropriate KPIs. Varelas; Tsoupros (2024) suggest that tourism management and marketing destinations (DMMOs) should be more strategic by using KPIs to improve the operational effectiveness and long-term sustainability of tourism destinations. Using DEA analysis, managers can make data-driven decisions that consider financial aspects and social and environmental sustainability, which are key to responsible tourism growth. In facing the challenges of globalization and climate change, companies must also consider the impact of their strategic decisions on sustainability.

Research Hornungová (2015) emphasizes the importance of selecting the right performance indicators in measuring a company's progress toward sustainability goals. Through factor analysis, it was found that indicators such as Return on Investment (ROI) and Cash Flow provide a better picture of the financial impact of decisions taken by companies in the context of sustainability. Therefore, companies committed to sustainability must adopt a more integrative approach to evaluating their performance by simultaneously considering economic, social, and environmental aspects. Overall, the direction of future research in business management will increasingly focus on the integration of financial performance and sustainability. Future research is expected to develop further analytical tools and models to help companies measure their performance holistically, including sustainability variables as key KPIs. Additional research also needs to explore the role of digital technology and big data in improving decision-making related to sustainability and business performance (VARELAS; TSOUPROS, 2024). Thus, sustainability becomes a social goal and a key driver of effective and efficient company performance in the long term.

2. MATERIAL AND METHODS

This study employs a bibliometric analysis approach, a systematic method for examining literature to comprehensively understand trends, relationships, and research gaps within a specific field. This analysis is applied to review the literature on financial performance evaluation and its implications in the business world. A qualitative methodology focuses on content analysis of sustainability and corporate performance papers, which aligns with the chosen approach. The study's methodology consists of two main stages. The first stage involves data extraction, including fundamental data selection and search strategies, followed by bibliometric analysis using bibliometric techniques supported by relevant software. The selected database was chosen due to its frequent publication of theoretical and empirical studies related to the Sustainable Development Goals (SDGs).

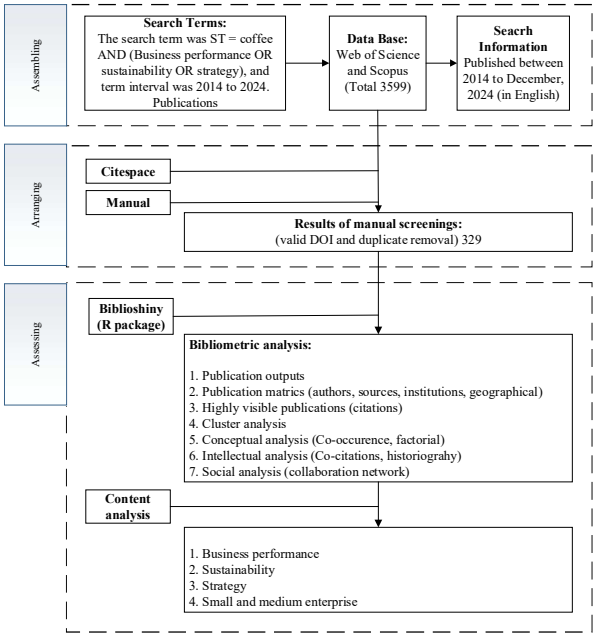

Figure 1. Methodological framework.
Figura 1. Quadro metodológico.

RQ-1. How has research on sustainability and corporate performance evolved?
RQ-1. Como evoluiu a pesquisa sobre sustentabilidade e desempenho corporativo?

RQ-2. What collaborative partnerships are emerging between countries, authors, and institutions in sustainability and corporate performance research?
RQ-2. Que parcerias colaborativas estão surgindo entre países, autores e instituições na pesquisa sobre sustentabilidade e desempenho corporativo?
RQ-3. Which articles and authors are most influential in sustainability and corporate performance research?
RQ-3. Quais artigos e autores são os mais influentes na pesquisa sobre sustentabilidade e desempenho corporativo?

RQ-4. Which countries or regions are leading the way in research on sustainability and corporate performance?
RQ-4. Quais países ou regiões estão na vanguarda da pesquisa sobre sustentabilidade e desempenho corporativo?

RQ-5. What are the main topics and focuses in sustainability and corporate performance research?
RQ-5. Quais são os principais tópicos e focos na pesquisa sobre sustentabilidade e desempenho corporativo?

RQ-6. What thematic trends and new research areas are emerging in sustainability and corporate performance research?
RQ-6. Quais tendências temáticas e novas áreas de pesquisa estão emergindo na pesquisa sobre sustentabilidade e desempenho corporativo?

We selected citation databases that encompass literature on business performance, sustainability, and companies to gather data. Scopus and Web of Science are widely utilized by researchers for literature searches and bibliometric analysis (SUDARSANA; BABA, 2019; MISHRA et al., 2020, 2021). In this study, the Web of Science (WoS) Core Collection is the primary data source for processing and analysis. The analysis covers publications from the period 2014 to 2024.

Bibliometrics employs mathematical and statistical methods to quantitatively examine literature, particularly about scientific publications' production, growth, maturation, and utilization. Consequently, bibliometrics has become a widely used tool for assessing and analyzing research trends, including researcher productivity (Maître et al., 2022), institutional collaboration, the impact of a country's scientific investment on national R&D productivity, and academic quality, among other applications.

Bibliometric analysis comprises two main components: performance analysis and knowledge mapping analysis. Performance analysis utilizes bibliometric indicators to evaluate the productivity of various entities, such as authors, institutions, countries, and journals, as well as the impact of publications based on citation data. In contrast, knowledge mapping analysis provides a structural and temporal representation of the cognitive and social networks within a specific research domain (COBO et al., 2012). Several tools have been developed to facilitate bibliometric analysis, including Biblioshiny, which is built on the R programming environment. Biblioshiny is an open-source application capable of importing data from multiple sources, such as Scopus and Web of Science, while offering a variety of bibliometric analysis tools (ARIA; CUCCURULLO, 2017). In this study, we utilized several modules available in the Bibliometrix application, including primary information, annual scientific production, citation analysis, most relevant sources, key authors and affiliations, country distribution, and word cloud visualization.

3. RESULTS

Figure 2 shows several thematic clusters identified from this analysis, each reflecting a different research focus. The first cluster shows the relationship between knowledge, management, strategy, and human performance themes. This cluster illustrates the importance of a knowledge-based approach and management strategy in improving company performance, especially those related to human and economic aspects. The second cluster focuses on sustainability (sustainable development, environmental management, and stakeholder engagement). This theme highlights how sustainability efforts in environmental management and stakeholder engagement contribute to long-term company performance. The third cluster is related to operational efficiency, including keywords such as efficiency, decision-making, sales, and supply chains.

Figure 3 shows how the distribution of literature follows Bradford's Law. Core sources such as Sustainability (Switzerland) are the journals most frequently cited or referenced in sustainability and business performance research. This suggests that these journals have a significant influence on shaping thinking and research direction in this area. Journals such as Uncertain Supply Chain Management and Cogent Business and Management are in the second tier, which, although their contribution is not as significant as the core journals, still provide essential context, especially in the area of uncertain supply chain management and business management in general. Other journals in the core sources also reflect a multidisciplinary focus, such as the Journal of Open Innovation, which indicates a strong relationship between open innovation, sustainability, and firm performance. This confirms that this topic is not only limited to management but also encompasses other disciplines, such as innovation, economics, and technology.

Figure 4, in Biblioshiny's analysis, displays the relative contribution of journals to research on the topic; the horizontal axis depicts the impact size (H-index), which

reflects the number of essential articles cited in a journal, while the vertical axis lists the journal names. The journal Sustainability (Switzerland) has the highest local impact with an H-index of 31, indicating its dominant role in the field. The Journal of Open Innovation: Technology, Market, and Complexity is in second place with an H-index of 16, followed by Economic Research-Ekonomska Istraživanja and Technological Forecasting and Social Change with values of 15 each. Other journals, such as Business Strategy and the Environment, Heliyon, and Journal of Cleaner Production, have H-index values ranging from 9 to 11, indicating significant but smaller contributions compared to sustainability.

The dendrogram derived from this bibliometric analysis presents the structure of keyword groupings based on conceptual similarity using hierarchical clustering. In the dendrogram, the horizontal axis identifies the analyzed keywords, so the labels on this axis do not contain numerical values or statistical meaning and are only intended to visualize the tree-like grouping. In contrast, the vertical axis provides substantive information by indicating the dissimilarity index among keywords. The values on the vertical axis represent cluster merging distances, where lower values indicate closer thematic relations and higher co-occurrence in the literature. In contrast, mergers at higher values reflect greater differences among keyword groups. Accordingly, the horizontal axis identifies the keywords, while the vertical axis maps the epistemic proximity among them, allowing the dendrogram to illustrate the overall clustering structure within the examined research domain.

Understanding both axes reveals the formation of several main thematic clusters. The first cluster groups keywords related to sustainability, corporate governance, and business performance that merge at relatively low vertical values, indicating strong linkages between sustainability and firm performance in prior studies. The second cluster consists of innovation, competitiveness, and business model, which merge at intermediate levels, indicating a moderate thematic relationship between innovation, competitive positioning, and business model development. The third cluster comprises operational performance, manufacturing, and quality management, which merge at slightly higher levels, showing a distinct group concerned with process management and operational efficiency. Thus, the axes jointly not only structure the clusters but also provide a comprehensive understanding of thematic patterns, revealing dominant trends and research directions in the analyzed field.

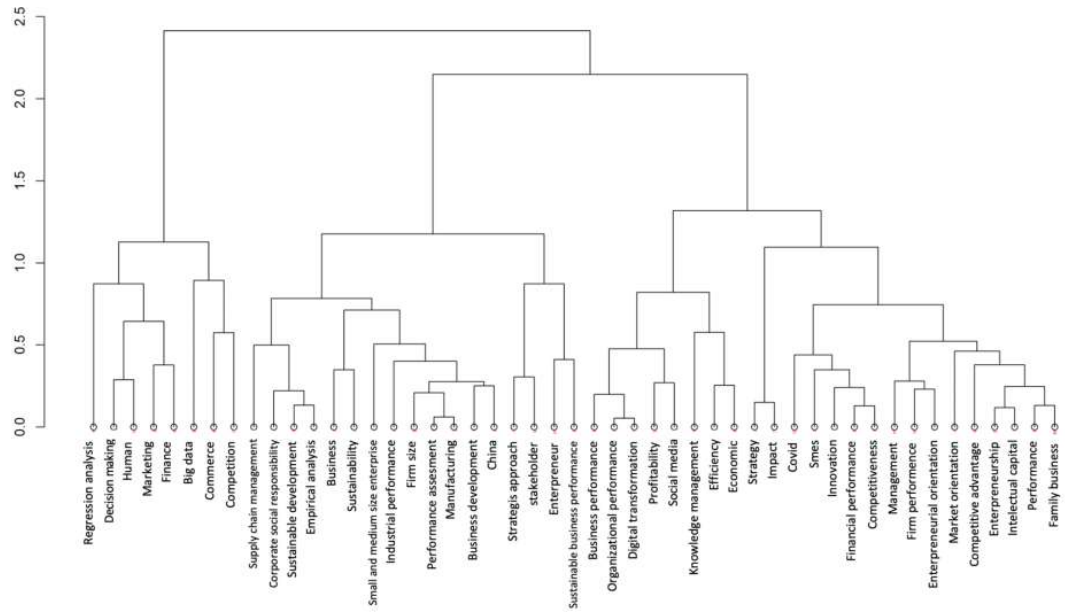

Figure 2. Tematik dendrogram.
Figura 2. Dendrograma temático.

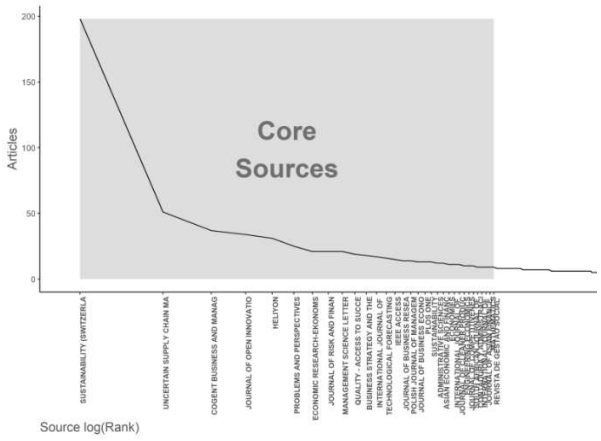

Figure 3. Bradford's Law.
Figura 3. Lei de Bradford.

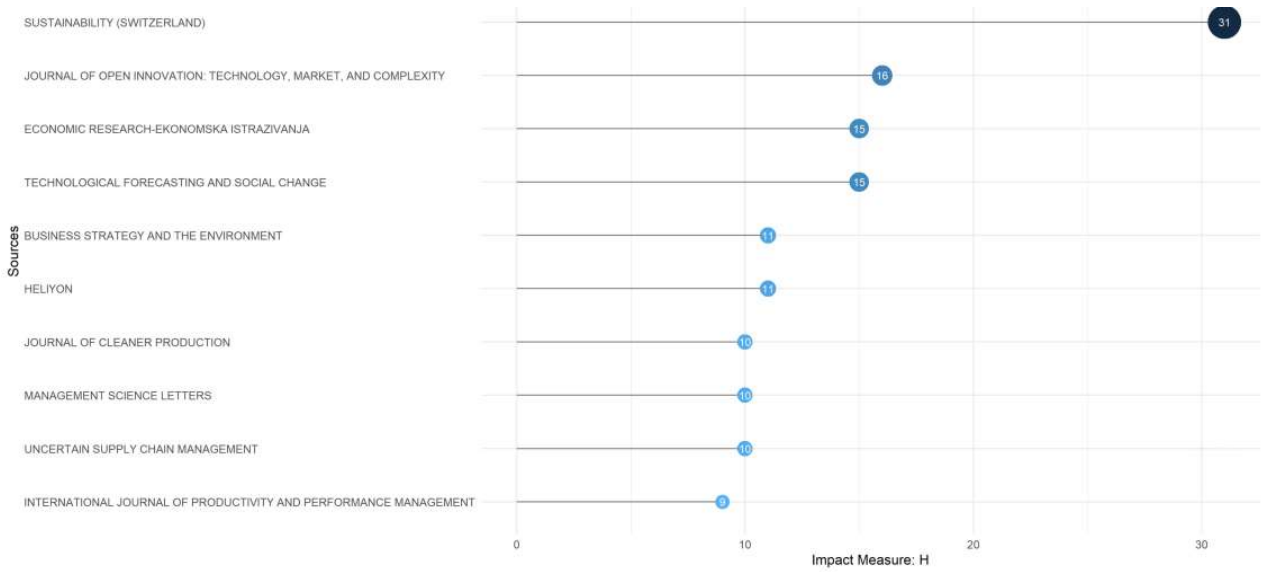

Figure 4. Sources' local impact.
Figura 4. Impacto local das fontes.

Figure 5 shows the authors' contributions to the research based on the number of documents produced each year. Nguyen H is one of the most productive authors, with his peak contribution in 2021, making five papers, indicated by the largest circle in the graph. His contributions are spread over the past few years, indicating a consistent production pattern. Other authors, such as Wang Y, show a stable production pattern since the beginning of their contributions. Wang Y produces documents almost every year, with a total contribution of 4 papers in 2020 and 3 documents in other years. This author plays a significant role in producing relevant research over time.

Meanwhile, Rajnoha R has a more sporadic but significant contribution pattern, with three documents produced in 2018 and 2020. Yasa N shows a contribution of 2 papers in 2020 and 2022, reflecting the attention to research in specific periods. Authors such as Ali S are making increasing contributions, producing two documents in 2022 and showing potential to be more productive.

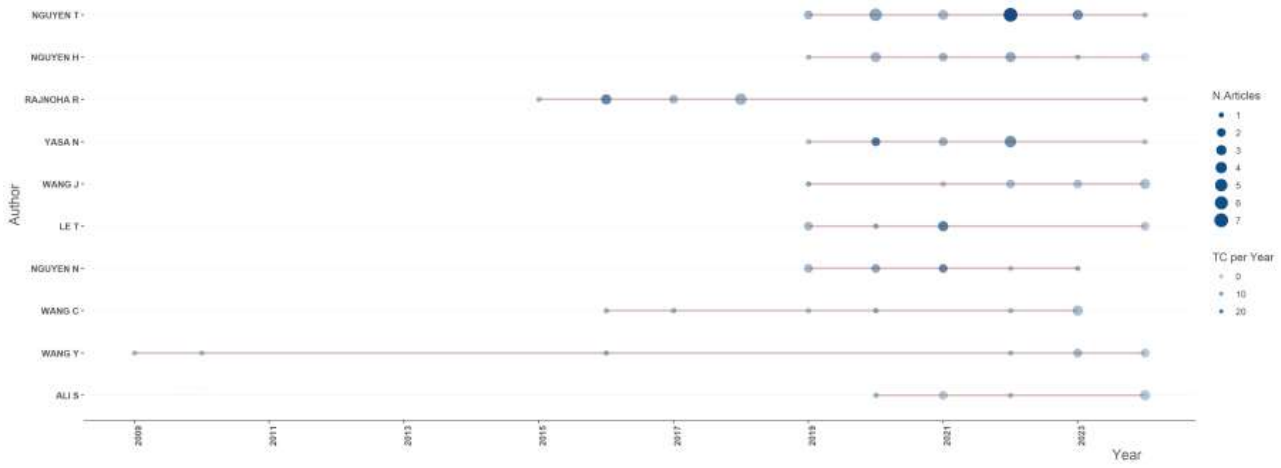

Figure 5. Authors' production over time.
Figura 5. Produção dos autores ao longo do tempo.

Figure 6 illustrates the distribution of author productivity and represents the percentage of authors based on the number of documents they have produced. It reveals that most authors contribute only one document, aligning with Lotka's Law, which states that most contributions in a field come from many low-productivity authors. In contrast, only a small fraction of authors demonstrate high productivity. In this graph, more than 75% of authors produce only 1 document, reflecting the dominant contribution of low-productivity authors. The number of authors decreases sharply as the number of papers produced increases. Authors who make 2 to 5 documents account for about 20% of authors, indicating that this group has a larger contribution. However, they are relatively small in number compared to the group with one document. Highly productive authors who produce more than 10 documents account for less than 5% of the total authors. This distribution suggests that the research community on this topic has a broad author base, with most authors contributing only occasionally. In contrast, a few highly productive authors play a significant role in

shaping and developing the literature in this field. This pattern reflects a typical distribution in many research fields, where a small number of authors make consistent and significant contributions.

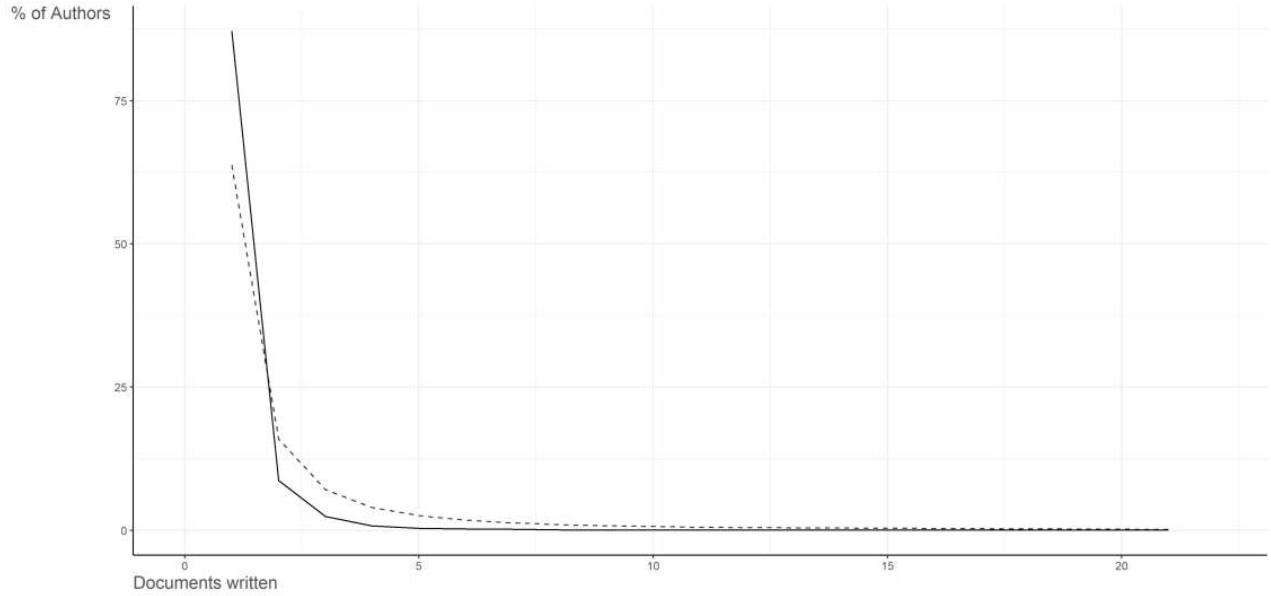

Figure 6. Author productivity through Lotka's Law.
Figura 6. Produtividade do autor segundo a Lei de Lotka.

Figure 7 illustrates the local influence of authors based on their h-index values, which measures the productivity and citation impact of an author's work in the local academic community on a given topic. The higher the h-index value, the greater the author's contribution to regional research. The author with the highest h-index value is Nguyen T, with a value of 9, indicating that this author is productive and has many highly cited works in the local community. Next, authors such as Nguyen N, Rajnoha R, and Yasa N each have an h-index value of 7, placing them as major contributors with a significant impact on research in this area.

Several other authors, such as Garcia-Perez A, Giantari I, and Kumar A, have an h-index value of 6, indicating significant influence but slightly lower than the leading group. Authors such as Tajeddini K, Chen H, and Dey P recorded an h-index value of 5, which still reflects a significant contribution to research but with a more limited impact than groups with higher scores.

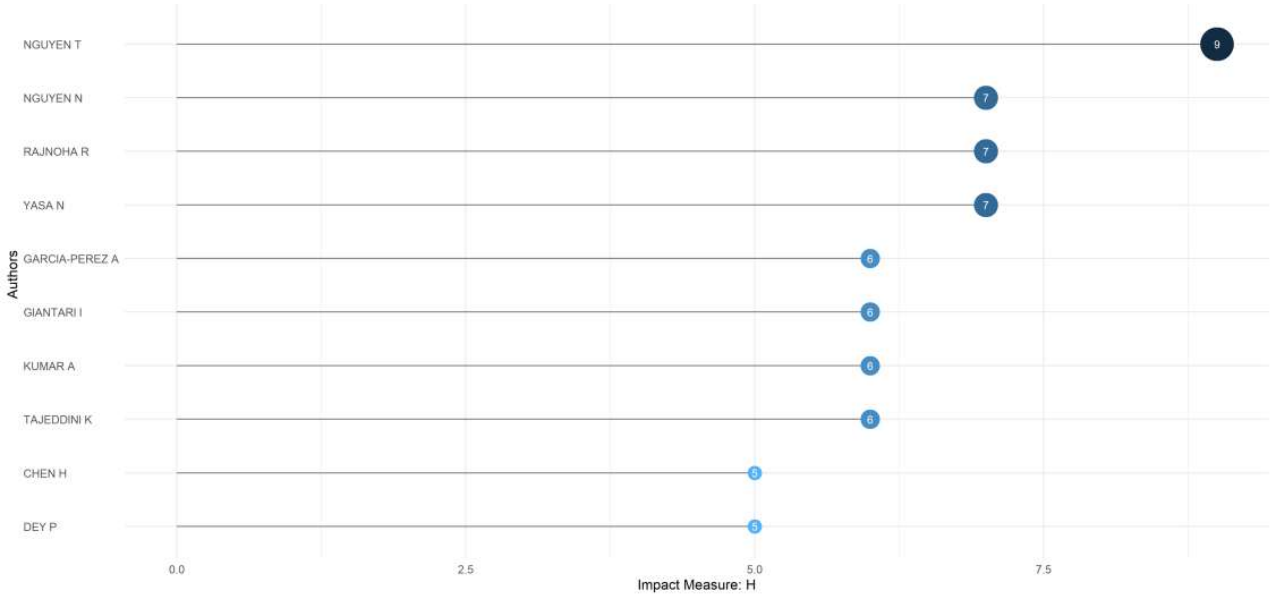

Figure 7. Authors' local impact.
Figura 7. Impacto local dos autores.

Figure 8 shows the affiliations or institutions that have contributed the most to the research; the number of papers produced by each institution is represented by the length of the horizontal line, providing an overview of the level of involvement of the institution in this topic. The University of South Africa is ranked first, with 28 articles contributing, indicating the institution's significant role in leading research in sustainability and corporate performance. The second position is occupied by Udayana University from Indonesia, which produced 27 articles, reflecting this institution's high

interest and involvement, especially in the local context. The University of Zagreb follows in third place with 25 articles contributed, indicating that this institution is also active in related research.

Other institutions, such as Brno University of Technology and King Abdulaziz University, each produced 18 articles, reflecting their significant involvement, although lower than the top three institutions. Universiti Teknologi MARA, Universiti Utara Malaysia, University of Belgrade, and University of Johannesburg produced 17 articles, while Coventry University contributed 16. This shows that the contributions of these institutions remain relevant and vital in shaping the literature on this topic.

Country	Freq
China	247
Indonesia	241
Uk	150
Spain	127
Malaysia	105
Usa	95
South africa	88
India	76
South korea	72
Italy	64

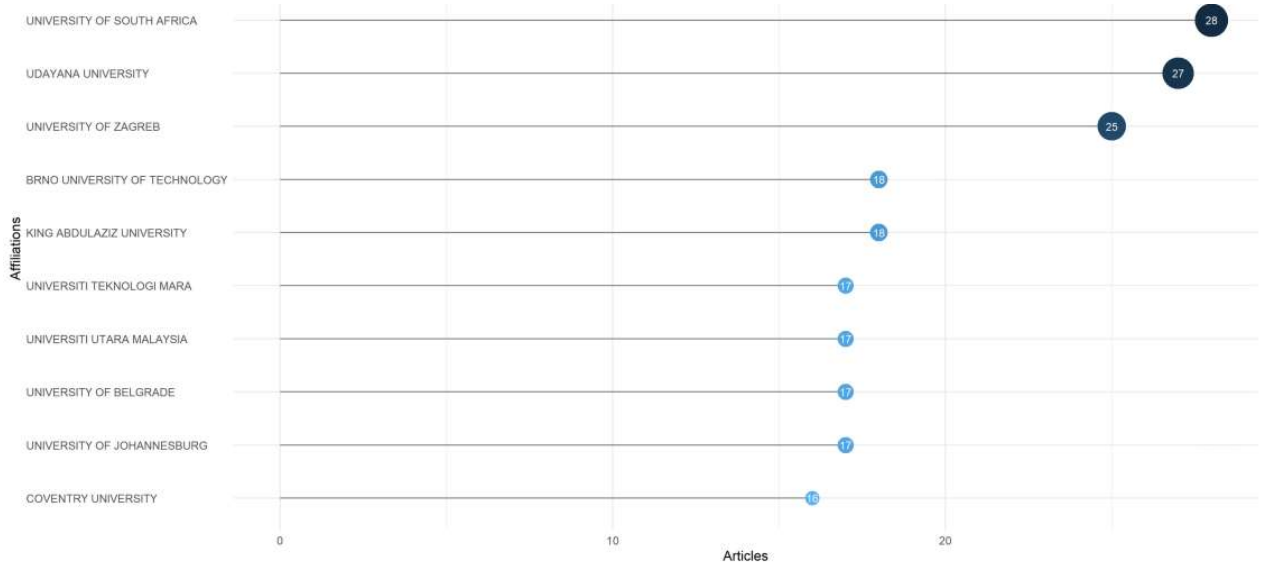

Figure 8. Most relevant affiliations.
Figura 8. Afiliações mais relevantes.

Figure 9 shows that Indonesia is in the top position with 190 documents, most of which come from Single Country Publications (SCP). The research in Indonesia is generally domestic and conducted through domestic collaboration, with limited international involvement. The second position is occupied by China, which recorded 167 documents, with a pattern similar to Indonesia, where most publications come from SCP. However, the contribution of multiple country publications (MCP) in China is slightly higher than that of Indonesia, indicating international involvement in some research. These countries strongly focus on developing domestic research with great potential to increase global impact through wider international collaboration.

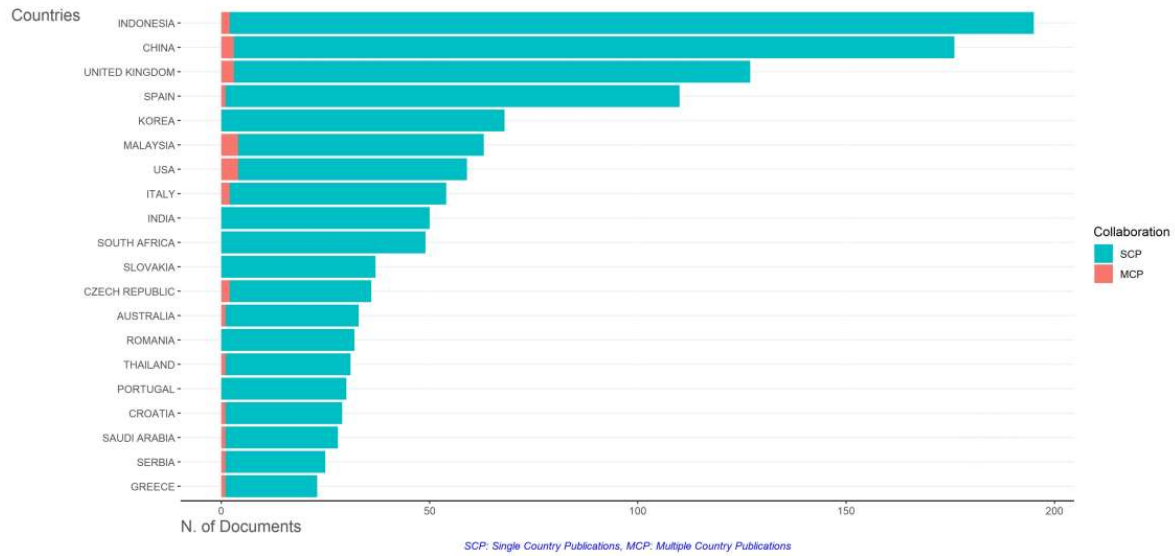

Figure 9. Corresponding authors' countries.
Figura 9. Países dos autores correspondentes.

Countries such as the United Kingdom (102 documents), Spain (90 documents), and Korea (85 documents) show significant contributions, with a higher proportion of MCP. This reflects the active involvement of these countries in international collaboration, which allows them to share knowledge and innovation across countries. For example, the United Kingdom has a strong pattern of cooperation, which strengthens the global influence of the research produced. In addition, countries such as Malaysia (79 documents) and the USA (72 papers) also make significant contributions. Malaysia has a balanced SCP and MCP mix pattern, indicating an essential role in domestic and international research. Meanwhile, countries such as Italy (64 documents) and India (53 papers) also show a relatively high proportion of MCP, indicating their involvement in international academic networks.

In Figure 10, the map uses colors to depict each country's contribution level, with darker colors indicating a higher number of publications, while lighter colors indicate a lower number of publications. China (Freq 247) and Indonesia (Freq 241) have the darkest colors, reflecting the highest contribution to research on this topic. Other countries, such as the United States, India, the United Kingdom, and Malaysia, also have relatively dark colors, indicating significant participation in producing related scientific publications. Countries such as Spain and Italy also make substantial contributions in Europe, indicating a focus on sustainability and corporate performance research.

Indonesia and Malaysia are the main contributors in Southeast Asia, highlighting the importance of this research in a regional context. Meanwhile, countries with lighter colors, such as those in Africa and South America, show lower involvement, possibly due to resource constraints or different research focuses.

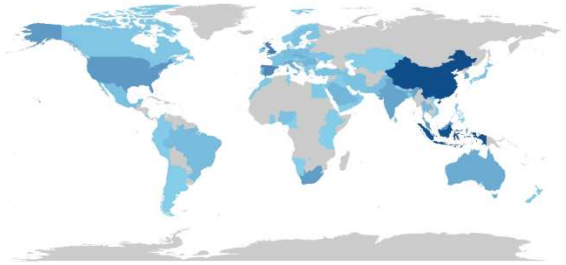

Figure 10. Countries' scientific production.
Figura 10. Produção científica dos países.

Figure 11 shows the trend of articles published by five major countries: China, Indonesia, Malaysia, Spain, and the United Kingdom, which show a pattern of increasing contributions, especially after 2010. China shows the most significant growth, with the number of articles increasing sharply after 2015 and reaching more than 250 in 2023. This indicates China has a strong and rapidly growing focus on sustainability and corporate performance research. Indonesia also shows a sharp increase in contributions after 2015, following China with more than 230 articles in 2023, reflecting the high interest in this topic in the local context. Other countries, such as Malaysia, Spain, and the United Kingdom, also show stable and increasing trends. Malaysia reached over 150 articles, while Spain and the United Kingdom each had similar contributions in the range of 100-150 articles in 2023. Although their contributions are lower than those of China and Indonesia, the consistent growth shows that the topic continues to gain attention in these countries.

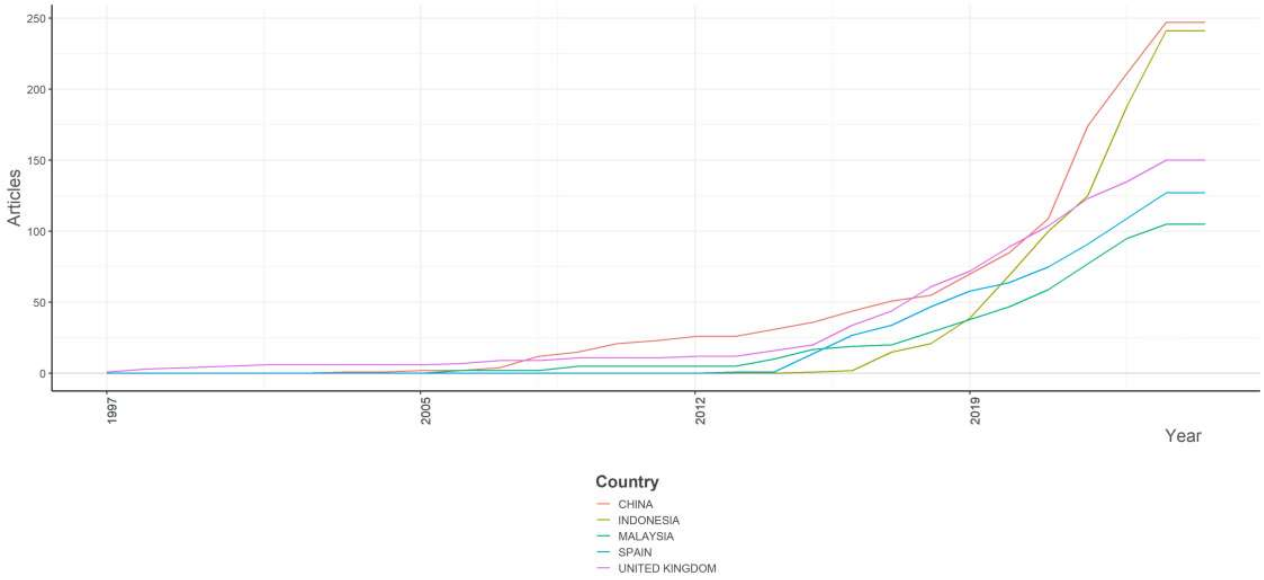

Figure 11. Countries' production over time.
Figura 11. Produção dos países ao longo do tempo.

Figure 12 provides an overview of the most cited documents globally; the document written by Weng H, 2015, in the journal Sustainability received 380 citations and became the document with the most significant academic impact in this field. This article most likely discusses key, highly relevant, and influential issues, especially in discussions about sustainability. The second position is filled by Darnall N, 2008 article from the Journal of International Management with 337 citations, highlighting the significant influence of this research in international management and sustainability. Another article that is also highly cited is the work of Lepenioti K, 2020 (324 citations) from the

International Journal of Information Management, which shows the importance of information technology integration in improving corporate performance sustainably. Franco-Santos M, 2007 article (316 citations) from the International Journal of Operations and Production Management underlines the role of operations management in sustainability and performance efficiency.

More recent articles, such as Llopis-Albert C, 2021 (306 citations), show that relevant research continues to grow with a focus on sustainability in the future. Furthermore, Haseeb M, 2019 (299 citations), in the journal Sustainability, shows that discussions on sustainability continue to be a primary concern in various contexts, including corporate management and strategy. Other articles, such as Popović A, 2018 (236 citations) and Dubey R, 2017 (231 citations), also contribute to the academic literature on benchmarking and technology integration in supply chains.

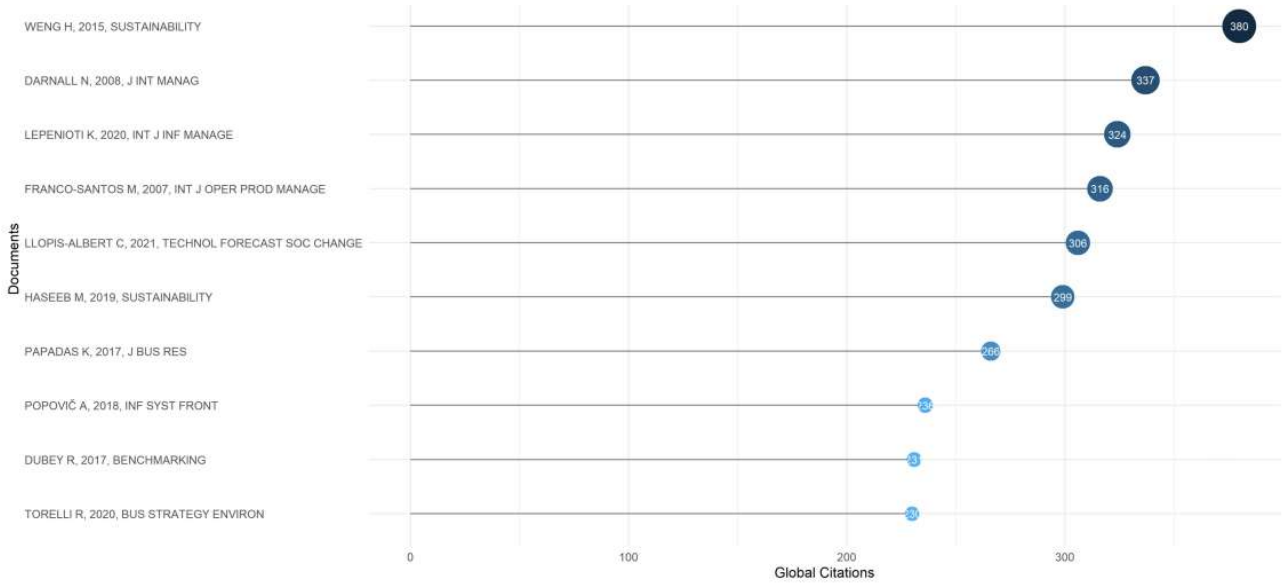

Figure 12. Most globally cited documents.
Figura 12. Documentos mais citados globalmente.

Figure 13 shows the frequency of occurrence of each keyword based on the number of documents discussing it. The term "business performance" ranks first with a frequency of 145, indicating that this topic is a significant focus in related research. The term "business" ranks second with 113 occurrences, followed by "commerce" with 107 occurrences, emphasizing the importance of business and trade in the research. In addition, "business development" with 102 occurrences shows attention to business development as essential to support corporate sustainability and performance. Several other keywords, such as "performance assessment" and "sustainability," appear 91 times, reflecting the importance of performance measurement and sustainability practices in this study. Terms such as "sustainable development" (78 occurrences), "small and medium-sized enterprises" (77 occurrences), and "industrial performance" (74 occurrences) show the diversification of research in specific sectors, especially small and medium-sized enterprises, and the focus on industrial development.

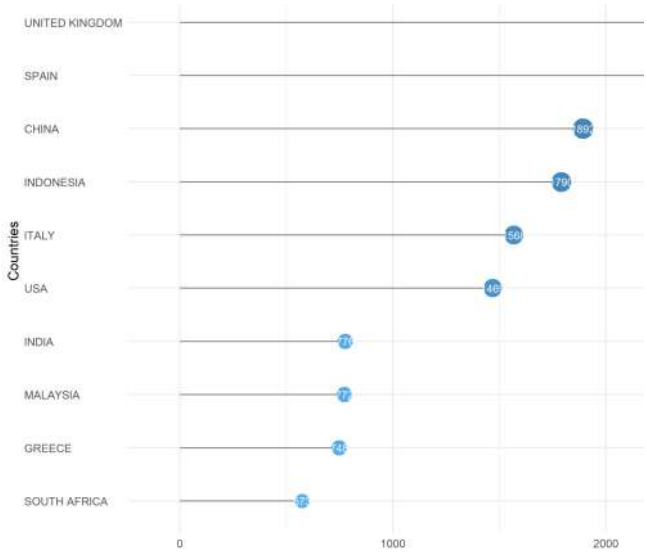

Figure 13. Most frequent words.
Figura 13. Palavras mais frequentes.

In the bibliometric analysis, Figure 14 illustrates the frequency distribution of keywords; the size of each word in this word cloud reflects the level of importance or frequency of occurrence of the word across publications. Larger words indicate higher frequency, while smaller words appear less frequently.

The keyword "business performance" dominates the word cloud, reflecting the primary focus of the research on measuring and improving business performance. Other important keywords, such as "business development," "sustainability," "commerce," and "innovation," also have significant sizes, indicating a strong focus on sustainable business development, trade, and innovation. Terms such as "small and medium-sized enterprise" and "supply chain management" stand out, focusing on the small and medium-sized enterprise sector and supply chain management in supporting sustainability.

Several other keywords, such as "performance assessment," "industrial performance," and "decision making," also have pretty large sizes, indicating the importance of technical and strategic aspects in sustainability management and corporate performance. In addition,

"corporate social responsibility" and "empirical analysis" focus on corporate social responsibility and a data-driven approach in the research.

Figure 14. Word cloud.
Figura 14. Nuvem de palavras.

Figure 15 of the bibliometric analysis illustrates the distribution and contribution of key topics; each box represents a specific topic, and the box size reflects the number of documents discussing the subject. At the same time, the percentage indicates the topic's relative contribution to the overall dataset. The topic "business performance" occupies a dominant position with 145 documents (7% of the total), indicating the primary focus of the research on measuring and improving business performance. The topics "business development" (102 documents, 5%) and "sustainability" (91 papers, 5%) also have significant contributions, reflecting a close attention to sustainable business development. In addition, the themes "commerce" (107 documents, 5%) and "innovation" (72 papers, 4%) highlight the role of innovation and trade in supporting sustainability and corporate performance.

Several topics, such as "decision making" (49 documents, 2%), "performance assessment" (91 papers, 5%), and "industrial performance" (74 papers, 4%), indicate the research focus on technical and strategic aspects that support the achievement of optimal performance. Meanwhile, themes such as "China" (43 documents, 2%) reflect this study's specific geographical context of interest.

Figure 15. TreeMap.
Figura 15. Árvore temática.

Figure 16 shows the trend of using the main keywords in the research over time; this graph depicts the accumulated frequency of occurrence of keywords such as business, business development, business performance, commerce, sustainability, and others, showing how the relevance of these themes evolves. The keywords business performance and development stand out with the highest occurrences, each exceeding 150 times until 2025. This shows that the theme of business performance and development remains a primary research focus. Sustainability also indicates a strong trend, with an accumulated occurrence approaching 100 times, reflecting the incredible attention to sustainability in business. Other keywords, such as commerce, industrial performance, and innovation, show a steady upward trend, especially after 2015. This reflects the growing relevance of these themes and the increasing attention to innovation and efficiency in business sustainability. Sustainable development and performance assessment also show an increase, but at a slower rate than the main keywords.

Figure 17 shows the frequency of occurrence of key terms in publications over a specific period. Each term is represented by a horizontal line that reflects the duration of its relevance, while the size of the circle indicates the intensity of the term's use in a given year. Some terms, such as "sustainability," "business performance," and "strategy," have been consistent topics in research since the beginning of the analysis period, indicating that these themes are a significant focus and have continued relevance. Terms such as "artificial intelligence" and "internet of things" have started to appear in recent years, especially after 2020, reflecting a new research trend combining technology with business performance and sustainability. The term "COVID-19" began to appear around 2020, illustrating the impact of the pandemic on research in this area. Several other terms, such as "customer satisfaction" and "competitive advantage," show a stable pattern but do not experience a significant increase, indicating that these topics remain relevant but do not dominate academic discussions. Terms such as "data analytics" and "management" show a steady increase year after year, confirming that data analysis and resource management are becoming increasingly important in corporate sustainability and performance.

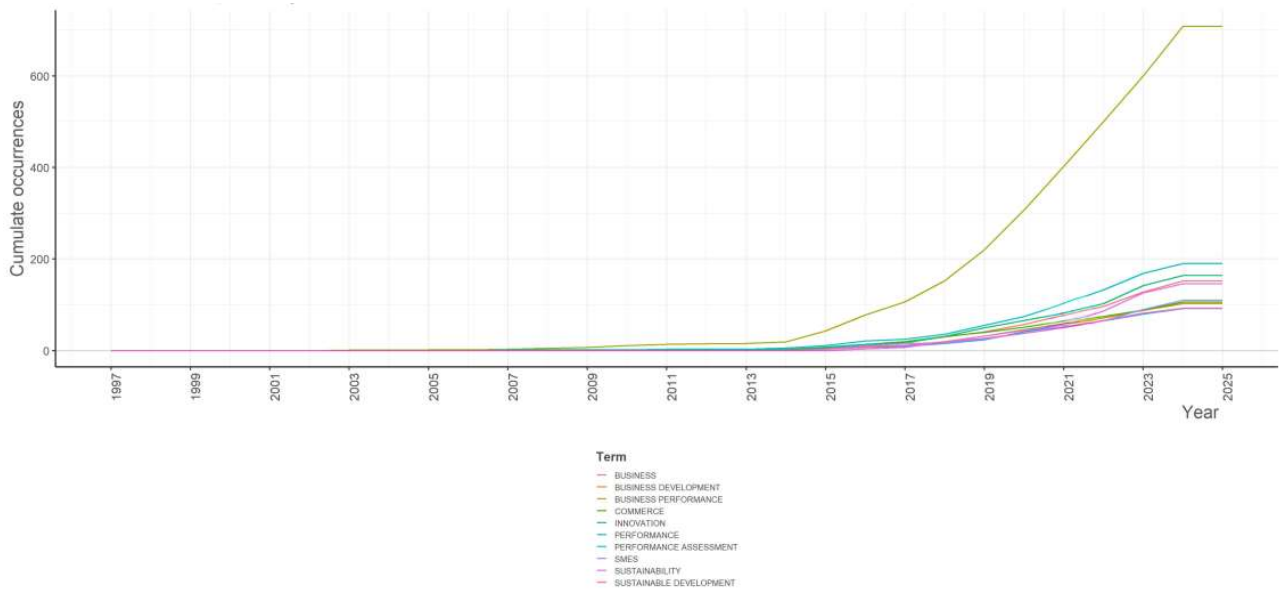

Figure 16. Words' frequency over time.
Figura 16. Frequência das palavras ao longo do tempo.

The co-occurrence network shows the cumulative degree distribution between keywords based on how often they co-occur in publications, reflecting the connectedness of the main concepts in the research. In this graph, at the beginning (node 0), the cumulative degree is at 1.0, indicating that some main keywords are very connected to others in the network. These keywords are usually core terms such as "sustainability" or "business performance," which are often used together with different terms. After the first node, there is a sharp drop in the cumulative degree, indicating that most other keywords are less connected. In the 10th to 20th node range, the cumulative degree drops to around 0.5, meaning that around 50% of the keywords in this network are moderately connected. After the 30th node, the cumulative degree is below 0.25, indicating that most of the keywords in the network have a low degree of relatedness. These keywords are more specific or rarely used in the broader research context.

Figure 18 illustrates the relationships between keywords that frequently appear together in the research; each node (circle) represents a keyword, while the node's size indicates the frequency of its use. The connecting lines define the relationships between nodes, where thicker lines indicate stronger relationships or higher co-occurrence frequencies. The colors of the nodes and lines indicate clusters of interconnected keywords. The largest and most dominant node is "business performance," which is closely connected to other keywords such as "commerce," "business development," and "sustainability." This shows that business performance is a central topic in this research, which is often associated with trade, business development, and sustainability. This cluster also includes keywords such as "small and medium-sized enterprises" and "innovation," indicating the importance of small businesses and innovation in supporting business performance.

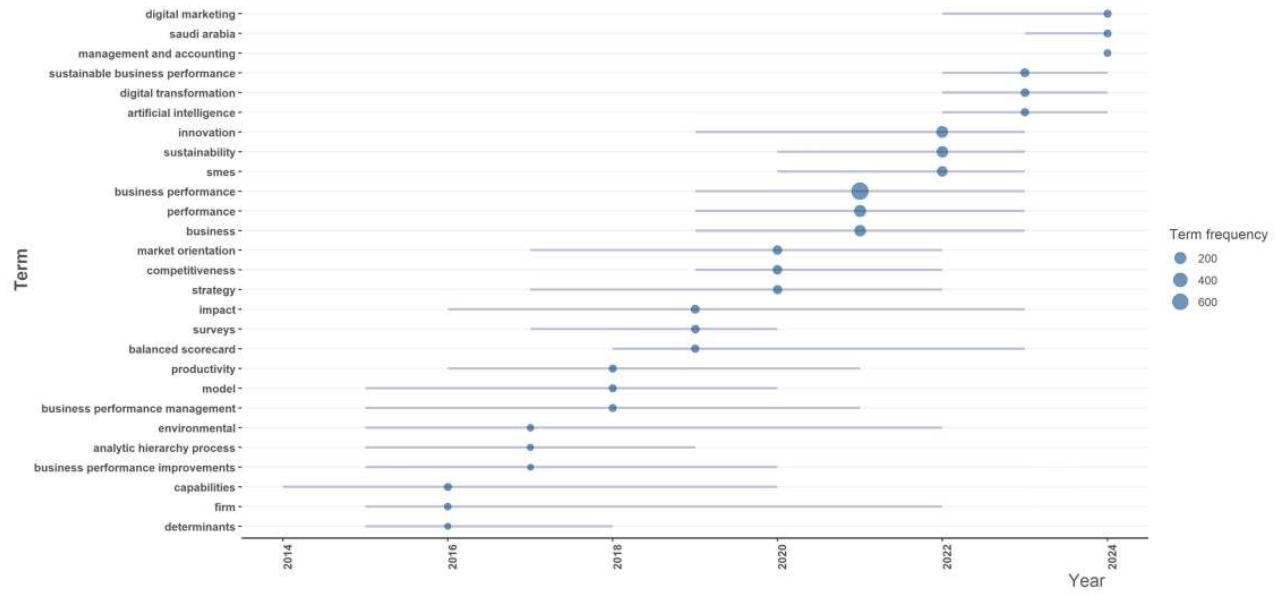

Figure 17. Trend topic.
Figura 17. Tópico de tendência.

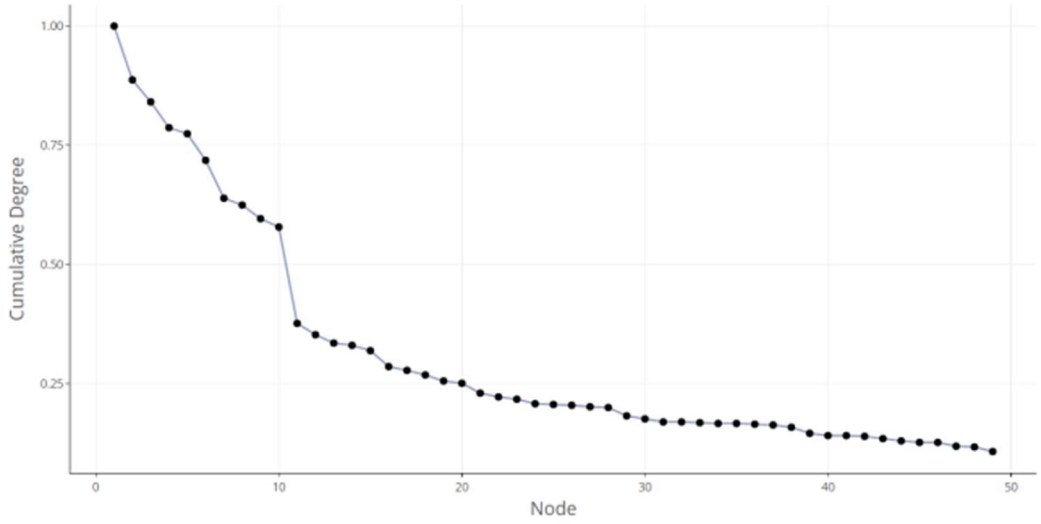

Figure 18. Co-Occurrence network.
Figura 18. Rede de coocorrência.

Figure 19 shows a thematic map of the various themes and keywords into several clusters based on their thematic relatedness and proximity, with each cluster represented by a different color. The size of the nodes reflects the relative importance of a particular keyword within the cluster, while the lines indicate the relationships between nodes. The green cluster, which is the largest cluster, displays significant themes such as "business development," "industrial performance," and "performance assessment." These themes focus on business development, performance assessment, and operational sustainability. This cluster reflects the core of research in this area, with many connections to other relevant themes.

4. DISCUSSION

The key performance indicator method is based on a collection of journals filtered into 200 journal data, which are then made into a tabulation table (attached). The distribution of research focus (Figure 21) based on international journals shows that ESG and sustainability dominate with a proportion of 25%, followed by supply chain management with the same percentage (25%). Research on digital technology takes a share of 20%, while strategic management and HR and employee welfare contribute 20% and 15%, respectively.

This reflects the high priority of the literature on ESG and sustainability issues as the core of modern corporate strategy, as emphasized by Chang; Lee (2022). ESG is a significant concern because of its broad impact on corporate reputation and market value, especially in highly monitored industries. However, research focusing on HR is still relatively small compared to other themes. This indicates an opportunity to explore further employee well-being and involvement in supporting corporate sustainability goals (ABID; CONTRERAS, 2022). The significant proportion for supply chain management and digital technologies also highlights the importance of technology integration in ensuring operational efficiency and resilience, especially in the face of global challenges such as pandemics and logistics disruptions (MAÎTRE et al., 2022).

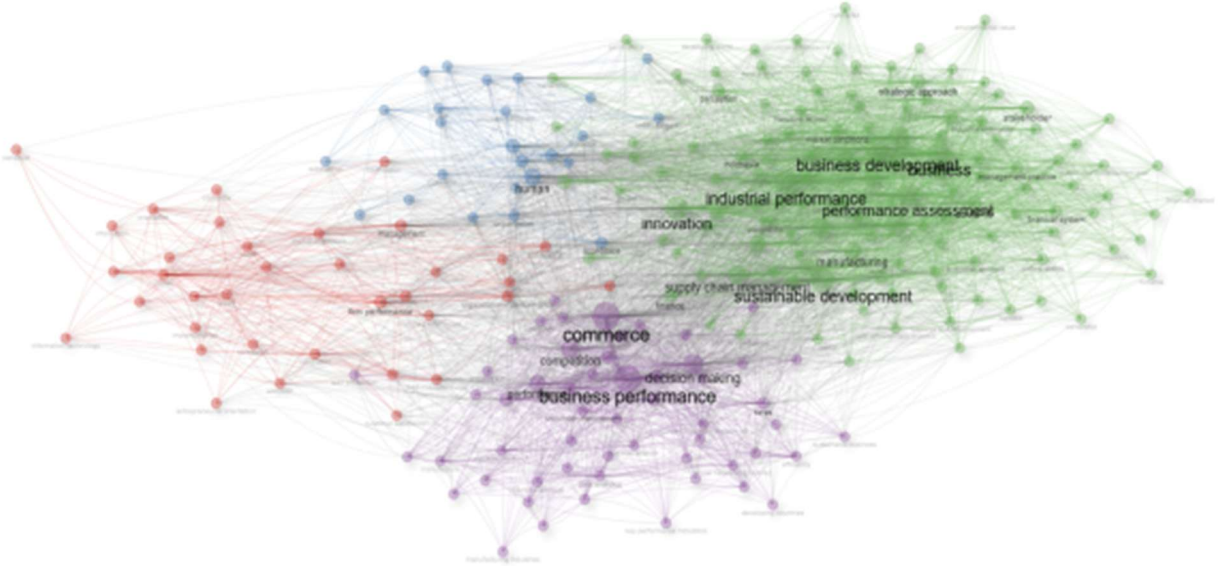

Figure 19. Thematic map.
Figura 19. Mapa temático.

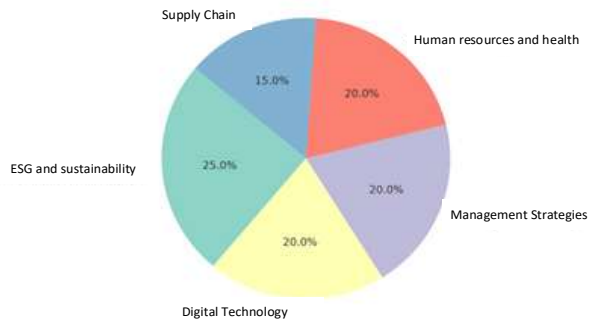

Figure 20. Research focuses on the distribution of corporate performance and sustainability.
Figura 20. Distribuição do desempenho corporativo e da sustentabilidade.

The relationship between sustainability indicators and company performance (Figure 2) shows that ESG has the most significant influence, with an impact score of 85%, followed by operational efficiency (75%), risk management (80%), and social capital (70%). ESG emerged as a key indicator because a company's ability to meet environmental, social, and governance standards is often associated with increased investor confidence and market competitiveness (CHANG; LEE, 2022). Operational efficiency is an essential element that supports company profitability while ensuring optimal use of resources (COŞKUN; AKGÜL, 2022). Although social capital has a lower score (70%), it remains relevant because it helps strengthen the relationship between the company and the community and strategic partners, as Li et al. (2022) emphasized. Meanwhile, risk management is key to ensuring that companies can face uncertainty in the global market. This can be seen in the research of Maître et al. (2022), which shows that a technology-based approach can help companies detect and proactively address supply chain disruptions.

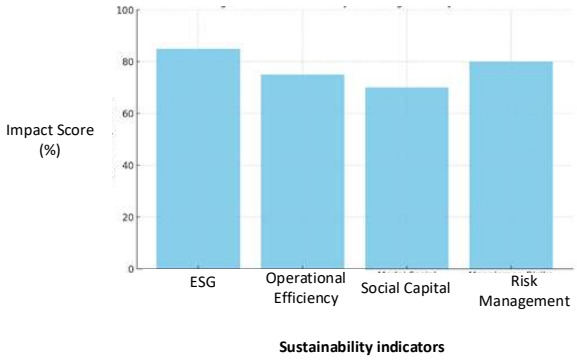

Figure 21. Relationship between KPI indicators and company performance and sustainability.
Figura 21. Relação entre os indicadores-chave de desempenho (KPIs) e o desempenho e a sustentabilidade da empresa.

Future research directions in sustainability and corporate performance (Figure 22) identified ESG integration in SMEs as the top priority with a score of 90%, followed by digitalization in the supply chain (85%), sustainable human resource management (80%), and the application of AI for risk analysis (75%). The focus on ESG for SMEs reflects the need to develop more inclusive sustainability strategies, especially for small companies often facing resource constraints (CHANG; LEE, 2022). Supply chain digitalization is also essential because it can help improve operational efficiency and responsiveness to global challenges (MAÎTRE et al., 2022). Sustainable human resource management is the third priority, indicating the need to ensure workforce well-being as part of a long-term sustainability strategy (ABID; CONTRERAS, 2022). Meanwhile, applying AI for risk analysis is considered a strategic step to improve companies' ability to manage complex uncertainties in the global market, as shown in the study by Khan et al. (2022). Future research is expected to address this gap to strengthen the contribution of sustainability to overall corporate performance.

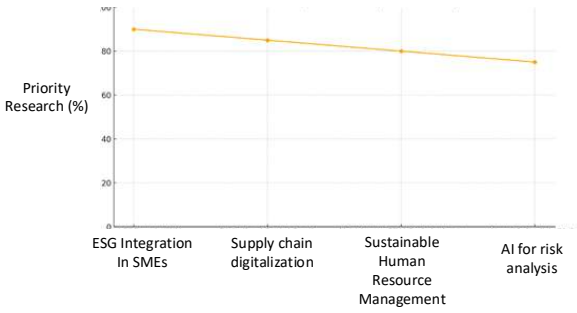

Figure 22. Future research directions in corporate performance and sustainability.
Figura 21. Relação entre os indicadores-chave de desempenho (KPIs) e o desempenho e a sustentabilidade da empresa.

4.1. Analysis of Key Performance Indicators (KPIs) in the Context of Sustainability and Corporate

Key Performance Indicators (KPIs) are essential for evaluating a company's success in achieving sustainability and enhancing operational performance, as shown in Figure 23. Based on various journal analyses, KPIs such as Environment, Social, and Governance (ESG), operational efficiency, risk management, and social capital emerge as dominant indicators. ESG, for example, is the basis for companies to assess the impact of business activities on the environment and society, as well as good corporate governance. Chang; Lee (2022) show that companies that consistently implement ESG activities tend to have higher corporate value and are better prepared to face regulatory pressures and consumer expectations. In addition, operational efficiency is often associated with cost reductions and increased productivity, which directly contribute to profitability while supporting sustainability initiatives (COŞKUN; AKGÜL, 2022)..

Risk management and social capital are also essential KPIs in corporate sustainability. Risk management allows companies to mitigate uncertainties in a dynamic business environment, such as supply chain disruptions or regulatory changes (MAÎTRE et al., 2022). Social capital, which includes relationships with internal and external stakeholders, is key to strengthening a company's social and operational sustainability (LI et al., 2022). Companies that successfully build trust and collaboration with partners, communities, and employees are more likely to achieve long-term sustainability. These KPIs provide a framework for companies to integrate sustainability into their business strategies while creating added value for all stakeholders.

4.2. Research Gap Visualization in the Context of Sustainability and Corporate Performance

The research gap in the context of sustainability and corporate performance (Figure 22) shows the need to expand

the scope of research in strategic areas such as ESG integration in small and medium enterprises (SMEs), supply chain digitalization, increasing social capital, and human resource (HR) sustainability. Chang; Lee (2022) emphasized that large companies still dominate ESG implementation, while SMEs that often face resource constraints require a customized approach. In addition, supply chain digitalization is one of the top priorities to ensure operational efficiency and resilience, especially amid global challenges such as pandemics and logistics disruptions (MAÎTRE et al., 2022). These studies indicate that technologies like big data and machine learning can serve as practical solutions for identifying risks and enhancing responses in supply chain management, as illustrated in the figure below.

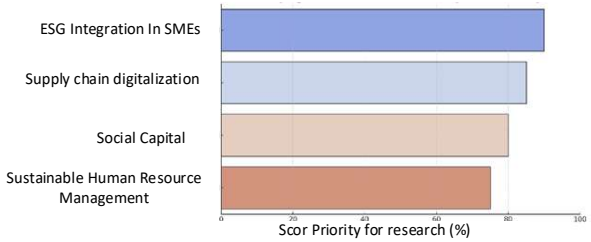

Figure 22. Specific research gaps on corporate performance and sustainability.
Figura 22. Lacunas específicas de pesquisa sobre desempenho corporativo e sustentabilidade.

Social capital and HR sustainability also represent significant research gaps. Social capital, which involves the relationships between a company and its communities and stakeholders, is often overlooked in the sustainability literature (LI et al., 2022). This creates an opportunity to explore how social capital can support operational and social sustainability. Furthermore, HR sustainability research is still limited to the relationship between employee well-being and productivity without further investigating strategic approaches that can be implemented to ensure the sustainability of the future workforce (ABID; CONTRERAS, 2022). By addressing these gaps, companies can create a holistic approach to sustainability that improves performance and has a broad positive impact on society.

Many studies have explored Key Performance Indicators (KPIs) in evaluating business performance and sustainability, but their integration with sustainability aspects remains limited (HŘEBÍČEK et al., 2012; ELEFTHERIADIS; ANAGNOSTOPOULOU, 2017). Approaches like Balanced Scorecard and Data Envelopment Analysis (DEA) have been applied, but multidisciplinary integration is still lacking (HORVÁTHOVÁ; MOKRIŠOVÁ, 2023; VARELAS et al., 2024).

Adopting digital technologies, including artificial intelligence and data analytics, has influenced performance measurement, yet limited research addresses their role in improving KPIs. Bokolo (2022) explored digital system interoperability, while Khan et al. (2022) investigated machine learning's impact on sustainable business management. Cross-sectional research dominates KPI studies, offering only short-term insights into business performance. However, longitudinal studies are crucial to understanding how performance evolves due to external dynamics. Bubenik et al. (2022) assessed strategic changes' impact on business efficiency, while van Tuin et al. (2020) examined leadership's influence on employee well-being. More longitudinal research is needed to capture long-term performance trends effectively.

Most KPI research lacks industry-specific perspectives, limiting its applicability across different sectors. Studies on agribusiness, the creative industry, and the informal sector remain scarce despite their unique performance challenges (HŘEBÍČEK et al., 2012; CVIJANOVIĆ et al., 2015). These methodological variations highlight the need for empirical research that tailors KPI models to specific industry needs. Developing a contextual KPI framework can help businesses optimize strategies, ensuring alignment with sector-specific dynamics and sustainability goals.

4.3. The Relationship between Sustainability and Corporate

Sustainability performance has become a key factor influencing corporate performance across various sectors. Research has increasingly focused on the connection between sustainability and corporate success in recent years, emphasizing environmental, social, and governance (ESG) factors. Studies indicate that companies integrating sustainability into their business strategies often achieve stronger financial performance and an enhanced reputation (SMITH; JOHNSON, 2021). Sustainability has been recognized as a source of competitive advantage, as businesses prioritizing social and environmental responsibility tend to gain greater trust from consumers and investors, ultimately contributing to long-term growth (CHEN et al., 2019). However, recent findings suggest that the relationship between sustainability and corporate performance is not always straightforward and can be influenced by various factors, such as industry characteristics and organizational culture. Research has shown that companies in specific sectors, including manufacturing and energy, face greater challenges in implementing sustainable practices without compromising profitability (LEE; TAN, 2022). This highlights the need to consider sustainability within a more tailored industry-specific context. Consequently, further research must examine how sustainability interacts with external factors, such as regulatory frameworks and market demand, in shaping corporate performance.

Future research on the sustainability-performance relationship is expected to adopt a more holistic and data-driven approach. Studies will increasingly focus on assessing the long-term effects of sustainability practices within specific industries and exploring how technology and innovation can accelerate sustainability adoption across different sectors (BROWN et al., 2021). Additionally, research will emphasize the importance of stakeholder engagement in generating shared value through sustainability initiatives. This shift will encourage companies to prioritize financial performance and broader social and environmental impacts, strengthening their position in an increasingly competitive global market (KHAN et al., 2020).

5. CONCLUSIONS

This study highlights the importance of sustainability as a driver of long-term corporate performance. Sustainability practices, particularly those related to ESG factors, have positively impacted financial and non-financial outcomes. However, the success of these practices is highly dependent on factors such as organizational readiness, industry

characteristics, and stakeholder engagement. Companies strategically integrating sustainability into their core operations are more likely to thrive long-term. Future research should explore how sustainability affects performance across contexts and provide insights that can be applied to managers seeking to adopt sustainability practices. Sustainability has been shown to impact corporate performance, both financially and non-financially, significantly. Companies that integrate sustainability into their strategies, particularly those related to ESG factors, tend to have better long-term performance. Sustainability principles can improve operational efficiency, strengthen corporate reputation, and enhance stakeholder relationships. In this regard, corporate success depends on financial returns and the social and environmental impacts they generate. Sustainability is key to building a solid, long-term foundation that is adaptive to the ever-changing global market (CHEN et al., 2019).

These findings imply that corporate managers need to pay more attention to the role of sustainability in their business strategies. Sustainability should be part of a long-term plan focusing on immediate financial gains and achieving larger social and environmental goals. Managers need to integrate ESG aspects into strategic decision-making and day-to-day operations. This requires a paradigm shift in how companies manage resources, design products, and interact with consumers and other stakeholders (LEE; TAN, 2022). In addition, companies need to ensure that all stakeholders, including employees, customers, and investors, are involved in the sustainability process. Managers must create a culture that supports sustainability, where every organization member feels responsible for maintaining the company's sustainability. This active involvement will increase the effectiveness of sustainability initiatives and encourage the creation of sustainable shared values. Sustainability that is thoroughly integrated into the organizational culture will help companies to be better prepared for future challenges and strengthen their position in an increasingly competitive market (SMITH; JOHNSON, 2021).

Recommendations in this study include that companies should actively integrate sustainability into long-term business strategies to ensure sustainable performance; additional research is required to explore the impact of industry factors and organizational culture on the connection between sustainability and corporate performance; and managers should involve stakeholders in implementing sustainability practices to increase the support and success of these initiatives.

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