

Integrating Sustainability Criteria into Supplier Selection Processes: Insights from a PRISMA Review

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Abstract:

Research Question (RQ): In the era of dynamic transition towards sustainable practices in procurement functions, a notable gap emerges in understanding which sustainability criteria organizations use in supplier selection. This study aims to bridge this gap by posing questions: RQ1: "Which sustainability-related criteria should be integrated into the supplier selection process?" and RQ2: "What is the relationship between research methodologies and types of contributions in the literature examining sustainability issues?"

Purpose: The primary aim of this research is to analyse and understand the integration of sustainable practices into supplier selection processes, with a focus on identifying key sustainability criteria used by organizations in evaluating potential suppliers, and how these criteria influence the decision-making process.

Method: To achieve the research objectives, a systematic literature review was conducted using the PRISMA method. This approach enabled a comprehensive, structured, and unbiased analysis of existing studies, ensuring the validity and reliability of the research.

Results: We addressed both research questions and confirmed the thesis. The study revealed a diversity of sustainability criteria considered by companies, covering economic, environmental, and social dimensions. Analysis of 21 publications demonstrated an increasing trend in the inclusion of sustainability criteria in supplier evaluations, highlighting a multidimensional approach to sustainability.

Organization: The findings of the study have a significant impact on procurement managers and practitioners, as they present a framework for the strategic integration of sustainability criteria into supplier selection, thereby improving organizational practices and contributing to the strategic value of procurement functions.

Society: The study emphasizes the broader impact on society and the environment, advocating for a shift towards more responsible and sustainable procurement practices. It highlights the role of sustainable supplier selection in promoting environmental responsibility, social accountability, and contributing to global sustainability goals.

Originality: The research contributes original insights into the integration of sustainability criteria into supplier selection, offering a new perspective on procurement practices. It provides a novel approach to using the PRISMA method for analysing sustainability in procurement, enhancing the methodological rigor and applicability of the research.

Limitations / further research: While the study brings significant insights, it acknowledges limitations such as the restriction to recent publications and reliance on specific databases. It suggests directions for further research, including exploring diverse methodologies, conducting comparative and longitudinal studies, and examining the impact of sustainable practices on consumer behaviour.

Keywords: sustainability, procurement function, supplier selection, sustainability criteria, PRISMA method.

1 Introduction

The modern procurement function is a complex and strategically important part of every organization that dynamically responds to global market challenges, (Nurasiah, I., Marini, A., Nafiah, M., & Rachmawati 2022, pp. 3640–3647). As explained by Mbugua and Barasa (2023) the concept of sustainability is increasingly coming to the forefront, becoming a key paradigm in the supply chain and transforming traditional procurement practices. In times of environmental changes and an emphasis on social responsibility, companies are becoming more aware that sustainable approaches are essential for long-term economic success, environmental preservation, and social well-being. (pp. 387–395)

Despite the growth in awareness and the integration of sustainability into corporate strategies, there exists a literature gap in researching and understanding the sustainability criteria that buyers use in supplier selection. Sustainability criteria are not just tools for meeting environmental standards or social responsibility; they are becoming a key factor in achieving competitive advantage and ensuring business excellence. Despite the existing literature that addresses various aspects of sustainability in the procurement function, there is a noticeable need for more in-depth, structured, and systematized research that would make research results more accessible and useful for decision-makers. (Asadabadi, Ahmadi & Gupta, 2022, pp. 322–325; Jaheer et al., 2023, pp. 2492–2493)

This lack of comprehensive understanding led us to pose the following research questions and thesis. The first research question, RQ1, is: "Which sustainability-related criteria shall be integrated into the supplier selection process?" With this question, we aim to uncover which criteria are essential for evaluating suppliers through the prism of sustainability and how companies can effectively integrate them into their procurement strategies.

Upon reviewing a portion of the publications, we aspire to explore the connection between research methods and types of contributions, in terms of how research approaches and methodologies influence the formation of sustainable knowledge and practices. The lack of methodological diversity and critical reflection can lead to one-sided findings that do not capture the complexity of sustainability challenges faced by modern businesses. From this basis, we develop the second research question, RQ2: "What is the relationship between research methodologies and types of contributions in the literature examining sustainability issues?" This part of the research focuses on analysing methodological approaches and types of contributions that have been used in studying sustainability, to better understand current research trends and potential for further development in this area.

We assume that the majority of relevant publications on our topic originate from journals that focus on sustainability, hence the simple thesis we have set is: "The majority of relevant publications on our topic are in the journal Sustainability." This statement was made based on a preliminary analysis of publications, and with it, we aim to verify whether this recognized

journal truly represents the core of publications on the topic of sustainability and the procurement function.

The purpose of this research is to explore and better understand how sustainable practices are integrated into supplier selection processes within the modern procurement function. The goal is to identify which sustainability criteria organizations use when evaluating potential suppliers and how these criteria affect the final decision on selection (Maestro-Prieto, Rodríguez, Casado Vara & Corchado 2020 pp. 57–66; Mbugua & Barasa; 2023, pp.387–395). With this, we aim to respond to the key question (RQ1), which is especially relevant at a time when companies are under increasing pressure to act responsibly and sustainably. Furthermore, the research also examines (RQ2) how research methods and types of contributions are used in the literature addressing sustainability, to understand how different approaches contribute to knowledge in this area. With this aim, we seek a better understanding of current research trends and perhaps even to identify potential methodological gaps.

The importance of this research stems from the necessity for organisations not only to follow the latest sustainability trends but also to ensure their supplier selection procedures are strategic and aligned with sustainability goals. The research will be able to provide companies with concrete tools and insights for improving the sustainability efficiency of their supply chains, which is crucial for achieving long-term business success and positive social impact.

2 Theoretical framework

Procurement within an organization is a strategic and structured process aimed at efficiently acquiring goods, services, and resources essential for operational needs. It relies on strategic foresight, encompassing planning, supplier selection, contract negotiation, and aligning purchases with organizational goals. This process requires a profound understanding of the market, identifying needs, evaluating potential suppliers, and negotiating favourable terms. The effective management of supplier relationships is pivotal to procurement success, affecting the quality, cost, and availability of purchases. It involves fostering trust, maintaining clear communication, and adeptly handling relationships to prevent procurement challenges. Technological advancements and innovative approaches can streamline procurement processes, boosting efficiency. Organizations might choose centralized procurement to capitalize on economies of scale and ensure consistency or decentralized procurement for greater flexibility and responsiveness to specific departmental needs. Centralized procurement consolidates decision-making at a singular point within the organization, potentially securing better terms due to larger volume transactions. Conversely, decentralized procurement disperses purchasing decisions across different units or departments, catering more specifically to individual needs. (Dubois & Wynstra, 2005 pp.25; Keller, Kocsi & Budai 2018, pp. 111–112; Medeiros & Ferreire 2018, p. 2)

Procurement is fundamental to an organization's ability to operate effectively, necessitating a strategic approach to managing external vendor resources and aligning them with internal

needs. This alignment, facilitated by collaborative efforts across departments, is crucial for efficient organizational decision-making. Ultimately, procurement is strategic, requiring a mix of meticulous planning, efficient supplier management, and alignment with organizational goals to ensure the timely and cost-effective acquisition of high-quality resources.

The current and future procurement paradigm is increasingly strategic, technology-driven, and focused on sustainability, emphasizing the transformation of procurement into a crucial strategic partner within organizations. Digital technologies such as AI, blockchain, and data analytics are at the forefront, enabling enhanced efficiency, transparency, and decision-making. There's a marked shift towards ethical sourcing and sustainability, reflecting a commitment to environmental and social governance criteria. Collaboration with suppliers is evolving into strategic partnerships, fostering innovation and resilience in supply chains. Moreover, the paradigm is adapting to global challenges by emphasizing supply chain diversification and agility, allowing organizations to respond swiftly to market changes and risks. This new paradigm necessitates procurement professionals to embrace new skills and technologies, prioritizing value creation and strategic impact over traditional cost-saving measures. (Alhammad 2023, pp. 2–9; O'Brien 2019, pp.6–75)

Sustainability has gained paramount importance in procurement, driven by the growing awareness that sustainable practices are essential for long-term economic prosperity, environmental conservation, and societal welfare. Integrating sustainability into supplier selection means assessing suppliers not merely on traditional metrics like cost, quality, and delivery but also on their environmental and social performances. This holistic approach enables organizations to better manage risks, comply with regulations, fulfil consumer expectations for ethical and sustainable products, boost their brand reputation, and contribute to global sustainability objectives. Sustainable procurement practices can lead to cost reductions through the more efficient utilization of resources and energy, potentially unlocking new market and innovation opportunities. Thus, sustainability in procurement transcends ethical considerations and is increasingly viewed as a strategic element that can offer competitive edges and bolster business resilience against environmental and societal challenges. (Francis et al. 2023, pp.11–12; Letunovska et al., pp.2–8)

Based on this literature review, we pose the following research questions: RQ1 is: "Which sustainability-related criteria shall be integrated into the supplier selection process?" and also RQ2: "What is the relationship between research methodologies and types of contributions in the literature examining sustainability issues?"

3 Method

The primary research methodology is based on an integrative literature review using the Systematic Literature Review (SLR) method, which systematically collects and analyses scientific studies on a specific topic. Herczeg, Koteczki, and Balassa (2023) present that the purpose of the method is to summarize existing knowledge, identify patterns and gaps in

research, and provide an objective overview of the literature. The method establishes a framework that defines the steps for literature search (Figure 1) and is accepted for conducting SLR in the academic world. (p. 91)

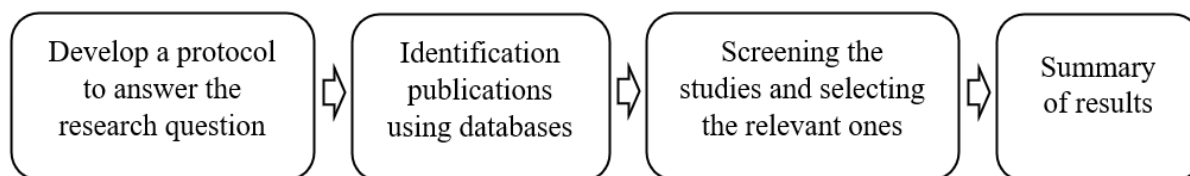


Figure 1. Four steps of SLR methodology

The SLR methodology - Systematic Literature Review comprises four steps: first, the formulation of a research protocol. Second: searching for relevant studies in databases. The search in our study was conducted using scientific databases: DOAJ, EBSCO, COBISS, dLib, and Google Scholar. Third comes the selection of relevant publications, where we limit ourselves to the framework of subjective relevance to the research question and the age of publications. We cover publications that are no more than 6 years old, and the majority, at least 50%, are from the last 2 years. Fourth and finally, preparing a summary of findings.

We will present the report on the systematic review using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) model or tool. According to Basenach (2023), the PRISMA process includes a checklist and a flow diagram that assists researchers in creating a clear, transparent, and structured literature review and meta-analyses. The purpose of PRISMA is to ensure standardization in reporting, making studies more comparable and increasing the transparency and credibility of systematic reviews. (pp. 10–17)

PRISMA is a development from previous guidelines, notably QUOROM (Quality of Reporting of Meta-analyses), which was published in 1999. The PRISMA guidelines were first published in 2009 with the aim of improving the reporting of systematic reviews and meta-analyses. The PRISMA guidelines were updated in 2020 to include new concepts and improvements in the methodology of systematic reviews. PRISMA guidelines have become widely accepted and are used as a standard by authors, reviewers, and editors in the preparation and evaluation of systematic reviews and meta-analyses. The PRISMA method is valued for its ability to ensure clarity, transparency, and completeness in reporting on systematic reviews and meta-analyses. It helps researchers follow a standardized procedure in reviewing, evaluating, and synthesizing research, reducing the risk of bias and enabling more reliable conclusions. PRISMA contributes to better efficiency and comparability of studies and promotes the use of high-quality methodological standards. The use of PRISMA guidelines increases confidence in the conclusions of systematic reviews and meta-analyses, which has a significant impact on decision-making in healthcare and policy. (Basenach, et al., 2023, pp. 10–22; Moher et al., 2010, 337–339; Slagboom et al., 2023, pp. 320–327)

The PRISMA checklist comprises several items that cover various segments of the study, including the title, abstract, methods, results, and discussion, (see Figure 2). PRISMA is a methodological framework that provides a standardized procedure for conducting systematic reviews and meta-analyses. This approach involves clearly defining research questions, systematically searching for relevant studies in databases with specified keywords and time periods, in our case, 10 days, such as Pevec (2023, pp. 134) did in her study. Studies are then carefully checked and those that do not meet specific criteria such as publication time and accessibility are excluded. The remaining articles are thoroughly reviewed, irrelevant ones are eliminated, and then selected studies are synthesized to summarize and evaluate existing evidence. PRISMA thus aids in ensuring transparency, reducing bias, and improving the reliability of conclusions from systematic reviews.

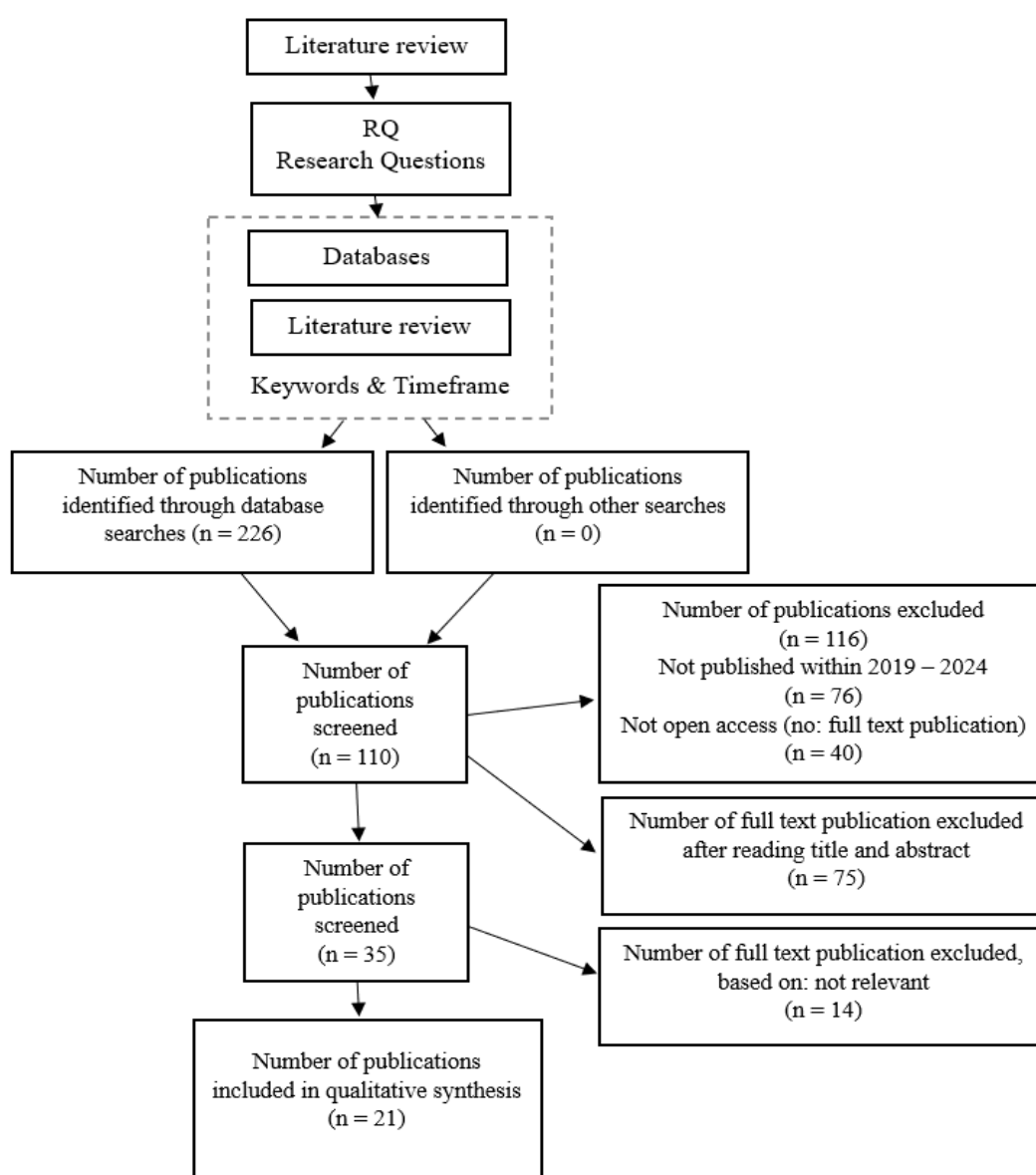


Figure 2. Research model

We conducted the PRISMA process by first developing a protocol to address the posed research questions. This was followed by a systematic search of databases with specific keywords, where we identified 226 publications. Publications not published between 2019 and 2024 or not available in full text were excluded from further consideration. After reviewing titles and abstracts, an additional 75 articles were eliminated, while 14 more articles were excluded after reading the full text due to irrelevance. Finally, we performed a qualitative synthesis of 21 publications that met the criteria for inclusion in our study.

The reliability and validity of the PRISMA method, as outlined by Slagboom et al., (2023, pp. 320–327), are ensured through a comprehensive and structured approach that allows for the precise identification, integration, and evaluation of research and studies on the selected topic. This systematicity includes the use of a checklist and flow diagram, enabling researchers to accurately follow steps in reviewing literature, selecting studies, and analyzing data. The studies included in the systematic review were diverse in terms of study design, time period, sample size, and geographical location, contributing to the diversity and comprehensiveness of the data. The study considers the findings of individual authors' research. We excluded subjective conclusions from the analysis, thus ensuring the validity of the study. The reliability of the results was verified through a reproducibility step within a 10-day timeframe, like Pevec (2023, p. 134).

4 Results

We will present the responses to individual questions in simple tables and illustrative charts. In the final analysis, we include 21 publications that are no more than 6 years old, with the majority, at least 50%, coming from the last 2 years. In the following Figure 3, we present the publications by year, similar to Cortese, et al., (2022, p. 6).

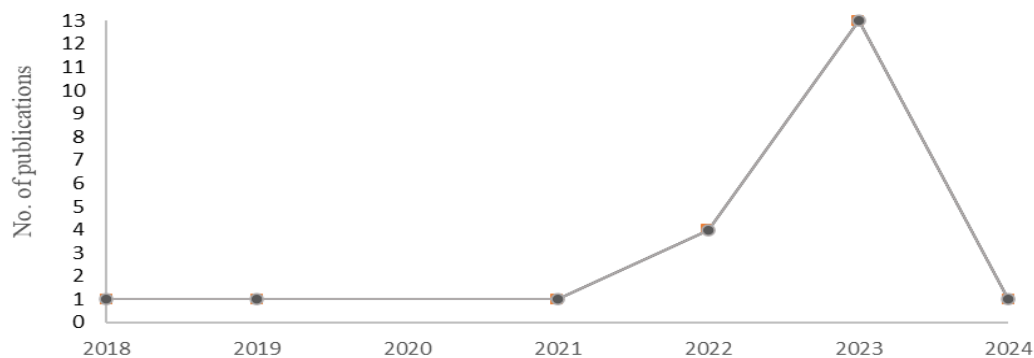


Figure 3. Distribution of publications by years

Response to RQ1: "Which sustainability-related criteria shall be integrated into the supplier selection process?" is presented in a simple table of the selected 21 publications on the topic of sustainability criteria. The table 1 displays authors, journal, findings in the form of identified sustainability criteria, the method used, and the type of contribution in the publication, similar to Cortese, et al., (2022, p. 15).

Table 1. Publications selected for systematic literature review: sustainability criteria for supplier selection

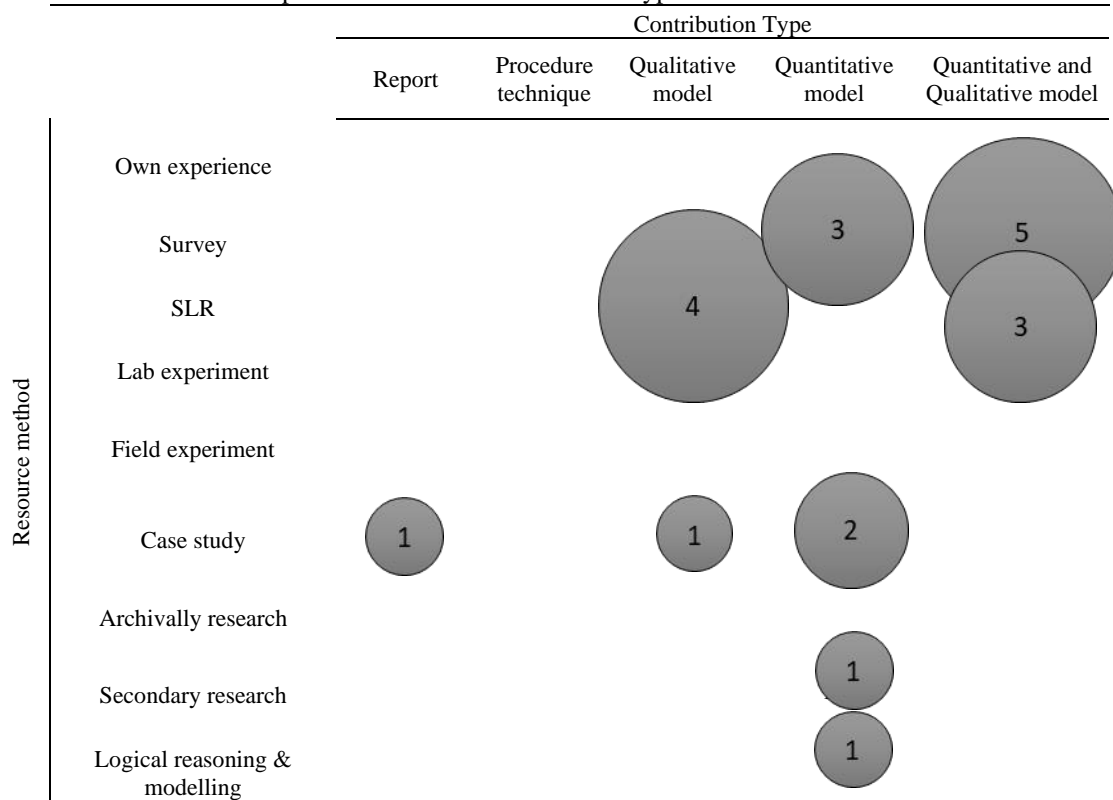
No	Source (authors) and Year	Journal	Findings (criteria)	Resource method	Contribution type
1	Bai, C., & Sarkis, J. (2018)	Technological and Economic Development of Economy	Economic/Business Factors: cost, quality, time, flexibility, innovation, technology, relationships. Environmental Factors: Pollution controls, pollution prevention, environmental management system, resource consumption, pollution production. Social Factors: Employment practices, health and safety, impact on local communities.	Logical reasoning and modelling	Quantitative model
2	Huymajer et al. (2022)	Sustainability	Materials and Resources: materials, excavation material, recycled materials, and waste. Energy: renewable energy sources, energy production, fossil fuels, and transport. Ground and Water: water usage, the hydrological system, soil quality, cultural preservation. Health: noise, air quality, toxic materials, ionizing radiation, and safety. Social: knowledge exchange, local stakeholder involvement, human rights and labour conditions, fair wages and local social return.	Case study	Quantitative model
3	Herczeg, A. C., Koteczki, R., & Balassa, B. E. (2023)	Ecocycles	Energy efficiency, recycling, sustainable packaging, and consumer acceptance of these practices.	SLR	Qualitative model
4	AE Francis et al. (2023)	Sustainability	Energy, materials, water management, and light pollution.	Case study	Report
5	P Colás-Bravo, J Conde-Jiménez, S Reyes-de-Cózar (2021)	Sustainability	Educational quality, Inclusion, Responsible actions, Universal literacy, Sustainability as a purpose.	Survey	Quantitative and Qualitative model
6	A de Souza Barbosa et al. (2023)	Humanities and Social Sciences Communications	Water pollution, soil degradation, air pollution, solid waste, energy consumption, renewable energies, recycling, green innovation, gender diversity, remuneration policy, intellectual empowerment, equal opportunity, community social actions, and investment in innovation.	SLR	Quantitative and Qualitative model
7	TTP Cortese, et al., (2022)	Energies	Energy efficiency and renewable energy.	SLR	Qualitative model
8	EE García-Salirrosas, RF Rondon-Eusebio (2022)	Sustainability	Environmental awareness, green satisfaction, green attitude, green purchase intention, green purchasing preference, green experiential value, responsible consumption, green engagement, green trust and green loyalty.	SLR	Qualitative model
9	MR Asadabadi, HB Ahmadi, H Gupta, JJH Liou (2023)	Annals of Operations Research	Investing in the environment to make an economic gain. Resource accessibility as well as green competencies. Collaborating with rivals and groups related to the environment. Product design considering factors such as reusing and being energy efficient	Survey	Quantitative and Qualitative model
10	H Wang (2022)	Sustainability	Economic: financial capacity, quality, technical capacity, cost or price, timely delivery.	SLR	Quantitative model

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11	M Zubair, S Chen, Y Ma, X Hu (2023)	Sustainability	Low-carbon, green transportation systems, renewable energy sources.	SLR	Quantitative and Qualitative model
12	AKS Ong, et al. (2023)	Sustainability	Economic concerns, environmental concerns, and authority support.	Survey	Quantitative and Qualitative model
13	AM Alhajiri, MN Akhtar (2023)	Civil Engineering Journal	The carbon footprint reduction, durability enhancement and economic viability.	SLR	Quantitative and Qualitative model
14	Abdullah Jaheer (2023)	International Journal for Research in Applied Science & Engineering Technology	Utility of sustainable goods, buying behaviour, awareness of sustainable production, the importance of production of sustainable apparel, and adaptation practices.	Survey	Quantitative and Qualitative model
15	G Rosalin, W Santosa (2023)	Journal of Social Research	Environmental, social (related to employment), and governance dimensions.	Case study	Qualitative model
16	N Letunovska et al. (2023)	Logistics	Environmental, social, and economic procurement sustainability.	Survey	Quantitative model
17	FY Pai, YJ Shih, YC Chuang, TM Yeh (2023)	Sustainability	Environmental awareness and customer experience	Survey	Quantitative model
18	NSH AL Hilal (2023)	Sustainability	Consumer perceptions, emotions, and relationships with the product, technology, improving the efficiency and quality of shopping experiences, brand awareness and loyalty.	Survey	Quantitative and Qualitative model
19	RG Alajmi (2024)	Sustainability	Energy efficiency and CO2 emissions as sustainability	Secondary research	Quantitative model
20	F Kellner, S Utz (2019)	Journal of cleaner production	Business ethics, environment, working conditions, human rights.	Case study	Quantitative model
21	A Weniger, P Del Rosario, JG Backes, M Traverso (2023)	Buildings	Recyclability at the end of the product's lifetime, durability, cost-saving construction, optimized use of energy and resources, low environmental footprint, fair working conditions, and the proportion of, recycled material.	Survey	Quantitative model

The response to the research question RQ2: "What is the relationship between research methods and types of contributions in the literature studying sustainability issues, according to data from the reviewed literature?" will be presented in Table 2, similar to Huymajer (2023, p. 11).

Table 2. Relationship between research methods and types of contributions



Verification of the thesis: "The majority of relevant publications on our topic are in the journal Sustainability," is conducted (Figure 4) through a simple review of the number of publications in journals, similar to Francis et al. (2023, p. 9).

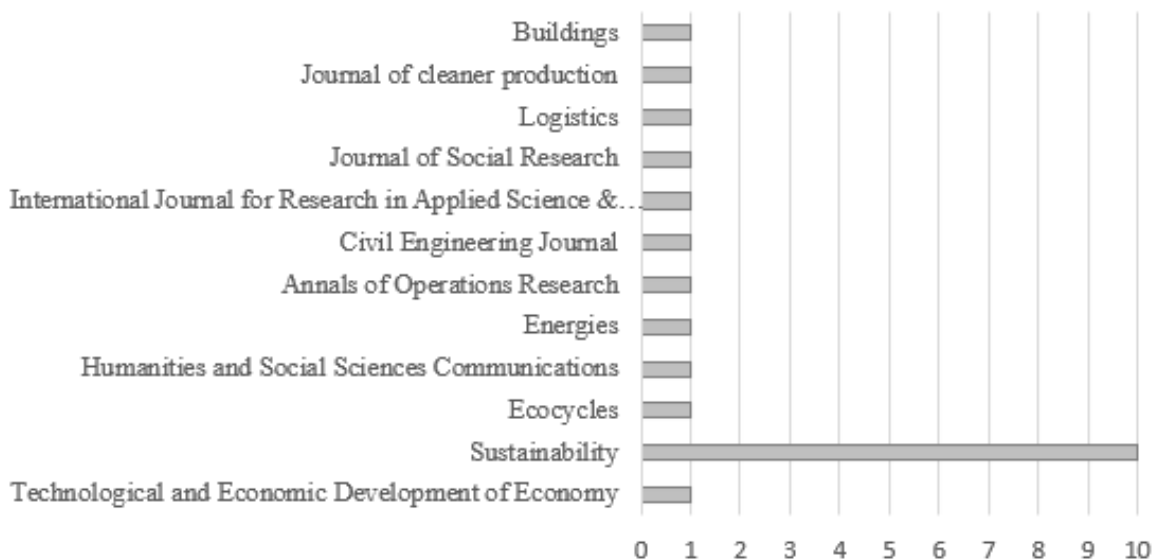


Figure 4. Number of publications published in different journals

5 Discussion

In the previous chapter, we present answers to the posed research questions using tables and charts. We analysed 21 publications that were selected based on criteria such as the time of publication and relevance to the topic. The selected publication is no older than 6 years, with half of these being less than 2 years old. The results are presented simply, by individual research questions (RQ1 and RQ2) and thesis. With a clear graphical representation of the distribution of publications by years, it allows for transparency and easier understanding of trends and patterns in the research field related to sustainability criteria in the supplier selection process.

Based on the data (Figure 3) shown on the chart of the distribution of publications by years, it is evident that there was a significant increase in the number of relevant publications in 2023, representing a peak in research activity in the field under discussion. This may indicate an increased interest and emphasis on sustainability within the selected timeframe, possibly stemming from heightened social awareness or new regulatory requirements. The decrease in the number of publications in 2024 is due to the period covered, as our research was conducted in March 2024. In the analysis of the selected 21 publications, which were limited to the last six years, it is clear that the majority of the research comes from a more recent period, highlighting the topicality and relevance of the gathered data for contemporary discussions and sustainable development practices. In further discussion, it would be beneficial to explore what led to such a trend and how these insights could impact future research directions and policies in the field of sustainability.

Table 1 shows the selected publications for the systematic literature review, relating to sustainability criteria in supplier selection. The studies cover various aspects of sustainable assessment, from economic and business factors such as costs, quality, time, flexibility, innovation, and culture, to environmental and social impacts, including employment practices, health and safety, and the impact on local communities and stakeholders. Research methods include logical reasoning and modelling, case studies, systematic literature reviews (SLR), and surveys. Types of contributions mentioned include quantitative models, qualitative models, reports, and combinations of quantitative and qualitative approaches, reflecting the diversity of methodological approaches and analyses used in the research. For example, Bai and Sarkis (2018, p. 2209) focused on quantitative modelling to assess economic, environmental, and social factors in technological and economic development. Huymajer et al. (2022, pp. 19–23) used a case study in the journal *Sustainability* to address materials and resources, energy, land and water, and health and social issues. Herczeg, Koteczki, and Balassa (2023, pp. 95–97) conducted an SLR in *Ecocycles* to examine energy efficiency, recycling, sustainable packaging, and the adoption of these practices by consumers. Economic and business factors, as mentioned by Bai and Sarkis (2018, pp. 2209–2220), include costs, quality, time efficiency, flexibility, innovation, corporate culture, technology, and partnerships. This highlights that suppliers must not only offer competitive prices but also adhere to the values and goals of organizations, contributing to greater added value. Environmental factors considered by publications (Barbosa et al. 2023, pp. 8–9; Francis et al. 2023, pp.11–12; Pai, Shih, Chuang & Yeh, 2023, pp. 8–9)

include pollution control, pollution prevention, environmental management systems, resource consumption, and waste production. This indicates that companies are increasingly looking for suppliers who actively manage and reduce their environmental footprint. Social factors are also crucial as they encompass employment practices, health and safety, impact on local communities, and stakeholder relations. These criteria reflect a growing recognition of the importance of responsible work practices and a positive contribution to the communities in which businesses operate. Huymajer et al. (2022, pp. 19–23) also highlight the importance of resource management, such as materials, recycled materials, and waste, as well as energy, water, and health, emphasizing that sustainable practices require a comprehensive approach to physical resources and their impact on the environment and society. Other authors, such as Herczek, Koteczki and Balassa (2023, pp. 95–97), focus on energy efficiency, recycling, and sustainable packaging, reflecting the need to reduce energy consumption and promote circular economic practices. The discussion of these publications reflects a wide range of criteria that are crucial in supplier selection, highlighting the importance of a holistic approach to sustainability that considers not just economic efficiency but also environmental responsibility and social justice. The research indicates a trend of expanding the concept of sustainability into all spheres of business, showing an increasing understanding that sustainable practices are essential for the long-term success of companies.

Table 2 shows the relationship between research methods and types of contributions in the reviewed literature related to sustainability criteria in supplier selection. It is observed that the methods and contributions vary in their prevalence and use in research. The survey research method was frequently used, with five contributions combining quantitative and qualitative models, and three using exclusively quantitative models. This reflects researchers' desire for broad empirical data and the analysis and interpretation of this data through mixed methods, allowing for a more comprehensive insight into the studied phenomena. Systematic literature reviews (SLR) contributed four qualitative models, highlighting a trend in research towards a deep understanding of topics without focusing on numerical data. Also, SLRs contributed three quantitative models, indicating a balanced approach between qualitative and quantitative data evaluation. Interestingly, the case study method was used once for a report and twice for quantitative models. Case studies allow for an in-depth analysis of specific instances and can be very useful for theory development or understanding complex issues. There was also one use of logical reasoning and modelling for a quantitative model. This method allows for the development of theoretical models that are verified using quantitative data. Notably, methods such as laboratory and field experiments were not recorded in the contributions, which may indicate challenges in implementation or lesser relevance of these methods in the context of sustainable supplier selection. The absence of contributions in categories like "personal experience," "archival research," and "secondary research" suggests that sustainability research prefers primary data and direct research methods over anecdotal evidence or the examination of existing data collections.

The graphical representation (Figure 4) shows the distribution of publications related to our topic across various scientific journals. Based on the chart, we can determine that the journal "Sustainability" contains the most publications related to the topic of sustainability in supplier selection. This clearly indicates that "Sustainability" is a leading publication in the research space regarding the number of publications on this topic. Considering these data, we can confirm the thesis, stating that "the majority of relevant publications on our topic are in the journal Sustainability." This finding is expected, as "Sustainability" is known for its specialization and focus on sustainability research, attracting authors and research contributing to this field. This confirms the thesis and highlights the importance of "Sustainability" as a key resource for research in sustainable development and supplier selection.

In our opinion, our study successfully links the analysis of literature with research questions and establishes a solid foundation for discussing sustainability criteria in supplier selection. The diversity of methods and types of contributions indicates that the field of sustainability in procurement is complex and multidisciplinary. It is worth mentioning that it may not be sufficient to merely identify the most common methods and types of contributions but also to examine how these methods and contributions interact with each other to affect the quality and application of research findings in practice. Interestingly, researchers show a preference for certain publications and methods, which could reflect current trends or a lack of specific research areas.

To the research question RQ1: "Which sustainability-related criteria shall be integrated into the supplier selection process?" we formulate the following answer:

Incorporating sustainability criteria into the supplier selection process is no longer merely an option but is becoming a norm. The criteria to be applied range from the economic and business impact of suppliers to their environmental and societal impact. This includes not only direct costs and quality but also broader environmental and social effects, such as employment practices, local impact, resource management, and energy efficiency.

To the research question RQ2: "What is the relationship between research methods and types of contributions in the literature studying sustainability issues, according to data from the reviewed literature?" we formulate the following answer:

There is a relationship between research methods and types of contributions in the literature, where quantitative and qualitative methods are combined for a comprehensive insight into sustainability issues. Surveys and SLRs are among the most common methods, indicating a tendency towards collecting broad datasets and gaining a deep understanding of the subject matter.

To the proposed thesis: "The majority of relevant publications on our topic are in the journal Sustainability." We confirm with the following explanation:

Figure 4 of the number of publications by journals confirms that the journal "Sustainability" carries the bulk of publications on the topic of sustainability and

supplier selection. This indicates that the journal has become a reference point for publishing research related to sustainability in supply chains, thereby confirming the thesis.

Through our research, we found that sustainability in the supplier selection process is a comprehensive topic that encompasses economic, environmental, and social criteria. Furthermore, the widespread use of specific research methods, such as surveys and systematic literature reviews, was confirmed, as well as the popularity of the journal "Sustainability" as an important platform for publishing relevant research in this field.

6 Conclusion

The summary of our research findings focuses on the integration of sustainability criteria into the supplier selection process and the analysis of research methods and contributions in the literature on sustainability. Based on the analysis of 21 publications covering the last six years, we discovered a significant increase in the number of relevant publications in 2023, reflecting a greater interest in sustainability topics during this period. However, we observed a decrease in publications in 2024, which can be attributed to the timing of our research conducted early in 2024. Research question RQ1 led us to conclude that sustainability criteria for supplier selection must be comprehensive and multidimensional, considering not only economic and business impacts but also environmental and social influences. Publications show that companies are increasingly focused on pollution control, efficient resource management, and positive community engagement. Research question RQ2 reveals that the most common research methods are surveys and systematic literature reviews, used by authors for quantitative and qualitative analyses, providing a broad and in-depth insight into sustainability issues. The lack of contributions from laboratory and field experiments and secondary research indicates a predominance of primary research and direct research methods. The hypothesis was confirmed with data showing that the journal "Sustainability" is the main source of publications on sustainability and procurement functions, highlighting its importance as a leading publication in this field. Together, these findings suggest that sustainability is crucial in supplier selection, and companies need clear guidelines and methods to integrate these criteria into their business decisions. The research contributes to a better understanding of current research trends and aids in shaping future policies and research in the field of sustainable procurement.

The contribution of this research to the field and science is multifaceted, extending from direct applicative value for procurement management practice to broader implications for the theoretical understanding of sustainable development in companies. Specifically, it is reflected in:

- The research provides data-supported evidence on the use of sustainability criteria in supplier selection, beneficial for managers aiming to implement sustainable strategies in their organizations. Strategic evaluation of suppliers offers insights into how companies can improve their supplier selection processes by including assessments of

environmental and social impact, which has become crucial in the modern business environment.

- By identifying and analysing sustainability criteria and their impact on supplier selection, the research contributes to the development of theoretical frameworks in this area.
- The research presents a fresh and standardized approach to literature review through the systematic application of the PRISMA method, which can serve as a best practice example for future research.
- The results provide businesses with concrete guidelines for integrating sustainability criteria into their procurement decisions, thereby improving their internal operational efficiency and external corporate responsibility.
- The research promotes ideals of universal excellence with a focus on ethics, social responsibility, and sustainable practices, central to building more sustainability-oriented and responsible organizations.
- By offering a deeper understanding of sustainability criteria and research methodology, the study serves as an educational tool for academics, researchers, and students engaged in the fields of sustainability and procurement.

This research underscores the importance of incorporating sustainable practices in procurement decisions, highlighting the role of academic inquiry in shaping future business strategies and policies towards sustainability.

This research empowers managers and procurement professionals with concrete and empirically supported sustainability criteria that they can implement in their decision-making processes. These insights enable them to enhance their supplier selection strategies, focusing not only on traditional economic aspects but also on long-term environmental and social benefits. This approach allows them to avoid short-term savings that could harm the environment or society and instead make decisions that promote long-term sustainability and ethical responsibility. For organizations, the research underscores the importance of integrating sustainable approaches across all business segments, especially in the supply chain, which is pivotal for operational efficiency. Organizations can use these insights to develop sustainable policies that support green business practices and corporate social responsibility. This not only improves their reputation and compliance with legislation but can also lead to innovations and new business opportunities. Next, in a broader societal context, the research supports the narrative of sustainability as an essential element for future generations. It fosters social awareness and contributes to greater corporate responsibility towards communities, leading to improved working conditions, the safeguarding of human rights, and the promotion of the local economy. Also, regarding the environment, the research emphasizes the need to reduce the environmental footprint of businesses. By promoting criteria such as energy efficiency, the use of renewable resources, and circular economy practices, it helps in establishing environmental standards that are vital for conserving planetary resources and preventing further environmental degradation.

References

1. Abdullah J., Ukesh S., Saran, T., Nikunj S., Siddharth T., Richa T., Vivek G. (2023). Era of Sustainability in Textile Industry: A study on Rising Concerns towards Sustainable Fabrics in Indian Fringe. *International Journal for Research in Applied Science & Engineering Technology*, 11(4), 2491–2496. doi: 10.22214/ijraset.2023.50674
2. Alhammadi, A., Soar, J., Yusaf, T., Ali, B. M., & Kadirgama, K. (2023). Redefining procurement paradigms: A critical review of buyer-supplier dynamics in the global petroleum and natural gas industry. *The Extractive Industries and Society*, 16, 1–11 doi: 10.1016/j.exis.2023.101351
3. AL Hilal, N. S. H. (2023). The impact of the use of augmented reality on online purchasing behaviour sustainability: The Saudi consumer as a model. *Sustainability*, 15(6), 2–19. doi: 10.3390/su15065448
4. Alajmi, R. G. (2024). Total-Factor Energy Efficiency (TFEE) and CO2 Emissions for GCC Countries. *Sustainability*, 16(2), 1–18. doi: 10.3390/su16020878
5. Alhajiri, A. M., & Akhtar, M. N. (2023). Enhancing sustainability and economics of concrete production through silica fume: A systematic review. *Civil Engineering Journal*, 9(10), 2612–2629. doi: 10.28991/CEJ-2023-09-10-017
6. Asadabadi, M. R., Ahmadi, H. B., Gupta, H., & Liou, J. J. (2023). Supplier selection to support environmental sustainability: the stratified BWM TOPSIS method. *Annals of Operations Research*, 322(1), 321–344. doi: 10.1007/s10479-022-04878-y
7. Bai, C., & Sarkis, J. (2018). Integrating sustainability into supplier selection: a grey-based TOPSIS analysis. *Technological and Economic Development of Economy*, 24(6), 2202–2224. doi: 10.3846/tede.2018.5582
8. Basenach, L., Renneberg, B., Salbach, H., Dreier, M., & Wölfling, K. (2023). Systematic reviews and meta-analyses of treatment interventions for Internet use disorders: Critical analysis of the methodical quality according to the PRISMA guidelines. *Journal of Behavioral Addictions*, 12(1), 9–25. doi: 10.1556/2006.2022.00087
9. Colás-Bravo, P., Conde-Jiménez, J., & Reyes-de-Cózar, S. (2021). Sustainability and digital teaching competence in higher education. *Sustainability*, 13(22), 1–17. doi: 10.3390/su132212354
10. Cortese, T. T. P., Almeida, J. F. S. D., Batista, G. Q., Storopoli, J. E., Liu, A., & Yigitcanlar, T. (2022). Understanding sustainable energy in the context of smart cities: a PRISMA review. *Energies*, 15(7), 1–38. doi: 10.3390/en15072382
11. de Souza Barbosa, A., da Silva, M. C. B. C., da Silva, L. B., Morioka, S. N., & de Souza, V. F. (2023). Integration of Environmental, Social, and Governance (ESG) criteria: their impacts on corporate sustainability performance. *Humanities and Social Sciences Communications*, 10(1), 1–18. doi: 10.1057/s41599-023-01919-0
12. Dubois, A. & Wynstra, J. (2005). Organising the Purchasing Function as an Interface between Internal and External Networks. Retrieved from: <https://www.impgroup.org/uploads/papers/4683.pdf>
13. Francis, A. E., Webb, M., Desha, C., Rundle-Thiele, S., & Caldera, S. (2023). Environmental Sustainability in Stadium Design and Construction: A Systematic Literature Review. *Sustainability*, 15(8), 1–25. doi: 10.3390/su15086896
14. García-Salirrosas, E. E., & Rondon-Eusebio, R. F. (2022). Green marketing practices related to key variables of consumer purchasing behavior. *Sustainability*, 14(14), 1–19. doi: 10.3390/su14148499

15. Herczeg, A. C., Koteczki, R., & Balassa, B. E. (2023). Sustainability trends in the wine industry: Cognitive biases and methodological insights from a PRISMA review. *Ecocycles*, 9(3), 90–102. Doi: 10.19040/ecocycles.v9i3.376
16. Huymajer, M., Woegerbauer, M., Winkler, L., Mazak-Huemer, A., & Biedermann, H. (2022). An interdisciplinary systematic review on sustainability in tunnelling—bibliometrics, challenges, and solutions. *Sustainability*, 14(4), 1–33. doi: 10.3390/su14042275
17. Keller, K., Kocsi, B. & Budai, I. (2018). Evaluation of Suppliers at A Steel Structure Manufacturer. *Műszaki Tudományok Közlemények*, 9(1), 111–114. doi: 10.33894/mtk-2018.09.23
18. Kellner, F., & Utz, S. (2019). Sustainability in supplier selection and order allocation: Combining integer variables with Markowitz portfolio theory. *Journal of cleaner production*, 214, 462–474.
19. Letunovska, N., Offei, F. A., Junior, P. A., Lyulyov, O., Pimonenko, T., & Kwilinski, A. (2023). Green Supply Chain Management: The Effect of Procurement Sustainability on Reverse Logistics. *Logistics*, 7(3), 1–17. doi: 10.3390/logistics7030047
20. Maestro-Prieto, J. A., Rodríguez, S., Casado Vara, R. C., & Corchado, J. M. (2020). Agent organisations: from independent agents to virtual organisations and societies of agents. *ADCAIJ: Advances in Distributed Computing and Artificial Intelligence Journal*, 9(4), 55–70. doi: 10.14201/ADCAIJ2020945570
21. Medeiros, M. & Ferreira, L. (2018). Development of a purchasing portfolio model: An empirical study in a Brazilian hospital. *Production Planning and Control*, 29(7), 571–585. doi: 10.1080/09537287.2018.1434912
22. Mbugua, K. C., Barasa, P. W. (2023). Influence of Supplier Selection on Organizational Performance of Saccos in Kenya: A Case Study of Biashara Sacco in Nyeri County. *International Journal of Scientific and Research Publications*, 13(10), 387–395. doi: 10.29322/IJSRP.13.10. 2023.p14249
23. Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Prisma Group. (2010). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *International journal of surgery*, 8(5), 336–341. doi: 10.1016/j.ijsu.2010.02.007
24. Nurashiah, I., Marini, A., Nafiah, M., & Rachmawati, N. (2022). Nilai kearifan lokal: projek paradigma baru program sekolah penggerak untuk mewujudkan profil pelajar pancasila. *Jurnal Basicedu*, 6(3), 3639–3648. doi: <https://doi.org/10.31004/basicedu.v6i3.2727>
25. O'Brien, J. (2019). *Category Management in Purchasing: A Strategic Approach to Maximize Business Profitability*. Kogan Page.
26. Ong, A. K. S., German, J. D., Redi, A. A. N. P., Cordova, L. N. Z., Longanilla, F. A. B., Caprecho, N. L., & Javier, R. A. V. (2023). Antecedents of Behavioral Intentions for Purchasing Hybrid Cars Using Sustainability Theory of Planned Behavior Integrated with UTAUT2. *Sustainability*, 15(9), 1–24. doi: 10.3390/su15097657
27. Pai, F. Y., Shih, Y. J., Chuang, Y. C., & Yeh, T. M. (2023). Supporting Environment Sustainability: Purchasing Intentions Relating to Battery Electric Vehicles in Taiwan. *Sustainability*, 15(24). 1–19. doi: /10.3390/su152416786
28. Pevec, N. (2023). The concept of identifying factors of quiet quitting in organizations: an integrative literature review. *Challenges of the Future*, 2, 128–147. doi: 10.37886/ip.2023.006
29. Rosalin, G., & Santosa, W. (2023). Evaluation of Suppliers in the Implementation of Sustainable Supply Chains for the Apparel Industry in Indonesia. *Journal of Social Research*, 2(10), 3534–3543.

30. Slagboom, T. N., van Bunderen, C. C., De Vries, R., Bisschop, P. H., & Drent, M. L. (2023). Prevalence of clinical signs, symptoms and comorbidities at diagnosis of acromegaly: a systematic review in accordance with PRISMA guidelines. *Pituitary*, 26(4), 319–332. doi: 10.1007/s11102-023-01322-7
31. Wang, H. (2022). Sustainable circular supplier selection in the power battery industry using a linguistic T-spherical fuzzy MAGDM model based on the improved ARAS method. *Sustainability*, 14(13), doi: 10.3390/su14137816
32. Weniger, A., Del Rosario, P., Backes, J. G., & Traverso, M. (2023). Consumer Behavior and Sustainability in the Construction Industry—Relevance of Sustainability-Related Criteria in Purchasing Decision. *Buildings*, 13(3), 1–22. doi: /10.3390/buildings13030638
33. Zubair, M., Chen, S., Ma, Y., & Hu, X. (2023). A Systematic Review on Carbon Dioxide (CO₂) Emission Measurement Methods under PRISMA Guidelines: Transportation Sustainability and Development Programs. *Sustainability*, 15(6), 1–19. doi: 10.3390/su15064817

Povzetek:

Integracija trajnostnih kriterijev v procese izbora dobaviteljev: Pregled po metodi PRISMA

Raziskovalno vprašanje (RV): V dobi dinamičnega prehoda na trajnostne prakse v nabavnih funkcijah se pojavi opazna vrzel v razumevanju, katere trajnostne kriterije organizacije uporabljajo pri izbiri dobaviteljev. Ta študija si prizadeva zapolniti to vrzel z zastavljanjem vprašanj: RQ1: "Kateri trajnostno povezani kriteriji bi morali biti integrirani v proces izbora dobaviteljev?" in RQ2: "Kakšno je razmerje med raziskovalnimi metodologijami in vrstami prispevkov v literaturi, ki preučuje trajnostna vprašanja?"

Namen: Glavni cilj te raziskave je analizirati in razumeti integracijo trajnostnih praks v procese izbire dobaviteljev, s poudarkom na identifikaciji ključnih trajnostnih kriterijev, ki jih organizacije uporabljajo pri ocenjevanju potencialnih dobaviteljev, in kako ti kriteriji vplivajo na odločitveni proces.

Metoda: Za doseganje raziskovalnih ciljev je bila izvedena sistematična literatura pregled z uporabo metode PRISMA. Ta pristop je omogočil celovito, strukturirano in nepristransko analizo obstoječih študij, zagotavljajoč veljavnost in zanesljivost raziskave.

Rezultati: Odgovorili smo na obe raziskovalni vprašanji in potrdili tezo. Raziskava je razkrila raznolikost trajnostnih kriterijev, ki jih upoštevajo podjetja, pokrivajoč ekonomske, okoljske in socialne dimenzije. Analiza 21 publikacij je pokazala naraščajoči trend vključevanja trajnostnih meril v ocene dobaviteljev, kar poudarja večdimenzionalni pristop k trajnosti.

Organizacija: Ugotovitve študije imajo pomemben vpliv na menedžerje in praktike nabave, saj predstavljajo okvir za strateško integracijo trajnostnih kriterijev v izbor dobaviteljev, s tem izboljšujejo organizacijske prakse in prispevajo k strateški vrednosti nabavnih funkcij.

Družba: Študija poudarja širši vpliv na družbo in okolje, zagovarja prehod na bolj odgovorne in trajnostne nabavne prakse. Izpostavlja vlogo trajnostnega izbora dobaviteljev pri spodbujanju okoljske odgovornosti, socialne odgovornosti in prispevanju k globalnim ciljem trajnosti.

Originalnost: Raziskava prispeva originalne uvide v integracijo trajnostnih kriterijev v izbor dobaviteljev, ponuja novo perspektivo na prakse nabave. Zagotavlja nov pristop uporabe metode PRISMA pri analizi trajnosti v nabavi, kar povečuje metodološko rigoroznost in aplikativnost raziskave.

Omejitve/nadaljnje raziskovanje: Čeprav študija prinaša pomembne uvide, priznava omejitve, kot so omejitve na nedavne publikacije in zanašanje na specifične baze podatkov. Predlaga smeri za nadaljnje raziskovanje, vključno z raziskovanjem raznolikih metodologij, izvajanjem primerjalnih in longitudinalnih študij ter preučevanjem vpliva trajnostnih praks na vedenje potrošnikov.

Ključne besede: trajnost, nabavna funkcija, izbira dobaviteljev, trajnostni kriteriji, metoda PRISMA.

Božidar Lenarčič, currently excelling as a Purchasing Category Manager at Adria Mobil since 2019, has significantly contributed to procurement strategies and supplier negotiations, enhancing key projects like Just-in-Sequence (JIS). Alongside, he pursued a PhD focusing on quality and excellence in organizational studies, demonstrating his commitment to continuous improvement in strategic procurement.

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